Ref. Ares(2021)1886118 - 16/03/2021

LIFE Integrated projects 2015

Climate Action

Stage 2 – FULL PROPOSAL

Technical application forms

Part A – administrative information

LIFE 2015	FOR ADMINISTRATION USE ONLY LIFE15 IPC/

PROJECT

Project title (*max. 120 characters*): Coast to Coast Climate Challenge
Project acronym (*max. 25 characters*): EU LIFE IP C2C CC
The project will be implemented in the following Country(s) and/or Administrative region(s):
The project takes place in Central Denmark Region (CDR) and North Denmark Region (NDR). Denmark is administratively divided in five regions of which CDR administrates the central part of the Jutland peninsular. The project is a multi-city/regional project as it involves 15 municipalities from the Central Denmark Region (plus 3 signing a Letter of Support) and 3 municipalities from the North Denmark Region. It thus complies with the criterion of covering a large territorial area.

Expected start date: 01/01/2017 Expected end date: 31/12/2022

PROJECT POLICY AREA

You can only tick one of the following options:

Climate Change Adaptation LIFE Integrated Project: Integrated project contributing to the implementation of a transnational, national, regional or local specific adaptation strategy or action plan	☐
Climate Change Mitigation LIFE Integrated Project: Integrated project contributing to the implementation of a transnational, national, regional or industry/sector specific greenhouse gas mitigation strategy, action plan or low carbon economy roadmap	☐
Urban Climate Change Mitigation and/or Adaptation LIFE Integrated Project: Integrated project contributing to the implementation of an urban action plan pioneering the transition to a low carbon and/or climate resilient society	■

The IP will implement the following action plan/strategy/roadmap (*full copy is to be provided if modified since Concept Note submission*):
The below list of plans are the climate change adaptation (CCA) plans of 21 municipalities from the two regions and the 4 Flood Risk Management Plans (derived from the EU Floods Directive) located in Central Denmark Region.
The municipal CCA plans build on the Danish Government's recommendations[1], but vary in practice among municipalities in relation to the level of ambition and level of details. According to an agreement between the Government and Local Government Denmark (LGDK), CCA plans must contain the following themes: background, risk assessment (flooding and values),

[1] http://klimatilpasning.dk/media/670126/klimatilpasningsvejledning_webV2.pdf

general CCA targets, and proposed concrete actions. All plans must be presented for public approval and – later – integrated into spatial planning. All plans are politically approved.
An overview of the content of the plans is given in Figure 1. The themes of the content of the plans shown in Figure 1 is the origin of the structure of C2C CC which was further developed in illustrated in Figure 2. In Denmark, most plans are digitised and do not exist as hard copy. The attached copies (on the CDrom) are thus from pdf. printouts of the digital plans. A few of the plans have been updated with new data after the submission date of the concept note. The below links have been updated.

Climate Change Adaptation Plans from associated beneficiaries in C2C CC:

1. Favrskov Kommune, 2014. *Klimatilpasningsplan.* Favrskov Kommune, 51 pages - http://favrskov.viewer.dkplan.niras.dk/dkplan/dkplan.aspx?pageId=392
2. Hedensted Kommune, 2013. *Kommuneplan 2013, Hovedstruktur.* Hedensted Kommune, 28 pages - http://www.hedensted.dk/borger/natur,-miljoe-og-energi/oversvoemmelser/klimatilpasningshandleplan (CCA plan integrated with the municipal spatial plan)
3. Herning Kommune, 2014. *Klimatilpasningsplan, Tillæg nr. 13 til Herning Kommuneplan 2013-2024.* Herning Kommune, 31 pages - http://kommuneplan.herning.dk/planer-for-hele-kommunen/miljoe-og-klima/klima-og-energi/klimatilpasning (CCA plan integrated with the municipal spatial plan)
4. Holstebro Kommune, 2014. *Klimatilpasningsplan for Holstebro Kommune 2014. Kommuneplantillæg 2009:32.* Teknik og Miljø, 29 pages - http://www.holstebro.dk/Klimatilpasningsplan-9717.aspx
5. Horsens Kommune, 2014. *Kommuneplantillæg 1 – 2013 Klimatilpasningsplan. Vind med vandet.* Horsens Byråd, 89 pages - http://kommuneplan.horsens.dk/download/kommuneplantillaeg/tillaeg_1_klimatilpasning/tilaeg_1_til_kommuneplan_2013_pdf.pdf
6. Lemvig Kommune. 2014. *Klimatilpasningsplan 2014 – 2017.* Lemvig Kommune, 29 pages - http://www.lemvig.dk/Planer-og-projekter/Klimatilpasningsplan.aspx
7. Morsø Kommune, 2013. Klimatilpasningsplan 2013, Morsø Kommune. 35 pages - http://morsoe.viewer.dkplan.niras.dk/DKplan/dkplan.aspx?pageId=343
8. Norddjurs Kommune, 2015. *PLANPORTAL Norddjurs Kommune. Beskrivelse af indsatser i udpegede risikoområder.* Norddjurs Kommune, 23 pages - http://norddjurs-planer.cowi.webhouse.dk/dk/klimatilpasningsplan/klimatilpasningsplan_02.htm
9. Randers Kommune, 2014. *Forslag til Tillæg nr. 6 til kommuneplan 2013.* Randers Kommune, 45 pages - http://sektorplaner.randers.dk/dk/klimatilpasningsplan/klimatilpasningsplan.htm
10. Samsø Kommune, 2013. *Klimatilpasning.* Samsø Kommune, 4 pages - http://planer.samsoe.dk/dk/kommuneplan/redegoerelse_hovedstruktur_og_retningslinjer/miljoe_og_klima/klimatilpasning.htm
11. Silkeborg Kommune, 2014. *Klimatilpasningsplan 2014 for Silkeborg Kommune.* Silkeborg Kommune, 66 pages - http://silkeborgsektorplaner.viewer.dkplan.niras.dk/plan/17#/
12. Skanderborg Kommune, 2014. Klimatilpasningsplan. Kommuneplan 13. 13-09. Skanderborg Kommune, 50 pages - https://www.skanderborg.dk/Borger/Natur-og-miljoe/Klimatilpasning-og-oversvoemmelse.aspx
13. Skive Kommune, 2015. *Klimatilpasningsplan 2014 – 2017.* Skive Kommune, 87 pages - http://skive.viewer.dkplan.niras.dk/DKplan/dkplan.aspx?pageId=1205
14. Struer Kommune, 2015. *Struer Kommune arbejder på Klimatilpasningsplanen, notat.* Struer Kommune, 1 p – http://kommuneplan.struer.dk/webtop/site.aspx?p=20844 (The CCA plan proposal will be politically presented 7th May 2016)
15. Syddjurs Kommune, 2014. *Syddjurs Klimatilpasningsplan 2014. Tillæg nr. 7 til Syddjurs Kommuneplan.* Syddjurs Kommune, 30 pages - http://www.syddjurs.dk/borger/natur-miljoe-og-klima/klima-og-energi/klimatilpasning
16. Thisted Kommune, 2014. Forslag til kommuneplantillæg nr.13. Klimatilpasning. Thisted Kommune, 53 pages - http://www.thisted.dk/OmKommunen/KommuneplanLokalplaner/~/media/OM_KOMMUNEN/KommuneplanLokalplaner/Sektorplaner/Klimatilpasningplan.ashx
17. Vesthimmerland Kommune, 2013. – Klimatilpasningsplan, Handleplan. Vesthimmerland Kommune, 13 pages - http://polweb.nethotel.dk/Produkt/PolWeb/default.asp?p=vesthimmerlands07&page=document&docId=20365&itemId=20412
18. Viborg Kommune, 2014. *Klimatilpasningsplan Tillæg nr. 19 til Kommuneplan 2013-2025.* Viborg Kommune, 28 pages - http://kommune.viborg.dk/Borger/Natur,-miljoe-og-affald/Klima-og-energi/Klimaplaner/Klimatilpasningsplan

Climate Change Adaptation Plans from supporting municipalities:

19. Ikast-Brande Kommune, 2014. *Klimatilpasningsplan 2013. Tillæg nr. 2 til Ikast-Brande Kommuneplan 2013-2025.* Ikast-Brande Kommune, 56 pages - http://www.ikast-brande.dk/media/6071662/klimatilpasningsplan_2013_endelig.pdf
20. Odder Kommune, 2014. *Klimatilpasningsplan Odder Kommune 2014.* Odder Kommune, 50 pages - http://www.oddernettet.dk/site.aspx?MenuID=141&Langref=75&Area=&topID=&ArticleID=4634&expandID=1374&moduleID=&ParentID=4454&UndersideID=2178
21. Ringkøbing-Skjern Kommune, 2012. *Handleplan 2011-2015 for klimatilpasning.* Ringkøbing-Skjern Kommune, 49 pages – No link

Risk Management Plans:

22. Hedensted Kommune, 2014. *Risikostyringsplan 2015 for Juelsminde*. Hedensted Kommune, 28 pages - http://www.hedensted.dk/politik/offentliggoerelser/risikostyringsplaner
23. Holstebro Kommune, 2014. *Risikostyringsplan 2015-2021 Forslag til offentliggørelse 2015.* Holstebro Kommune, 11 pages - http://www.holstebro.dk/Risikostyringsplan-9718.aspx
24. Norddjurs Kommune, 2014. *Risikostyringsplan.* Norddjurs Kommune, 27 pages - http://norddjurs-planer.cowi.webhouse.dk/dk/risikostyringsplan_for_oversvoemmelse_randers_fjord_-_2015-2021/risikostyringsplan_for_oversvoemmelse_randers_fjord_-_2015-2021.htm
25. Randers Kommune, 2014. *Risikostyringsplan*. Randers Kommune, 71 pages - http://sektorplaner.randers.dk/dk/risikostyringsplan/planen/planen.htm

Climate Change Adaption Plan Municipality	Sea and fjords	Lakes and rivers	Groundwater	Rainwater	Tools	Cooperation
Favrskov		p. 16b	p. 47	p. 18m p. 39b	p. 44b	p. 15t p. 16b
Hedensted	p. 21m p. 23m		p. 22t + m	p. 23b		p. 25b
Herning		p. 22	p. 9t + m p. 20	p. 25n p. 28m		p. 7t p. 22
Holstebro	p. 12	p. 10 p. 14 p. 15 no. 1-9	p. 13	p. 15 no 6	p. 15 no 10-11	p. 16m
Horsens	p. 10m p. 34 P. 35m	p. 35t+b	p. 22t	p. 7m	p. 35t + b	p. 84m
Ikast-Brande		p. 27m	p. 13t+m	p. 13 m p. 14 b		p. 27 b
Lemvig	p. 15m+b		p. 8b		p. 26 m	p. 20t+m p. 26m
Norsø	p. 25, no. 7, 9 + 10	p. 25, no. 8		p. 24, no. 2+3 p. 31b	p. 26m	p. 24, no.1 p. 25, no. 8 p. 29 b p. 31 m
Norddjurs	p. 1-2		p. 3m p. 13b	p. 3-5		in nearly all mentioned projects
Odder	p. 21 p. 40	p. 19	p. 24	p. 18 p. 24		
Randers	p. 13 p. 20-21 p. 24 p. 35-38	p. 14 p. 21 p. 25-28m p. 35-38	p. 18 p. 23 p. 35-38	p. 15-16 p. 22 p. 28m p. 35-38		p. 6b-7t p. 35-38
Ringkøbing-Skjern	p. 20-25 p. 40	p. 20-25 p. 40	p. 20-25	p. 20-25		p. 21, (Skjern Å) p. 45m
Samsø	p. 3m p. 4t		2b	3m-b		
Silkeborg	p. 32m (Gudenåen)		p. 32 (Aldersłyst/Godvad)	p. 32t (Ans) p. 32m (Knudlund) p. 32b (Thaaning)	p. 32t (Aldersłyst/Hvinningdal	p. 13
Skanderborg	p. 41		p. 41	p. 30m p. 41	p. 41	p. 32b p. 41
Skive	p. 31b		p. 22	p. 36 p. 39-40	p. 22b p.66	
Struer*						
Syddjurs			p. 24t	p. 12m p. 16, no 2-3	(p. 24t)	p. 5b p. 7
Thisted			p. 32-33	p. 30b		
Vesthimmerland	p. 12, no 2-6			p. 12, no 1 (Halkær Å + Aars By)		
Viborg	p. 22m p. 23m		p. 23b-p. 24	p. 23m	p. 23m	

*Note: The municipality of Struer has not yet any CCA-plan. Their main target is the challenges from Sea and Fjords.

Risk Management Plan	Sea and fjords	Lakes and rivers	Groundwater	Rainwater	Tools	Cooperation
Hedensted	p. 9 p. 16-17					p. 26t
Holstebro	p. 2-4					p. 2m
Norddjurs	p. 21-22					
Randers	p. 68-71			p. 68-71		p. 65-66

t – top (or left, when there are three columns)
m – middle
b – bottom (or right, when there are three columns)
no – number

Figure 1: Overview of the content of the municipal CCA plans.

BENEFICIARIES

Name of the **coordinating** beneficiary (1): Central Denmark Region (CDR)

Name of the associated beneficiary (2): Favrskov Kommune (FK)

Name of the associated beneficiary (3): Hedensted Kommune (HEDKOM)

Name of the associated beneficiary (4): Herning Kommune (HK)

Name of the associated beneficiary (5): Holstebro Kommune (HbK)

Name of the associated beneficiary (6): Horsens Kommune (Horsens)

Name of the associated beneficiary (7): Lemvig Kommune (LK)

Name of the associated beneficiary (8): Lemvig Vand & Spildevand A/S (LVS)

Name of the associated beneficiary (9): Morsø Forsyning A/S (MF)

Name of the associated beneficiary (10): Morsø Kommune (MK)

Name of the associated beneficiary (11): Norddjurs Kommune (NDK)

Name of the associated beneficiary (12): Randers Kommune (RK)

Name of the associated beneficiary (13): Samsø Kommune (SAK)

Name of the associated beneficiary (14): Silkeborg Kommune (SIK)

Name of the associated beneficiary (15): Skanderborg Forsyningsvirksomhed A/S (SFV)

Name of the associated beneficiary (16): Skanderborg Kommune (SK-KOM)

Name of the associated beneficiary (17): Skive Kommune (SKK)

Name of the associated beneficiary (18): Skive Vand A/S (SKV)

Name of the associated beneficiary (19): Struer Forsyning Spildevand A/S (STF)

Name of the associated beneficiary (20): Struer Kommune (STK)

Name of the associated beneficiary (21): Syddjurs Kommune (SDK)

Name of the associated beneficiary (22): Thisted Kommune (TK)

Name of the associated beneficiary (23): Thisted spildevand transport A/S (TV)

Name of the associated beneficiary (24): Vestforsyning Erhverv A/S (VESTF)

Name of the associated beneficiary (25): Vesthimmerlands commune (VHK)

Name of the associated beneficiary (26): Vesthimmerlands Vand A/S (VV)

Name of the associated beneficiary (27): Via University College (VIA)

Name of the associated beneficiary (28): Viborg Kommune (VK)

Name of the associated beneficiary (29): Aalborg Universitet (AAU)

Name of the associated beneficiary (30): Aarhus Universitet (AU)

Name of the associated beneficiary (31): Central Denmark EU Office (CDEU)

PROJECT BUDGET AND REQUESTED EC FUNDING	
Total integrated project budget:	11.673.483€
Total LIFE eligible project budget:	11.666.491€
EC LIFE financial contribution requested:	6.999.894€ (= 60 % of total eligible budget)

DS

Coordinating Beneficiary Profile Information					
Short Name	CDR			**Beneficiary n°**	1
Legal information on the Coordinating Beneficiary					
Legal Name	Central Denmark Region		**Legal Status**		
VAT No	29190925		**Public body**	X	
Legal Registration No	29190925		**Private commercial**		
Registration Date	01/01/2007		**Private non- commercial**		
PIC No.	**997381452**		**VAT reimbursement**	Y	N
Legal address of the Coordinating Beneficiary					
Street Name and No	Central Denmark Region Emil Møllers Gade 41		**PO Box**	N/A	
Post Code	8700	**Town/City**	Horsens		
Country Code	DK	**Country Name**	Denmark		
Coordinating Beneficiary contact person information					
Function	Chief Consultant				
Surname	Selmer	**First Name**	Dorthe		
E-mail address	dorsel@rm.dk				
Department / Service	Regional Development/Regional Udvikling				
Street Name and No	Skottenborg 26		**PO Box**	N/A	
Post Code	8800	**Town/City**	Viborg		
Country	Denmark				
Telephone No	+45 29620830	**Fax No**	+45 78410001		
Coordinating Beneficiary details					
Website	www.rm.dk and specific for climate change adaptation: http://www.rm.dk/regional-udvikling/klimatilpasning/				

Brief description of the Coordinating Beneficiary's activities and experience in the area of the proposal

CDR is the 2nd largest regional administrative unit in Denmark covering 19 municipalities, of which 15 are associated beneficiaries in the C2C CC project. Besides health care, CDR ensures and coordinates regional development within nature, environment, business and tourism. CDR is the authority and has particular professional expertise in the field of soil pollution, but is not an authority as such on CCA vis-a-vis the municipalities.

Since 2007, CDR has increasingly cooperated with the municipalities on CCA and water related issues. In a process of co-creation, cooperation has focused on providing data on flood risks, debating CCA plans, and ensuring good business development based on the market pull effect of the water sector in particular and the public sector in general. Thus, CDR has already created a strong link with water authorities and businesses. To strengthen business development and innovation within the water sector, CDR adopted 'Challenge:Water' in 2012 supported by ERDF. In order to export Danish water solutions, the Danish Water Technology House was inaugurated in Singapore.

Apart from its active engagement in the FINNOWATER action group within the EIP on Water, CDR has a long experience with managing EU development projects within the water and CCA sector. To mention a few supported by ERDF InterReg IVB NSR: CLIWAT, WaterCAP, WaterCAP-Taskforce, WaterCAP-Communication Hub – and lately - TOPSOIL and WaterCOG. CDR is also the coordinator of a large ELENA project on energy savings in cooperation with 11 municipalities (CeDEPI).

As concerns the Life programme, within environment and groundwater protection, the CDR has carried out the NorthPestClean project as an innovative way of combating contamination, which is part of CDR responsibility.

As of now, the consortium of the C2C CC project includes the following stakeholders having signed Letters of Intent (LoI): municipalities, river basin cooperation fora, national agencies, academia, companies, the Danish Confederation of Industry, and water utilities.

YOU **MAY NOT** DUPLICATE THIS PAGE

COORDINATING BENEFICIARY DECLARATION

The undersigned hereby certifies that:

1. The specific actions listed in this proposal do not and will not receive aid from the European Structural and Investment Funds or other European Union funding programmes. In the event that any such funding will be made available after the submission of the proposal or during the implementation of the project, my organisation will immediately inform the Contracting Authority.

2. My organisation Central Denmark Region has not been served with bankruptcy orders, nor has it received a formal summons from creditors. My organisation is not in any of the situations listed in Articles 106(1) and 107 of Council Regulation No 966/2012 of the European Parliament and of the Council of 25 October 2012 on the financial rules applicable to the general budget of the Union (OJ L298 of 26.10.2012).

3. My organisation (which is legally registered in the European Union) will contribute 1.431.535 € to the project. My organisation will participate in the implementation of the following actions: A1, A2, A3, A4, A5, C1, C2, C3, C4, C5, C6, C7, C17,D1, D2, D3, D4, E1, E2, E3, E4, E5, E6, F1 and F2. The estimated total cost of my organisation's part in the implementation of the project is 3.498.543 €.

4. My organisation will conclude with the associated beneficiaries and co-financiers any agreements necessary for the completion of the work, provided these do not infringe on their obligations, as stated in the grant agreement with the Contracting Authority. Such agreements will be based on the model proposed by the Contracting Authority. They will describe clearly the tasks to be performed by each associated beneficiary and define the financial arrangements.

5. I commit to comply with all relevant eligibility criteria, as defined in the LIFE Multiannual Work Programme 2014-2017 and the LIFE Call for Proposals including the LIFE Guidelines for Applicants.

I am legally authorised to sign this statement on behalf of my organisation.

I have read in full the LIFE Model Grant Agreement and the Financial and Administrative Guidelines provided with the LIFE application files.

I certify to the best of my knowledge that the statements made in this proposal are true and the information provided is correct.

At Viborg, Dk on Wednesday 30th, September 2020

Signature of the Coordinating Beneficiary:

Pernille Blach Hansen, Chief Executive Officer, Central Denmark Region

PUBLIC BODY DECLARATION

The undersigned hereby certifies that:

My organisation *(add organisation's name)* Central Denmark Region is either

A. State or regional or local authority,

or

B. a body governed by public law, or an association formed by one or more of such authorities or bodies governed by public law, or an entity registered as private law body wishing to be considered for the purpose of this call as equivalent to "public body"; **it fulfils all four following criteria** and will prove it by providing evidence upon first request:
    1. it is established for the specific purpose of meeting needs in the general interest, not having an industrial or commercial character, and
    2. it has a legal personality and
    3. it is financed, for most part, by the State, or regional or local authorities, or other bodies governed by public law; or subject to management supervision by those bodies; or having an administrative, managerial or supervisory board, more than half of whose members are appointed by the State, regional or local authorities or by other bodies governed by public law, and
    4. **in the event the organisation stops its activities, its rights and obligations, liability and debts will be transferred to a public body.**

It should be therefore considered a "public body" for the purpose of this LIFE 2015 call for integrated project proposals.

I am legally authorised to sign this statement on behalf of my organisation.

At Viborg, Dk on Wednesday 30th, October 2020

Signature of the Coordinating Beneficiary:

Pernille Blach Hansen, Chief Executive Officer, Central Denmark Region

ASSOCIATED BENEFICIARY DECLARATION and MANDATE

I, the undersigned,

Torben Tran Ankjærø,

representing,

Official name: Favrskov Kommune (FK)
Official legal status: Public body
Official registration No: 29 18 97 14
Registered Office: Skovvej 20, 8382, Hinnerup, Denmark
Vat. No: 29 18 97 14

hereinafter referred to as "the associated beneficiary", for the purposes of the signature and the implementation of the grant agreement [EU LIFE IP Coast to Coast Climate Challenge (EU LIFE IP C2C CC)] with the Contracting Authority (hereinafter referred to as "the grant agreement") hereby:

1. Mandate
Official name: Central Denmark Region
Official legal status: Public body
Official registration No: 29 19 09 25
Registered Office: Central Denmark Region, Emil Møllers Gade 41, Horsens 8700, Denmark
Vat. No: 29 19 09 25

represented by Rolf Johnsen, Chief Consultant (hereinafter referred to as "the coordinating beneficiary") to sign in my name and on my behalf the grant agreement and its possible subsequent amendments with the Contracting Authority.

2. Mandate the coordinating beneficiary to act on behalf of the associated beneficiary in compliance with the grant agreement.

I hereby confirm that the associated beneficiary accepts all terms and conditions of the grant agreement and, in particular, all provisions affecting the coordinating beneficiary and the associated beneficiaries. In particular, I acknowledge that, by virtue of this mandate, the coordinating beneficiary alone is entitled to receive funds from the Contracting Authority and distribute the amounts corresponding to the associated beneficiary's participation in the action.

I hereby accept that the associated beneficiary will do everything in its power to help the coordinating beneficiary fulfil its obligations under the grant agreement, and in particular, to provide to the coordinating beneficiary, on its request, whatever documents or information may be required.

I hereby declare that the associated beneficiary agrees that the provisions of the grant agreement, including this mandate, shall take precedence over any other agreement between the associated beneficiary and the coordinating beneficiary which may have an effect on the implementation of the grant agreement.

I furthermore certify that:

A7

1. The associated beneficiary has not been served with bankruptcy orders, nor has it received a formal summons from creditors. My organisation is not in any of the situations listed in Articles 106(1) and 107 of Council Regulation No 966/2012 of the European Parliament and of the Council of 25 October 2012 on the financial rules applicable to the general budget of the Union (OJ L298 of 26.10.2012).
2. The associated beneficiary will contribute 42.904€ to the project.

   My organisation will participate in the implementation of the following actions: C1, C2, C3, C4, C5, C6, C7 and C12

   The estimated total cost of my organisation's part in the implementation of the project is 107.260€.
3. The associated beneficiary will conclude with the coordinating beneficiary an agreement necessary for the completion of the work, provided this does not infringe on our obligations, as stated in the grant agreement with the Contracting Authority. This agreement will be based on the model proposed by the Contracting Authority. It will describe clearly the tasks to be performed by my organisation and define the financial arrangements.
4. I commit to comply with all relevant eligibility criteria, as defined in the LIFE Multiannual Work Programme 2014-2017 and the LIFE Call for Proposals including the LIFE Guidelines for Applicants.

This declaration and mandate shall be annexed to the grant agreement and shall form an integral part thereof.

I am legally authorised to sign this statement on behalf of my organisation.

I have read in full the LIFE Model Grant Agreement and the Financial and Administrative GUIDELINES provided with the LIFE application files.

I certify to the best of my knowledge that the statements made in this proposal are true and the information provided is correct.

At Hammel, Denmark on 29-08-2016

Signature of the Associated Beneficiary:

Torben Tran Project Coordinator

Name(s) and status/function of signatory:
Torben Tran Ankjærø, Project Coordinator, Agriculture and Nature, Favrskov Kommune

DS

ASSOCIATED BENEFICIARY DECLARATION and MANDATE

I, the undersigned,

Per Nørmark Andersen,

representing,

Official name: Hedensted Kommune (HEDKOM)
Official legal status: Public body
Official registration No: 29 18 95 87
Registered Office: Niels Espes Vej 8, Hedensted, 8722, Denmark
Vat. No: 29 18 95 87

hereinafter referred to as "the associated beneficiary", for the purposes of the signature and the implementation of the grant agreement [EU LIFE IP Coast to Coast Climate Challenge (EU LIFE IP C2C CC)] with the Contracting Authority (hereinafter referred to as "the grant agreement") hereby:

1. Mandate
Official name: Central Denmark Region
Official legal status: Public body
Official registration No: 29 19 09 25
Registered Office: Central Denmark Region, Emil Møllers Gade 41, Horsens 8700, Denmark
Vat. No: 29 19 09 25

represented by Rolf Johnsen, Chief Consultant (hereinafter referred to as "the coordinating beneficiary") to sign in my name and on my behalf the grant agreement and its possible subsequent amendments with the Contracting Authority.

2. Mandate the coordinating beneficiary to act on behalf of the associated beneficiary in compliance with the grant agreement.

I hereby confirm that the associated beneficiary accepts all terms and conditions of the grant agreement and, in particular, all provisions affecting the coordinating beneficiary and the associated beneficiaries. In particular, I acknowledge that, by virtue of this mandate, the coordinating beneficiary alone is entitled to receive funds from the Contracting Authority and distribute the amounts corresponding to the associated beneficiary's participation in the action.

I hereby accept that the associated beneficiary will do everything in its power to help the coordinating beneficiary fulfil its obligations under the grant agreement, and in particular, to provide to the coordinating beneficiary, on its request, whatever documents or information may be required.

I hereby declare that the associated beneficiary agrees that the provisions of the grant agreement, including this mandate, shall take precedence over any other agreement between the associated beneficiary and the coordinating beneficiary which may have an effect on the implementation of the grant agreement.

I furthermore certify that:

1. The associated beneficiary has not been served with bankruptcy orders, nor has it received a formal summons from creditors. My organisation is not in any of the situations listed in Articles 106(1) and 107 of Council Regulation No 966/2012 of the European Parliament and of the Council of 25 October 2012 on the financial rules applicable to the general budget of the Union (OJ L298 of 26.10.2012).
2. The associated beneficiary will contribute 266.008€ to the project.

   My organisation will participate in the implementation of the following actions: C1, C2, C3, C4, C5, C6, C7, C8, C12, C15, C18 and C22.

   The estimated total cost of my organisation's part in the implementation of the project is 665.019€.
3. The associated beneficiary will conclude with the coordinating beneficiary an agreement necessary for the completion of the work, provided this does not infringe on our obligations, as stated in the grant agreement with the Contracting Authority. This agreement will be based on the model proposed by the Contracting Authority. It will describe clearly the tasks to be performed by my organisation and define the financial arrangements.
4. I commit to comply with all relevant eligibility criteria, as defined in the LIFE Multiannual Work Programme 2014-2017 and the LIFE Call for Proposals including the LIFE Guidelines for Applicants.

This declaration and mandate shall be annexed to the grant agreement and shall form an integral part thereof.

I am legally authorised to sign this statement on behalf of my organisation.

I have read in full the LIFE Model Grant Agreement and the Financial and Administrative GUIDELINES provided with the LIFE application files.

I certify to the best of my knowledge that the statements made in this proposal are true and the information provided is correct.

At .....Hedensted..... on.....25. August 2016.....

Signature of the Associated Beneficiary:



Name(s) and status/function of signatory:

Per Nørmark Andersen

Head of Department

DS

ASSOCIATED BENEFICIARY DECLARATION and MANDATE

I, the undersigned,

Søren Brandt,

representing,

Official name: Herning Kommune (HK)
Official legal status: Public body
Official registration No: 29189919
Registered Office: Torvet 5, Herning, 7400, Denmark
Vat. No: 29189919

hereinafter referred to as "the associated beneficiary", for the purposes of the signature and the implementation of the grant agreement [EU LIFE IP Coast to Coast Climate Challenge (EU LIFE IP C2C CC)] with the Contracting Authority (hereinafter referred to as "the grant agreement") hereby:

1. Mandate
Official name: Central Denmark Region
Official legal status: Public body
Official registration No: 29 19 09 25
Registered Office: Central Denmark Region, Emil Møllers Gade 41, Horsens 8700, Denmark
Vat. No: 29 19 09 25

represented by Rolf Johnsen, Chief Consultant (hereinafter referred to as "the coordinating beneficiary") to sign in my name and on my behalf the grant agreement and its possible subsequent amendments with the Contracting Authority.

2. Mandate the coordinating beneficiary to act on behalf of the associated beneficiary in compliance with the grant agreement.

I hereby confirm that the associated beneficiary accepts all terms and conditions of the grant agreement and, in particular, all provisions affecting the coordinating beneficiary and the associated beneficiaries. In particular, I acknowledge that, by virtue of this mandate, the coordinating beneficiary alone is entitled to receive funds from the Contracting Authority and distribute the amounts corresponding to the associated beneficiary's participation in the action.

I hereby accept that the associated beneficiary will do everything in its power to help the coordinating beneficiary fulfil its obligations under the grant agreement, and in particular, to provide to the coordinating beneficiary, on its request, whatever documents or information may be required.

I hereby declare that the associated beneficiary agrees that the provisions of the grant agreement, including this mandate, shall take precedence over any other agreement between the associated beneficiary and the coordinating beneficiary which may have an effect on the implementation of the grant agreement.

I furthermore certify that:

AS

1. The associated beneficiary has not been served with bankruptcy orders, nor has it received a formal summons from creditors. My organisation is not in any of the situations listed in Articles 106(1) and 107 of Council Regulation No 966/2012 of the European Parliament and of the Council of 25 October 2012 on the financial rules applicable to the general budget of the Union (OJ L298 of 26.10.2012).
2. The associated beneficiary will contribute 35.313€ to the project.

   My organisation will participate in the implementation of the following actions: C1, C2, C3, C4, C5, C6, C7 and C13

   The estimated total cost of my organisation's part in the implementation of the project is 88.283€.
3. The associated beneficiary will conclude with the coordinating beneficiary an agreement necessary for the completion of the work, provided this does not infringe on our obligations, as stated in the grant agreement with the Contracting Authority. This agreement will be based on the model proposed by the Contracting Authority. It will describe clearly the tasks to be performed by my organisation and define the financial arrangements.
4. I commit to comply with all relevant eligibility criteria, as defined in the LIFE Multiannual Work Programme 2014-2017 and the LIFE Call for Proposals including the LIFE Guidelines for Applicants.

This declaration and mandate shall be annexed to the grant agreement and shall form an integral part thereof.

I am legally authorised to sign this statement on behalf of my organisation.

I have read in full the LIFE Model Grant Agreement and the Financial and Administrative GUIDELINES provided with the LIFE application files.

I certify to the best of my knowledge that the statements made in this proposal are true and the information provided is correct.

At Herning..... on.....02-09-2016.....

Signature of the Associated Beneficiary:

Name(s) and status/function of signatory:

Søren Brandt

Teknik og Miljø
Natur og grønne områder
Rådhuset, Torvet
7400 Herning

DS

ASSOCIATED BENEFICIARY DECLARATION and MANDATE

I, the undersigned,

Torben Mølgaard
Afdelingschef,
Natur og Miljø, Holstebro Kommune

representing,

Official name: Holstebro Kommune (HbK)
Official legal status: Public body
Official registration No: 29189927
Registered Office: Kirkestræde 11, Holstebro, 7500, Denmark
Vat. No: 29189927

hereinafter referred to as "the associated beneficiary", for the purposes of the signature and the implementation of the grant agreement [EU LIFE IP Coast to Coast Climate Challenge (EU LIFE IP C2C CC)] with the Contracting Authority (hereinafter referred to as "the grant agreement") hereby:

1. Mandate
Official name: Central Denmark Region
Official legal status: Public body
Official registration No: 29 19 09 25
Registered Office: Central Denmark Region, Emil Møllers Gade 41, Horsens 8700, Denmark
Vat. No: 29 19 09 25

represented by Rolf Johnsen, Chief Consultant (hereinafter referred to as "the coordinating beneficiary") to sign in my name and on my behalf the grant agreement and its possible subsequent amendments with the Contracting Authority.

2. Mandate the coordinating beneficiary to act on behalf of the associated beneficiary in compliance with the grant agreement.

I hereby confirm that the associated beneficiary accepts all terms and conditions of the grant agreement and, in particular, all provisions affecting the coordinating beneficiary and the associated beneficiaries. In particular, I acknowledge that, by virtue of this mandate, the coordinating beneficiary alone is entitled to receive funds from the Contracting Authority and distribute the amounts corresponding to the associated beneficiary's participation in the action.

I hereby accept that the associated beneficiary will do everything in its power to help the coordinating beneficiary fulfil its obligations under the grant agreement, and in particular, to provide to the coordinating beneficiary, on its request, whatever documents or information may be required.

I hereby declare that the associated beneficiary agrees that the provisions of the grant agreement, including this mandate, shall take precedence over any other agreement between the associated beneficiary and the coordinating beneficiary which may have an effect on the implementation of the grant agreement.

94

I furthermore certify that:

1. The associated beneficiary has not been served with bankruptcy orders, nor has it received a formal summons from creditors. My organisation is not in any of the situations listed in Articles 106(1) and 107 of Council Regulation No 966/2012 of the European Parliament and of the Council of 25 October 2012 on the financial rules applicable to the general budget of the Union (OJ L298 of 26.10.2012).
2. The associated beneficiary will contribute 65.810€ to the project.

   My organisation will participate in the implementation of the following actions: C1, C2, C3, C4, C5, C6, C7, C9 and C13.

   The estimated total cost of my organisation's part in the implementation of the project is 164.524€.
3. The associated beneficiary will conclude with the coordinating beneficiary an agreement necessary for the completion of the work, provided this does not infringe on our obligations, as stated in the grant agreement with the Contracting Authority. This agreement will be based on the model proposed by the Contracting Authority. It will describe clearly the tasks to be performed by my organisation and define the financial arrangements.
4. I commit to comply with all relevant eligibility criteria, as defined in the LIFE Multiannual Work Programme 2014-2017 and the LIFE Call for Proposals including the LIFE Guidelines for Applicants.

This declaration and mandate shall be annexed to the grant agreement and shall form an integral part thereof.

I am legally authorised to sign this statement on behalf of my organisation.

I have read in full the LIFE Model Grant Agreement and the Financial and Administrative GUIDELINES provided with the LIFE application files.

I certify to the best of my knowledge that the statements made in this proposal are true and the information provided is correct.

At ....Holstebro..... on 29/9-2016.....

Signature of the Associated Beneficiary:

Name(s) and status/function of signatory: Torben Mølgaard, Afdelingschef (Head of Department), Natur og Miljø, Holstebro Kommune

DS

ASSOCIATED BENEFICIARY DECLARATION and MANDATE

I, the undersigned,

Tom Heron, Executive Director

representing,

Official name: Horsens Kommune (Horsens)
Official legal status: Public body
Official registration No: 29189889
Registered Office: Rådhustorvet 4, Horsens, 8700, Denmark
Vat. No: 29189889

hereinafter referred to as "the associated beneficiary", for the purposes of the signature and the implementation of the grant agreement [EU LIFE IP Coast to Coast Climate Challenge (EU LIFE IP C2C CC)] with the Contracting Authority (hereinafter referred to as "the grant agreement") hereby:

1. Mandate
Official name: Central Denmark Region
Official legal status: Public body
Official registration No: 29 19 09 25
Registered Office: Central Denmark Region, Emil Møllers Gade 41, Horsens 8700, Denmark
Vat. No: 29 19 09 25

represented by Rolf Johnsen, Chief Consultant (hereinafter referred to as "the coordinating beneficiary") to sign in my name and on my behalf the grant agreement and its possible subsequent amendments with the Contracting Authority.

2. Mandate the coordinating beneficiary to act on behalf of the associated beneficiary in compliance with the grant agreement.

I hereby confirm that the associated beneficiary accepts all terms and conditions of the grant agreement and, in particular, all provisions affecting the coordinating beneficiary and the associated beneficiaries. In particular, I acknowledge that, by virtue of this mandate, the coordinating beneficiary alone is entitled to receive funds from the Contracting Authority and distribute the amounts corresponding to the associated beneficiary's participation in the action.

I hereby accept that the associated beneficiary will do everything in its power to help the coordinating beneficiary fulfil its obligations under the grant agreement, and in particular, to provide to the coordinating beneficiary, on its request, whatever documents or information may be required.

I hereby declare that the associated beneficiary agrees that the provisions of the grant agreement, including this mandate, shall take precedence over any other agreement between the associated beneficiary and the coordinating beneficiary which may have an effect on the implementation of the grant agreement.

I furthermore certify that:

A5

1. The associated beneficiary has not been served with bankruptcy orders, nor has it received a formal summons from creditors. My organisation is not in any of the situations listed in Articles 106(1) and 107 of Council Regulation No 966/2012 of the European Parliament and of the Council of 25 October 2012 on the financial rules applicable to the general budget of the Union (OJ L298 of 26.10.2012).
2. The associated beneficiary will contribute 355.190€ to the project.

   My organisation will participate in the implementation of the following actions: C1, C2, C3, C4, C5, C6, C7, C12, C14, and C23

   The estimated total cost of my organisation's part in the implementation of the project is 884.524€.
3. The associated beneficiary will conclude with the coordinating beneficiary an agreement necessary for the completion of the work, provided this does not infringe on our obligations, as stated in the grant agreement with the Contracting Authority. This agreement will be based on the model proposed by the Contracting Authority. It will describe clearly the tasks to be performed by my organisation and define the financial arrangements.
4. I commit to comply with all relevant eligibility criteria, as defined in the LIFE Multiannual Work Programme 2014-2017 and the LIFE Call for Proposals including the LIFE Guidelines for Applicants.

This declaration and mandate shall be annexed to the grant agreement and shall form an integral part thereof.

I am legally authorised to sign this statement on behalf of my organisation.

I have read in full the LIFE Model Grant Agreement and the Financial and Administrative GUIDELINES provided with the LIFE application files.

I certify to the best of my knowledge that the statements made in this proposal are true and the information provided is correct.

At Tom Heron on 29/8/2016

Signature of the Associated Beneficiary:

Tom Heron, Executive Director, Horsens Kommune

ASSOCIATED BENEFICIARY DECLARATION and MANDATE

I, the undersigned,

Thomas Damgaard

representing,

Official name: Lemvig Kommune (LK)
Official legal status: Public body
Official registration No: 29189935
Registered Office: Rådhusgade 2, Lemvig, 7620, Denmark
Vat. No: 29189935

hereinafter referred to as "the associated beneficiary", for the purposes of the signature and the implementation of the grant agreement [EU LIFE IP Coast to Coast Climate Challenge (EU LIFE IP C2C CC)] with the Contracting Authority (hereinafter referred to as "the grant agreement") hereby:

1. Mandate
Official name: Central Denmark Region
Official legal status: Public body
Official registration No: 29 19 09 25
Registered Office: Central Denmark Region, Emil Møllers Gade 41, Horsens 8700, Denmark
Vat. No: 29 19 09 25

represented by Rolf Johnsen, Chief Consultant (hereinafter referred to as "the coordinating beneficiary") to sign in my name and on my behalf the grant agreement and its possible subsequent amendments with the Contracting Authority.

2. Mandate the coordinating beneficiary to act on behalf of the associated beneficiary in compliance with the grant agreement.

I hereby confirm that the associated beneficiary accepts all terms and conditions of the grant agreement and, in particular, all provisions affecting the coordinating beneficiary and the associated beneficiaries. In particular, I acknowledge that, by virtue of this mandate, the coordinating beneficiary alone is entitled to receive funds from the Contracting Authority and distribute the amounts corresponding to the associated beneficiary's participation in the action.

I hereby accept that the associated beneficiary will do everything in its power to help the coordinating beneficiary fulfil its obligations under the grant agreement, and in particular, to provide to the coordinating beneficiary, on its request, whatever documents or information may be required.

I hereby declare that the associated beneficiary agrees that the provisions of the grant agreement, including this mandate, shall take precedence over any other agreement between the associated beneficiary and the coordinating beneficiary which may have an effect on the implementation of the grant agreement.

I furthermore certify that:

1. The associated beneficiary has not been served with bankruptcy orders, nor has it received a formal summons from creditors. My organisation is not in any of the situations listed in Articles 106(1) and 107 of Council Regulation No 966/2012 of the European Parliament and of the Council of 25 October 2012 on the financial rules applicable to the general budget of the Union (OJ L298 of 26.10.2012).
2. The associated beneficiary will contribute 251.242€ to the project.

   My organisation will participate in the implementation of the following actions: C1, C2, C3, C4, C5, C6, C7, C9, C17 and C21.

   The estimated total cost of my organisation's part in the implementation of the project is 628.105€.
3. The associated beneficiary will conclude with the coordinating beneficiary an agreement necessary for the completion of the work, provided this does not infringe on our obligations, as stated in the grant agreement with the Contracting Authority. This agreement will be based on the model proposed by the Contracting Authority. It will describe clearly the tasks to be performed by my organisation and define the financial arrangements.
4. I commit to comply with all relevant eligibility criteria, as defined in the LIFE Multiannual Work Programme 2014-2017 and the LIFE Call for Proposals including the LIFE Guidelines for Applicants.

This declaration and mandate shall be annexed to the grant agreement and shall form an integral part thereof.

I am legally authorised to sign this statement on behalf of my organisation.

I have read in full the LIFE Model Grant Agreement and the Financial and Administrative GUIDELINES provided with the LIFE application files.

I certify to the best of my knowledge that the statements made in this proposal are true and the information provided is correct.

At Lemvig Kommune on August 25, 2016

Signature of the Associated Beneficiary:

Lemvig Kommune
Teknik & miljø
Rådhusgade 2
7620 Lemvig

Name(s) and status/function of signatory:

THOMAS DAMGAARD

HEAD OF DEPARTMENT, NATURE & ENVIRONMENT

Thomas Damgaard
Head of department, Nature & Environment

ASSOCIATED BENEFICIARY DECLARATION and MANDATE

I, the undersigned,

Lars Nørgård Holmegaard

representing,

Official name: Lemvig Vand & Spildevand A/S (LVS)
Official legal status: Private commercial
Official registration No: 32832296
Registered Office: Rønbjerghage 31, Lemvig, 7620, Denmark
Vat. No: 32832296

hereinafter referred to as "the associated beneficiary", for the purposes of the signature and the implementation of the grant agreement [EU LIFE IP Coast to Coast Climate Challenge (EU LIFE IP C2C CC)] with the Contracting Authority (hereinafter referred to as "the grant agreement") hereby:

1. Mandate
Official name: Central Denmark Region
Official legal status: Public body
Official registration No: 29 19 09 25
Registered Office: Central Denmark Region, Emil Møllers Gade 41, Horsens 8700, Denmark
Vat. No: 29 19 09 25

represented by Rolf Johnsen, Chief Consultant (hereinafter referred to as "the coordinating beneficiary") to sign in my name and on my behalf the grant agreement and its possible subsequent amendments with the Contracting Authority.

2. Mandate the coordinating beneficiary to act on behalf of the associated beneficiary in compliance with the grant agreement.

I hereby confirm that the associated beneficiary accepts all terms and conditions of the grant agreement and, in particular, all provisions affecting the coordinating beneficiary and the associated beneficiaries. In particular, I acknowledge that, by virtue of this mandate, the coordinating beneficiary alone is entitled to receive funds from the Contracting Authority and distribute the amounts corresponding to the associated beneficiary's participation in the action.

I hereby accept that the associated beneficiary will do everything in its power to help the coordinating beneficiary fulfil its obligations under the grant agreement, and in particular, to provide to the coordinating beneficiary, on its request, whatever documents or information may be required.

I hereby declare that the associated beneficiary agrees that the provisions of the grant agreement, including this mandate, shall take precedence over any other agreement between the associated beneficiary and the coordinating beneficiary which may have an effect on the implementation of the grant agreement.

I furthermore certify that:

1. The associated beneficiary has not been served with bankruptcy orders, nor has it received a formal summons from creditors. My organisation is not in any of the situations listed in Articles 106(1) and 107 of Council Regulation No 966/2012 of the European Parliament and of the Council of 25 October 2012 on the financial rules applicable to the general budget of the Union (OJ L298 of 26.10.2012).
2. The associated beneficiary will contribute 258.042€ to the project.

   My organisation will participate in the implementation of the following actions: C1, C2, C3, C4, C5, C6, C7, C17, C9, and C21.

   The estimated total cost of my organisation's part in the implementation of the project is 645.105€.
3. The associated beneficiary will conclude with the coordinating beneficiary an agreement necessary for the completion of the work, provided this does not infringe on our obligations, as stated in the grant agreement with the Contracting Authority. This agreement will be based on the model proposed by the Contracting Authority. It will describe clearly the tasks to be performed by my organisation and define the financial arrangements.
4. I commit to comply with all relevant eligibility criteria, as defined in the LIFE Multiannual Work Programme 2014-2017 and the LIFE Call for Proposals including the LIFE Guidelines for Applicants.

This declaration and mandate shall be annexed to the grant agreement and shall form an integral part thereof.

I am legally authorised to sign this statement on behalf of my organisation.

I have read in full the LIFE Model Grant Agreement and the Financial and Administrative GUIDELINES provided with the LIFE application files.

I certify to the best of my knowledge that the statements made in this proposal are true and the information provided is correct.

At .....Lemvig..... on.....29-08-2016.....

Signature of the Associated Beneficiary:

Name(s) and status/function of signatory:

Lars Nørgård Holmegaard

CEO at Lemvig Vand og Spildevand A/S

ASSOCIATED BENEFICIARY DECLARATION and MANDATE

I, the undersigned,

CEO Gitte Guldberg

representing,

Official name: Morsø forsyning A/S (MF)
Official legal status: Private commercial
Official registration No: 32 47 90 65
Registered Office: Nørregade 3, Nykøbing M, 7900, Denmark
Vat. No: 32 47 90 65

hereinafter referred to as "the associated beneficiary", for the purposes of the signature and the implementation of the grant agreement [EU LIFE IP Coast to Coast Climate Challenge (EU LIFE IP C2C CC)] with the Contracting Authority (hereinafter referred to as "the grant agreement") hereby:

1. Mandate
Official name: Central Denmark Region
Official legal status: Public body
Official registration No: 29 19 09 25
Registered Office: Central Denmark Region, Emil Møllers Gade 41, Horsens 8700, Denmark
Vat. No: 29 19 09 25

represented by Rolf Johnsen, Chief Consultant (hereinafter referred to as "the coordinating beneficiary") to sign in my name and on my behalf the grant agreement and its possible subsequent amendments with the Contracting Authority.

2. Mandate the coordinating beneficiary to act on behalf of the associated beneficiary in compliance with the grant agreement.

I hereby confirm that the associated beneficiary accepts all terms and conditions of the grant agreement and, in particular, all provisions affecting the coordinating beneficiary and the associated beneficiaries. In particular, I acknowledge that, by virtue of this mandate, the coordinating beneficiary alone is entitled to receive funds from the Contracting Authority and distribute the amounts corresponding to the associated beneficiary's participation in the action.

I hereby accept that the associated beneficiary will do everything in its power to help the coordinating beneficiary fulfil its obligations under the grant agreement, and in particular, to provide to the coordinating beneficiary, on its request, whatever documents or information may be required.

I hereby declare that the associated beneficiary agrees that the provisions of the grant agreement, including this mandate, shall take precedence over any other agreement between the associated beneficiary and the coordinating beneficiary which may have an effect on the implementation of the grant agreement.

I furthermore certify that:

1. The associated beneficiary has not been served with bankruptcy orders, nor has it received a formal summons from creditors. My organisation is not in any of the situations listed in Articles 106(1) and 107 of Council Regulation No 966/2012 of the European Parliament and of the Council of 25 October 2012 on the financial rules applicable to the general budget of the Union (OJ L298 of 26.10.2012).
2. The associated beneficiary will contribute 31.846€ to the project.

   My organisation will participate in the implementation of the following actions: C1, C2, C3, C4, C5, C6, C7, and C9.

   The estimated total cost of my organisation's part in the implementation of the project is 79.616€.
3. The associated beneficiary will conclude with the coordinating beneficiary an agreement necessary for the completion of the work, provided this does not infringe on our obligations, as stated in the grant agreement with the Contracting Authority. This agreement will be based on the model proposed by the Contracting Authority. It will describe clearly the tasks to be performed by my organisation and define the financial arrangements.
4. I commit to comply with all relevant eligibility criteria, as defined in the LIFE Multiannual Work Programme 2014-2017 and the LIFE Call for Proposals including the LIFE Guidelines for Applicants.

This declaration and mandate shall be annexed to the grant agreement and shall form an integral part thereof.

I am legally authorised to sign this statement on behalf of my organisation.

I have read in full the LIFE Model Grant Agreement and the Financial and Administrative GUIDELINES provided with the LIFE application files.

I certify to the best of my knowledge that the statements made in this proposal are true and the information provided is correct.

At .....Nykøbing Mors..... on.....26. august 2016.....

Signature of the Associated Beneficiary:

Name(s) and status/function of signatory:

CEO Gitte Guldberg

ASSOCIATED BENEFICIARY DECLARATION and MANDATE

I, the undersigned,

Arne Kirk

representing,

Official name: Morsø kommune (MK)
Official legal status: Public body
Official registration No: 41 33 30 14
Registered Office: Jernbanevej 7, Nykøbing M, 7900, Denmark
Vat. No: 41 33 30 14

hereinafter referred to as "the associated beneficiary", for the purposes of the signature and the implementation of the grant agreement [EU LIFE IP Coast to Coast Climate Challenge (EU LIFE IP C2C CC)] with the Contracting Authority (hereinafter referred to as "the grant agreement") hereby:

1. Mandate
Official name: Central Denmark Region
Official legal status: Public body
Official registration No: 29 19 09 25
Registered Office: Central Denmark Region, Emil Møllers Gade 41, Horsens 8700, Denmark
Vat. No: 29 19 09 25

represented by Rolf Johnsen, Chief Consultant (hereinafter referred to as "the coordinating beneficiary") to sign in my name and on my behalf the grant agreement and its possible subsequent amendments with the Contracting Authority.

2. Mandate the coordinating beneficiary to act on behalf of the associated beneficiary in compliance with the grant agreement.

I hereby confirm that the associated beneficiary accepts all terms and conditions of the grant agreement and, in particular, all provisions affecting the coordinating beneficiary and the associated beneficiaries. In particular, I acknowledge that, by virtue of this mandate, the coordinating beneficiary alone is entitled to receive funds from the Contracting Authority and distribute the amounts corresponding to the associated beneficiary's participation in the action.

I hereby accept that the associated beneficiary will do everything in its power to help the coordinating beneficiary fulfil its obligations under the grant agreement, and in particular, to provide to the coordinating beneficiary, on its request, whatever documents or information may be required.

I hereby declare that the associated beneficiary agrees that the provisions of the grant agreement, including this mandate, shall take precedence over any other agreement between the associated beneficiary and the coordinating beneficiary which may have an effect on the implementation of the grant agreement.

I furthermore certify that:

AD

1. The associated beneficiary has not been served with bankruptcy orders, nor has it received a formal summons from creditors. My organisation is not in any of the situations listed in Articles 106(1) and 107 of Council Regulation No 966/2012 of the European Parliament and of the Council of 25 October 2012 on the financial rules applicable to the general budget of the Union (OJ L298 of 26.10.2012).
2. The associated beneficiary will contribute 31.846€ to the project.

   My organisation will participate in the implementation of the following actions: C1, C2, C3, C4, C5, C6, C7, and C9.

   The estimated total cost of my organisation's part in the implementation of the project is 79.616€.
3. The associated beneficiary will conclude with the coordinating beneficiary an agreement necessary for the completion of the work, provided this does not infringe on our obligations, as stated in the grant agreement with the Contracting Authority. This agreement will be based on the model proposed by the Contracting Authority. It will describe clearly the tasks to be performed by my organisation and define the financial arrangements.
4. I commit to comply with all relevant eligibility criteria, as defined in the LIFE Multiannual Work Programme 2014-2017 and the LIFE Call for Proposals including the LIFE Guidelines for Applicants.

This declaration and mandate shall be annexed to the grant agreement and shall form an integral part thereof.

I am legally authorised to sign this statement on behalf of my organisation.

I have read in full the LIFE Model Grant Agreement and the Financial and Administrative GUIDELINES provided with the LIFE application files.

I certify to the best of my knowledge that the statements made in this proposal are true and the information provided is correct.

At ..Nykøbing..... on.....30.08.2016.....

Signature of the Associated Beneficiary:

Arne Kirk
Natur- og Miljøchef

Name(s) and status/function of signatory:

DS

ASSOCIATED BENEFICIARY DECLARATION and MANDATE

I, the undersigned,

Hanne Broe, Head of Department for culture, nature and areal planning

representing,

Official name: Norddjurs Kommune (NDK)
Official legal status: Public body
Official registration No: 29189986
Registered Office: Torvet 3, Grenaa, 8500, Denmark
Vat. No: 29189986

hereinafter referred to as "the associated beneficiary", for the purposes of the signature and the implementation of the grant agreement [EU LIFE IP Coast to Coast Climate Challenge (EU LIFE IP C2C CC)] with the Contracting Authority (hereinafter referred to as "the grant agreement") hereby:

1. Mandate
Official name: Central Denmark Region
Official legal status: Public body
Official registration No: 29 19 09 25
Registered Office: Central Denmark Region, Emil Møllers Gade 41, Horsens 8700, Denmark
Vat. No: 29 19 09 25

represented by Rolf Johnsen, Chief Consultant (hereinafter referred to as "the coordinating beneficiary") to sign in my name and on my behalf the grant agreement and its possible subsequent amendments with the Contracting Authority.

2. Mandate the coordinating beneficiary to act on behalf of the associated beneficiary in compliance with the grant agreement.

I hereby confirm that the associated beneficiary accepts all terms and conditions of the grant agreement and, in particular, all provisions affecting the coordinating beneficiary and the associated beneficiaries. In particular, I acknowledge that, by virtue of this mandate, the coordinating beneficiary alone is entitled to receive funds from the Contracting Authority and distribute the amounts corresponding to the associated beneficiary's participation in the action.

I hereby accept that the associated beneficiary will do everything in its power to help the coordinating beneficiary fulfil its obligations under the grant agreement, and in particular, to provide to the coordinating beneficiary, on its request, whatever documents or information may be required.

I hereby declare that the associated beneficiary agrees that the provisions of the grant agreement, including this mandate, shall take precedence over any other agreement between the associated beneficiary and the coordinating beneficiary which may have an effect on the implementation of the grant agreement.

I furthermore certify that:

A7

1. The associated beneficiary has not been served with bankruptcy orders, nor has it received a formal summons from creditors. My organisation is not in any of the situations listed in Articles 106(1) and 107 of Council Regulation No 966/2012 of the European Parliament and of the Council of 25 October 2012 on the financial rules applicable to the general budget of the Union (OJ L298 of 26.10.2012).
2. The associated beneficiary will contribute 278.544€ to the project.

   My organisation will participate in the implementation of the following actions: C1, C2, C3, C4, C5, C6, C7, C10, and C11.

   The estimated total cost of my organisation's part in the implementation of the project is 696.359€.
3. The associated beneficiary will conclude with the coordinating beneficiary an agreement necessary for the completion of the work, provided this does not infringe on our obligations, as stated in the grant agreement with the Contracting Authority. This agreement will be based on the model proposed by the Contracting Authority. It will describe clearly the tasks to be performed by my organisation and define the financial arrangements.
4. I commit to comply with all relevant eligibility criteria, as defined in the LIFE Multiannual Work Programme 2014-2017 and the LIFE Call for Proposals including the LIFE Guidelines for Applicants.

This declaration and mandate shall be annexed to the grant agreement and shall form an integral part thereof.

I am legally authorised to sign this statement on behalf of my organisation.

I have read in full the LIFE Model Grant Agreement and the Financial and Administrative GUIDELINES provided with the LIFE application files.

I certify to the best of my knowledge that the statements made in this proposal are true and the information provided is correct.

At Ålesgård on 31.8.2016

Signature of the Associated Beneficiary:

Name(s) and status/function of signatory: HANNE BROE
HEAD OF DEPARTMENT
FOR CULTURE, NATURE
AND AREAL PLANNING

ASSOCIATED BENEFICIARY DECLARATION and MANDATE

I, the undersigned,

Nels Markussen, Head of Department of Nature and Environment,

Representing:

Official name: Randers Kommune (RK)
Official legal status: Public body
Official registration No: 29189668
Registered Office: Laksetorvet 1, Randers C, 8900, Denmark
Vat. No: 29189668

hereinafter referred to as "the associated beneficiary", for the purposes of the signature and the implementation of the grant agreement [EU LIFE IP Coast to Coast Climate Challenge (EU LIFE IP C2C CC)] with the Contracting Authority (hereinafter referred to as "the grant agreement") hereby:

1. Mandate
Official name: Central Denmark Region
Official legal status: Public body
Official registration No: 29 19 09 25
Registered Office: Central Denmark Region, Emil Møllers Gade 41, Horsens 8700, Denmark
Vat. No: 29 19 09 25

represented by Rolf Johnsen, Chief Consultant (hereinafter referred to as "the coordinating beneficiary") to sign in my name and on my behalf the grant agreement and its possible subsequent amendments with the Contracting Authority.

2. Mandate the coordinating beneficiary to act on behalf of the associated beneficiary in compliance with the grant agreement.

I hereby confirm that the associated beneficiary accepts all terms and conditions of the grant agreement and, in particular, all provisions affecting the coordinating beneficiary and the associated beneficiaries. In particular, I acknowledge that, by virtue of this mandate, the coordinating beneficiary alone is entitled to receive funds from the Contracting Authority and distribute the amounts corresponding to the associated beneficiary's participation in the action.

I hereby accept that the associated beneficiary will do everything in its power to help the coordinating beneficiary fulfil its obligations under the grant agreement, and in particular, to provide to the coordinating beneficiary, on its request, whatever documents or information may be required.

I hereby declare that the associated beneficiary agrees that the provisions of the grant agreement, including this mandate, shall take precedence over any other agreement between the associated beneficiary and the coordinating beneficiary which may have an effect on the implementation of the grant agreement.

I furthermore certify that:

A7

1. The associated beneficiary has not been served with bankruptcy orders, nor has it received a formal summons from creditors. My organisation is not in any of the situations listed in Articles 106(1) and 107 of Council Regulation No 966/2012 of the European Parliament and of the Council of 25 October 2012 on the financial rules applicable to the general budget of the Union (OJ L298 of 26.10.2012).
2. The associated beneficiary will contribute 370.972€ to the project.

   My organisation will participate in the implementation of the following actions: C1, C2, C3, C4, C5, C6, C7, C11, C12, and C16.

   The estimated total cost of my organisation's part in the implementation of the project is 927.430€.
3. The associated beneficiary will conclude with the coordinating beneficiary an agreement necessary for the completion of the work, provided this does not infringe on our obligations, as stated in the grant agreement with the Contracting Authority. This agreement will be based on the model proposed by the Contracting Authority. It will describe clearly the tasks to be performed by my organisation and define the financial arrangements.
4. I commit to comply with all relevant eligibility criteria, as defined in the LIFE Multiannual Work Programme 2014-2017 and the LIFE Call for Proposals including the LIFE Guidelines for Applicants.

This declaration and mandate shall be annexed to the grant agreement and shall form an integral part thereof.

I am legally authorised to sign this statement on behalf of my organisation.

I have read in full the LIFE Model Grant Agreement and the Financial and Administrative GUIDELINES provided with the LIFE application files.

I certify to the best of my knowledge that the statements made in this proposal are true and the information provided is correct.

At Randers Kommune on August 26th 2016

Signature of the Associated Beneficiary:

Name(s) and status/function of signatory:
Nels Markussen, Head of Department of Nature and Environment

ASSOCIATED BENEFICIARY DECLARATION and MANDATE

I, the undersigned, Søren Stensgaard

representing,

Official name: Samsø Kommune (SAK)
Official legal status: Public body
Official registration No: 23795515
Registered Office: Søtofte 10, Samsø, 8305, Denmark
Vat. No: 23795515

hereinafter referred to as "the associated beneficiary", for the purposes of the signature and the implementation of the grant agreement [EU LIFE IP Coast to Coast Climate Challenge (EU LIFE IP C2C CC)] with the Contracting Authority (hereinafter referred to as "the grant agreement") hereby:

1. Mandate
Official name: Central Denmark Region
Official legal status: Public body
Official registration No: 29 19 09 25
Registered Office: Central Denmark Region, Emil Møllers Gade 41, Horsens 8700, Denmark
Vat. No: 29 19 09 25

represented by Rolf Johnsen, Chief Consultant (hereinafter referred to as "the coordinating beneficiary") to sign in my name and on my behalf the grant agreement and its possible subsequent amendments with the Contracting Authority.

2. Mandate the coordinating beneficiary to act on behalf of the associated beneficiary in compliance with the grant agreement.

I hereby confirm that the associated beneficiary accepts all terms and conditions of the grant agreement and, in particular, all provisions affecting the coordinating beneficiary and the associated beneficiaries. In particular, I acknowledge that, by virtue of this mandate, the coordinating beneficiary alone is entitled to receive funds from the Contracting Authority and distribute the amounts corresponding to the associated beneficiary's participation in the action.

I hereby accept that the associated beneficiary will do everything in its power to help the coordinating beneficiary fulfil its obligations under the grant agreement, and in particular, to provide to the coordinating beneficiary, on its request, whatever documents or information may be required.

I hereby declare that the associated beneficiary agrees that the provisions of the grant agreement, including this mandate, shall take precedence over any other agreement between the associated beneficiary and the coordinating beneficiary which may have an effect on the implementation of the grant agreement.

I furthermore certify that:

A7

1. The associated beneficiary has not been served with bankruptcy orders, nor has it received a formal summons from creditors. My organisation is not in any of the situations listed in Articles 106(1) and 107 of Council Regulation No 966/2012 of the European Parliament and of the Council of 25 October 2012 on the financial rules applicable to the general budget of the Union (OJ L298 of 26.10.2012).
2. The associated beneficiary will contribute 102.682€ to the project.

   My organisation will participate in the implementation of the following actions: C1, C2, C3, C4, C5, C6, C7, and C19.

   The estimated total cost of my organisation's part in the implementation of the project is 256.705€.
3. The associated beneficiary will conclude with the coordinating beneficiary an agreement necessary for the completion of the work, provided this does not infringe on our obligations, as stated in the grant agreement with the Contracting Authority. This agreement will be based on the model proposed by the Contracting Authority. It will describe clearly the tasks to be performed by my organisation and define the financial arrangements.
4. I commit to comply with all relevant eligibility criteria, as defined in the LIFE Multiannual Work Programme 2014-2017 and the LIFE Call for Proposals including the LIFE Guidelines for Applicants.

This declaration and mandate shall be annexed to the grant agreement and shall form an integral part thereof.

I am legally authorised to sign this statement on behalf of my organisation.

I have read in full the LIFE Model Grant Agreement and the Financial and Administrative GUIDELINES provided with the LIFE application files.

I certify to the best of my knowledge that the statements made in this proposal are true and the information provided is correct.

At .....Samsø, Tranebjerg.....on..25-08-2016.....

Signature of the Associated Beneficiary:

Name(s) and status/function of signatory: Søren Stensgaard, Technical Director

ASSOCIATED BENEFICIARY DECLARATION and MANDATE

I, the undersigned,

Morten Horsfeldt Jespersen,

representing,

Official name: Silkeborg Kommune (SIK)
Official legal status: Public body
Official registration No: 29189841
Registered Office: Søvej 1, Silkeborg, 8600, Denmark
Vat. No: 29189841

hereinafter referred to as "the associated beneficiary", for the purposes of the signature and the implementation of the grant agreement [EU LIFE IP Coast to Coast Climate Challenge (EU LIFE IP C2C CC)] with the Contracting Authority (hereinafter referred to as "the grant agreement") hereby:

1. Mandate
Official name: Central Denmark Region
Official legal status: Public body
Official registration No: 29 19 09 25
Registered Office: Central Denmark Region, Emil Møllers Gade 41, Horsens 8700, Denmark
Vat. No: 29 19 09 25

represented by Rolf Johnsen, Chief Consultant (hereinafter referred to as "the coordinating beneficiary") to sign in my name and on my behalf the grant agreement and its possible subsequent amendments with the Contracting Authority.

2. Mandate the coordinating beneficiary to act on behalf of the associated beneficiary in compliance with the grant agreement.

I hereby confirm that the associated beneficiary accepts all terms and conditions of the grant agreement and, in particular, all provisions affecting the coordinating beneficiary and the associated beneficiaries. In particular, I acknowledge that, by virtue of this mandate, the coordinating beneficiary alone is entitled to receive funds from the Contracting Authority and distribute the amounts corresponding to the associated beneficiary's participation in the action.

I hereby accept that the associated beneficiary will do everything in its power to help the coordinating beneficiary fulfil its obligations under the grant agreement, and in particular, to provide to the coordinating beneficiary, on its request, whatever documents or information may be required.

I hereby declare that the associated beneficiary agrees that the provisions of the grant agreement, including this mandate, shall take precedence over any other agreement between the associated beneficiary and the coordinating beneficiary which may have an effect on the implementation of the grant agreement.

I furthermore certify that:

A7

1. The associated beneficiary has not been served with bankruptcy orders, nor has it received a formal summons from creditors. My organisation is not in any of the situations listed in Articles 106(1) and 107 of Council Regulation No 966/2012 of the European Parliament and of the Council of 25 October 2012 on the financial rules applicable to the general budget of the Union (OJ L298 of 26.10.2012).
2. The associated beneficiary will contribute 42.904€ to the project:

   My organisation will participate in the implementation of the following actions: C1, C2, C3, C4, C5, C6, C7 and C12

   The estimated total cost of my organisation's part in the implementation of the project is 107.260€.
3. The associated beneficiary will conclude with the coordinating beneficiary an agreement necessary for the completion of the work, provided this does not infringe on our obligations, as stated in the grant agreement with the Contracting Authority. This agreement will be based on the model proposed by the Contracting Authority. It will describe clearly the tasks to be performed by my organisation and define the financial arrangements.
4. I commit to comply with all relevant eligibility criteria, as defined in the LIFE Multiannual Work Programme 2014-2017 and the LIFE Call for Proposals including the LIFE Guidelines for Applicants.

This declaration and mandate shall be annexed to the grant agreement and shall form an integral part thereof.

I am legally authorised to sign this statement on behalf of my organisation.

I have read in full the LIFE Model Grant Agreement and the Financial and Administrative GUIDELINES provided with the LIFE application files.

I certify to the best of my knowledge that the statements made in this proposal are true and the information provided is correct.

At Silkeborg, on 26th og August 2016

Signature of the Associated Beneficiary:

Name(s) and status/function of signatory: Head of section for nature and environment

ASSOCIATED BENEFICIARY DECLARATION and MANDATE

I, the undersigned,

Jens Frederik Bastrup,

representing,

Official name: Skanderborg Forsyningsvirksomhed A/S (SFV)
Official legal status: Private commercial
Official registration No: 32666906
Registered Office: Døjsøvej 1, Skanderborg, 8660, Denmark
Vat. No: 32666906

hereinafter referred to as "the associated beneficiary", for the purposes of the signature and the implementation of the grant agreement [EU LIFE IP Coast to Coast Climate Challenge (EU LIFE IP C2C CC)] with the Contracting Authority (hereinafter referred to as "the grant agreement") hereby:

1. Mandate
Official name: Central Denmark Region
Official legal status: Public body
Official registration No: 29 19 09 25
Registered Office: Central Denmark Region, Emil Møllers Gade 41, Horsens 8700, Denmark
Vat. No: 29 19 09 25

represented by Rolf Johnsen, Chief Consultant (hereinafter referred to as "the coordinating beneficiary") to sign in my name and on my behalf the grant agreement and its possible subsequent amendments with the Contracting Authority.

2. Mandate the coordinating beneficiary to act on behalf of the associated beneficiary in compliance with the grant agreement.

I hereby confirm that the associated beneficiary accepts all terms and conditions of the grant agreement and, in particular, all provisions affecting the coordinating beneficiary and the associated beneficiaries. In particular, I acknowledge that, by virtue of this mandate, the coordinating beneficiary alone is entitled to receive funds from the Contracting Authority and distribute the amounts corresponding to the associated beneficiary's participation in the action.

I hereby accept that the associated beneficiary will do everything in its power to help the coordinating beneficiary fulfil its obligations under the grant agreement, and in particular, to provide to the coordinating beneficiary, on its request, whatever documents or information may be required.

I hereby declare that the associated beneficiary agrees that the provisions of the grant agreement, including this mandate, shall take precedence over any other agreement between the associated beneficiary and the coordinating beneficiary which may have an effect on the implementation of the grant agreement.

I furthermore certify that:

47

1. The associated beneficiary has not been served with bankruptcy orders, nor has it received a formal summons from creditors. My organisation is not in any of the situations listed in Articles 106(1) and 107 of Council Regulation No 966/2012 of the European Parliament and of the Council of 25 October 2012 on the financial rules applicable to the general budget of the Union (OJ L298 of 26.10.2012).
2. The associated beneficiary will contribute 160.700€ to the project.

   My organisation will participate in the implementation of the following actions: C1, C2, C3, C4, C5, C6, C7, C12 and C20.

   The estimated total cost of my organisation's part in the implementation of the project is 401.749€.
3. The associated beneficiary will conclude with the coordinating beneficiary an agreement necessary for the completion of the work, provided this does not infringe on our obligations, as stated in the grant agreement with the Contracting Authority. This agreement will be based on the model proposed by the Contracting Authority. It will describe clearly the tasks to be performed by my organisation and define the financial arrangements.
4. I commit to comply with all relevant eligibility criteria, as defined in the LIFE Multiannual Work Programme 2014-2017 and the LIFE Call for Proposals including the LIFE Guidelines for Applicants.

This declaration and mandate shall be annexed to the grant agreement and shall form an integral part thereof.

I am legally authorised to sign this statement on behalf of my organisation.

I have read in full the LIFE Model Grant Agreement and the Financial and Administrative GUIDELINES provided with the LIFE application files.

I certify to the best of my knowledge that the statements made in this proposal are true and the information provided is correct.

At ....SKANDERBORG..... on.....30.03.2016.....

Signature of the Associated Beneficiary:

Name(s) and status/function of signatory:

Jens Frederik Bastrup, CEO

DS

ASSOCIATED BENEFICIARY DECLARATION and MANDATE

I, the undersigned,

Hans Brok-Brandi,

representing,

Official name: Skanderborg Kommune (SK-KOM)
Official legal status: Public body
Official registration No: 29189633
Registered Office: Adelgade 44, Skanderborg, 8660, Denmark
Vat. No: 29189633

hereinafter referred to as "the associated beneficiary", for the purposes of the signature and the implementation of the grant agreement [EU LIFE IP Coast to Coast Climate Challenge (EU LIFE IP C2C CC)] with the Contracting Authority (hereinafter referred to as "the grant agreement") hereby:

1. Mandate
Official name: Central Denmark Region
Official legal status: Public body
Official registration No: 29 19 09 25
Registered Office: Central Denmark Region, Emil Møllers Gade 41, Horsens 8700, Denmark
Vat. No: 29 19 09 25

represented by Rolf Johnsen, Chief Consultant (hereinafter referred to as "the coordinating beneficiary") to sign in my name and on my behalf the grant agreement and its possible subsequent amendments with the Contracting Authority.

2. Mandate the coordinating beneficiary to act on behalf of the associated beneficiary in compliance with the grant agreement.

I hereby confirm that the associated beneficiary accepts all terms and conditions of the grant agreement and, in particular, all provisions affecting the coordinating beneficiary and the associated beneficiaries. In particular, I acknowledge that, by virtue of this mandate, the coordinating beneficiary alone is entitled to receive funds from the Contracting Authority and distribute the amounts corresponding to the associated beneficiary's participation in the action.

I hereby accept that the associated beneficiary will do everything in its power to help the coordinating beneficiary fulfil its obligations under the grant agreement, and in particular, to provide to the coordinating beneficiary, on its request, whatever documents or information may be required.

I hereby declare that the associated beneficiary agrees that the provisions of the grant agreement, including this mandate, shall take precedence over any other agreement between the associated beneficiary and the coordinating beneficiary which may have an effect on the implementation of the grant agreement.

I furthermore certify that:

A7

1. The associated beneficiary has not been served with bankruptcy orders, nor has it received a formal summons from creditors. My organisation is not in any of the situations listed in Articles 106(1) and 107 of Council Regulation No 966/2012 of the European Parliament and of the Council of 25 October 2012 on the financial rules applicable to the general budget of the Union (OJ L298 of 26.10.2012).
2. The associated beneficiary will contribute 42.904€ to the project.

   My organisation will participate in the implementation of the following actions: C1, C2, C3, C4, C5, C6, C7 and C12.

   The estimated total cost of my organisation's part in the implementation of the project is 107.260€.
3. The associated beneficiary will conclude with the coordinating beneficiary an agreement necessary for the completion of the work, provided this does not infringe on our obligations, as stated in the grant agreement with the Contracting Authority. This agreement will be based on the model proposed by the Contracting Authority. It will describe clearly the tasks to be performed by my organisation and define the financial arrangements.
4. I commit to comply with all relevant eligibility criteria, as defined in the LIFE Multiannual Work Programme 2014-2017 and the LIFE Call for Proposals including the LIFE Guidelines for Applicants.

This declaration and mandate shall be annexed to the grant agreement and shall form an integral part thereof.

I am legally authorised to sign this statement on behalf of my organisation.

I have read in full the LIFE Model Grant Agreement and the Financial and Administrative GUIDELINES provided with the LIFE application files.

I certify to the best of my knowledge that the statements made in this proposal are true and the information provided is correct.

At Skanderborg on 26th of august 2016

Signature of the Associated Beneficiary:

Hans Brok-Brandi
Funktionsleder
Natur & Miljø
Skanderborg Kommune

Name(s) and status/function of signatory:

Hans Brok-Brandi
Head of department
Nature and Enviroment
Skanderborg Kommune

DS

ASSOCIATED BENEFICIARY DECLARATION and MANDATE

I, the undersigned,

Lars Peter Salhøj
Chef for Plan, Klima & Support / Head of Department, Planning, Climate & Support

representing,

Official name: Skive Kommune (SKK)
Official legal status: Public body
Official registration No: 29189579
Registered Office: Torvegade 10, Skive, 7800, Denmark
Vat. No: 29189579

hereinafter referred to as "the associated beneficiary", for the purposes of the signature and the implementation of the grant agreement [EU LIFE IP Coast to Coast Climate Challenge (EU LIFE IP C2C CC)] with the Contracting Authority (hereinafter referred to as "the grant agreement") hereby:

1. Mandate
Official name: Central Denmark Region
Official legal status: Public body
Official registration No: 29 19 09 25
Registered Office: Central Denmark Region, Emil Møllers Gade 41, Horsens 8700, Denmark
Vat. No: 29 19 09 25

represented by Rolf Johnsen, Chief Consultant (hereinafter referred to as "the coordinating beneficiary") to sign in my name and on my behalf the grant agreement and its possible subsequent amendments with the Contracting Authority.

2. Mandate the coordinating beneficiary to act on behalf of the associated beneficiary in compliance with the grant agreement.

I hereby confirm that the associated beneficiary accepts all terms and conditions of the grant agreement and, in particular, all provisions affecting the coordinating beneficiary and the associated beneficiaries. In particular, I acknowledge that, by virtue of this mandate, the coordinating beneficiary alone is entitled to receive funds from the Contracting Authority and distribute the amounts corresponding to the associated beneficiary's participation in the action.

I hereby accept that the associated beneficiary will do everything in its power to help the coordinating beneficiary fulfil its obligations under the grant agreement, and in particular, to provide to the coordinating beneficiary, on its request, whatever documents or information may be required.

I hereby declare that the associated beneficiary agrees that the provisions of the grant agreement, including this mandate, shall take precedence over any other agreement between the associated beneficiary and the coordinating beneficiary which may have an effect on the implementation of the grant agreement.

I furthermore certify that:

1. The associated beneficiary has not been served with bankruptcy orders, nor has it received a formal summons from creditors. My organisation is not in any of the situations listed in Articles 106(1) and 107 of Council Regulation No 966/2012 of the European Parliament and of the Council of 25 October 2012 on the financial rules applicable to the general budget of the Union (OJ L298 of 26.10.2012).
2. The associated beneficiary will contribute 31.846€ to the project.

   My organisation will participate in the implementation of the following actions: C1, C2, C3, C4, C5, C6, C7, and C9.

   The estimated total cost of my organisation's part in the implementation of the project is 79.616€.
3. The associated beneficiary will conclude with the coordinating beneficiary an agreement necessary for the completion of the work, provided this does not infringe on our obligations, as stated in the grant agreement with the Contracting Authority. This agreement will be based on the model proposed by the Contracting Authority. It will describe clearly the tasks to be performed by my organisation and define the financial arrangements.
4. I commit to comply with all relevant eligibility criteria, as defined in the LIFE Multiannual Work Programme 2014-2017 and the LIFE Call for Proposals including the LIFE Guidelines for Applicants.

This declaration and mandate shall be annexed to the grant agreement and shall form an integral part thereof.

I am legally authorised to sign this statement on behalf of my organisation.

I have read in full the LIFE Model Grant Agreement and the Financial and Administrative GUIDELINES provided with the LIFE application files.

I certify to the best of my knowledge that the statements made in this proposal are true and the information provided is correct.

At Skive on 26/8-16

Signature of the Associated Beneficiary:

Name(s) and status/function of signatory:

Lars Peter Salhøj
Chef for Plan, Klima & Support / Head of Department, Planning, Climate & Support

JPS

ASSOCIATED BENEFICIARY DECLARATION and MANDATE

I, the undersigned,

Mogens J. Nielsen

representing,

Official name: Skive vand A/S (SKV)
Official legal status: Private commercial
Official registration No: 30238974
Registered Office: Norgesvej 5, Skive, 7800, Denmark
Vat. No: 30238974

hereinafter referred to as "the associated beneficiary", for the purposes of the signature and the implementation of the grant agreement [EU LIFE IP Coast to Coast Climate Challenge (EU LIFE IP C2C CC)] with the Contracting Authority (hereinafter referred to as "the grant agreement") hereby:

1. Mandate
Official name: Central Denmark Region
Official legal status: Public body
Official registration No: 29 19 09 25
Registered Office: Central Denmark Region, Emil Møllers Gade 41, Horsens 8700, Denmark
Vat. No: 29 19 09 25

represented by Rolf Johnsen, Chief Consultant (hereinafter referred to as "the coordinating beneficiary") to sign in my name and on my behalf the grant agreement and its possible subsequent amendments with the Contracting Authority.

2. Mandate the coordinating beneficiary to act on behalf of the associated beneficiary in compliance with the grant agreement.

I hereby confirm that the associated beneficiary accepts all terms and conditions of the grant agreement and, in particular, all provisions affecting the coordinating beneficiary and the associated beneficiaries. In particular, I acknowledge that, by virtue of this mandate, the coordinating beneficiary alone is entitled to receive funds from the Contracting Authority and distribute the amounts corresponding to the associated beneficiary's participation in the action.

I hereby accept that the associated beneficiary will do everything in its power to help the coordinating beneficiary fulfil its obligations under the grant agreement, and in particular, to provide to the coordinating beneficiary, on its request, whatever documents or information may be required.

I hereby declare that the associated beneficiary agrees that the provisions of the grant agreement, including this mandate, shall take precedence over any other agreement between the associated beneficiary and the coordinating beneficiary which may have an effect on the implementation of the grant agreement.

I furthermore certify that:

1. The associated beneficiary has not been served with bankruptcy orders, nor has it received a formal summons from creditors. My organisation is not in any of the situations listed in Articles 106(1) and 107 of Council Regulation No 966/2012 of the European Parliament and of the Council of 25 October 2012 on the financial rules applicable to the general budget of the Union (OJ L298 of 26.10.2012).
2. The associated beneficiary will contribute 31.846€ to the project.

   My organisation will participate in the implementation of the following actions: C1, C2, C3, C4, C5, C6, C7, and C9.

   The estimated total cost of my organisation's part in the implementation of the project is 79.616€.
3. The associated beneficiary will conclude with the coordinating beneficiary an agreement necessary for the completion of the work, provided this does not infringe on our obligations, as stated in the grant agreement with the Contracting Authority. This agreement will be based on the model proposed by the Contracting Authority. It will describe clearly the tasks to be performed by my organisation and define the financial arrangements.
4. I commit to comply with all relevant eligibility criteria, as defined in the LIFE Multiannual Work Programme 2014-2017 and the LIFE Call for Proposals including the LIFE Guidelines for Applicants.

This declaration and mandate shall be annexed to the grant agreement and shall form an integral part thereof.

I am legally authorised to sign this statement on behalf of my organisation.

I have read in full the LIFE Model Grant Agreement and the Financial and Administrative GUIDELINES provided with the LIFE application files.

I certify to the best of my knowledge that the statements made in this proposal are true and the information provided is correct.

At SILVE on 26. AUGUST 2016

Signature of the Associated Beneficiary: Mogens J. Nielsen

Name(s) and status/function of signatory: DIREKTØR

ASSOCIATED BENEFICIARY DECLARATION and MANDATE

I, the undersigned,

Knud Schousboe

representing,

Official name: Struer Forsyning Spildevand A/S (STF)
Official legal status: Private commercial
Official registration No: 33053622
Registered Office: Jyllandsgade 1, Struer, 7600, Denmark
Vat. No: 26203333

hereinafter referred to as "the associated beneficiary", for the purposes of the signature and the implementation of the grant agreement [EU LIFE IP Coast to Coast Climate Challenge (EU LIFE IP C2C CC)] with the Contracting Authority (hereinafter referred to as "the grant agreement") hereby:

1. Mandate
Official name: Central Denmark Region
Official legal status: Public body
Official registration No: 29 19 09 25
Registered Office: Central Denmark Region, Emil Møllers Gade 41, Horsens 8700, Denmark
Vat. No: 29 19 09 25

represented by Rolf Johnsen, Chief Consultant (hereinafter referred to as "the coordinating beneficiary") to sign in my name and on my behalf the grant agreement and its possible subsequent amendments with the Contracting Authority.

2. Mandate the coordinating beneficiary to act on behalf of the associated beneficiary in compliance with the grant agreement.

I hereby confirm that the associated beneficiary accepts all terms and conditions of the grant agreement and, in particular, all provisions affecting the coordinating beneficiary and the associated beneficiaries. In particular, I acknowledge that, by virtue of this mandate, the coordinating beneficiary alone is entitled to receive funds from the Contracting Authority and distribute the amounts corresponding to the associated beneficiary's participation in the action.

I hereby accept that the associated beneficiary will do everything in its power to help the coordinating beneficiary fulfil its obligations under the grant agreement, and in particular, to provide to the coordinating beneficiary, on its request, whatever documents or information may be required.

I hereby declare that the associated beneficiary agrees that the provisions of the grant agreement, including this mandate, shall take precedence over any other agreement between the associated beneficiary and the coordinating beneficiary which may have an effect on the implementation of the grant agreement.

I furthermore certify that:

1. The associated beneficiary has not been served with bankruptcy orders, nor has it received a formal summons from creditors. My organisation is not in any of the situations listed in Articles 106(1) and 107 of Council Regulation No 966/2012 of the European Parliament and of the Council of 25 October 2012 on the financial rules applicable to the general budget of the Union (OJ L298 of 26.10.2012).
2. The associated beneficiary will contribute 31.846€ to the project.

   My organisation will participate in the implementation of the following actions: C1, C2, C3, C4, C5, C6, C7, and C9.

   The estimated total cost of my organisation's part in the implementation of the project is 79.616€.
3. The associated beneficiary will conclude with the coordinating beneficiary an agreement necessary for the completion of the work, provided this does not infringe on our obligations, as stated in the grant agreement with the Contracting Authority. This agreement will be based on the model proposed by the Contracting Authority. It will describe clearly the tasks to be performed by my organisation and define the financial arrangements.
4. I commit to comply with all relevant eligibility criteria, as defined in the LIFE Multiannual Work Programme 2014-2017 and the LIFE Call for Proposals including the LIFE Guidelines for Applicants.

This declaration and mandate shall be annexed to the grant agreement and shall form an integral part thereof.

I am legally authorised to sign this statement on behalf of my organisation.

I have read in full the LIFE Model Grant Agreement and the Financial and Administrative GUIDELINES provided with the LIFE application files.

I certify to the best of my knowledge that the statements made in this proposal are true and the information provided is correct.

At .....Struer..... on.....2016.08.26.....

Signature of the Associated Beneficiary:

Name(s) and status/function of signatory: DIRECTOR CEO

ASSOCIATED BENEFICIARY DECLARATION and MANDATE

I, the undersigned,

John Patuel Hansen

representing,

Official name: Struer Kommune (STK)
Official legal status: Public body
Official registration No: 29189951
Registered Office: Østergade 13, Struer, 7600, Denmark
Vat. No: 29189951

hereinafter referred to as "the associated beneficiary", for the purposes of the signature and the implementation of the grant agreement [EU LIFE IP Coast to Coast Climate Challenge (EU LIFE IP C2C CC)] with the Contracting Authority (hereinafter referred to as "the grant agreement") hereby:

1. Mandate
Official name: Central Denmark Region
Official legal status: Public body
Official registration No: 29 19 09 25
Registered Office: Central Denmark Region, Emil Møllers Gade 41, Horsens 8700, Denmark
Vat. No: 29 19 09 25

represented by Rolf Johnsen, Chief Consultant (hereinafter referred to as "the coordinating beneficiary") to sign in my name and on my behalf the grant agreement and its possible subsequent amendments with the Contracting Authority.

2. Mandate the coordinating beneficiary to act on behalf of the associated beneficiary in compliance with the grant agreement.

I hereby confirm that the associated beneficiary accepts all terms and conditions of the grant agreement and, in particular, all provisions affecting the coordinating beneficiary and the associated beneficiaries. In particular, I acknowledge that, by virtue of this mandate, the coordinating beneficiary alone is entitled to receive funds from the Contracting Authority and distribute the amounts corresponding to the associated beneficiary's participation in the action.

I hereby accept that the associated beneficiary will do everything in its power to help the coordinating beneficiary fulfil its obligations under the grant agreement, and in particular, to provide to the coordinating beneficiary, on its request, whatever documents or information may be required.

I hereby declare that the associated beneficiary agrees that the provisions of the grant agreement, including this mandate, shall take precedence over any other agreement between the associated beneficiary and the coordinating beneficiary which may have an effect on the implementation of the grant agreement.

I furthermore certify that:

1. The associated beneficiary has not been served with bankruptcy orders, nor has it received a formal summons from creditors. My organisation is not in any of the situations listed in Articles 106(1) and 107 of Council Regulation No 966/2012 of the European Parliament and of the Council of 25 October 2012 on the financial rules applicable to the general budget of the Union (OJ L298 of 26.10.2012).
2. The associated beneficiary will contribute 31.846€ to the project.

   My organisation will participate in the implementation of the following actions: C1, C2, C3, C4, C5, C6, C7, and C9.

   The estimated total cost of my organisation's part in the implementation of the project is 79.616€.
3. The associated beneficiary will conclude with the coordinating beneficiary an agreement necessary for the completion of the work, provided this does not infringe on our obligations, as stated in the grant agreement with the Contracting Authority. This agreement will be based on the model proposed by the Contracting Authority. It will describe clearly the tasks to be performed by my organisation and define the financial arrangements.
4. I commit to comply with all relevant eligibility criteria, as defined in the LIFE Multiannual Work Programme 2014-2017 and the LIFE Call for Proposals including the LIFE Guidelines for Applicants.

This declaration and mandate shall be annexed to the grant agreement and shall form an integral part thereof.

I am legally authorised to sign this statement on behalf of my organisation.

I have read in full the LIFE Model Grant Agreement and the Financial and Administrative GUIDELINES provided with the LIFE application files.

I certify to the best of my knowledge that the statements made in this proposal are true and the information provided is correct.

At Struer on 1/9-2016

Signature of the Associated Beneficiary: John P. H

Name(s) and status/function of signatory: John Patuel Hansen
Head of Planning and Environment

STRUER KOMMUNE
ØSTERGADE 11-15 . 7600 STRUER
TELEFON 96 84 84 84

ASSOCIATED BENEFICIARY DECLARATION and MANDATE

I, the undersigned,

Morten Hundahl

representing,

Official name: Syddjurs Kommune (SDK)
Official legal status: Public body
Official registration No: 29189978
Registered Office: Lundbergsvej 2, Ebeltoft, 8400, Denmark
Vat. No: 29189978

hereinafter referred to as "the associated beneficiary", for the purposes of the signature and the implementation of the grant agreement [EU LIFE IP Coast to Coast Climate Challenge (EU LIFE IP C2C CC)] with the Contracting Authority (hereinafter referred to as "the grant agreement") hereby:

1. Mandate
Official name: Central Denmark Region
Official legal status: Public body
Official registration No: 29 19 09 25
Registered Office: Central Denmark Region, Emil Møllers Gade 41, Horsens 8700, Denmark
Vat. No: 29 19 09 25

represented by Rolf Johnsen, Chief Consultant (hereinafter referred to as "the coordinating beneficiary") to sign in my name and on my behalf the grant agreement and its possible subsequent amendments with the Contracting Authority.

2. Mandate the coordinating beneficiary to act on behalf of the associated beneficiary in compliance with the grant agreement.

I hereby confirm that the associated beneficiary accepts all terms and conditions of the grant agreement and, in particular, all provisions affecting the coordinating beneficiary and the associated beneficiaries. In particular, I acknowledge that, by virtue of this mandate, the coordinating beneficiary alone is entitled to receive funds from the Contracting Authority and distribute the amounts corresponding to the associated beneficiary's participation in the action.

I hereby accept that the associated beneficiary will do everything in its power to help the coordinating beneficiary fulfil its obligations under the grant agreement, and in particular, to provide to the coordinating beneficiary, on its request, whatever documents or information may be required.

I hereby declare that the associated beneficiary agrees that the provisions of the grant agreement, including this mandate, shall take precedence over any other agreement between the associated beneficiary and the coordinating beneficiary which may have an effect on the implementation of the grant agreement.

I furthermore certify that:

1. The associated beneficiary has not been served with bankruptcy orders, nor has it received a formal summons from creditors. My organisation is not in any of the situations listed in Articles 106(1) and 107 of Council Regulation No 966/2012 of the European Parliament and of the Council of 25 October 2012 on the financial rules applicable to the general budget of the Union (OJ L298 of 26.10.2012).
2. The associated beneficiary will contribute 214.995€ to the project.

   My organisation will participate in the implementation of the following actions: C1, C2, C3, C4, C5, C6, C7, and C10.

   The estimated total cost of my organisation's part in the implementation of the project is 537.487€.
3. The associated beneficiary will conclude with the coordinating beneficiary an agreement necessary for the completion of the work, provided this does not infringe on our obligations, as stated in the grant agreement with the Contracting Authority. This agreement will be based on the model proposed by the Contracting Authority. It will describe clearly the tasks to be performed by my organisation and define the financial arrangements.
4. I commit to comply with all relevant eligibility criteria, as defined in the LIFE Multiannual Work Programme 2014-2017 and the LIFE Call for Proposals including the LIFE Guidelines for Applicants.

This declaration and mandate shall be annexed to the grant agreement and shall form an integral part thereof.

I am legally authorised to sign this statement on behalf of my organisation.

I have read in full the LIFE Model Grant Agreement and the Financial and Administrative GUIDELINES provided with the LIFE application files.

I certify to the best of my knowledge that the statements made in this proposal are true and the information provided is correct.

At .....Ebeltoft..... on.....September 09, 2016.....

Signature of the Associated Beneficiary:

Name(s) and status/function of signatory:

Morten Hundahl

Head of Department

DS

ASSOCIATED BENEFICIARY DECLARATION and MANDATE

I, the undersigned,

Marianne Davidsen Galsgaard
representing,

Official name: Thisted Kommune (TK)
Official legal status: Public body
Official registration No: 29189560
Registered Office: Asylgade 30, Thisted, 7700, Denmark
Vat. No: 29189560

hereinafter referred to as "the associated beneficiary", for the purposes of the signature and the implementation of the grant agreement [EU LIFE IP Coast to Coast Climate Challenge (EU LIFE IP C2C CC)] with the Contracting Authority (hereinafter referred to as "the grant agreement") hereby:

1. Mandate
Official name: Central Denmark Region
Official legal status: Public body
Official registration No: 29 19 09 25
Registered Office: Central Denmark Region, Emil Møllers Gade 41, Horsens 8700, Denmark
Vat. No: 29 19 09 25

represented by Rolf Johnsen, Chief Consultant (hereinafter referred to as "the coordinating beneficiary") to sign in my name and on my behalf the grant agreement and its possible subsequent amendments with the Contracting Authority.

2. Mandate the coordinating beneficiary to act on behalf of the associated beneficiary in compliance with the grant agreement.

I hereby confirm that the associated beneficiary accepts all terms and conditions of the grant agreement and, in particular, all provisions affecting the coordinating beneficiary and the associated beneficiaries. In particular, I acknowledge that, by virtue of this mandate, the coordinating beneficiary alone is entitled to receive funds from the Contracting Authority and distribute the amounts corresponding to the associated beneficiary's participation in the action.

I hereby accept that the associated beneficiary will do everything in its power to help the coordinating beneficiary fulfil its obligations under the grant agreement, and in particular, to provide to the coordinating beneficiary, on its request, whatever documents or information may be required.

I hereby declare that the associated beneficiary agrees that the provisions of the grant agreement, including this mandate, shall take precedence over any other agreement between the associated beneficiary and the coordinating beneficiary which may have an effect on the implementation of the grant agreement.

I furthermore certify that:

1. The associated beneficiary has not been served with bankruptcy orders, nor has it received a formal summons from creditors. My organisation is not in any of the situations listed in Articles 106(1) and 107 of Council Regulation No 966/2012 of the European Parliament and of the Council of 25 October 2012 on the financial rules applicable to the general budget of the Union (OJ L298 of 26.10.2012).
2. The associated beneficiary will contribute 31.846€ to the project.

   My organisation will participate in the implementation of the following actions: C1, C2, C3, C4, C5, C6, C7, and C9.

   The estimated total cost of my organisation's part in the implementation of the project is 79.616€.
3. The associated beneficiary will conclude with the coordinating beneficiary an agreement necessary for the completion of the work, provided this does not infringe on our obligations, as stated in the grant agreement with the Contracting Authority. This agreement will be based on the model proposed by the Contracting Authority. It will describe clearly the tasks to be performed by my organisation and define the financial arrangements.
4. I commit to comply with all relevant eligibility criteria, as defined in the LIFE Multiannual Work Programme 2014-2017 and the LIFE Call for Proposals including the LIFE Guidelines for Applicants.

This declaration and mandate shall be annexed to the grant agreement and shall form an integral part thereof.

I am legally authorised to sign this statement on behalf of my organisation.

I have read in full the LIFE Model Grant Agreement and the Financial and Administrative GUIDELINES provided with the LIFE application files.

I certify to the best of my knowledge that the statements made in this proposal are true and the information provided is correct.

At ..... on...01-09-2016

Signature of the Associated Beneficiary:

Name(s) and status/function of signatory:

Marianne Davidsen Galsgaard, Head of the planning and environmental department, Thisted Municipality

ASSOCIATED BENEFICIARY DECLARATION and MANDATE

I, the undersigned,

Gro Heen

representing,

Official name: Thisted spildevand transport A/S (TV)
Official legal status: Private commercial
Official registration No: 32 36 24 43
Registered Office: Silstrupvej 12, Thisted, 7700, Denmark
Vat. No: 32 36 24 43

hereinafter referred to as "the associated beneficiary", for the purposes of the signature and the implementation of the grant agreement [EU LIFE IP Coast to Coast Climate Challenge (EU LIFE IP C2C CC)] with the Contracting Authority (hereinafter referred to as "the grant agreement") hereby:

1. Mandate
Official name: Central Denmark Region
Official legal status: Public body
Official registration No: 29 19 09 25
Registered Office: Central Denmark Region, Emil Møllers Gade 41, Horsens 8700, Denmark
Vat. No: 29 19 09 25

represented by Rolf Johnsen, Chief Consultant (hereinafter referred to as "the coordinating beneficiary") to sign in my name and on my behalf the grant agreement and its possible subsequent amendments with the Contracting Authority.

2. Mandate the coordinating beneficiary to act on behalf of the associated beneficiary in compliance with the grant agreement.

I hereby confirm that the associated beneficiary accepts all terms and conditions of the grant agreement and, in particular, all provisions affecting the coordinating beneficiary and the associated beneficiaries. In particular, I acknowledge that, by virtue of this mandate, the coordinating beneficiary alone is entitled to receive funds from the Contracting Authority and distribute the amounts corresponding to the associated beneficiary's participation in the action.

I hereby accept that the associated beneficiary will do everything in its power to help the coordinating beneficiary fulfil its obligations under the grant agreement, and in particular, to provide to the coordinating beneficiary, on its request, whatever documents or information may be required.

I hereby declare that the associated beneficiary agrees that the provisions of the grant agreement, including this mandate, shall take precedence over any other agreement between the associated beneficiary and the coordinating beneficiary which may have an effect on the implementation of the grant agreement.

I furthermore certify that:

1. The associated beneficiary has not been served with bankruptcy orders, nor has it received a formal summons from creditors. My organisation is not in any of the situations listed in Articles 106(1) and 107 of Council Regulation No 966/2012 of the European Parliament and of the Council of 25 October 2012 on the financial rules applicable to the general budget of the Union (OJ L298 of 26.10.2012).
2. The associated beneficiary will contribute 31.846€ to the project.

   My organisation will participate in the implementation of the following actions: C1, C2, C3, C4, C5, C6, C7, and C9.

   The estimated total cost of my organisation's part in the implementation of the project is 79.616€.
3. The associated beneficiary will conclude with the coordinating beneficiary an agreement necessary for the completion of the work, provided this does not infringe on our obligations, as stated in the grant agreement with the Contracting Authority. This agreement will be based on the model proposed by the Contracting Authority. It will describe clearly the tasks to be performed by my organisation and define the financial arrangements.
4. I commit to comply with all relevant eligibility criteria, as defined in the LIFE Multiannual Work Programme 2014-2017 and the LIFE Call for Proposals including the LIFE Guidelines for Applicants.

This declaration and mandate shall be annexed to the grant agreement and shall form an integral part thereof.

I am legally authorised to sign this statement on behalf of my organisation.

I have read in full the LIFE Model Grant Agreement and the Financial and Administrative GUIDELINES provided with the LIFE application files.

I certify to the best of my knowledge that the statements made in this proposal are true and the information provided is correct.

At .....Thisted..... on.....31.08.2016.....

Signature of the Associated Beneficiary:

Name(s) and status/function of signatory: Teknisk Direktør Gro Heen

Teknisk Direktør Gro H

Thisted Vand
Silstrupvej 12
7700 Thisted

DS

ASSOCIATED BENEFICIARY DECLARATION and MANDATE

I, the undersigned,

Søren Holm Pedersen

representing,

Official name: Vestforsyning A/S (VESTF)
Official legal status: Private commercial
Official registration No: 25952200
Registered Office: Nupark 51 Måbjerg, Holstebro, 7500, Denmark
Vat. No: 25952200

hereinafter referred to as "the associated beneficiary", for the purposes of the signature and the implementation of the grant agreement [EU LIFE IP Coast to Coast Climate Challenge (EU LIFE IP C2C CC)] with the Contracting Authority (hereinafter referred to as "the grant agreement") hereby:

1. Mandate
Official name: Central Denmark Region
Official legal status: Public body
Official registration No: 29 19 09 25
Registered Office: Central Denmark Region, Emil Møllers Gade 41, Horsens 8700, Denmark
Vat. No: 29 19 09 25

represented by Rolf Johnsen, Chief Consultant (hereinafter referred to as "the coordinating beneficiary") to sign in my name and on my behalf the grant agreement and its possible subsequent amendments with the Contracting Authority.

2. Mandate the coordinating beneficiary to act on behalf of the associated beneficiary in compliance with the grant agreement.

I hereby confirm that the associated beneficiary accepts all terms and conditions of the grant agreement and, in particular, all provisions affecting the coordinating beneficiary and the associated beneficiaries. In particular, I acknowledge that, by virtue of this mandate, the coordinating beneficiary alone is entitled to receive funds from the Contracting Authority and distribute the amounts corresponding to the associated beneficiary's participation in the action.

I hereby accept that the associated beneficiary will do everything in its power to help the coordinating beneficiary fulfil its obligations under the grant agreement, and in particular, to provide to the coordinating beneficiary, on its request, whatever documents or information may be required.

I hereby declare that the associated beneficiary agrees that the provisions of the grant agreement, including this mandate, shall take precedence over any other agreement between the associated beneficiary and the coordinating beneficiary which may have an effect on the implementation of the grant agreement.

I furthermore certify that:

1. The associated beneficiary has not been served with bankruptcy orders, nor has it received a formal summons from creditors. My organisation is not in any of the situations listed in Articles 106(1) and 107 of Council Regulation No 966/2012 of the European Parliament and of the Council of 25 October 2012 on the financial rules applicable to the general budget of the Union (OJ L298 of 26.10.2012).
2. The associated beneficiary will contribute 31.846€ to the project.

   My organisation will participate in the implementation of the following actions: C1, C2, C3, C4, C5, C6, C7, and C9.

   The estimated total cost of my organisation's part in the implementation of the project is 79.616€.
3. The associated beneficiary will conclude with the coordinating beneficiary an agreement necessary for the completion of the work, provided this does not infringe on our obligations, as stated in the grant agreement with the Contracting Authority. This agreement will be based on the model proposed by the Contracting Authority. It will describe clearly the tasks to be performed by my organisation and define the financial arrangements.
4. I commit to comply with all relevant eligibility criteria, as defined in the LIFE Multiannual Work Programme 2014-2017 and the LIFE Call for Proposals including the LIFE Guidelines for Applicants.

This declaration and mandate shall be annexed to the grant agreement and shall form an integral part thereof.

I am legally authorised to sign this statement on behalf of my organisation.

I have read in full the LIFE Model Grant Agreement and the Financial and Administrative GUIDELINES provided with the LIFE application files.

I certify to the best of my knowledge that the statements made in this proposal are true and the information provided is correct.

At Holstebro..... on...29. August 2016.....

Signature of the Associated Beneficiary: Søren Holm Pedersen

Name(s) and status/function of signatory:

SØREN HOLM PEDERSEN chief Development officer

VESTFORSYNING
Nupark 51 . 7500 Holstebro
Tlf. +45 9612 7300

PS

ASSOCIATED BENEFICIARY DECLARATION and MANDATE

I, the undersigned,

Ole Helk

representing,

Official name: Vesthimmerlands kommune (VHK)
Official legal status: Public body
Official registration No: 29189471
Registered Office: Himmerlandsgade 27, Aars, 9600, Denmark
Vat. No: 29189471

hereinafter referred to as "the associated beneficiary", for the purposes of the signature and the implementation of the grant agreement [EU LIFE IP Coast to Coast Climate Challenge (EU LIFE IP C2C CC)] with the Contracting Authority (hereinafter referred to as "the grant agreement") hereby:

1. Mandate
Official name: Central Denmark Region
Official legal status: Public body
Official registration No: 29 19 09 25
Registered Office: Central Denmark Region, Emil Møllers Gade 41, Horsens 8700, Denmark
Vat. No: 29 19 09 25

represented by Rolf Johnsen, Chief Consultant (hereinafter referred to as "the coordinating beneficiary") to sign in my name and on my behalf the grant agreement and its possible subsequent amendments with the Contracting Authority.

2. Mandate the coordinating beneficiary to act on behalf of the associated beneficiary in compliance with the grant agreement.

I hereby confirm that the associated beneficiary accepts all terms and conditions of the grant agreement and, in particular, all provisions affecting the coordinating beneficiary and the associated beneficiaries. In particular, I acknowledge that, by virtue of this mandate, the coordinating beneficiary alone is entitled to receive funds from the Contracting Authority and distribute the amounts corresponding to the associated beneficiary's participation in the action.

I hereby accept that the associated beneficiary will do everything in its power to help the coordinating beneficiary fulfil its obligations under the grant agreement, and in particular, to provide to the coordinating beneficiary, on its request, whatever documents or information may be required.

I hereby declare that the associated beneficiary agrees that the provisions of the grant agreement, including this mandate, shall take precedence over any other agreement between the associated beneficiary and the coordinating beneficiary which may have an effect on the implementation of the grant agreement.

I furthermore certify that:

A7

1. The associated beneficiary has not been served with bankruptcy orders, nor has it received a formal summons from creditors. My organisation is not in any of the situations listed in Articles 106(1) and 107 of Council Regulation No 966/2012 of the European Parliament and of the Council of 25 October 2012 on the financial rules applicable to the general budget of the Union (OJ L298 of 26.10.2012).
2. The associated beneficiary will contribute 31.846€ to the project.

   My organisation will participate in the implementation of the following actions: C1, C2, C3, C4, C5, C6, C7, and C9.

   The estimated total cost of my organisation's part in the implementation of the project is 79.616€.
3. The associated beneficiary will conclude with the coordinating beneficiary an agreement necessary for the completion of the work, provided this does not infringe on our obligations, as stated in the grant agreement with the Contracting Authority. This agreement will be based on the model proposed by the Contracting Authority. It will describe clearly the tasks to be performed by my organisation and define the financial arrangements.
4. I commit to comply with all relevant eligibility criteria, as defined in the LIFE Multiannual Work Programme 2014-2017 and the LIFE Call for Proposals including the LIFE Guidelines for Applicants.

This declaration and mandate shall be annexed to the grant agreement and shall form an integral part thereof.

I am legally authorised to sign this statement on behalf of my organisation.

I have read in full the LIFE Model Grant Agreement and the Financial and Administrative GUIDELINES provided with the LIFE application files.

I certify to the best of my knowledge that the statements made in this proposal are true and the information provided is correct.

Aars 31/8-2016 ,30. august 2016

Ole Helk

Direktør

PS

ASSOCIATED BENEFICIARY DECLARATION and MANDATE

I, the undersigned,

Jens Chr. Olesen
representing,

Official name: Vesthimmerlands Vand A/S (VV)
Official legal status: Private commercial
Official registration No: 32562299
Registered Office: Th. Eriksens Vej 28, Farsø, 9640, Denmark
Vat. No: 32562299

hereinafter referred to as "the associated beneficiary", for the purposes of the signature and the implementation of the grant agreement [EU LIFE IP Coast to Coast Climate Challenge (EU LIFE IP C2C CC)] with the Contracting Authority (hereinafter referred to as "the grant agreement") hereby:

1. Mandate
Official name: Central Denmark Region
Official legal status: Public body
Official registration No: 29 19 09 25
Registered Office: Central Denmark Region, Emil Møllers Gade 41, Horsens 8700, Denmark
Vat. No: 29 19 09 25

represented by Rolf Johnsen, Chief Consultant (hereinafter referred to as "the coordinating beneficiary") to sign in my name and on my behalf the grant agreement and its possible subsequent amendments with the Contracting Authority.

2. Mandate the coordinating beneficiary to act on behalf of the associated beneficiary in compliance with the grant agreement.

I hereby confirm that the associated beneficiary accepts all terms and conditions of the grant agreement and, in particular, all provisions affecting the coordinating beneficiary and the associated beneficiaries. In particular, I acknowledge that, by virtue of this mandate, the coordinating beneficiary alone is entitled to receive funds from the Contracting Authority and distribute the amounts corresponding to the associated beneficiary's participation in the action.

I hereby accept that the associated beneficiary will do everything in its power to help the coordinating beneficiary fulfil its obligations under the grant agreement, and in particular, to provide to the coordinating beneficiary, on its request, whatever documents or information may be required.

I hereby declare that the associated beneficiary agrees that the provisions of the grant agreement, including this mandate, shall take precedence over any other agreement between the associated beneficiary and the coordinating beneficiary which may have an effect on the implementation of the grant agreement.

I furthermore certify that:

1. The associated beneficiary has not been served with bankruptcy orders, nor has it received a formal summons from creditors. My organisation is not in any of the situations listed in Articles 106(1) and 107 of Council Regulation No 966/2012 of the European Parliament and of the Council of 25 October 2012 on the financial rules applicable to the general budget of the Union (OJ L298 of 26.10.2012).
2. The associated beneficiary will contribute 31.846€ to the project.

   My organisation will participate in the implementation of the following actions: C1, C2, C3, C4, C5, C6, C7, and C9.

   The estimated total cost of my organisation's part in the implementation of the project is 79.616€.
3. The associated beneficiary will conclude with the coordinating beneficiary an agreement necessary for the completion of the work, provided this does not infringe on our obligations, as stated in the grant agreement with the Contracting Authority. This agreement will be based on the model proposed by the Contracting Authority. It will describe clearly the tasks to be performed by my organisation and define the financial arrangements.
4. I commit to comply with all relevant eligibility criteria, as defined in the LIFE Multiannual Work Programme 2014-2017 and the LIFE Call for Proposals including the LIFE Guidelines for Applicants.

This declaration and mandate shall be annexed to the grant agreement and shall form an integral part thereof.

I am legally authorised to sign this statement on behalf of my organisation.

I have read in full the LIFE Model Grant Agreement and the Financial and Administrative GUIDELINES provided with the LIFE application files.

I certify to the best of my knowledge that the statements made in this proposal are true and the information provided is correct.

At .....Farsø..... on...31.08.2016.....

Signature of the Associated Beneficiary:

Name(s) and status/function of signatory:

Direktør

ASSOCIATED BENEFICIARY DECLARATION and MANDATE

I, the undersigned,

Harald Elmo Mikkelsen

representing,

Official name: Via University College (VIA)
Official legal status: Public body
Official registration No: 30773047
Registered Office: Chr. M. Oestergaards Vej 4, Horsens, 8700, Denmark
Vat. No: 30773047

hereinafter referred to as "the associated beneficiary", for the purposes of the signature and the implementation of the grant agreement [EU LIFE IP Coast to Coast Climate Challenge (EU LIFE IP C2C CC)] with the Contracting Authority (hereinafter referred to as "the grant agreement") hereby:

1. Mandate
Official name: Central Denmark Region
Official legal status: Public body
Official registration No: 29 19 09 25
Registered Office: Central Denmark Region, Emil Møllers Gade 41, Horsens 8700, Denmark
Vat. No: 29 19 09 25

represented by Rolf Johnsen, Chief Consultant (hereinafter referred to as "the coordinating beneficiary") to sign in my name and on my behalf the grant agreement and its possible subsequent amendments with the Contracting Authority.

2. Mandate the coordinating beneficiary to act on behalf of the associated beneficiary in compliance with the grant agreement.

I hereby confirm that the associated beneficiary accepts all terms and conditions of the grant agreement and, in particular, all provisions affecting the coordinating beneficiary and the associated beneficiaries. In particular, I acknowledge that, by virtue of this mandate, the coordinating beneficiary alone is entitled to receive funds from the Contracting Authority and distribute the amounts corresponding to the associated beneficiary's participation in the action.

I hereby accept that the associated beneficiary will do everything in its power to help the coordinating beneficiary fulfil its obligations under the grant agreement, and in particular, to provide to the coordinating beneficiary, on its request, whatever documents or information may be required.

I hereby declare that the associated beneficiary agrees that the provisions of the grant agreement, including this mandate, shall take precedence over any other agreement between the associated beneficiary and the coordinating beneficiary which may have an effect on the implementation of the grant agreement.

I furthermore certify that:

1. The associated beneficiary has not been served with bankruptcy orders, nor has it received a formal summons from creditors. My organisation is not in any of the situations listed in Articles 106(1) and 107 of Council Regulation No 966/2012 of the European Parliament and of the Council of 25 October 2012 on the financial rules applicable to the general budget of the Union (OJ L298 of 26.10.2012).
2. The associated beneficiary will contribute 235.936€ to the project.

   My organisation will participate in the implementation of the following actions: C1, C2, C3, C4, C5, C6, C7, C18, C22, C23 and F1.

   The estimated total cost of my organisation's part in the implementation of the project is 609.614€.
3. The associated beneficiary will conclude with the coordinating beneficiary an agreement necessary for the completion of the work, provided this does not infringe on our obligations, as stated in the grant agreement with the Contracting Authority. This agreement will be based on the model proposed by the Contracting Authority. It will describe clearly the tasks to be performed by my organisation and define the financial arrangements.
4. I commit to comply with all relevant eligibility criteria, as defined in the LIFE Multiannual Work Programme 2014-2017 and the LIFE Call for Proposals including the LIFE Guidelines for Applicants.

This declaration and mandate shall be annexed to the grant agreement and shall form an integral part thereof.

I am legally authorised to sign this statement on behalf of my organisation.

I have read in full the LIFE Model Grant Agreement and the Financial and Administrative GUIDELINES provided with the LIFE application files.

I certify to the best of my knowledge that the statements made in this proposal are true and the information provided is correct.

At AARHUS on 29 AUGUST 2016

Signature of the Associated Beneficiary:

Name(s) and status/function of signatory:

Rector: Harald Elmo Mikkelsen.

DS

ASSOCIATED BENEFICIARY DECLARATION and MANDATE

I, the undersigned,

Jørgen Jørgensen,

representing,

Official name: Viborg kommune (VK)
Official legal status: Public body
Official registration No: 29189846
Registered Office: Prinsens Alle 5, Viborg, 8800, Denmark
Vat. No: 29189846

hereinafter referred to as "the associated beneficiary", for the purposes of the signature and the implementation of the grant agreement [EU LIFE IP Coast to Coast Climate Challenge (EU LIFE IP C2C CC)] with the Contracting Authority (hereinafter referred to as "the grant agreement") hereby:

1. Mandate
Official name: Central Denmark Region
Official legal status: Public body
Official registration No: 29 19 09 25
Registered Office: Central Denmark Region, Emil Møllers Gade 41, Horsens 8700, Denmark
Vat. No: 29 19 09 25

represented by Rolf Johnsen, Chief Consultant (hereinafter referred to as "the coordinating beneficiary") to sign in my name and on my behalf the grant agreement and its possible subsequent amendments with the Contracting Authority.

2. Mandate the coordinating beneficiary to act on behalf of the associated beneficiary in compliance with the grant agreement.

I hereby confirm that the associated beneficiary accepts all terms and conditions of the grant agreement and, in particular, all provisions affecting the coordinating beneficiary and the associated beneficiaries. In particular, I acknowledge that, by virtue of this mandate, the coordinating beneficiary alone is entitled to receive funds from the Contracting Authority and distribute the amounts corresponding to the associated beneficiary's participation in the action.

I hereby accept that the associated beneficiary will do everything in its power to help the coordinating beneficiary fulfil its obligations under the grant agreement, and in particular, to provide to the coordinating beneficiary, on its request, whatever documents or information may be required.

I hereby declare that the associated beneficiary agrees that the provisions of the grant agreement, including this mandate, shall take precedence over any other agreement between the associated beneficiary and the coordinating beneficiary which may have an effect on the implementation of the grant agreement.

I furthermore certify that:

1. The associated beneficiary has not been served with bankruptcy orders, nor has it received a formal summons from creditors. My organisation is not in any of the situations listed in Articles 106(1) and 107 of Council Regulation No 966/2012 of the European Parliament and of the Council of 25 October 2012 on the financial rules applicable to the general budget of the Union (OJ L298 of 26.10.2012).
2. The associated beneficiary will contribute 42.904€ to the project.

   My organisation will participate in the implementation of the following actions: C1, C2, C3, C4, C5, C6, C7 and C12.

   The estimated total cost of my organisation's part in the implementation of the project is 107.260€.
3. The associated beneficiary will conclude with the coordinating beneficiary an agreement necessary for the completion of the work, provided this does not infringe on our obligations, as stated in the grant agreement with the Contracting Authority. This agreement will be based on the model proposed by the Contracting Authority. It will describe clearly the tasks to be performed by my organisation and define the financial arrangements.
4. I commit to comply with all relevant eligibility criteria, as defined in the LIFE Multiannual Work Programme 2014-2017 and the LIFE Call for Proposals including the LIFE Guidelines for Applicants.

This declaration and mandate shall be annexed to the grant agreement and shall form an integral part thereof.

I am legally authorised to sign this statement on behalf of my organisation.

I have read in full the LIFE Model Grant Agreement and the Financial and Administrative GUIDELINES provided with the LIFE application files.

I certify to the best of my knowledge that the statements made in this proposal are true and the information provided is correct.

At Viborg on 7/9 - 2016

Signature of the Associated Beneficiary:

Name(s) and status/function of signatory: Jørgen Jørgensen, Kontorchef

JPS

ASSOCIATED BENEFICIARY DECLARATION and MANDATE

I, the undersigned,

Nina Scholdager,

representing,

Official name: Aalborg Universitet (AAU)
Official legal status: Public body
Official registration No: 29102384
Registered Office: Fredrik Bajers Vej 5, Aalborg Øst, 9220, Denmark
Vat. No: 29102384

hereinafter referred to as "the associated beneficiary", for the purposes of the signature and the implementation of the grant agreement [EU LIFE IP Coast to Coast Climate Challenge (EU LIFE IP C2C CC)] with the Contracting Authority (hereinafter referred to as "the grant agreement") hereby:

1. Mandate
Official name: Central Denmark Region
Official legal status: Public body
Official registration No: 29 19 09 25
Registered Office: Central Denmark Region, Emil Møllers Gade 41, Horsens 8700, Denmark
Vat. No: 29 19 09 25

represented by Rolf Johnsen, Chief Consultant (hereinafter referred to as "the coordinating beneficiary") to sign in my name and on my behalf the grant agreement and its possible subsequent amendments with the Contracting Authority.

2. Mandate the coordinating beneficiary to act on behalf of the associated beneficiary in compliance with the grant agreement.

I hereby confirm that the associated beneficiary accepts all terms and conditions of the grant agreement and, in particular, all provisions affecting the coordinating beneficiary and the associated beneficiaries. In particular, I acknowledge that, by virtue of this mandate, the coordinating beneficiary alone is entitled to receive funds from the Contracting Authority and distribute the amounts corresponding to the associated beneficiary's participation in the action.

I hereby accept that the associated beneficiary will do everything in its power to help the coordinating beneficiary fulfil its obligations under the grant agreement, and in particular, to provide to the coordinating beneficiary, on its request, whatever documents or information may be required.

I hereby declare that the associated beneficiary agrees that the provisions of the grant agreement, including this mandate, shall take precedence over any other agreement between the associated beneficiary and the coordinating beneficiary which may have an effect on the implementation of the grant agreement.

I furthermore certify that:

1. The associated beneficiary has not been served with bankruptcy orders, nor has it received a formal summons from creditors. My organisation is not in any of the situations listed in Articles 106(1) and 107 of Council Regulation No 966/2012 of the European Parliament and of the Council of 25 October 2012 on the financial rules applicable to the general budget of the Union (OJ L298 of 26.10.2012).
2. The associated beneficiary will contribute 10,726€ to the project.

   My organisation will participate in the implementation of the following actions: C1, C2, C3, C4, C5, C6, C7, and F1

   The estimated total cost of my organisation's part in the implementation of the project is 53,628€.
3. The associated beneficiary will conclude with the coordinating beneficiary an agreement necessary for the completion of the work, provided this does not infringe on our obligations, as stated in the grant agreement with the Contracting Authority. This agreement will be based on the model proposed by the Contracting Authority. It will describe clearly the tasks to be performed by my organisation and define the financial arrangements.
4. I commit to comply with all relevant eligibility criteria, as defined in the LIFE Multiannual Work Programme 2014-2017 and the LIFE Call for Proposals including the LIFE Guidelines for Applicants.

This declaration and mandate shall be annexed to the grant agreement and shall form an integral part thereof.

I am legally authorised to sign this statement on behalf of my organisation.

I have read in full the LIFE Model Grant Agreement and the Financial and Administrative GUIDELINES provided with the LIFE application files.

I certify to the best of my knowledge that the statements made in this proposal are true and the information provided is correct.

At Aalborg on 31/3 - 2016.

Signature of the Associated Beneficiary:

Nina Scholdager

Nina Scholdager, Senior Legal Adviser, Head of Grants & Contracts:

PS

ASSOCIATED BENEFICIARY DECLARATION and MANDATE

I, the undersigned,

Hanne Bach

representing,

Official name: Aarhus University (AU)
Official legal status: Public body
Official registration No: 31119103
Registered Office: Nordre Ringgade 1, Aarhus C, 8000
Vat. No: 31119103

hereinafter referred to as "the associated beneficiary", for the purposes of the signature and the implementation of the grant agreement [EU LIFE IP Coast to Coast Climate Challenge (EU LIFE IP C2C CC)] with the Contracting Authority (hereinafter referred to as "the grant agreement") hereby:

1. Mandate
Official name: Central Denmark Region
Official legal status: Public body
Official registration No: 29 19 09 25
Registered Office: Central Denmark Region, Emil Møllers Gade 41, Horsens 8700, Denmark
Vat. No: 29 19 09 25

represented by Rolf Johnsen, Chief Consultant (hereinafter referred to as "the coordinating beneficiary") to sign in my name and on my behalf the grant agreement and its possible subsequent amendments with the Contracting Authority.

2. Mandate the coordinating beneficiary to act on behalf of the associated beneficiary in compliance with the grant agreement.

I hereby confirm that the associated beneficiary accepts all terms and conditions of the grant agreement and, in particular, all provisions affecting the coordinating beneficiary and the associated beneficiaries. In particular, I acknowledge that, by virtue of this mandate, the coordinating beneficiary alone is entitled to receive funds from the Contracting Authority and distribute the amounts corresponding to the associated beneficiary's participation in the action.

I hereby accept that the associated beneficiary will do everything in its power to help the coordinating beneficiary fulfil its obligations under the grant agreement, and in particular, to provide to the coordinating beneficiary, on its request, whatever documents or information may be required.

I hereby declare that the associated beneficiary agrees that the provisions of the grant agreement, including this mandate, shall take precedence over any other agreement between the associated beneficiary and the coordinating beneficiary which may have an effect on the implementation of the grant agreement.

I furthermore certify that:

87

1. The associated beneficiary has not been served with bankruptcy orders, nor has it received a formal summons from creditors. My organisation is not in any of the situations listed in Articles 106(1) and 107 of Council Regulation No 966/2012 of the European Parliament and of the Council of 25 October 2012 on the financial rules applicable to the general budget of the Union (OJ L298 of 26.10.2012).
2. The associated beneficiary will contribute 69.057€ to the project.

   My organisation will participate in the implementation of the following actions: C1, C2, C3, C4, C5, C6, C7, C24 and F1

   The estimated total cost of my organisation's part in the implementation of the project is 199.455€.
3. The associated beneficiary will conclude with the coordinating beneficiary an agreement necessary for the completion of the work, provided this does not infringe on our obligations, as stated in the grant agreement with the Contracting Authority. This agreement will be based on the model proposed by the Contracting Authority. It will describe clearly the tasks to be performed by my organisation and define the financial arrangements.
4. I commit to comply with all relevant eligibility criteria, as defined in the LIFE Multiannual Work Programme 2014-2017 and the LIFE Call for Proposals including the LIFE Guidelines for Applicants.

This declaration and mandate shall be annexed to the grant agreement and shall form an integral part thereof.

I am legally authorised to sign this statement on behalf of my organisation.

I have read in full the LIFE Model Grant Agreement and the Financial and Administrative GUIDELINES provided with the LIFE application files.

I certify to the best of my knowledge that the statements made in this proposal are true and the information provided is correct.

At Roskilde on 29/8-2016

Signature of the Associated Beneficiary: Hanne Bach

Name(s) and status/function of signatory:

Hanne Bach, director

DCE - Danish Centre for Environment and Energy
Aarhus University
Frederiksborgvej 399
PO Box 358
DK-4000 Roskilde, Denmark

DS

ASSOCIATED BENEFICIARY DECLARATION and MANDATE

I, the undersigned,

Lars Holte Nielsen,

representing,

Official name: Midtjyllands EU-Kontor - Central Denmark EU Office (CDEU)
Official legal status: Public body
Official registration No: 30167082
Registered Office: c/o Region Midtjylland, Regional Udvikling, Skottenborg 26, Viborg, 8800, Denmark
Vat. No: 30167082

hereinafter referred to as "the associated beneficiary", for the purposes of the signature and the implementation of the grant agreement [EU LIFE IP Coast to Coast Climate Challenge (EU LIFE IP C2C CC)] with the Contracting Authority (hereinafter referred to as "the grant agreement") hereby:

1. Mandate
Official name: Central Denmark Region
Official legal status: Public body
Official registration No: 29 19 09 25
Registered Office: Central Denmark Region, Emil Møllers Gade 41, Horsens 8700, Denmark
Vat. No: 29 19 09 25

represented by Rolf Johnsen, Chief Consultant (hereinafter referred to as "the coordinating beneficiary") to sign in my name and on my behalf the grant agreement and its possible subsequent amendments with the Contracting Authority.

2. Mandate the coordinating beneficiary to act on behalf of the associated beneficiary in compliance with the grant agreement.

I hereby confirm that the associated beneficiary accepts all terms and conditions of the grant agreement and, in particular, all provisions affecting the coordinating beneficiary and the associated beneficiaries. In particular, I acknowledge that, by virtue of this mandate, the coordinating beneficiary alone is entitled to receive funds from the Contracting Authority and distribute the amounts corresponding to the associated beneficiary's participation in the action.

I hereby accept that the associated beneficiary will do everything in its power to help the coordinating beneficiary fulfil its obligations under the grant agreement, and in particular, to provide to the coordinating beneficiary, on its request, whatever documents or information may be required.

I hereby declare that the associated beneficiary agrees that the provisions of the grant agreement, including this mandate, shall take precedence over any other agreement between the associated beneficiary and the coordinating beneficiary which may have an effect on the implementation of the grant agreement.

I furthermore certify that:

1. The associated beneficiary has not been served with bankruptcy orders, nor has it received a formal summons from creditors. My organisation is not in any of the situations listed in Articles 106(1) and 107 of Council Regulation No 966/2012 of the European Parliament and of the Council of 25 October 2012 on the financial rules applicable to the general budget of the Union (OJ L298 of 26.10.2012).
2. The associated beneficiary will contribute 51.481€ to the project.

   My organisation will participate in the implementation of the following actions: C1, C2, C3, C4, C5, C6 and C7, E5, E6, F1.

   The estimated total cost of my organisation's part in the implementation of the project is 128.703€.
3. The associated beneficiary will conclude with the coordinating beneficiary an agreement necessary for the completion of the work, provided this does not infringe on our obligations, as stated in the grant agreement with the Contracting Authority. This agreement will be based on the model proposed by the Contracting Authority. It will describe clearly the tasks to be performed by my organisation and define the financial arrangements.
4. I commit to comply with all relevant eligibility criteria, as defined in the LIFE Multiannual Work Programme 2014-2017 and the LIFE Call for Proposals including the LIFE Guidelines for Applicants.

This declaration and mandate shall be annexed to the grant agreement and shall form an integral part thereof.

I am legally authorised to sign this statement on behalf of my organisation.

I have read in full the LIFE Model Grant Agreement and the Financial and Administrative GUIDELINES provided with the LIFE application files.

I certify to the best of my knowledge that the statements made in this proposal are true and the information provided is correct.

At Brussel ..... on 26/08/16

Signature of the Associated Beneficiary:

Name(s) and status/function of signatory:

Lars Holle Nielsen
Director
Central Denmark EU Office

DS

ASSOCIATED BENEFICIARY PROFILE (complete for each Associated Beneficiary)

Associated Beneficiary profile information			
Short name	FK	**Beneficiary n°**	2

Legal information on the Associated Beneficiary				
Legal Name	Favrskov Kommune	**Legal Status**		
VAT No	29 18 97 14	**Public body**	X	
Legal Registration No	29 18 97 14	**Private commercial**		
Registration Date	01.01.2007	**Private non-commercial**		
PIC No.		**VAT reimbursement**	Y	

Legal address of the Associated Beneficiary					
Street Name and No	Skovvej 20			**PO Box**	
Post Code	8382	**Town/City**	Hinnerup		
Country Code	DK	**Country Name**	Denmark		

Brief description of the Associated Beneficiary's activities and experience in the area of the proposal

Favrskov Kommune is a municipality (Danish: Kommune) within the Central Denmark Region. As the local authority, it is responsible for the provision of local government services in Favrskov, including those relating to the environment and climate, such as the Climate Change Adaption plans.

Favrskov Kommune is responsible for administration of the legislation concerning groundwater protection, nature protection, river management and CCA. The organization is used to participate in or stay in head of projects of many different types within the climate and environmental area.

Favrskov Municipality has experience with projects regarding river restoration and wetlands and in both areas the EU has contributed financially. Favrskov Municipality has a great focus on how climate projects supports the development and improvement of Nature. Meanwhile we seek to use these projects for recreational purposes such as the creation of new pathways, angling and ornithology.

YOU MAY DUPLICATE THIS PAGE

ASSOCIATED BENEFICIARY PROFILE (complete for each Associated Beneficiary)

Associated Beneficiary profile information			
Short name	HEDKOM	**Beneficiary n°**	3

Legal information on the Associated Beneficiary			
Legal Name	Hedensted Kommune	**Legal Status**	
VAT No	29 18 95 87	**Public body**	X
Legal Registration No	29 18 95 87	**Private commercial**	
Registration Date	01.01.2007	**Private non-commercial**	
PIC No.		**VAT reimbursement**	Y

Legal address of the Associated Beneficiary					
Street Name and No	Niels Espes Vej 8			**PO Box**	
Post Code	8722	**Town/City**	Hedensted		
Country Code	DK	**Country Name**	Denmark		

Brief description of the Associated Beneficiary's activities and experience in the area of the proposal

Hedensted Kommune (Eng: Hedensted Municipality) is a local authority responsible for administration of e.g. the local Climate adaptation plan, nature protection, river basin management plans, urban and rural planning, groundwater protection, nature protection and river management. The organization has a large experience in leading projects of large diversity and complexity.

Hedensted Municipality has worked consistently with the challenges regarding climate changes since 2008, both when it comes to limit the emission of greenhouse gasses to the atmosphere as well as climate change adaption in the local area.

Since 2009 climate change adaption has been a central part of the development parameters in the municipal development plan as well as the municipality's local Agenda 21 plan. Agenda 21 was passed in the UN Conference on Environment and Development (UNCED) in Rio de Janerio in 1992.

In 2015 a risk management plan for the town of Juelsminde was added to these initiatives in reference to the EU Floods Directive.

In the municipal plan as well as the risk management plan of Juelsminde there is a specific focus where in the municipality there are risks regarding flooding from the ocean, rainfall and rivers as well as the extent of these possible floods.

In the C2C CC project Hedensted Municipality has a special focus on the involvement of citizens in local solutions to the climate challenges, which added value can be achieved when climate adaption is rooted locally as well as how we can increase the social dimension when we cooperate towards common goals. Interaction between different stakeholders, e.g. citizens, businesses, knowledge- and research

DS

organizations, and the municipality, is at the center of the municipal activities.

From 2009 to 2012 Hedensted Municipality participated in the Interreg IVN North Sea Region project "North Sea Sustainable Energy Planning". This project gave the municipality knowledge and experience on how to work with global challenges in a local framework as well as how to work with non-statutory issues. Participation in this project paved the way for Hedensted Municipality to join the Covernant of Mayors.

YOU MAY DUPLICATE THIS PAGE

ASSOCIATED BENEFICIARY PROFILE (complete for each Associated Beneficiary)

Associated Beneficiary profile information			
Short name	HK	**Beneficiary n°**	4

Legal information on the Associated Beneficiary				
Legal Name	Herning Kommune	**Legal Status**		
VAT No	29189919	**Public body**	X	
Legal Registration No	29189919	**Private commercial**		
Registration Date	01.01.2007	**Private non-commercial**		
PIC No.		**VAT reimbursement**	Y	

Legal address of the Associated Beneficiary					
Street Name and No	Torvet 5			**PO Box**	
Post Code	7400	**Town/City**	Herning		
Country Code	DK	**Country Name**	Denmark		

Brief description of the Associated Beneficiary's activities and experience in the area of the proposal

Herning Municipality is a local authority responsible for administration of e.g. the local Climate adaptation plan, nature protection, river basin management plans, urban and rural planning, groundwater, protection, nature protection and river management. The organization has a large experience in leading projects of large diversity and complexity.
In the climate adaptation plan flood risk assessments and cost estimations have been made. The municipality is responsible for implementing the climate adaptation plan and engages the local community in building up capacity to deal with climate adaptation.

In relation to the river basin management plans the municipality is responsible for development and implementation of local action plans. This may happen by launching new initiatives and by using measures, when granting new environmental permits and environmental approvals.

The municipality is beneficiary in a European development project called TopSoil. The project is partly financed by the ERDF InterReg IV NSR. The objective of the project is to improve water quantity and quality in relation to climate change and the subsurface. Previously the municipality has been involved in another LIFE+ project called Carbon 20 - dealing with reduction of emission of CO2. The project ended in 2013.

ASSOCIATED BENEFICIARY PROFILE (complete for each Associated Beneficiary)

Associated Beneficiary profile information			
Short name	HbK	**Beneficiary n°**	5

Legal information on the Associated Beneficiary				
Legal Name	Holstebro Kommune	**Legal Status**		
VAT No	29189927	**Public body**	X	
Legal Registration No	29189927	**Private commercial**		
Registration Date	01.01.2007	**Private non-commercial**		
PIC No.		**VAT reimbursement**	Y	

Legal address of the Associated Beneficiary					
Street Name and No	Kirkestraede 11			**PO Box**	
Post Code	7500	**Town/City**	Holstebro		
Country Code	DK	**Country Name**	Denmark		

Brief description of the Associated Beneficiary's activities and experience in the area of the proposal

Holstebro Kommune (Eng: Holstebro Municipality) is a local authority responsible for administration of e.g. the local Climate adaptation plan, nature protection, river basin management plans, urban and rural planning, groundwater, protection, nature protection and river management. The organization has a large experience in leading projects of large diversity and complexity.

The municipality is responsible for implementing the climate adaptation plan and engaging the local community in building up capacity to deal with climate adaptation.

In relation to the river basin management plans the municipality is responsible for development and implementation of local action plans. This may happen by launching new initiatives and by using measures, when granting new environmental permits and environmental approvals.

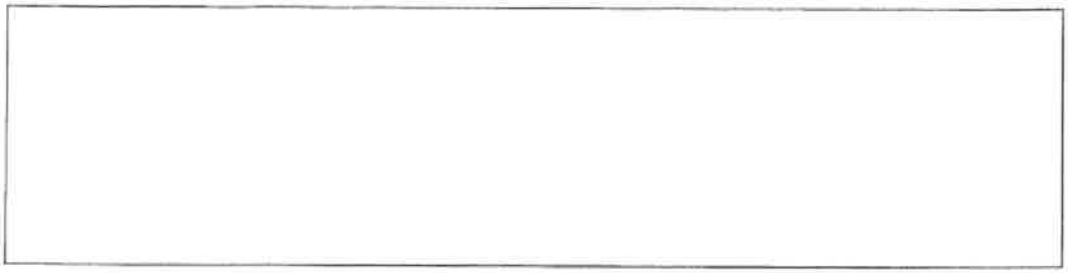
The actions concerning the Channel of Thyborøn (C9) aims to emphesise how the cross-sectional area of the Channel to face the upcoming challenges regarding the conditions of storm floods near the area bordering on the Limfjord. These challenges has been specified as points of special interest in the municipal climate adaption plan.

The action regarding the Storå River (C13) shall bring attention to how the flooding of open areas affects the usage of these areas, including how it influences the operation of agriculture and the potential loss of crops as well as the existing natural values.

The river system of Storå upstream of Holstebro Municipal covers an area of 830 km^2 divided between the municipalities of Ikast-Brande, Herning and Holstebro. All these municipalities operate with issues regarding the water management in the open landscape as points of special attention in their climate adaption plans. In addition, the three municipalities has established a common forum for cooperation as well as exchange of experience and best practice for the area surrounding the Storå River.

Experience in the area of the proposal

Holstebro Municipal is involved in the EU supported partnership "Vand fra Landet" which also includes The Technological Institute, Orbicon and a range of water utility companies. The project is concerned with the problems regarding water running from rural areas towards the cities through rivers, which increases the risk for flooding.



YOU MAY DUPLICATE THIS PAGE

ASSOCIATED BENEFICIARY PROFILE (complete for each Associated Beneficiary)

Associated Beneficiary profile information			
Short name	Horsens	Beneficiary n°	6

Legal information on the Associated Beneficiary				
Legal Name	Horsens Kommune	Legal Status		
VAT No	29189889	Public body	X	
Legal Registration No	29189889	Private commercial		
Registration Date	01.01.2007	Private non-commercial		
PIC No		VAT reimbursement	Y	N

Legal address of the Associated Beneficiary					
Street Name and No	Rådhustorvet 4			PO Box	
Post Code	8700	Town/City	Horsens		
Country Code	DK	Country Name	Denmark		

Brief description of the Associated Beneficiary's activities and experience in the area of the proposal

Horsens Kommune (Eng: Horsens Municipality) is a local authority responsible for administration of e.g. the local Climate adaptation plan, nature protection, river basin management plans, urban and rural planning, groundwater, protection, nature protection and river management. The organization has a large experience in leading projects of large diversity and complexity.
In the climate adaptation plan flood risk assessments and cost estimations have been made. The municipality is responsible for implementing the climate adaptation plan and engages the local community in building up capacity to deal with climate adaptation.

In relation to the river basin management plans the municipality is responsible for development and implementation of local action plans. This may happen by launching new initiatives and by using measures, when granting new environmental permits and environmental approvals.

The municipality is beneficiary in a European development project called TopSoil. The project is partly financed by the ERDF InterReg IV NSR. The objective of the project is to improve water quantity and quality in relation to climate change and the subsurface. Previously the municipality has been involved in another InterReg IVB project called CLIWAT- dealing with climate adaptation and groundwater. The project ended I 2013.

A7

ASSOCIATED BENEFICIARY PROFILE (complete for each Associated Beneficiary)

Associated Beneficiary profile information					
Short name	LK			**Beneficiary n°**	7
Legal information on the Associated Beneficiary					
Legal Name	Lemvig Kommune		**Legal Status**		
VAT No	29189935		**Public body**	X	
Legal Registration No	29189935		**Private commercial**		
Registration Date	01.01.2007		**Private non-commercial**		
PIC No.			**VAT reimbursement**	Y	
Legal address of the Associated Beneficiary					
Street Name and No	Rådhusgade 2			**PO Box**	
Post Code	7620	**Town/City**	Lemvig		
Country Code	DK	**Country Name**	Denmark		

Brief description of the Associated Beneficiary's activities and experience in the area of the proposal

Lemvig Kommune (LK) is a municipality and hence is the local, competent authority responsible for drafting and administration of LK's Climate adaptation plan. Moreover LK is the local competent authority for nature protection, river basin management plans, urban and rural planning, coast and groundwater protection ect. LK has considerable experience with directing and participating in large and complex projects in these areas.

LK is involved in C9 "The Thyborøn Channel and the Western Limfjord", C17 "Thyborøn City and Harbour as well as Harbøøre Tange", and C21 "Climatorium – An innovative showroom for climate development and climate tourism".

LK has significant competences and experiences within the climate adaption sector, hereunder in leading climate adaption projects, interest involvement and impact assessment studies. LK draws upon these in securing the clearly defined objectives with the other associated beneficiaries involved in the actions.

In connection with drafting of the municipalities climate adaption plan, LK has built up strong competences within mapping the loss of value on land areas affected by future climate change, based upon drawn up climate scenarios. In addition, LK has great experiences, from concrete climate adaptions projects, with the whole process from mapping of challenges to dealing with them.

YOU MAY DUPLICATE THIS PAGE

DS

ASSOCIATED BENEFICIARY PROFILE (complete for each Associated Beneficiary)

Associated Beneficiary profile information						
Short name	LVS			**Beneficiary n°**	8	
Legal information on the Associated Beneficiary						
Legal Name	Lemvig Vand & Spildevand A/S			**Legal Status**		
VAT No	32832296			**Public body**		
Legal Registration No	32832296			**Private commercial**	X	
Registration Date	24.03.2010			**Private non-commercial**		
PIC No.				**VAT reimbursement**		N
Legal address of the Associated Beneficiary						
Street Name and No	Rønbjerghage 31			**PO Box**		
Post Code	7620	**Town/City**	Lemvig			
Country Code	DK	**Country Name**	Denmark			

Brief description of the Associated Beneficiary's activities and experience in the area of the proposal

Lemvig Vand & Spildevand A/S (LVS) was founded in 2010 as a result of the Water Sector Reform Act, which prescribes that all local sewage and water supplies in Denmark is separated from the municipalities. Hence, LVS is an independent utility company, which is 100 % owned by Lemvig Municipality. Lemvig Vand og Spildevand A/S employs 21 employees and has an annual turnover of approximately 60 mill DKK.

LVS is involved in the projects "Thyborøn Kanal og Vestlige Limfjord", "Thyborøn By og Havn" and "Klimatorium i Lemvig".

LVS has taken an active part in the preparation of Lemvig Municipality's climate adaptation plan for the plan period 2014-17. LVS is in ongoing dialogue with Lemvig Municipality on the handling of present and future climate challenges. In this way, LVS is the most important collaborator for Lemvig Municipality when it comes to climate adaptation. LVS has particular expertise in underground supply infrastructure, i.e. pipelines for handling of wastewater and surface water.

YOU MAY DUPLICATE THIS PAGE

A7

ASSOCIATED BENEFICIARY PROFILE (complete for each Associated Beneficiary)

Associated Beneficiary profile information						
Short name	MF			**Beneficiary n°**	9	
Legal information on the Associated Beneficiary						
Legal Name	Morsø Forsyning A/S			**Legal Status**		
VAT No	32 47 90 65			**Public body**		
Legal Registration No	32 47 90 65			**Private commercial**	X	
Registration Date	01.10.2009			**Private non-commercial**		
PIC No.				**VAT reimbursement**		N
Legal address of the Associated Beneficiary						
Street Name and No:	Nørregade 3			**PO Box:**		
Post Code	7900	**Town/City**	Nykøbing Mors			
Country Code	DK	**Country Name**	Denmark			

Brief description of the Associated Beneficiary's activities and experience in the area of the proposal

Morsø Forsyning A/S (MF) was founded in 2009 as a result of the Water Sector Reform Act, which prescribes that all local sewage and water supplies in Denmark is separated from the municipalities. Hence, MF is an independent utility company, which is 100 % owned by Morsø Municipality. MF employs 25 employees and has an annual turnover of approximately 66 mill DKK.

MF is involved in the project "Thyborøn Kanal og Vestlige Limfjord". Based on the company's strong competencies in the area of climate adaptation, including knowledge about the handling and transport of surface water, MF can contribute to the achievement of the well-defined objectives among the project partners.

MF has taken an active part in the preparation of Morsø Municipality's climate adaptation plan for the plan period 2013. MF is in ongoing dialogue with Morsø Municipality on the handling of present and future climate challenges. In this way, MF is the most important collaborator for Morsø Municipality when it comes to climate adaptation. MF has as a utility company special skills in handling and transport of surface water and wastewater.

Morsø Forsyning A/S is responsible for sewer, water and heat supply in Morsø Municipality. The company's main tasks are to run the sewer, water and heat supply including, in close collaboration with Morsø Municipality, to contribute to climate adaptation in the municipality.

In close collaboration with Morsø Municipality, MF is working to ensure the drainage of surface water. The company possesses extensive knowledge and experience in handling of surface water as well as working on project in the context of both large and small climate situations.

Morsø Forsyning has not previously participated in an EU project.

YOU MAY DUPLICATE THIS PAGE

ASSOCIATED BENEFICIARY PROFILE (complete for each Associated Beneficiary)

Associated Beneficiary profile information			
Short name	MK	Beneficiary n°	10

Legal information on the Associated Beneficiary				
Legal Name	Morsø kommune	Legal Status		
VAT No	41 33 30 14	Public body	X	
Legal Registration No	41 33 30 14	Private commercial		
Registration Date	17.04.1964	Private non-commercial		
PIC No.		VAT reimbursement	Y	

Legal address of the Associated Beneficiary					
Street Name and No	Jernbanevej 7			PO Box	
Post Code	7900	Town/City	Nykøbing M		
Country Code	DK	Country Name	Denmark		

Brief description of the Associated Beneficiary's activities and experience in the area of the proposal

1. Beskriv jeres organisation og jeres juridiske status.

Morsø Municipality(Morsø Kommune (MK)) is the local , Competent Authority for Preparation and administration of Morsø Municipality's climate adaptation plan . MK is also the local Competent Authority for the Protection of Nature, river basin management plans, urban design and planning in the rural areas, groundwater protection , etc. the organization has a great deal in leading and participating in large and complex projekts.

2. Beskriv de aktiviteter(projekter) i er involveret i C2C og jeres kompetencer på området.

MK is involved in the project " Thyborøn Channel and Western Limfjord " . Our contribution will help to achive the well defined objectives of the project becauce of our strong competences in climate adaption, including involving stakeholders and assessment of consequences.

3. Beskriv jeres erfaringer med tidligere EU projekter, hvis i har dem.

In the preparation of the city's climate adaptation plan, MK has attained strong capabilities in mapping the loss of value of land as a result of future climate scenarios. In addition, MK has attained experience with the whole process of mapping challenge for handling challenge, through the work with concrete adaptation projects .

MK Working regularly with various EU projects in areas other than climate adaptation.

YOU MAY DUPLICATE THIS PAGE

A7

ASSOCIATED BENEFICIARY PROFILE (complete for each Associated Beneficiary)

Associated Beneficiary profile information			
Short name	NDK	**Beneficiary n°**	11

Legal information on the Associated Beneficiary				
Legal Name	Norddjurs Kommune	**Legal Status**		
VAT No	29189986	**Public body**	X	
Legal Registration No	29189986	**Private commercial**		
Registration Date	01.01.2007	**Private non-commercial**		
PIC No:		**VAT reimbursement**	Y	

Legal address of the Associated Beneficiary					
Street Name and No	Torvet 3			**PO Box**	
Post Code	8500	**Town/City**	Grenaa		
Country Code	DK	**Country Name**	Denmark		

Brief description of the Associated Beneficiary's activities and experience in the area of the proposal

The Municipality of Norddjurs (NDK) is a local authority responsible for administration of e.g. the local climate adaptation plan, nature protection, river basin management plans, urban and rural planning, groundwater protection, nature protection and river management. The organisation has a large experience in leading projects of large diversity and complexity.

In the climate adaptation plan, flood risk assessments and cost estimations have been made. The municipality is responsible for implementing the climate adaptation plan and engages the local community in building up capacity to deal with climate adaptation.

NDK is participating in C2C CC with two projects. The first project will shed light on the opportunities to make climate adaptation within the Grenaa's surrounding area. Through times, this surrounding area has changed character from containing one of Denmark's biggest lakes to contain many layers of pumps that holds the areas dry. This creates the opportunity for famers to run intensive farming in the area. Vast draining of the area creates missing flexibility in connection to climate influences.

The second project, will clarify how adaptation of areas near Randers fjord will happen. The project will see how water can contribute with possibilities of use to the today very characteristic farming landscape where areas are being pumped dry for continuing running of agriculture.

NDK is participating in the LIFE Programme with nature projects.

YOU MAY DUPLICATE THIS PAGE

ASSOCIATED BENEFICIARY PROFILE (complete for each Associated Beneficiary)

Associated Beneficiary profile information			
Short name	RK	Beneficiary n°	12

Legal information on the Associated Beneficiary				
Legal Name	Randers Kommune	Legal Status		
VAT No	29189668	Public body	X	
Legal Registration No	29189668	Private commercial		
Registration Date	01.01.2007	Private non-commercial		
PIC No.		VAT reimbursement	Y	

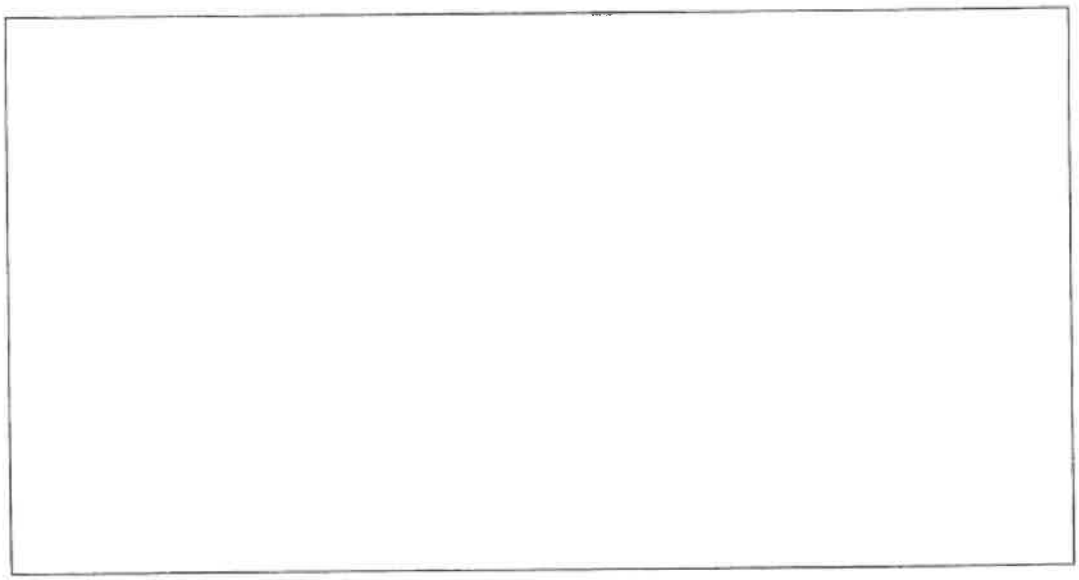
Legal address of the Associated Beneficiary					
Street Name and No.	Laksetorvet 1			PO Box	
Post Code	8900	Town/City	Randers C		
Country Code	DK	Country Name	Denmark		

Brief description of the Associated Beneficiary's activities and experience in the area of the proposal

Randers Kommune is a municipality (Danish: Kommune) within the Central Denmark Region. As the local authority, RK is responsible for the provision of local government services in the municipality of Randers, including those relating to the environment and climate, such as the Strategic Climate Energy Plans, Climate Adaptation Plans and Risk Management Plan (EC Floods Directive).

Randers Kommune is responsible for administration of the legislation concerning environmental protection, groundwater protection, nature protection, river management and CCA. The municipality is responsible for the realization of Climate Adaptation Plan and Risk Management Plan according to EC Flood Directive.
The municipal Plan Office, within the Environmental Division, is responsible for urban planning, urban development plans, local planning and climate change adaptation plans. The office handles a number of planning projects where citizens and companies are involved in co-creation and in the democratic processes.

Randers Kommune has participated in several various EU funded projects (eg. Interreg IVB, North Sea regional Programme, Enercoast 2009-2012 and Europe for Citizens' Programme, Twintown, Climate 2010 with The city of Lahti, Finland).
Right now, the organization Randers Kommune, Environmental Division takes part in ELENA Program supported project CeDEPI, managed by Region Central Denmark.



YOU MAY DUPLICATE THIS PAGE

ASSOCIATED BENEFICIARY PROFILE (complete for each Associated Beneficiary)

Associated Beneficiary profile information			
Short name	SAK	**Beneficiary n°**	13

Legal information on the Associated Beneficiary				
Legal Name	Samsø Kommune	**Legal Status**		
VAT No	23795515	**Public body**	X	
Legal Registration No	23795515	**Private commercial**		
Registration Date	01.04.1969	**Private non-commercial**		
PIC No.		**VAT reimbursement**	Y	

Legal address of the Associated Beneficiary					
Street Name and No	Søtofte 10			**PO Box**	
Post Code	8305	**Town/City**	Samsø		
Country Code	DK	**Country Name**	Denmark		

Brief description of the Associated Beneficiary's activities and experience in the area of the proposal

Samsø Municipality (SAK) is the local authority responsible for administration of e.g. the local Climate adaptation plan, nature protection, river basin management plans, urban and rural planning, and groundwater.

SAK will participate in action C19: Sustainable Urban Drainage Systems (SUDS) as recreational elements to handle coupled events between rainfall and storm surge

In 2015, SAK established in joint co-operation with the Samsø Waste Water Utility company a recreational facility around a retation pond. The experiences and methods gained from this project, is what SAK brings with it into C2C CC. The starting point will be, that the technical solutions shall contribute with more in the way of enhancing recreational and nature quality and more.

SAK has in former and present projects succeeded in engaging and activating local enthusiast within the energy sector. SAK achieved implementation within sustainable energy to the extent, that SAK can entirely cover its own energy consumption. This was only possible because of the local commitment and willingness to implement projects, which SAK also will utilize in C2C CC.

SAK has previously participated in the Interreg-project "IMPLEMENT" and is currently engaged in the EU project Biogas 2020. From these cross-border projects a good understanding has been derived for, what it takes to implement large scaled projects such as C2C CC, as well as what beneficial collaboration can arise across borders.

YOU MAY DUPLICATE THIS PAGE

A7

ASSOCIATED BENEFICIARY PROFILE (complete for each Associated Beneficiary)

Associated Beneficiary profile information			
Short name	SIK	Beneficiary n°	14

Legal information on the Associated Beneficiary				
Legal Name	Silkeborg Kommune	Legal Status		
VAT No	29189641	Public body	X	
Legal Registration No	29189641	Private commercial		
Registration Date	01.01.2007	Private non-commercial		
PIC No.		VAT reimbursement	Y	

Legal address of the Associated Beneficiary					
Street Name and No	Søvej 1			PO Box	
Post Code	8600	Town/City	Silkeborg		
Country Code	DK	Country Name	Denmark		

Brief description of the Associated Beneficiary's activities and experience in the area of the proposal

Silkeborg Kommune (Eng: Silkeborg Municipality) is a local authority responsible for administration of e.g. the local Climate adaptation plan, nature protection, urban and rural planning, groundwater, protection, nature protection and river management. The organisation has a wide experience in leading projects of large diversity and complexity.

In the climate adaptation plan, flood risk assessments and cost estimations have been made. The municipality is responsible for implementing the climate adaptation plan and engages the local community in building up capacity to deal with climate adaptation.

In relation to the river basin management plans the municipality is responsible for development and implementation of local action plans. This may happen by launching new initiatives and by using measures, when granting new environmental permits and environmental approvals.

The Municipality has furthermore been project manager and initiator on a project relating to the prediction of water levels in the River Gudenå. The project involved 4 local municipalities along the River Gudenå. The project produced a water level modelling tool, which is now available to the public as a web based tool where local residents gain easy access to an advanced warnings system regarding water level raise. The experience gained in this project will be very useful in the C2Ccc project, where a similar (but larger and more advanced) model is planned.

Silkeborg Municipality has a key location by the River Gudenå, as we cover the largest area in the catchment area out of the 7 municipalities. Silkeborg Municipality has the largest area of fresh water and the largest area of continuous woodland in the country

DS

compared to other Danish municipalities, and that makes nature one of our most important assets.

Recreational activities and tourism associated with water (sailing, swimming, fishing etc) is very important to us and many of our tourists and visitors come because of the great possibilities the area offers in outdoor and water based activities.

Silkeborg city is situated in close proximity to the water with many residential areas bordering the lakes in the River Gudenå system. Here the increased water levels cause great concern and the municipality is continuously searching for and applying solutions.

The above mentioned makes dealing with rising water levels a priority for Silkeborg Municipality and we have a lot of expertise in dealing with the associated issues. We are involved in nearly all the activities in C2C cc Gudenå.

The municipality has previous experience with EU projects. Presently we are a beneficiary in a European LIFE project regarding the restoration of raised bogs in Denmark which run until 2018.

YOU MAY DUPLICATE THIS PAGE

ASSOCIATED BENEFICIARY PROFILE (complete for each Associated Beneficiary)

Associated Beneficiary profile information			
Short name	SFV	**Beneficiary n°**	15

Legal information on the Associated Beneficiary				
Legal Name	Skanderborg Forsyningsvirksomhed a/s	**Legal Status**		
VAT No	32666906	**Public body**		
Legal Registration No	32666906	**Private commercial**	X	
Registration Date	01.01.2010	**Private non-commercial**		
PIC No		**VAT reimbursement**	Y	

Legal address of the Associated Beneficiary					
Street Name and No	Døjsøvej 1			**PO Box**	
Post Code	8660	**Town/City**	Skanderborg		
Country Code	DK	**Country Name**	Denmark		

Brief description of the Associated Beneficiary's activities and experience in the area of the proposal

Skanderborg Forsyningsvirksomhed a/s is a publicly owned utility responsible for drinking water and wastewater handling, as well as responsible for execution on climate adaptation plans for Skanderborg Municipality. The organisation has a great deal of experience in handling projects with many stakeholders as well as direct citizen involvement in public interest projects.

In relation to C2C the organisation is a direct partner in two separate initiatives, the Gudenåen project and AQUAGlobe. In terms of the Gudenåen project, the role of the organization will evolve primarily around creating a hydraulic model, a task for which the organisation is well prepared with internal engineering and modelling competencies. In terms of AQUAGlobe, which will be a center for developing knowledge and products within water tech, and sharing this knowledge broadly with the public in the form of playful experiences and innovative communication, the organisation will provide strong competencies in communication, stakeholder management, business development and project management.

DS

ASSOCIATED BENEFICIARY PROFILE (complete for each Associated Beneficiary)

Associated Beneficiary profile information			
Short name	SK-KOM	Beneficiary n°	16

Legal information on the Associated Beneficiary				
Legal Name	Skanderborg Kommune	Legal Status		
VAT No	291 896 33	Public body	X	
Legal Registration No	291 896 33	Private commercial		
Registration Date	01.01.2007	Private non-commercial		
PIC No.		VAT reimbursement	Y	

Legal address of the Associated Beneficiary					
Street Name and No	Adelgade 44			PO Box	
Post Code	8660	Town/City	Skanderborg		
Country Code	DK	Country Name	Denmark		

Brief description of the Associated Beneficiary's activities and experience in the area of the proposal

Skanderborg Municipality is a local authority responsible for administration of e.g. the local Climate Adaptation Plan, nature protection, river basin management plans, urban and rural planning, groundwater protection, water- and wastewater management and river management.

The organization has a large experience in leading projects of large diversity and complexity.

In the Climate Adaptation Plan flood risk assessments and cost estimations have been made. The municipality is responsible for implementing the Climate Adaptation Plan and engages the local community in building up capacity to deal with climate adaptation. In relation to the river basin management plans, the municipality is responsible for development and implementation of local action plans.

In partnership with our local water- and wastewater company, Skanderborg Forsyningsselskab A/S (Eng. Skanderborg Watersupply and Wastewater Company), we will implement 16 different projects and several other initiatives according to Skanderborg Municipality Climate Adaption Plan and Local Action Plan from 2014 till the end of 2018.The budget for these about 16 projects is around 250 - 382 mill. DKR.

The projects in Skanderborg Municipality's Climate Adaption Plan are very local – and are chosen by calculating risk assesments and cost estimations at a local perspective. All the projects are located in town areas or areas with many houses or in areas with great commercial and production interests or at places with vital infrastructure. The C2C CC project has a wider perspective.

ASSOCIATED BENEFICIARY PROFILE (complete for each Associated Beneficiary)

Associated Beneficiary profile information			
Short name	SKK	Beneficiary n°	17

Legal information on the Associated Beneficiary				
Legal Name	Skive Kommune	Legal Status		
VAT No	29189579	Public body	X	
Legal Registration No	29189579	Private commercial		
Registration Date	01.01.2007	Private non-commercial		
PIC No.		VAT reimbursement	Y	

Legal address of the Associated Beneficiary					
Street Name and No	Torvegade 10			PO Box	
Post Code	7800	Town/City	Skive		
Country Code	DK	Country Name	Denmark		

Brief description of the Associated Beneficiary's activities and experience in the area of the proposal

Skive Kommune (SKK) is a municipality and therefore the local, competent authority responsible for drafting and administration of SKK's Climate adaptation plan. Moreover SKK is the local competent authority for nature protection, river basin management plans, urban and rural planning, coast and groundwater protection ect. In these areas, SKK has obtained experience in participating as well as leading large and complicated projects, which will be helpful in SKK's involvement in the C9 "The Thyborøn Channel and the Western Limfjord".

SKK will contribute with its competences from the climate adaption sector to reach the goals set in C9. These competences consists among others of the abilities to create impact assessments and participant involvement.

Having drafted the municipality's climate adaption plan, SKK has accrued competences in mapping the loss of value on land areas as a consequence of predicted future climate change based scenarios. SKK's Operation and Engineering Department as well as Construction and Environment Department all have prior experience with climate adaption projects and the processes from start to finish.

Moreover, the department "Energicity Skive" in SKK also work in a project- and concept-oriented way, with the goal of creating a sustainable municipality. The goal is to reach CO2 neutrality by 2029 and mitigate climate changes.

SKK has previously participated in EU programs such as "Interreg Øresund-Kattegat-Skagerrak" with the projects "Biogas 2020" and "Implement". The "Implement" project won second place in the RegionStars Award 2015 (CityStar). The projects has provided SKK with experiences in Scandinavian cooperation on development of climate and energy production and consumption.

YOU MAY DUPLICATE THIS PAGE

ASSOCIATED BENEFICIARY PROFILE (complete for each Associated Beneficiary)

Associated Beneficiary profile information			
Short name	SKV	Beneficiary n°	18

Legal information on the Associated Beneficiary				
Legal Name	Skive Vand A/S	Legal Status		
VAT No	30238974	Public body:		
Legal Registration No	30238974	Private commercial:	X	
Registration Date	31.01.2007	Private non-commercial		
PIC No.		VAT reimbursement		N

Legal address of the Associated Beneficiary					
Street Name and No	Norgesvej 5			PO Box	
Post Code	7800	Town/City	Skive		
Country Code	DK	Country Name	Denmark		

Brief description of the Associated Beneficiary's activities and experience in the area of the proposal

Skive Vand A/S (SKV) was founded in 2007 as a result of the Water Sector Reform Act, which prescribes that all local sewage and water supplies in Denmark is separated from the municipalities. Hence, SKV is an independent utility company that is 100 % owned by Skive Municipality. SKV employs 36 employees and has an annual turnover of approximately 100 mill DKK.

SKV is involved in the project "Thyborøn Kanal og Vestlige Limfjord". Based on the company's strong competencies in the area of climate adaptation, including knowledge about the handling and transport of surface water, SKV can contribute to the achievement of the well-defined objectives among the project partners.

SKV has taken an active part in the preparation of Skive Municipality's climate adaptation plan for the plan period. SKV is in ongoing dialogue with Skive Municipality on the handling of present and future climate challenges. In this way, SKV is the most important collaborator for Skive Municipality when it comes to climate adaptation. SKV has as a utility company special skills in handling and transport of surface water and wastewater.

YOU MAY DUPLICATE THIS PAGE

PS

ASSOCIATED BENEFICIARY PROFILE (complete for each Associated Beneficiary)

Associated Beneficiary profile information			
Short name	STF	**Beneficiary n°**	19

Legal information on the Associated Beneficiary				
Legal Name	Struer Forsyning Spildevand A/S	**Legal Status**		
VAT No	33053622	**Public body**		
Legal Registration No	33053622	**Private commercial**	X	
Registration Date	29.06.2010	**Private non-commercial**		
PIC No.		**VAT reimbursement**		N

Legal address of the Associated Beneficiary					
Street Name and No.	Jyllandsgade 1			**PO Box**	96
Post Code	7600	**Town/City**	Struer		
Country Code	DK	**Country Name**	Denmark		

Brief description of the Associated Beneficiary's activities and experience in the area of the proposal

Struer Forsyning Spildevand A/S (STF) was founded in 2010 because of the Water Sector Reform Act, which prescribes that all local sewage and water supplies in Denmark is separated from the municipalities.

Hence, STF is an independent utility company with in the Struer forsyning cooperation that is 100 % owned by Struer Municipality. TV employs 32 employees, hereunder nine employees working with wastewater and has an annual turnover of approximately 120 mill DKK.

STF is involved in the project "Thyborøn Kanal og Vestlige Limfjord". Based on the company's strong competencies in the area of climate adaptation, including knowledge about the handling and transport of surface water, STF can contribute to the achievement of the well-defined objectives among the project partners.

In collaboration with Struer Municipality, STF has devised a climate adaptation plan for the plan period after 2012, hereunder drafting flood maps and participating in risk mapping and preparation of policies. STF is in regular contact with Struer municipality about the handling of present and future climate changes. In this way, STF is the most important collaborator for Thisted Municipality when it comes to climate adaptation. STF has as utility company special skills in handling and transport of surface water and wastewater.

STF has in the capacity as co-owner of Måbjerg BioEnergy previously undertaken the local project management and been responsible for reporting of the ECOSTILER project under EU-CONCERTO in the period 2008-2012.

YOU MAY DUPLICATE THIS PAGE

DS

ASSOCIATED BENEFICIARY PROFILE (complete for each Associated Beneficiary)

Associated Beneficiary profile information			
Short name	STK	Beneficiary n°	20

Legal information on the Associated Beneficiary				
Legal Name	Struer Kommune	Legal Status		
VAT No	29189951	Public body	X	
Legal Registration No	29189951	Private commercial		
Registration Date	01.01.2007	Private non-commercial		
PIC No.		VAT reimbursement	Y	

Legal address of the Associated Beneficiary					
Street Name and No	Østergade 13			PO Box	
Post Code	7600	Town/City	Struer		
Country Code	DK	Country Name	Denmark		

Brief description of the Associated Beneficiary's activities and experience in the area of the proposal

As a municipality Struer Kommune (STK) is the local, competent authority responsible for drafting and administration of STK's Climate adaptation plan. The local competent authority for nature protection, river basin management plans, urban and rural planning, coast and groundwater protection ect befalls STK. In these areas, STK has great experience with leading and participating in projects of considerable size and complexity

STK is involved in C9 "The Thyborøn Channel and the Western Limfjord". STK expects to draw upon its organization's strong skills in the climate adaptions sector, especially concerning participant involvement and impact assessment studies, which will be useful in achieving the well defined goals.

STK has strong technical skills in regards to mapping land areas and their foreseen loss of value based upon climate scenarios. Furthermore, STK also possess specific experiences with climate adaption projects from beginning to the end of the process.

ASSOCIATED BENEFICIARY PROFILE (complete for each Associated Beneficiary)

Associated Beneficiary profile information			
Short name	SDK	Beneficiary n°	21

Legal information on the Associated Beneficiary			
Legal Name	Syddjurs Kommune	Legal Status	
VAT No	29189978	Public body	X
Legal Registration No	29189978	Private commercial	
Registration Date	01.01.2007	Private non-commercial	
PIC No.		VAT reimbursement	Y

Legal address of the Associated Beneficiary					
Street Name and No	Lundbergsvej 2			PO Box	
Post Code	8400	Town/City	Ebeltoft		
Country Code	DK	Country Name	Denmark		

Brief description of the Associated Beneficiary's activities and experience in the area of the proposal

The Municipality of Syddjurs (Syddjurs Kommune), Environmental Department is a local authority responsible for planning and administration of e.g. the local Climate Adaptation Plan, surface- and groundwater, nature protection and other forms of related environmental planning..

In the climate adaptation plan for Syddjurs Kommune flood risk assessments and cost estimations have been made. The municipality is responsible for implementing the climate adaptation plan and engages the local community in building up capacity to deal with climate adaptation. In the climate adaptation plan is the river system of Kolindsund and Grenå mentioned as a special focus, because of the area's major economic, agricultural and natural importance to the community. The project will lead to possible actions and initiatives to maintain the current agricultural and urban use of the area.

The organization has a large experience in e.g. climate adaptation solutions, hydrogeological/hydrological surveys and nature protection projects with a high degree of complexity.

ASSOCIATED BENEFICIARY PROFILE (complete for each Associated Beneficiary)

Associated Beneficiary profile information			
Short name	TK	**Beneficiary n°**	22

Legal information on the Associated Beneficiary				
Legal Name	Thisted Kommune	**Legal Status**		
VAT No	29189560	**Public body**	X	
Legal Registration No	29189560	**Private commercial**		
Registration Date	01.01.2007	**Private non-commercial**		
PIC No.		**VAT reimbursement**	Y	

Legal address of the Associated Beneficiary					
Street Name and No:	Asylgade 30			**PO Box:**	
Post Code	7700	**Town/City**	Thisted		
Country Code	DK	**Country Name**	Denmark		

Brief description of the Associated Beneficiary's activities and experience in the area of the proposal

As a Danish municipality Thisted Kommune (TK) is the local, competent authority. TK is responsible for both drafting and administration of TK's climate adaptation plan, as well as the authority concerning nature protection, river basin management plans, urban and rural planning, coast and groundwater protection ect. The organization has good experiences with large and complex projects in the aforementioned areas, both on the level of directing and participating.

TK will be involved in C9 "The Thyborøn Channel and the Western Limfjord". TK can draw on the organization's competences and skills in relation to impact assessment and participant involvement from the climate change sector, to help reach the well-defined goals in collaboration with the other involved associated beneficiaries.

TK will also rely on its strong competences in mapping future climate changes effect on land areas and consequentially their loss of value. These mappings are based upon climate change prediction scenarios. These competences has been gained through the municipality's drafting of the climate adaption plan. In addition, TK has via prior work on concrete climate adaption projects gained experiences with the whole process for a climate project - from planning to implementation.

YOU MAY DUPLICATE THIS PAGE

ASSOCIATED BENEFICIARY PROFILE (complete for each Associated Beneficiary)

Associated Beneficiary profile information			
Short name	TV	Beneficiary n°	23

Legal information on the Associated Beneficiary			
Legal Name	Thisted spildevand transport A/S	Legal Status	
VAT No	32 36 24 43	Public body	
Legal Registration No	32 36 24 43	Private commercial	X
Registration Date	01.07.2009	Private non-commercial	
PIC No.		VAT reimbursement	Y

Legal address of the Associated Beneficiary					
Street Name and No	Silstrupvej 12			PO Box	
Post Code	7700	Town/City	Thisted		
Country Code	DK	Country Name	Denmark		

Brief description of the Associated Beneficiary's activities and experience in the area of the proposal

Thisted Vand A/S (TV) supplies drinking water and cleans wastewater in Thisted Municipality in the North Denmark Region.
Thisted Vand A/S was founded in 2009 as a result of the Water Sector Reform Act, which prescribes that all local sewage and water supplies in Denmark is separated from the municipalities. Hence, TV is an independent utility company that is 100 % owned by Thisted Municipality. TV employs 38 employees and has an annual turnover of approximately 113 mill DKK.

TV is involved in the project "Thyborøn Kanal og Vestlige Limfjord". Based on the company's strong competencies in the area of climate adaptation, including knowledge about the handling and transport of surface water, TV can contribute to the achievement of the well-defined objectives among the project partners.

In collaboration with Thisted Municipality, TV has devised a climate adaptation plan for the plan period 2010-22. TV is in ongoing dialogue with Thisted Municipality on the handling of present and future climate challenges. In this way, TV is the most important collaborator for Thisted Municipality when it comes to climate adaptation. TV has as a utility company special skills in handling and transport of surface water and wastewater.

Thisted Vand A/S has not previously participated in EU projects.

YOU MAY DUPLICATE THIS PAGE

ASSOCIATED BENEFICIARY PROFILE (complete for each Associated Beneficiary)

Associated Beneficiary profile information			
Short name	VESTF	Beneficiary n°	24

Legal information on the Associated Beneficiary					
Legal Name	Vestforsyning Erhverv A/S	Legal Status			
VAT No	26350697	Public body			
Legal Registration No	26350697	Private commercial	X		
Registration Date	01.01.2001	Private non-commercial			
PIC No.		VAT reimbursement	Y		

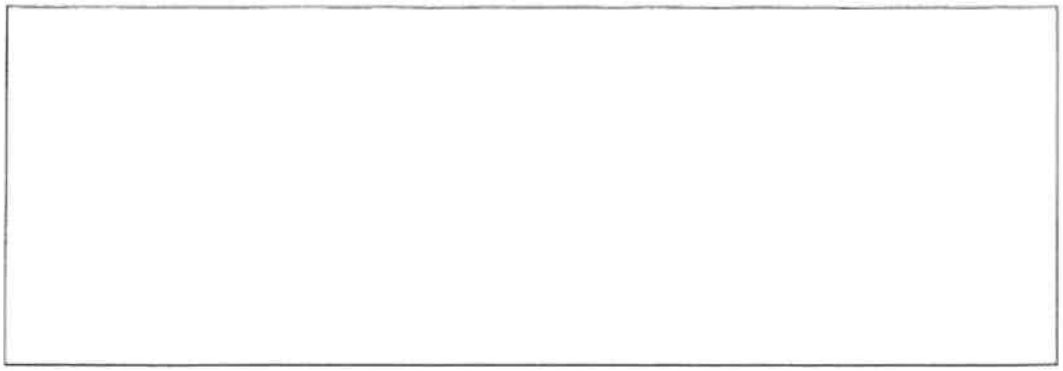
Legal address of the Associated Beneficiary					
Street Name and No	Nupark 51, Måbjerg			PO Box	
Post Code	7500	Town/City	Holstebro		
Country Code	DK	Country Name	Denmark		

Brief description of the Associated Beneficiary's activities and experience in the area of the proposal

Vestforsyning Erhverv A/S is the commercial arm of the Vestforsyning utility corporation working with technical, engineering and advisory development projects within energy supply, water supply and waste water cleaning. Introduction of green technologies and adjustment to climate change are prominent activity areas.

In the present project VFE A/S is involved in activities to foster adjustment to climate change with relation to the Thyborøn Canal and the western part of the Limfjord, Storåen and capacity building across different fields and disciplines of water supply and waste water cleaning. In this work, VFE A/S draws on many years of experience in designing, constructing, managing and monitoring supply facilities obtained both by working for the supply branches of the Vestforsyning utility corporation and externally.

VFE A/S has participated in numerous EU funded projects under Phare, Concerto and Horizon with emphasis on capacity building and engineering in relation to water supply, waste water cleaning, climate change and conversion to green technologies.



YOU MAY DUPLICATE THIS PAGE

ASSOCIATED BENEFICIARY PROFILE (complete for each Associated Beneficiary)

Associated Beneficiary profile information			
Short name	VHK	**Beneficiary n°**	25

Legal information on the Associated Beneficiary			
Legal Name	Vesthimmerlands kommune	**Legal Status**	
VAT No	29189471	**Public body**	X
Legal Registration No	29189471	**Private commercial**	
Registration Date	01.01.2007	**Private non-commercial**	
PIC No.		**VAT reimbursement**	Y

Legal address of the Associated Beneficiary					
Street Name and No	Himmerlandsgade 27			**PO Box**	
Post Code	9600	**Town/City**	Aars		
Country Code	DK	**Country Name**	Denmark		

Brief description of the Associated Beneficiary's activities and experience in the area of the proposal

Vesthimmerlands Kommune (VHK) is a municipality located in the western end of Himmerland. According to the law, the municipality is responsible for a wide range of subjects, hereunder securing the robustness and preventing floods of infrastructure because of high water levels in the Limfjord.

As the local authority, VHK must ensure the protection of water and bodies of water and have consequently adapted their organization to this purpose. The municipality has good experiences in participating in larger intermunicipal projects and is among others a member of the Limfjord Council and other regional partnerships.

VHK is also involved with a group of municipalities and the Danish Nature Agency that will apply a LIFE project concerning development and protection of river valleys.

YOU MAY DUPLICATE THIS PAGE

ASSOCIATED BENEFICIARY PROFILE (complete for each Associated Beneficiary)

Associated Beneficiary profile information			
Short name	VV	**Beneficiary n°**	26

Legal information on the Associated Beneficiary				
Legal Name	Vesthimmerlands Vand A/S	**Legal Status**		
VAT No	32562299	**Public body**		
Legal Registration No	32562299	**Private commercial**	X	
Registration Date	04.11.2009	**Private non-commercial**		
PIC No.		**VAT reimbursement**	Y	

Legal address of the Associated Beneficiary					
Street Name and No	Th. Eriksens Vej 28			**PO Box**	40
Post Code	9640	**Town/City**	Farsø		
Country Code	DK	**Country Name**	Denmark		

Brief description of the Associated Beneficiary's activities and experience in the area of the proposal

Vesthimmerlands Vand A/S (VV) is an independent company, which was separated from Vesthimmerlands municipality in 2010. The company is owned by the Vesthimmerlands Municipality and is run by a board consisting of nine members, where five is appointed by Vesthimmerlands Municipality, two by the consumers and two by the employees. VV employs 22 employees and has an annual turnover of approximately 72 million DKK.

VV was established in accordance with the Water Sector Reform Act adopted on the 28th of May 2009.

VV is involved in several different projects with knowledge gathering and handling of surface water. VV has been an active participator in the drafting of Vesthimmerlands municipality's climate adaption plan and are in regular contact with the municipality, especially concerning the handling of the present and future climate challenges. VV has a water utility company specific competences within the handling and transport of rain water, wastewater and LAR solutions.

YOU MAY DUPLICATE THIS PAGE

DS

ASSOCIATED BENEFICIARY PROFILE (complete for each Associated Beneficiary)

Associated Beneficiary profile information			
Short name	VIA	**Beneficiary n°**	27

Legal information on the Associated Beneficiary				
Legal Name	Via University College	**Legal Status**		
VAT No	30773047	**Public body**	X	
Legal Registration No	30773047	**Private commercial**		
Registration Date	10.08.2007	**Private non-commercial**		
PIC No.		**VAT reimbursement**	Y	

Legal address of the Associated Beneficiary					
Street Name and No	Chr. M. Oestergaards Vej 4			**PO Box**	
Post Code	8700	**Town/City**	Horsens		
Country Code	DK	**Country Name**	Denmark		

Brief description of the Associated Beneficiary's activities and experience in the area of the proposal

VIA University College (VIA) offers professional bachelor programs in engineering and it is currently the largest university college in Denmark. VIA offers programs in Horsens, Herning, Holstebro and Aarhus (Denmark) and hence cowers the entire C2C CC focus area. The Technology and Business UC provides technical and business education overall, with the aim of disseminating knowledge among high schools, students, businesses and other institutions - both regionally, nationally and internationally. At present, the Campus in Horsens, in which the research group is located, holds 3500 students of which approximately 40 % is EU citizens.

The Centre of Applied Research and Development in Building, Energy & Environment at VIA UC, Horsens, Denmark employs approximately 35 researchers. The centre carries out scientific research into topics such as: climate changes, climate adaptation plans, nature protection, roads and infrastructure, water and soil, energy and environment, buildings, sustainable retrofitting, geothermal energy, solar energy, energy storage and aquatic environments (among others). VIA has strong competencies in both practical and theoretical aspects of and is currently engaged in a research and development project related to climate changes, water and soil and geothermal energy.

In C2C the Centre of Applied Research and Development in Building, Energy & Environment at VIA UC will conduct research within the following topics: climate changes, climate adaptation plans, nature protection, roads and infrastructure, water and soil, energy and environment.

The research Centre disseminates research in international, peer-reviewed journals and at national and international conferences.

VIA University College (VIA) has been beneficiary in many development projects e.g.

DS

- Tools for ground source heating and cooling based on closed loop boreholes, afsluttet 2014 (64011-0003, EUDP-10-II)
- SURE! Bæredygtig nordisk energirenovering (64013-0579, EUDP 2013, Særpulje)
- Demonstration af nyt fuldskala teknologisk koncept med en kombineret jordvarmeslange- og faskineløsning (64015-0526, EUDP 2015, Særpulje)
- Kortlægning af mulighederne for geologisk varmelagring (1887-0017, EUDP 15-II, Særpulje)

YOU MAY DUPLICATE THIS PAGE

DS

ASSOCIATED BENEFICIARY PROFILE (complete for each Associated Beneficiary)

Associated Beneficiary profile information					
Short name	VK			Beneficiary n°	28
Legal information on the Associated Beneficiary					
Legal Name	Viborg Kommune		Legal Status		
VAT No	29189846		Public body	X	
Legal Registration No	29189846		Private commercial		
Registration Date	01.01.2007		Private non-commercial		
PIC No.			VAT reimbursement	Y	
Legal address of the Associated Beneficiary					
Street Name and No	Prinsens Alle 5			PO Box	
Post Code	8800	Town/City	Viborg		
Country Code	DK	Country Name	Denmark		

Brief description of the Associated Beneficiary's activities and experience in the area of the proposal

Viborg Kommune (Eng: Viborg Municipality) is a local authority responsible for administration of e.g. the local Climate adaptation plan, nature protection, river basin management plans, urban and rural planning, groundwater, protection, nature protection and river management. The organization has a large experience in leading projects of large diversity and complexity.
In the climate adaptation plan flood risk assessments and cost estimations have been made. The municipality is responsible for implementing the climate adaptation plan and engages the local community in building up capacity to deal with climate adaptation.

In relation to the river basin management plans the municipality is responsible for development and implementation of local action plans. This may happen by launching new initiatives and by using measures, when granting new environmental permits and environmental approvals.

YOU MAY DUPLICATE THIS PAGE

D3

ASSOCIATED BENEFICIARY PROFILE (complete for each Associated Beneficiary)

Associated Beneficiary profile information			
Short name	AAU	**Beneficiary n°**	29

Legal information on the Associated Beneficiary				
Legal Name	Aalborg Universitet	**Legal Status**		
VAT No	29102384	**Public body**	X	
Legal Registration No	29102384	**Private commercial**		
Registration Date	01.01.2005	**Private non-commercial**		
PIC No.		**VAT reimbursement**	Y	

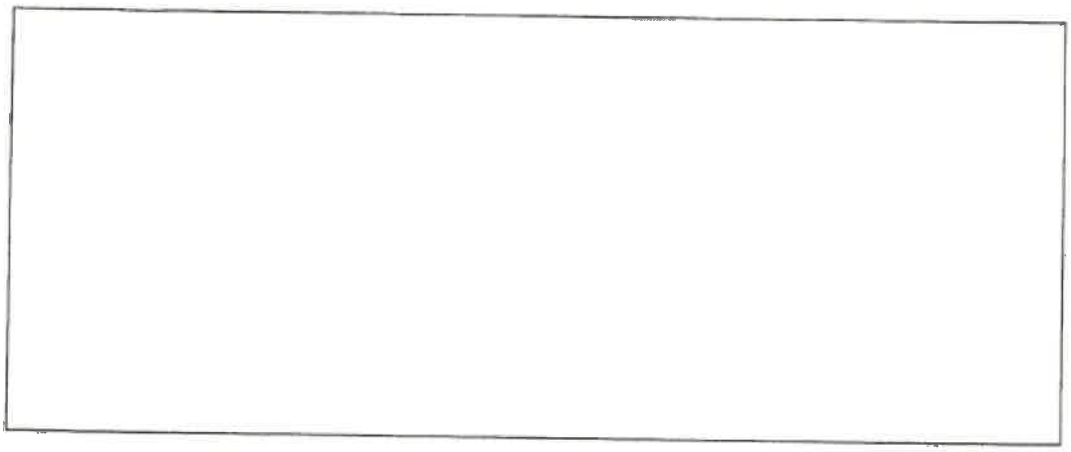
Legal address of the Associated Beneficiary					
Street Name and No	Fredrik Bajers Vej 5			**PO Box**	
Post Code	9220	**Town/City**	Aalborg Øst		
Country Code	DK	**Country Name**	Denmark		

Brief description of the Associated Beneficiary's activities and experience in the area of the proposal

Aalborg University is a state financed self-governing institution within the public administration under the authority of the minister for science, innovation and higher education.Aalborg University has its registered address and venue in the Municipality of Aalborg. The purpose of Aalborg University is to conduct research and provide research-based higher education to the highest international level.

The Department of Planning has an interdisciplinary group of researchers that has built up research in climate adaption and integrated water management with a special emphasis on integrated governance focusing on liveability, innovation, co-creation with citizens and other private partners and nexus governance integrating different sectors e.g. water management, energy supply and food production.

Department of Development and Planning has a comprehensive experience in administration of EU funded projects including regional development funds. The administrative staff at the department is backed up by central university units with detailed knowledge on financial, legal and administrative demands when administrating EU funds.



YOU MAY DUPLICATE THIS PAGE

ASSOCIATED BENEFICIARY PROFILE (complete for each Associated Beneficiary)

Associated Beneficiary profile information			
Short name	AU	Beneficiary n°	30

Legal information on the Associated Beneficiary					
Legal Name	Aarhus Universitet	Legal Status			
VAT No	31119103	Public body	X		
Legal Registration No:	31119103	Private commercial			
Registration Date	01.01.2007	Private non-commercial			
PIC No.		VAT reimbursement		Y	N

Legal address of the Associated Beneficiary					
Street Name and No:	Nordre Ringgade 1			PO Box:	
Post Code	8000	Town/City	Aarhus C		
Country Code	DK	Country Name	Denmark		

Brief description of the Associated Beneficiary's activities and experience in the area of the proposal

Aarhus University (AU) has a strong commitment to the development of society that is realised through its collaboration with government agencies and institutions and the business community. The university's goal is to contribute towards solving the complex global challenges facing the world. The university therefore strives to combine the high level of academic standards of its researchers with collaboration across disciplinary boundaries to combine research in new ways. This takes place in close contact with the world around us and creates the basis for the university to be internationally competitive within the areas of research, education, talent development and knowledge exchange.

The work within this project is coordinated within the framework of DCE- Danish Centre for Environment and Energy, Aarhus University (www.dce.au.dk/en/). DCE is the unit responsible for Aarhus University's public and private sector collaboration within the areas of environment, energy and climate. The Centre is managed by a Director referring to University Senior Management Team, represented by the dean of the Faculty of Science and Technology.

Aarhus University/DCE holds Denmark's leading research environment on applied environmental research. The university covers a very wide range of disciplines and special competences within both the biological and the physico-chemical area. DCE - Danish Centre for Environment and Energy at Aarhus University provides consultancy services and knowledge based on high quality research and thus contributes to the national and international community development, including the knowledge basis for the political decisions made by the Danish Parliament, ministries, municipalities and the EU. Public institutions are important clients purchasing the university's consultancy services, but collaboration also exists with private companies such as both national and international consulting engineers.

Within the field of climate change adaptation, AU has numerous activities, competencies and experience within a broad range of scientific areas. University scientists are involved with advanced integrated water management, climate change adaptation in agriculture, mapping of geological changes and climate, ecosystem-based climate change adaptation, socio-economic analysis, business model analyses, policy analysis of e.g. climate change policy, climate adaptation in cities, the relationship of environmental policy to other areas of policy and co-benefits and identification of opportunities and barriers for climate change adaptation locally and nationally.

The School of Culture and Society (CAS) at Aarhus University involved in the C2C project is one in three

Schools at the Faculty of Arts (http://cas.au.dk/en/). CAS hosts seven different departments (Anthropology, Archaeology, Philosophy & History of Ideas, Global Studies, History, The Study of Religion and Theology) and the School encompasses a range of strong research and degree programmes, which in dialogue with each other and with society work to develop innovative ways to solve issues of topical or perennial interest. CAS has excellent collaborative links to the environmental sciences/DCE at Aarhus University and the Department of Conservation and Archaeological Science at Moesgård Museum. In addition, CAS has declared the Environmental Humanities ("research into the climate and environment") an area of special strategic interest (as stated in the School's strategy 2014-2020) and already serves as host institution for notable activities and pioneering projects within this field of research.

Some of the ongoing complementary projects are:

- Integrating geophysics, geology, and hydrology for improved groundwater and environmental management Hygem.dk
- Advancing geological, geophysical and contaminant monitoring technologies for contaminated site investigation www.geocon.env.dtu.dk
- SWAT, an open source, eco-hydrological model, has been set up for the entire Denmark by Aarhus University. The work consist of five years' work, with significant inputs from seven scientists. The model enables analysis on the effects of climate and agricultural practices on water and nutrient runoff to freshwater and marine ecosystems, at the local, regional and national scales. http://www.mafia-alliance.org/about-mafia/science-plan/
- Pan-European replicate case studies of adaptation across sectors – assessment of cost-benefit and public participation http://base-adaptation.eu/
- European topic center on climate change adaptation to the European Environment Agency http://cca.eionet.europa.eu/

Relevant CAS projects would be:

- Climate | Culture | Catastrophe Network (C3NET: http://c3net.au.dk)

- The Aarhus University Research on the Anthropocene (AURA: http://anthropocene.au.dk)

- AU STAR – Science and Technology in Archaeological Research (http://projects.au.dk/au-star/)

YOU MAY DUPLICATE THIS PAGE

ASSOCIATED BENEFICIARY PROFILE (complete for each Associated Beneficiary)

Associated Beneficiary profile information			
Short name	CDEU	**Beneficiary n°**	31

Legal information on the Associated Beneficiary				
Legal Name	Midtjyllands EU-Kontor - Central Denmark EU Office	**Legal Status**		
VAT No	30167082	**Public body**	X	
Legal Registration No	30167082	**Private commercial**		
Registration Date	01.01.2007	**Private non-commercial**		
PIC No.		**VAT reimbursement**	Y	

Legal address of the Associated Beneficiary					
Street Name and No	c/o Region Midtjylland, Regional Udvikling Skottenborg 26			**PO Box**	
Post Code	8600	**Town/City**	Viborg		
Country Code	DK	**Country Name**	Denmark		

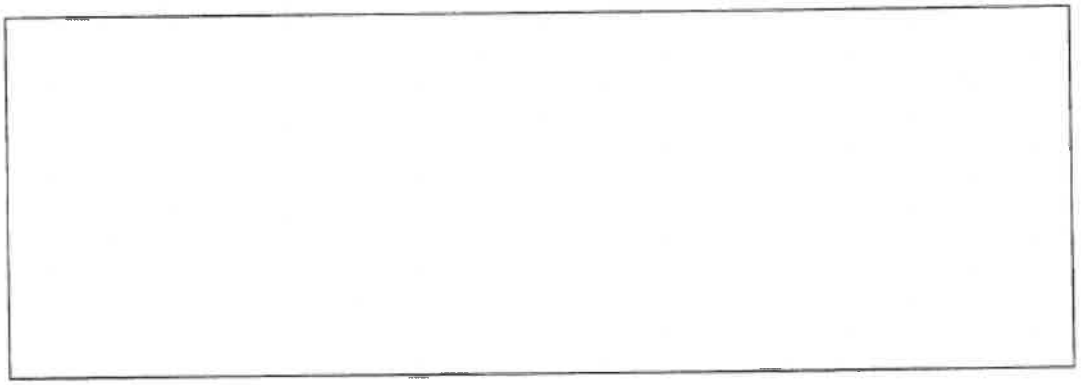
Brief description of the Associated Beneficiary's activities and experience in the area of the proposal

The Central Denmark EU Office (CDEU) is the European regional office for the Central Denmark Region, in Brussels. CDEU is legally an association, which was established by CDR and the 19 municipalities comprising the Central Denmark Region.

The overall aim of the office is to ensure the greatest possible benefit from European cooperation for companies, public institutions and associations in central Denmark. One of our main functions is to support small and medium sized enterprises on EU-projects and Internationalization. To ensure this we work with a wide range of stakeholders in the region i.e. the local development centres, Enterprise Europe Network representatives, GTS Institutes, clusters etc.

CDEU has great experience providing in-depth specialist briefings on selected policy areas such as climate, environment, business development and innovation areas. Within the water section of the climate area CDEU has been engaged in FINNOWATER, where it has gained experience with finding funding for innovative water projects for small and medium-sized firms. From FINNOWATER and other projects CDEU has considerable experience and competences with managing and implementing projects on an EU scale. CDEU can also draw upon competences in creating links to other European regions through networking and partner searches, and advising on international strategies and facilitating international contacts. These experiences and competences are beneficial for the communication, dissemination, awareness raising, project magement, replication and capacity building actions (C7, E5, E6, F1) that CDEU is involved in.

CDEU has previous EU-program experiences ranging from advising actors in our region on Interreg projects to being the lead partner on other EU financed projects with good results.



YOU MAY DUPLICATE THIS PAGE

DS

LIFE Integrated Projects 2015 – A7

OTHER PROPOSALS SUBMITTED FOR EUROPEAN UNION FUNDING

Please answer each of the following questions:

- Have you or any of your associated beneficiaries already benefited from previous LIFE co-financing? (please cite LIFE project reference number, title, year, amount of the co-financing, duration, name(s) of coordinating beneficiary and/or partners involved):

LIFE14 NAT/DK/000012 (LIFEraisedbogs - Raised bogs in Denmark: objective to reach a favourable conservation status for active raised bogs in the project areas), 2014, Total budget 5,592,198.00 €; EU contribution 3,355,319.00 €; 01-AUG-2015 to 31-DEC -2021; Beneficiaries from CDR/NDR: Norddjurs Kommune, Randers Kommune.

LIFE14 NAT/DK/000606 (RigKilde-LIFE - Restoration and conservation of petrifying springs (*7220), calcareous fens (*7210) and alkaline fens (7230) in Denmark; objective to ensure the favourable conservation status of calcareous fens (7210*), petrifying springs (7220*) and alkaline fens (7230) habitat types, and to increase their size), 2014, Total budget 6,220,049.00 €; EU contribution 3,732,029.00 €; 01-AUG-2015 to 31-JUL -2020; Beneficiaries from CDR/NDR: Thisted Kommune and Struer Kommune.

LIFE12 NAT/DK/001073 (REDCOHA-LIFE - Restoration of Danish Coastal Habitats; objective to improve the conservation status of the coastal dune habitats, significantly reducing the threats to some plant species, and improve conditions for a numner of species); 2012, 01-AUG-2013 to 31-JUL -2018, Total budget 2,845,912.00 €, EU contribution 1,422,956.00 €, Beneficiaries from CDR/NDR: Thisted Kommune

LIFE09 ENV/DK/000368 (NorthPestClean - Demonstration of alkaline hydrolysis as a new technology for remediation of pesticide contaminated soil and groundwater: the objective is to demonstrate that a novel remediation method based on in-situ alkaline hydrolysis is an effective technology for cleaning pesticide contaminated soil and groundwater; establish a basis for decision-making on full-scale site remediation, use the pilot studies to test the effectiveness of different 'enhancement' technologies and to estimate the cost-effectiveness of scaling-up each technology to allow for full-scale site remediation, create awareness among authorities and environmental scientists in EU Member States about this novel remediation technology and its effectiveness in large-scale pilot studies, compare the remediation potential of this new method with risk assessment-based stop-criteria for the clean-up), 2009, 01-SEP-2010 to 30-JUN -2014, Total budget 1,596,870.00 €, EU contribution 798,000.00 €, Beneficiaries from CDR/NDR: CDR.

LIFE08 ENV/DK/000468 (CleEn - 21 - Clean Enterprises of the 21st Century; the objective is to support wider implementation of SCP tools and methodologies in Danish industries), 2008; 01-JAN-2010 to 30-APR -2013; Total budget 1,170,741.00 €, EU contribution 585,370.00 €, Beneficiaries from CDR/NDR: Aalborg University.

DS

- Have you or any of the associated beneficiaries submitted any request for financing for actions or part of this project to other European Union financial instruments? To whom? When and with what results?

See form B3 relating to complementary funding.

LETTER OF INTENT FROM MANAGING/COMPETENT AUTHORITY/ENTITY

PROFILE AND COMMITMENT FORM

Title of the LIFE Integrated Project					
Title: Maintenance and improvement of sewer pipelines in As Vig					
Legal information on the MANAGING/COMPETENT AUTHORITY/ENTITY					
Legal Name	Hedensted Spildevand A/S				
Legal address of the MANAGING/COMPETENT AUTHORITY/ENTITY					
Street Name and No	Ørumvej 48			PO Box	
Post Code	8721	Town/City	Daugård		
Country Code	DK	Country Name	Denmark		

Confirmation	
We confirm that the complementary actions identified in this proposal and intended to be financed by Hedensted Spildevand A/S are in principle eligible for financing.	Yes ☒ No ☐ Comments: Hedensted Wastewater Company is facing large investments in maintenance of the sewer system. However, thorough analyses on the future of the area are a prerequisite for proper and sustainable solutions. Therefore, we have chosen to link this project taking place in As Vig to the activities of C2C CC (in particular C8)
We confirm that the proposal indicates correctly the potential financial contribution from the Hedensted Spildevand A/S	Yes ☒ No ☐ Comments: around 3,4 mio € are allocated to the project in As Vig.
We confirm that the proposal indicates correctly the timing of potential funding from Hedensted Spildevand A/S.	Yes ☒ No ☐ Comments: Hedensted Waste Water Company intends to coordinate its investments with the findings of the C2C CC project, and thus the timing is appropriate.
We confirm that during the assessment of applications for funding (to be) received by our authority, we (will) take into account that they are linked to the LIFE integrated project.	Yes ☒ No ☐ Comments: we are committed to the implementation of the project in As Vig as a part of the C2C CC IP.

Status of the financial commitment	
Committed/confirmed ☒	To be committed/confirmed ☐
Comments:	

Signature of the authorised person

Name and status of the authorised person (obligatory):	Ole Pedersen Managing Director
Date of the signature (obligatory):	12.04.2016
Authorised signature (obligatory):	Ole Peders

YOU MAY DUPLICATE THIS PAGE

Hedensted Spildevand

Hedensted Spildevand A/S
Drumvej 48
8721 Daugård

LIFE Integrated Projects 2015 – A8

LETTER OF INTENT FROM MANAGING/COMPETENT AUTHORITY/ENTITY

PROFILE AND COMMITMENT FORM

Title of the LIFE Integrated Project					
Title: Renewal of sewer system in Lemvig Municipality					
Legal information on the MANAGING/COMPETENT AUTHORITY/ENTITY					
Legal Name	Lemvig Vand og Spildevand A/S				
Legal address of the MANAGING/COMPETENT AUTHORITY/ENTITY					
Street Name and No	Rønbjerghage 31			**PO Box**	
Post Code	7620	**Town/City**	Lemvig		
Country Code	DK	**Country Name**	Denmark		

Confirmation	
We confirm that the complementary actions identified in this proposal and intended to be financed by Lemvig Vand og Spildevand A/S are in principle eligible for financing.	Yes x☐ No ☐ Comments: LVS confirms that the project mentioned in C17 is correctly identified and eligible for support from LVS
We confirm that the proposal indicates correctly the potential financial contribution from Lemvig Vand og Spildevand A/S	Yes x☐ No ☐ Comments: the mentioned amount is correct. 2,9 mio. € have been allocated to the project.
We confirm that the proposal indicates correctly the timing of potential funding from Lemvig Vand og Spildevand A/S	Yes x☐ No ☐ Comments: LVS intends to cooperate closely with C17 in order to benefit the maximum economically
We confirm that during the assessment of applications for funding (to be) received by our authority, we (will) take into account that they are linked to the LIFE integrated project.	Yes x☐ No ☐ Comments: LVS is already a partner and involved in more activities in the C2C CC IP

Status of the financial commitment	
Committed/confirmed X☐	To be committed/confirmed ☐
Comments:	

Signature of the authorised person	
Name and status of the authorised person (obligatory):	Albert Jensen Head of Infrastructure, Lemvig Vand og Spildevand A/S
Date of the signature (obligatory):	April 11, 2016

Authorised signature (obligatory):	ALBERT JENSEN

YOU MAY DUPLICATE THIS PAGE

JS

LIFE Integrated Projects 2015 – A8

LETTER OF INTENT FROM MANAGING/COMPETENT AUTHORITY/ENTITY

PROFILE AND COMMITMENT FORM

Title of the LIFE Integrated Project					
Title: Klimasikringsanlæg, Holstebro (Climate Protection)					
Legal information on the MANAGING/COMPETENT AUTHORITY/ENTITY					
Legal Name	Forsyningsselskabet Vestforsyning A/S				
Legal address of the MANAGING/COMPETENT AUTHORITY/ENTITY					
Street Name and No	Nupark 51			**PO Box**	
Post Code	7500	**Town/City**	Holstebro		
Country Code	DK	**Country Name**	Denmark		

Confirmation	
We confirm that the complementary actions identified in this proposal and intended to be financed by the Vestforsyning are in principle eligible for financing.	Yes x☒ No ☐ Comments: we expect to fund a complementary project on retaining water at up-stream in order to minimize flood risks in Holstebro city. The results of the activity C13 under the C2C CC project will constitute an important input when planning for sustainable solutions.
We confirm that the proposal indicates correctly the potential financial contribution from the Vestforsyning.	Yes x☒ No ☐ Comments: Vestforsyning plans to invest the amount mentioned as part of a major climate change adaptation efforts. The C2C CC project will improve the quality of the investment of Vestforsyning, make it more sustainable, and will thus climame-proof the city of Holstebro.
We confirm that the proposal indicates correctly the timing of potential funding from the Vestforsyning.	Yes x☒ No ☐ Comments: It is expected that construction work for the EIA study and detailed planning can begin in early March 2017 and completed early April 2018.
We confirm that during the assessment of applications for funding (to be) received by our authority, we (will) take into account that they are linked to the LIFE integrated project.	Yes x☒ No ☐ Comments: linking C2C CC to the Climate Protection project of Vestforsyning is highly relevant, support the purpose of the project, and expect to join the C2C CC project and its activities.
Status of the financial commitment	

Committed/confirmed ☐ To be committed/confirmed X☒ Comments:	
Signature of the authorised person	
Name and status of the authorised person (obligatory):	SØREN HOLM PEDERSEN
Date of the signature (obligatory):	12/4 2016
Authorised signature (obligatory):	Søren Holm Pedersen

YOU MAY DUPLICATE THIS PAGE

DJ

LETTER OF INTENT FROM MANAGING/COMPETENT AUTHORITY/ENTITY

PROFILE AND COMMITMENT FORM

Title of the LIFE Integrated Project					
Title: Separation of sewer system in Hedensted					
Legal information on the MANAGING/COMPETENT AUTHORITY/ENTITY					
Legal Name	Hedensted Waste Water Company (Hedensted Spildevand)				
Legal address of the MANAGING/COMPETENT AUTHORITY/ENTITY					
Street Name and No	Ørumvej 48			**PO Box**	
Post Code	8721	**Town/City**	Daugård		
Country Code	DK	**Country Name**	Denmark		

Confirmation	
We confirm that the complementary actions identified in this proposal and intended to be financed by th Hedensted Waste Water Company are in principle eligible for financing.	Yes☒ No ☐ Comments: Hedensted Wastewater Company wishes to work on separating sewer systems and has entered into cooperation with Hedensted Municipality to draw benefit of the analyses of the C2C CC (action C15). The waste water company is highly dependent on the processes in the city, and the engagement of citizens. Therefore the project is eligible and- the waste water company wants to engage in a cooperation.
We confirm that the proposal indicates correctly the potential financial contribution from the Hedensted Waste Water Company	Yes ☒ No ☐ Comments: around 8.3 mio € are allocated to the project in parts of the city of Hedensted.
We confirm that the proposal indicates correctly the timing of potential funding from Hedensted Waste Water Company.	Yes☒ No ☐ Comments: Hedensted Waste Water Company intends to coordinate its investments with the findings of the C2C CC project, and thus the timing is appropriate.
We confirm that during the assessment of applications for funding (to be) received by our authority, we (will) take into account that they are linked to the LIFE integrated project.	Yes☒ No ☐ Comments: we are committed to the implementation of the project in Hedensted as a part of the C2C CC IP.

Status of the financial commitment	
Committed/confirmed ☒	To be committed/confirmed ☐
Comments:	

Signature of the authorised person

Name and status of the authorised person (obligatory):	Ole Pedersen Managing Director
Date of the signature (obligatory):	12.04.2016
Authorised signature (obligatory):	

YOU MAY DUPLICATE THIS PAGE

Hedensted Spildevand

Hedensted Spildevand A/S
Grustvej 48
8723 Daugård

PS

LIFE Integrated Projects 2015 – A8

LETTER OF INTENT FROM MANAGING/COMPETENT AUTHORITY/ENTITY

PROFILE AND COMMITMENT FORM

Title of the LIFE Integrated Project					
Title: Maintenance and renewal of sewer system in Lemvig and climate adaptation					
Legal information on the MANAGING/COMPETENT AUTHORITY/ENTITY					
Legal Name	Lemvig Vand og Spildevand (LVS)				
Legal address of the MANAGING/COMPETENT AUTHORITY/ENTITY					
Street Name and No	Rønbjerghage 31			**PO Box**	
Post Code	7620	**Town/City**	Lemvig		
Country Code	DK	**Country Name**	Denmark		

Confirmation	
We confirm that the complementary actions identified in this proposal and intended to be financed by Lemvig Vand og Spildevand are in principle eligible for financing.	Yes x☐ No ☐ Comments: as a partner of C2C CC, Lemvig Vand and Spildevand has a strong interest in the IP and is contributing a complementary project which is highly dependent on the results of the process initiated by the C2C CC IP. The utility foresees costly investments in the future in wastewater pipes, but these investments should be qualified by the analyses of the IP to prevent bad choice of sewer pipe infrastructure.
We confirm that the proposal indicates correctly the potential financial contribution from Lemvig Vand og Spildevand	Yes x☐ No ☐ Comments: to this project, Lemvig Vand and Spildevand is allocating the indicated amount.
We confirm that the proposal indicates correctly the timing of potential funding from Lemvig Vand og Spildevand	Yes x☐ No ☐ Comments: LVS is following closely and integrating its activities with the C17 actions, so the timing is right and subject to cooperation between partners
We confirm that during the assessment of applications for funding (to be) received by our authority, we (will) take into account that they are linked to the LIFE integrated project.	Yes x☐ No ☐ Comments: Lemvig Vand and Spildevand is aware of the relationship to the C2C CC project and is already part of a number of its activities to profit the maximum from the IP.

Status of the financial commitment	
Committed/confirmed ☐	To be committed/confirmed x ☐
Comments:	

D1

Signature of the authorised person	
Name and status of the authorised person (obligatory):	Albert Jensen Head of Infrastructure, Lemvig Vand and Spildevand
Date of the signature (obligatory):	April 11, 2016
Authorised signature (obligatory):	ALBERT JENSEN

YOU MAY DUPLICATE THIS PAGE

PS

LIFE Integrated Projects 2015 – A8

LETTER OF INTENT FROM MANAGING/COMPETENT AUTHORITY/ENTITY

PROFILE AND COMMITMENT FORM

Title of the LIFE Integrated Project					
Title: TopSoil and water – the climate challenge in the near SUBSURFACE.					
Legal information on the MANAGING/COMPETENT AUTHORITY/ENTITY					
Legal Name	Region Midtjylland, Miljø				
Legal address of the MANAGING/COMPETENT AUTHORITY/ENTITY					
Street Name and No	Emil Møllers Gade 41			**PO Box**	
Post Code	8700	**Town/City**	Horsens		
Country Code	DK	**Country Name**	Denmark		

Confirmation	
We confirm that the complementary actions identified in this proposal and intended to be financed by Central Denmark Region and InterReg VB NSR are in principle eligible for financing.	Yes x☐ No ☐
We confirm that the proposal indicates correctly the potential financial contribution from Central Denmark Region and InterReg VB NSR	Yes x☐ No ☐ Comments: the mentioned amount is correct. € 7.34 mio. € have been allocated to the project.
We confirm that the proposal indicates correctly the timing of potential funding from Central Denmark Region and InterReg VB NSR	Yes x☐ No ☐ Comments: -
We confirm that during the assessment of applications for funding (to be) received by our authority, we (will) take into account that they are linked to the LIFE integrated project.	Yes x☐ No ☐ Comments: TopSoil is all ready linked to the C2C CC via partners and network all ready working together.

Status of the financial commitment	
Committed/confirmed X☐	To be committed/confirmed ☐
Comments:	

Signature of the authorised person	
Name and status of the authorised person (obligatory):	Jes Pedersen, Head of office Regionshuset Horsens
Date of the signature (obligatory):	12. april 2016 Emil Møllers Gade 41 8700 Horsens Tlf. 87 29 50 05
Authorised signature (obligatory):	JES PEDERSEN



LIFE Integrated projects 2015

Climate Action

Stage 2 – FULL PROPOSAL

Technical application forms

Part B – technical summary and overall context of the project

SUMMARY DESCRIPTION OF THE PROJECT

1. Overall context/background/geographical scope

Coast to Coast Climate Challenge (C2C CC) supports the implementation of 21 municipal climate change adaptation (CCA) plans (18 associated beneficiaries plus 3 primary stakeholders) and 4 risk management plans under the flood directive in the Central Denmark Region (CDR). It provides decision-makers with a framework for sustainable and integrative climate change adaptation (CCA) planning, mainstreams CCA into local planning and integrates other policy areas. Concrete actions cover capacity-building within all themes in the hydrological cycle, improve multi-level management structures, and carry a total of 24 concrete implementation actions. The CCA plans deal with cities as well as the countryside and coastlines, and include solutions in the hinterlands to prevent flooding in the cities.

Costs of inactions are substantial – on a European level[2] as well as in Denmark[3]. Consequently, the national government made it mandatory in 2013 for municipalities to prepare CCA plans. It also encouraged that the CCA action plans be integrated into the municipal spatial planning covering all spatial areas including cities and countryside, simultaneously complying with the EU Water Framework Directive and the Floods Directive. To date, the CCA plans have been adopted but implementation of actions are yet to be initiated. The C2C CC project will provide a comprehensive base for this implementation, evaluate the results and the process as well as give local authorities the tools for better integrated planning, taking into account the uncertainties of future climate change.

CCA in the region generally deals with challenges related to managing more water[4], touching upon all aspects of the hydrological cycle: sea and fjords, rivers and lakes, groundwater and rainwater. Rainwater is an issue for the whole region due to an increase in the amount and intensity of rain and cloudbursts. In the western part, the interconnectivity of the elements of the hydrological cycle means that more precipitation causes rising groundwater table and intrusion into houses. Cloudbursts cause flashfloods in many cities, and the increase in rainwater and more incidents with heavy rains cause watercourse floods and damages on infrastructure and urban areas. In the coastal areas, storm surges are increasing causing floods in the cities at the Limfjord in the north and on the east coast. When future storm surges occur simultaneously with heavy rain, most notably cities, but also other areas along the river banks, are in high risk of severe flooding.

On an administrative level, Denmark has implemented a municipal structural reform in 2007 and a company formation of the wastewater utility sector in 2009. 271 small municipalities were merged into 98 larger municipalities, and 14 counties merged into five regions having no legal responsibilities for water and spatial planning[5,6]. Alongside, new CCA regulations require that the municipalities prepare individual CCA action plans in relation to the

[2] European Environment Agency (EEA), 2015, EEA Signals 2015: Living in a changing climate. EEA.

[3] Danish Meteorological Institute (DMI), 2014, Fremtidige klimaforandringer i Danmark – Danmarks klimacenter rapport nr. 6 2014. Klima-, Energi- og Bygningsministeriet.

[4] DMI (2014) finds that: observed precipitation has increased the latest 150 years with 100 mm, and is expected to further increase with 4,6-6,1 % in year 2100; observed sea level rise since year 1900 has increased 1,7-2,2 mm/year, and is expected to further increase with 0,34-0,61 m.

[5] Ministry of the Interior and Health, 2006, *The Local Government Reform: In Brief.* Ministry of the Interior and Health, CPH

[6] Andersen H T, 2008, "The emerging Danish Government reform – centralised decentralisation", *Urban Research and Practice,* 1(1) 3-17.

municipal spatial plans leaving coordination of CCA across administrative borders in an 'institutional void'. As a result, these reforms have decentralized and increased the fragmentation of authorities hampering integrative CCA planning and coordination between local authorities. Since 2007, CDR has aimed at filling this institutional void by initiating and facilitating climate change measures and projects on a voluntary basis, e.g. CCA network-building activities creating a forum for knowledge sharing, collaboration and capacity building. Wastewater utilities and industries have supported collaboration and development of new holistic solutions to benefit the society and new clean-tech businesses. Municipalities within the region have welcomed and supported these CDR initiatives – in many ways preparing local stakeholders to engage in future CCA[7].

1.1. Present gaps or shortcomings that hinder effective implementation

CCA is cross-sectoral in nature and demands new forms of governance involving citizens at the local level as well as the national government. One major shortcoming hindering effective implementation of the CCA plans relates to the structural reform and the company formation of the water utilities. Since 2007, no single governmental body has the responsibility to coordinate CCA among the municipalities, increasing the risk of suboptimal solutions (e.g. one municipality leading water downstream with eventual damage to others). In addition, the company formation of the wastewater utilities has entailed that CCA in practice is regarded as a wastewater issue to be solved traditionally by gray infrastructure such as sewer pipes and basins. The synergies of green infrastructure, e.g. biodiversity and urban livability, are often not taken into account, as it increases the potential costs in areas outside the responsibilities of the utilities. The Danish government has tried to accommodate the use of e.g. Sustainable Urban Drainage System (SUDS) by making amendments to the water sector law. Amendments, that evaluated by Deloitte[8], do not fully meet the needs.

Another shortcoming is a lack of knowledge, knowledge sharing and capacity building on commonly shared issues and solutions among local authorities. The region possesses many water clean-tech companies (55 of 219 in Denmark[9]), but due to a lack of coordination, the presence of the newest knowledge and best available technologies (BAT) is not utilized. According to the Confederation of Danish Industry (DI), Danish BAT within water could double by 2025 compared to the present level. There is thus an unused potential for capacity building and innovation within the region among the municipalities, the utilities, water companies and research institutions.

A third gap is the difference in level of ambition and implementation between the prosperous and less prosperous municipalities within the region. The less prosperous, especially in the western part of the region, lack the resources and the capacity to carry out the necessary analyses and implement the CCA plans. In some instances, this gap reflects insufficient political and societal awareness in the municipalities – a gap which proves unjustified and therefore leaves the municipalities unprepared when a major, sudden, and unpredictable flood occurs. These municipalities will not only benefit economically, but also highly in terms of experience sharing from the C2C CC.

C2C CC will help overcome these shortcomings by providing decision-makers and local

---

[7] Documented in several publications at CDR Webpage: http://www.rm.dk/regional-udvikling/klimatilpasning/publikationer/
[8] Deloitte, 2013, "Evaluering af Vandsektorloven" LETT, DHI. (in Danish).
[9] Corresponding to 27%, and is only surpassed by the Capital Region with 35% of the water companies. The water companies within the region export 68% and has the highest share of the water clean-tech production in Denmark. Sourse: Brøndum and Fliess, 2013, "Kortlægning af vand i Region Midtjylland" (in Danish).

communities with multi-level and public-private cooperation forums, tools, shared capacities to implement their CCA plans and further develop their work on CCA. Furthermore, a number of concrete actions and demonstration projects will provide municipalities with best practice examples, synergies and data for further development, increasing the number of cities making use of integrated CCA planning.

1.2. Why the proposal falls under the IP definition

This proposal falls under the IP definition, as it implements CCA plans on a large territorial scale using a multi-city approach. The Central Denmark Region covers 13,142 km^2, of which about 10% is vulnerable to cloudbursts, has 1.000 km coastline, and 1.282.750 inhabitants. More than 50% live in cities larger than 10.000 inhabitants – with the eastern part of the region experiencing rapid urbanisation[10]. The three municipalities from the North Denmark Region cover 2,213 km^2, has 491 km of coastline, and 103,839 inhabitants.

The proposal deals with CCA projects laid out in the municipal CCA action plans required by the Danish government while at the same time including other EU (legislative) objectives. Designed to last longer than traditional projects, C2C CC consists of several actions, some developed more than others; some ripe to be implemented during a first phase, others at later stages. The experiences and results from these early actions will feed into later ones, making C2C CC a truly adaptive project.

C2C CC project consists of the following 3 phases:

- Phase 1: 2017-2018
- Pahse 2 and beyond: 2019-2022 (Phase 2: 2019-2020, Phase 3: 2021-2022 and beyond)

The C2C CC fulfills the following European Union legislation:

- The 'Life Regulation'[11] and An EU Strategy on adaptation to climate change[12] since it directly deals with extreme weather conditions leading to floods and rising sea levels, helping the cities, the municipalities, and the region to become more resilient. The CCA plans cover cities, their surroundings, as well as rivers, vulnerable coastal areas, etc. in an integrated, coordinated way.
- The Floods Directive[13]: Three cities appointed to be risk-prone areas and their local communities participate in C2C CC, creating more resilience in the cities and the region.
- The Water Framework Directive[14]: The CCA plans are by the law required to comply with the Directive and encouraged to use synergies with CCA to improve water ecology e.g. through establishment of wetlands.
- The overall objective of the Marine Strategy Framework Directive[15]: The C2C CC project revolves around the hydrological cycle and thus higher quality inland water will discharge in to the seas creating a positive effect on the marine environment, thereby

[10] 80.000 citizens are expected to move to the eastern part of Jutland within the coming 10 years
[11] REGULATION (EU) No 1293/2013 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 11 December 2013 on the establishment of a Programme for the Environment and Climate Action (LIFE) and repealing Regulation (EC) No 614/2007
[12] COM(2013), 216 of 16/4/2013. An EU Strategy on adaptation to climate change.
[13] DIRECTIVE 2007/60/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 23 October 2007 on the assessment and management of flood risks
[14] DIRECTIVE 2000/60/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 23 October 2000 establishing a framework for Community action in the field of water policy
[15] DIRECTIVE 2008/56/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 17 June 2008 establishing a framework for community action in the field of marine environmental policy (Marine Strategy Framework Directive)

PS

ensuring clean, healthy and productive seas in order to protect the ecosystems[16].

- The targets of the EU Biodiversity Strategy and the EU Habitats Directive[17]: Biodiversity is an issue in a number of CCA cases, primarily when dealing with fjords, rivers and lakes and providing species with better living conditions through green infrastructure[18] and nature-based solutions[19], and increasingly when carrying out SUDS in cities, enhancing urban liveability.
- C2C CC also integrates and furthers a number of supplementary objectives: Business development, as it is firmly anchored within a strong regional emphasis on business development and public-private cooperation in general and in the water sector. It also promotes the development of sustainable and high-quality coastal, nature and business tourism[20].

1.3. Similar brief information on the complementary actions

By nature, complementary actions fall under Life IP, as they reflect the complexity of the Life IP, support all themes of C2C CC actions, and will be coordinated by the C2C CC consortium. The future complementary projects are adaptive by the IP generated knowledge and raised awareness, and many will continue after the IP finishes. Complementary actions are, first and foremost, construction works financed by local authorities, wastewater utilities, as well as private funds; second, research projects and developing training material support; third, EU interregional projects.

2. Project objectives:

The overall objective of C2C CC is: *To create climate resilient cities in a climate resilient region through the formulation of a common long-term strategy among local stakeholders, implementing in a targeted way the local CCA plans, coordinating the CCA analyses and activities, and identifying and improving the resources and adaptive capacities of citizens, municipalities, utilities and companies within the water sector.*

The objective covers the IP itself, complimentary projects and projects initiated after the IP. It is based on the concept of resilience, which deals with both ecological and social resilience. Vulnerability and adaptive capacity are important elements in the concept of resilience[21]. Vulnerability may weaken both the ecological and social systems' ability to respond to change, and adaptive capacity is the systems' ability to cope with change. Within adaptive capacity lies an understanding of resilience as a process, where capacity to cope with change can be developed and strengthened, and where change can be used as a possibility to innovate.

C2C CC approaches the CCA plans as a cross-boundary challenge where coordination, knowledge sharing and capacity-building are necessary for improved governance and development of tools and innovation. The IP consists of four themes related to the hydrological cycle: sea and fjords, rivers, groundwater and rainwater. These are

[16] European Commission (EC), 2011, Seas for life, pages 1-32, p. 12.
[17] THE COUNCIL OF THE EUROPEAN COMMUNITIES (1992), Council Directive 92/43/EEC of 21 May 1992. The conservation of natural habitats and of wild fauna and flora
[18] COM(2013), 249 of 6/5/2013. Green Infrastructure (GI) — Enhancing Europe's Natural Capital
[19] EC (2015). Nature-based solutions. Defining Nature-Based Solutions. DG Research & Innovation. Web: https://ec.europa.eu/research/environment/index_en.cfm?pg=nature-based-solutions
[20] COM(2010), 352 of 30/6/2010. The world's No 1 tourist destination – a new political framework for tourism in Europe
[21] Folke, C. 2006. Resilience: the emergence of a perspective for social-ecological systems analyses. *Global Environmental Change,* 16: 253-67.

DJ

supplemented with three crosscutting themes: governance, tools, and innovation cf. Figure 2.

As this IP deals equally with the hydrological cycle as a whole and with the coordination of activities within an integrative CCA planning approach, the following objectives are of equal importance. The objectives of the hydrological cycle related to the challenges documented in the CCA plans are:

- *Sea and fjords:* To increase coastal resilience taking into consideration the environmental state and marine biodiversity and to enhance urban resilience.
- *Rivers:* To increase the resilience of land alongside river banks taking into consideration the environmental state and biodiversity and to enhance urban resilience.
- *Groundwater:* To increase resilience towards rising near-surface groundwater optimizing the use of surplus groundwater.
- *Rainwater:* To increase urban resilience taking into consideration the synergies with green infrastructure and urban livability.
- *Governance:* To increase the resilience through capacity-building, strengthened network governance and cross-border coordinated planning.
- *Tools:* To increase resilience through enhanced decision-making processes.
- *Innovation:* To increase resilience by generating jobs and green investments.

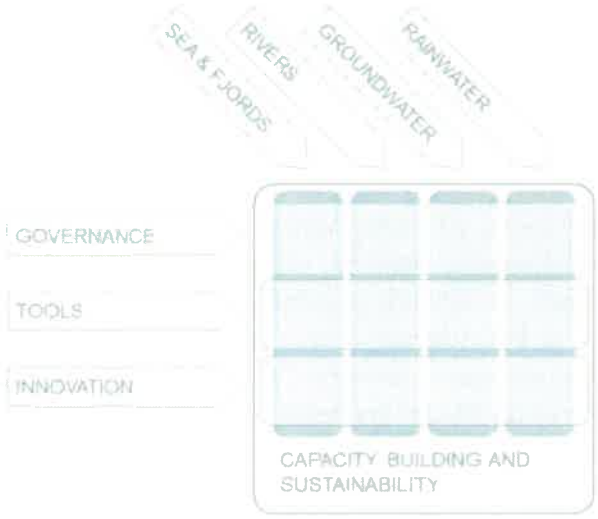


Figure 2: The 7 cross-cutting themes of C2C CC.

2.1. Similar brief information on the complementary actions

Complementary actions are designed to support core activities of the Life IP project, in some cases reflecting, continuing, and integrating prior commitment of the region to water-related issues, in some cases expanding on activities within future phases of the C2C CC project. The complementary actions thus support the objectives of the IP itself.

3. Actions and means involved:

The background of the C2C CC actions has its origin in the CCA plans, where an initial review highlighted challenges and actions across the hydrological cycle and an expressed need of cooperation with other municipalities, utilities, citizen, experts etc. cf. Figure 1. The IP design is a result hereof with its seven thematic focus areas cf. Figure 2.

The C2C CC actions come under three overall categories:

1. 5 preparatory action (A1-A5)
2. 7 thematic crosscutting capacity building actions (C1-C7) and 17 demonstration actions (C8-C24)
3. 4 monitoring actions (D1-D4), 6 dissemination actions (E1-E6) and 2 project management actions (F1-F2)

The preparatory actions identify and clarify legal as well as practical barriers for integrated CCA as a state-of-the-art with the purpose to aid the municipalities and utilities in navigating current legislation and practice. Furthermore, dialogue with national authorities about the barriers and possible solutions will be initiated.

The initial purpose of the 7 thematic capacity building actions was to create activities that supports integrative planning and coordination across the municipal borders and to benefit from the large expertise of gathering CCA professionals in one project. C1-C7 thus provide specific activities related to technical challenges related to sea and fjords (C1), rivers (C2), groundwater (C3) and rainwater (C4). The activities include workshops, seminars and courses where technical questions are discussed, experiences are exchanged and experts are brought in to contribute with defining possible solutions. Several of these activities will support neighboring municipalities with context specific knowledge related to a coordinating effort on the implementation of their CCA plans e.g. between the municipalities bordering the River Gudenå (C12), and other activities will ensure that knowledge-sharing occur across the demonstration actions e.g. that experiences of the SUDS action on Samsø Island (C19) also benefit in for example Horsens (C14). Furthermore, desk studies and two study trips bring in international experiences.

The three non-technical crosscutting capacity building actions (C5-C7) are established to further support implementation of the CCA plans. C5 deals with governance and strives for building capacity among the partners in integrative planning with many stakeholders and with competences to act as a local authority in network governance. This action involves courses, workshops, and an explicit use of the Advisory Committee's experts in network governance and planning processes. C5 produces a common CCA strategy for the region as a whole and after the end of the IP. Action C6 brings three tools already expressed needed by the C2C CC partners, these are a high-resolution groundwater model, a 3D flood visualization tool and a warning system. The two first tools are developed in Phase 1 to be applied in C8-C24. The last thematic action C7 has the aim to involve the water businesses of the region in the actual CCA challenges and needs of the local authorities and to catalyze innovation. This action involves networking and knowledge-sharing between water businesses and officials, and to support water businesses in regard to funding opportunities and training.

The 7 thematic crosscutting capacity building actions are demonstrated in the 17 demonstration actions C8-C24 that are run and managed by the C2C CC partners. Each of the 17 actions involve more than one of the 7 thematic actions and illustrates nicely the complexity of water running naturally as one hydrological system, but are administratively divided into sectors. These actions are of mainly best practice and demonstration character, and two actions involve pilot projects (C13 and C22). 12 of the actions are geographically located and deal with context specific CCA challenges, whereas 6 (C8-C13) are focused on the open land, and 6 (C14-C19) mainly are focused on urban areas. 5 actions are cross-geographical actions, where C20 and C21 are two innovation hubs

DS

focused on water businesses, tourism and awareness rising. C22-C24 are research based, where C22 and C23 include pilot testing and tool development, and C24 contributes with historical and anthropological knowledge on the region's climate history.

3.1 Complementary actions

1. *"WaterCoG":* A project around the North Sea involving eight beneficiaries from DK, NL, SE and UK. The focus is on improved water governance in the private and public sector and includes pilots in the region. Testing and demonstrating new management tools. The WaterCoG and C2C CC will have strong synergies in relation to water management, planning and stakeholder involvement. Complements C5. [Funded by InterregVB].
2. *Citizen awareness:* Outreach and communication to strengthen citizens' awareness to act on climate change. In cooperation with researchers, teaching staff and children. Complements C5. [Funded by Regional Development Funds].
3. *"TOPSOIL":* Focusing on issues related to rising groundwater levels and related climate change implications. Includes beneficiaries from DK, DE, NL, BE and UK and will add European aspects on groundwater to C2C CC. Complements C3. [Funded by InterregVB].
4. *Watercourse restauration:* Actual restauration of watercourses supplementing C2C CC by retaining water flow upstream and improving biodiversity. Complements C2. [Funded by the Danish AgriFish Agency under the EAFRD 2014-2020]
5. *Municipal and Water Utility CCA projects:* the municipalities and the region are to mobilize and invest at least 16 mill. € on CCA projects[22] within the project period. Likewise, the Danish utilities are to spend app. 135 mill. €[23] annually on climate investments[24] over the next 25 years. C2C CC will contribute with added value and influence the municipal CCA plans and waste water plans and the utilities' future construction projects. Complements C4. [Financed through taxes and water fees].
6. *CCA in coastal urban areas:* Urban development and construction project on CCA of an urban area facing the sea. Complements C1 [Funded by Realdania].
7. *City Innovation – Water and sustainable buildings*: Integrating environmental and societal challenges into business opportunities in emerging city markets for water management and water supply solutions. Complements C7. [To be funded by ERDF via Growth Forum CDR].

4. Expected results (main outputs and achievements, qualitative and quantitative):

4.1. Expected results linked to actions financed by LIFE

Preparatory actions: Identification of major barriers for implementation of CCA plans especially with regards to municipalities', wastewater utilities' and citizens' rights and obligations (A1, A4). Best practice knowledge on cross-sector cooperation and network/cluster formation, which is presented at a seminar in the first year (A2). A database, showing the information obtained from desk research and interviews (A3). Established good dialogue with relevant Danish public authorities (A5).

Concrete actions:

[22] Based on: 19 municipalities and 1 regional authority each spending approximately 135,000 EUR per year in 6 years.
[23] Approximately 27 mill. EUR per regional authority per year.
[24] Danish Association of Water Companies (DANVA) (2015). "Dansk Vand Magasin #3 juni 2015", DANVA. p. 32-34. (in Danish).

C1 (Sea and fjords) and related demonstration actions: At least 100 officials attended capacity building on coastal protection incl. combined events between rainfall and storm surge. At least 25 stakeholders attend a study trip to Germany and the Netherlands on solutions on coastal challenges. Establishment of a network on coastal CCA challenges to be continued after LIFE. Common tenders to ensure integrative solutions for neighboring municipalities. Examples from C8-C24: Climate history of CDR (C24), CCA of 400 km^2 flood prone coastal areas from 100 year event in 2050 (C9, C17, C11 and C18).

C2 (Rivers and lakes) and related demonstration actions: 1 tool (synergy with C6), a total of 250 C2C CC partners and stakeholders attended capacity building activities related to CCA of rivers. In addition 120 stakeholders attend workshop on integrative modelling of river catchments. 3 business models for incorporating city safety and compensation of farmers used by 15 municipalities, 1 ICT company have developed a warning system (synergy with C7) and at least 5 municipalities applied for wetland projects as mean for CCA. Examples from C8-C24: CCA carried out in regard to urban planning (C14, C16).

C3 (Groundwater) and related demonstration actions: 1 tool (synergy with C6), at least 50 C2C CC partners and stakeholders attend capacity building on CCA challenges related to rising groundwater levels incl. feedback on user needs for tool development (Action C6.1) and training in using the tool. At least 30 attend a study trip to learn about BAT on use of excess water from European experiences. Examples from C8-C24: 1 pilot project on methodology for infiltration potential to be used by all C2C CC partners (C22).

C4 (Rainwater) and related demonstration actions: At least 255 C2C CC partners and stakeholders attend capacity building workshops on CCA challenges related to urban areas, sustainable urban drainage systems (SUDS) and citizen involvement. Capacity building of businesses related to SUDS with at least 100 professionals. Examples from C8-C24: 1 pilot project on permeable coating (C23), SUDS as an added value means (C19), and added value related to citizen involvement (C18).

C5 (Governance) and related demonstration actions: At least 200 stakeholders and partners enrolled in C2C CC workshops on capacity building of integrative planning and multi-stakeholder management, at least 15 partners contributed to formulation of the common regional CCA strategy. A total of 560 participated in C2C CC workshops. At least 150 have attended the C2C CC courses. At least 300 participants from C8-C24 are enrolled with the Advisory Committee. Examples from C8-C24: Network governance and integrative planning of large catchments; the Limfjord (C9), River Grenaa (C10) and River Gudenaa (C12).

C6 (Tools) and related demonstration actions: 2 tools developed, 1 hydrological model on groundwater that combine surface water with rising groundwater level, 1 3D model on flooding from combined flood events between rainwater, rivers and sea. At least 2 municipalities have applied the groundwater model, and at least 15 municipalities have applied the 3D model. Best practice is investigated on warning systems. Examples from C8-C24: More integrated hydrological modelling in 9 out of the 16 actions (C8, C10, C11, C12, C14, C15, C17, C18, C19).

C7 (Innovation) and related demonstration actions: 6 triple helix workshops on real CCA challenges, best practice and innovation. At least 10 water companies advised on EU funding possibilities, at least 6 applications for EU funding. Training of 10 start-up

DS

companies on business development within ecosystem services. Increase of export of BAT on water by at least 25% by 2022 in Central Denmark Region. Examples from C8-C24: 2 innovation hubs on freshwater and seawater (C20, C21), flexible sewer pipes (C17), and 1 warning system (C2).

Furthermore, dissemination to a total of at least 1150 attendees through 3 C2C CC conferences and 1 international conference ENCORE.

4.2. Expected results linked to complementary actions (short and long term)

WaterCoG will demonstrate new tools to improve flood resilience and water governance. The results of the *Citizen Awareness* project compliments with outreach and dissemination. *TOPSOIL*'s results on CCA and groundwater and brings in European experiences. The results of restauration of watercourses support C2C CC by increasing a stream's retention effect up-stream. Tax and water fee financed CCA projects support the overall goal by making the region more climate resilient. However, it is also the aim of C2C CC to influence these projects towards more green and flexible solutions serving more purposes. Realdania's forthcoming program focuses on coastal urban areas, and a project within the region will support the IP by making an urban area resilient towards flooding from the sea. *City innovation* with increased export of CCA solutions to emerging city markets.

5. Expected contribution of the project to the implementation of the target plan/strategy

C2C CC will support the targeted implementation of the individual municipal CCA plans and the risk management plans under the Water Framework Directive, the Floods Directive, the objectives of the Marine Strategy Framework Directive and the Habitats Directive. The IP will do this by:

1. Securing cross-border collaboration as a necessity for integrated CCA. The IPs capacity-building elements and decision tools will assist the municipalities in the transition to new governance needs of CCA, which includes involvement of many actors in the planning and implementation process.
2. Creating analyses and tools to assist integrated CCA planning and decision making processes. The IP will aid and qualify implementation by analysing water issues as part of a hydrological cycle and create modelling tools to assist the municipalities.
3. Involving water industries, research institutions and industry associations in demonstration projects and capacity development activities will push for research and development of new knowledge and technologies.

5.1. Similar brief information on the complementary actions

The complementary projects contribute to the implementation by being directly related to the C2C CC actions C1-C24 and will enrich the IP with knowledge, experiences and additional CCA implementation.

6. Main stakeholders involved in the project:

The IP is already characterised by thorough stakeholder involvement on which the project consortium is based. Following, the C2C CC partners and primary stakeholders have provided input through interviews, four one-day workshops and pursuant communication. One workshop was held 13 August 2015 concerning the formulation of the Concept Note, and three workshops were held during the formulation of Full Proposal: 18 January 2016, 25 February 2016, and 17 March 2016. All potential partners and primary stakeholders of C2C CC were invited, and the workshops had between 30 and 65 participants, the

JPS

programme and minute of the workshop can be found on the CDR website[25]. During the workshops the concrete implementation actions C8-C24 were shaped based on the CCA plans and collaboration between the partners. These actions are formulated by the partners themselves and may therefore vary in their descriptions. The C2C CC process has already begun. The following are the primary stakeholders of the IP (all have signed letters of support):

- *National governmental bodies:* Danish Emergency Management Agency, The Danish Coastal Authority and The Danish Nature Agency.
- *Municipalities*: Ikast-Brande Municipality, Odder Municipality and Ringkøbing-Skjern Municipality.
- *Associations:* Concito, Danish Export Association, Danish Industry (DI), The Danish Insurance Association (DIA) and SEGES.
- *Research institutions:* Danish Technical University (DTU), GEUS and Danish Technological Institute.
- *Networks and centres:* The Freshwater Centre (FwC), Vand i byer (Innovation network for Water in Urban Areas) and KLIKOVAND.

7. Long term sustainability (including capacity building)

7.1. How sustainability of the project's results and effects will be ensured

C2C CC intends to lead to enhanced national legislation and/or international guidelines for integrated CCA. Long-term sustainability of the project is ensured by building up efficient cooperation and coordination structures - cross-boundary as well as multi-level governance. This is done by systematic capacity building measures and by creating long lasting forums for exchanging best practices – enhancing local authorities' motivation to continue cooperation. One of the gaps related to some municipalities having more ambitious CCA objectives/plans than others, makes it difficult bringing them all together; however, C2C CC creates a common understanding and starting point, which will facilitate further cooperation on CCA in the future.

Officials from other Danish regions will participate in C2C CC's workshops and this will constitute the starting point of replicability of tools and results from C2C CC will be further developed when replicated in other parts of Denmark. Business development shall ensure long-term effects by building up capacities in the industry and underpin the pull and push effect of innovative technologies within the CCA sector. Due to the large-scale and cross-boundary elements of the IP, C2C CC will ensure that the region stays a frontrunner within water technologies. C2C CC includes 17 large demonstration actions, that will accelerate more financing for e.g. construction works during and beyond the IP's duration. Furthermore, several of the funds mentioned in the Financial Plan extends beyond 2022, and local stakeholders will continue to apply for and receive funding for CCA.

8. Expected major constraints and risks:

- **Risk 1:** *The national socio-economic environment.* The current Danish government prioritises agriculture and business development higher than environmental concerns. On the other hand, the local socio-economic environment is characterised by a large amount of water clean tech companies and proactive local governments. Furthermore, the socio-economic environment is under pressure by the need to adapt to increased experienced flood events.
- **Risk 2:** *The relatively weak institutional set up of CDR regarding climate change*

[25] CDR website: http://www.rm.dk/regional-udvikling/klimatilpasning/aktiviteter/

DS

planning. CDR is not legally obligated to take on the role as a facilitator or coordinator of CCA activities, however, the municipalities within CDR respect and appreciate CDR's role (reflected by the signed Associated Beneficiary's Declarations and Letters of Support).

- **Risk 3:** *The complexity of many stakeholders.* The IP involves many stakeholders, which is the strength of the project, but which can also constrain and delay the processes. CDR has extensive experience with network management and management of large EU projects.
- **Risk 4:** *Funding for complementary actions are not mobilised.* C2C CC project management, incl. CDR's representative office in Brussels, will assist the municipalities with applications for funding.
- **Risk 5:** *Delays related to SEA and EIA processes.* SEA is not expected to delay the IP. EIA is expected to be involved in action C20, C21 and C22, and included in the budgets.

9. a) Is your project significantly climate related?	**Yes**	■	**No**	☐
b) Is your project significantly biodiversity-related?	**Yes**	☐	**No**	■

If you consider your project to be significantly climate or biodiversity-related (you marked 'yes'), please explain why: The IP deals significantly with the implementation of municipal CCA plans and Flood Risk Management Plans. The IP is not significantly biodiversity related, however, the C2C CC does take into account Natura 2000 areas under the EU Habitats Directive and Ramsar areas into consideration where relevant (Figure 5). This involves at least the following actions: C8 (Habitat site no. 52, "Horsens Fjord, havet øst for of Endelave), C9 (The Limfjord), C11 (Randers Fjord), C12 (involves 11 Natura2000 areas in the catchement of River Gudenaa), C15 (Uldum Kær), C17 (Thyboron, Natura 2000 and Ramsar area), and C19 (Stavns Fjord).

PS

GENERAL DESCRIPTION OF THE AREA(s) TARGETED BY THE PROJECT

Name(s)/Definition of the project area(s):

The project area consists of Central Denmark Region and three municipalities in the North Denmark Region bordering the Limfjord.

Comments:

C2C CC involves many geographical sites. An overview of names in Danish and English is provided in Table 1.

Table 1: Seas, fjords, rivers and lakes of C2C CC incl. name in English and related actions.

Danish name	English translation	Related actions
Gudenåen	The River Gudenå	C5, C6, C11, C12, C15, C16
Randers Fjord	Randers Fjord	C1, C11, C12
Klimabåndet	The Climate Ribbon	C16
Vesterhavet	The North Sea	C1, C3, C5, C6, C17
Limfjorden	The Limfjord	C1, C5, C9, C17
Harboøre Tange	Harboøre Tange	C17
Glud Håb	Glud Haab	C8, C18
Horsens Fjord	The Horsens Fjord	C8, C14
Sorte Sø	The Lake Sorte Sø	C20
Le Mur	Le Mur	C9
Klitmøller	Klitmøller	
Nationalpark Thy	Thy National Park	
Storåen	The River Storå	C6, C13
Silkeborgsøerne	The Silkeborg Lake District	C12
Gesager Å	the watercourse Gesager Å	C15
Uldum Kær	Uldum Kær	C15
Kolindsund	Kolindsund	C10
Kattegat	The Kattegat	C1, C19
Kragsø	Lake Kragsø	
Korup Å	The watercourse Korup Å	

DS

Ryom Å	The watercourse Ryom Å	
Grenåen	The River Grenaa	C6, C10
Bygholm Å	The watercourse Bygholm Å	C14
Hansted Å	The watercourse Hansted Å	C14
Horsens yderfjord	The outer fjord, Horsens Yderfjord	
Bygholm sø	The Lake Bygholm sø	C14
Store Hansted Å		C14
Alling Å		C11
Sørenden		C19
Thyborøn Kanal	Thyboron Canal	C1, C9
Stavns Fjord		C19
Dagnæs bæk		C14

MAPS OF THE GENERAL LOCATION OF THE PROJECT AREAS

GENERAL OVERVIEW OF LOCATION(s) IN THE COUNTRY

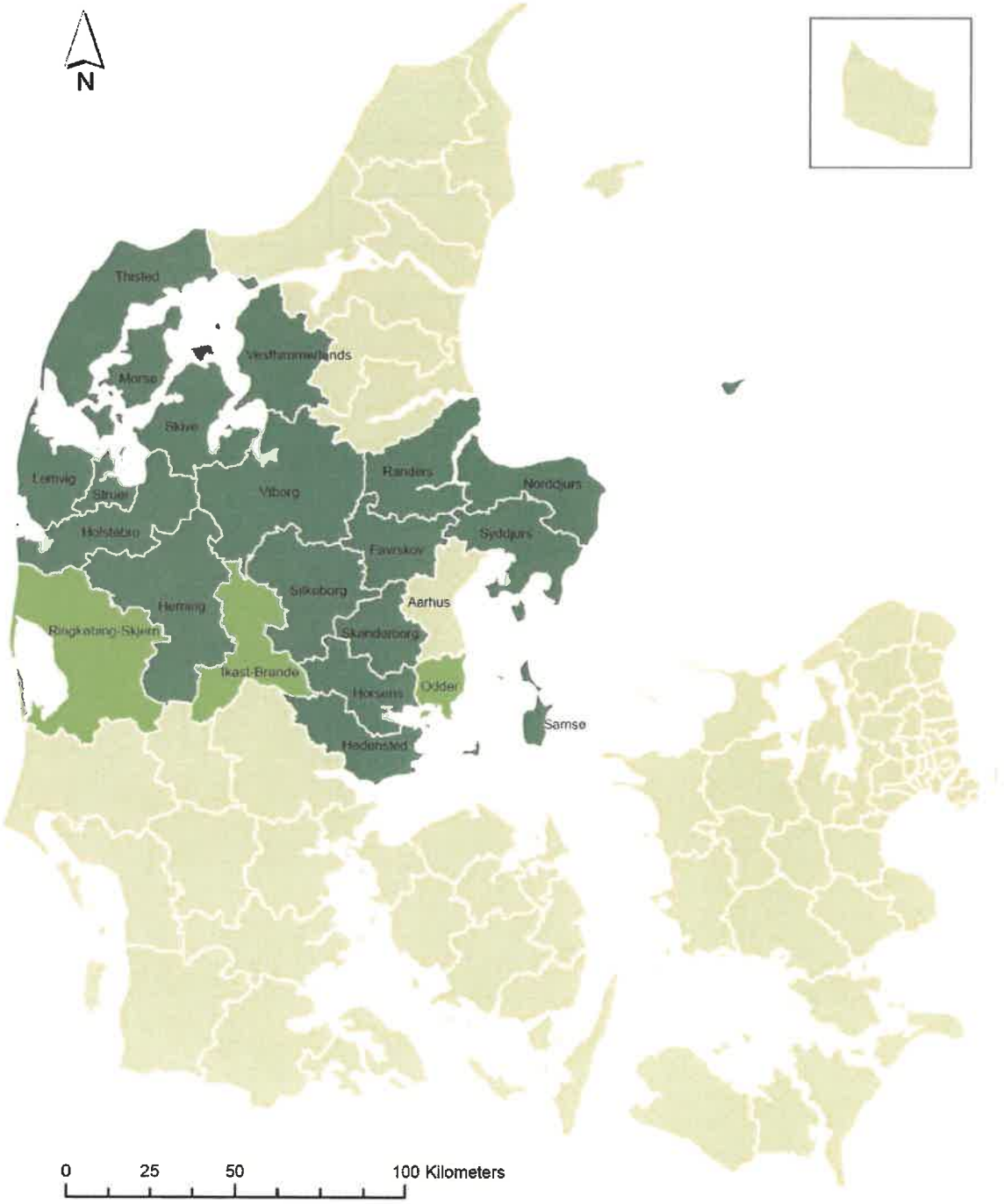


Figure 3: The region of C2C CC and the 21 municipalities, associated municipal beneficiaries (dark green) and municipal stakeholders with Letters of Support (light green).

DJ

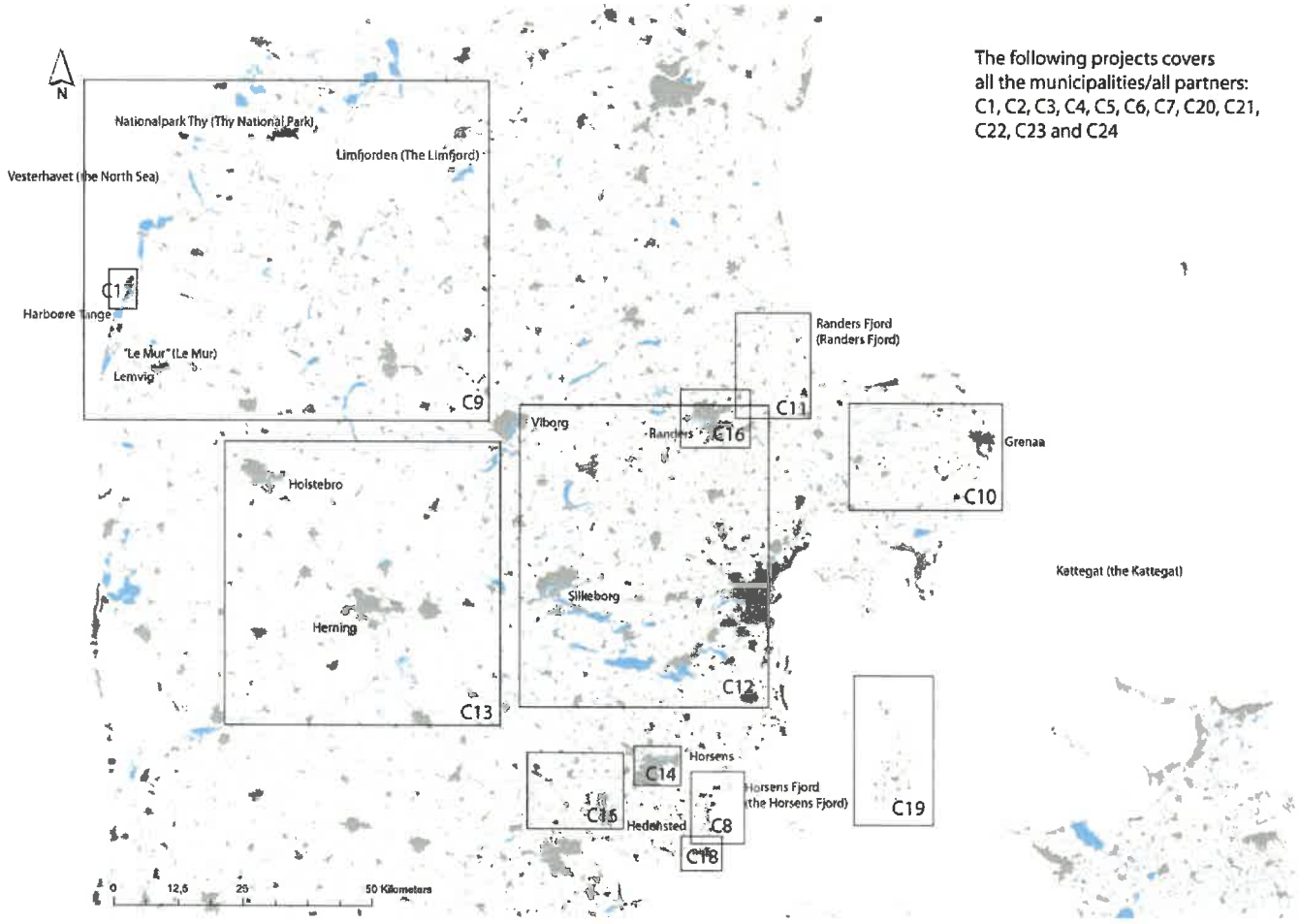


Figure 4: The location of actions C1-C24 in the Central Denmark Region. C18-C19 are geographically located throughout the region. C1-C7 and C20-C24 are cross-cutting for all municipalities.



Figure 5: Natura 2000 and Ramsar areas in CDR

DESCRIPTION OF THE STRATEGY FOR THE IMPLEMENTATION OF THE OVERALL PLAN

Short term (at least first 2.5 years):

The strategy is twofold: strategies to implement the participating partners' CCA plans in general, and the C2C CC contribution to the implementation – in a short and long term.

CCA plans

The national government made it mandatory for municipalities to formulate CCA plans in 2013. After their completion, the CCA action plans were to be integrated – step by step – into the municipal spatial planning eventually covering all spatial areas including cities and countryside, simultaneously complying with the EU Water Framework Directive and the Floods Directive cf. Figure 6 (left side). Furthermore, the government encouraged the municipalities to coordinate their CCA action plans with all other relevant plans cf. Figure 6 (right side).

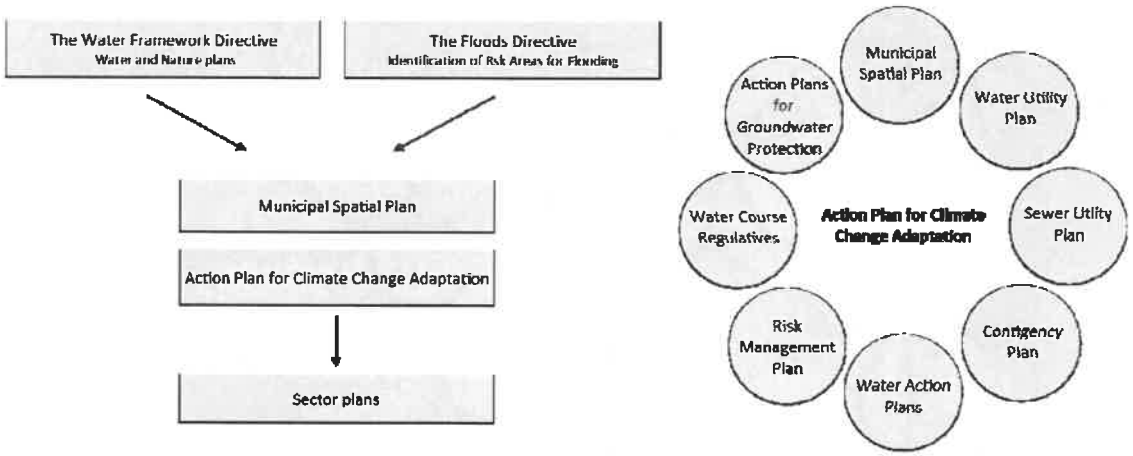


Figure 6: The Danish planning hierarchy related to the CCA plans (left side), and the related plans to the CCA plans (right side) (after Danish Nature Agency, 2013[26]).

In relation to the requirement of mandatory CCA plans, the Danish Nature Agency published guidelines on the content of the CCA plans. As a minimum, it had to include a risk assessment and a description of possible actions at municipal level. The guidelines recommended the following content of the CCA plans:

1. Background and conditions: incl. the municipality's climate challenges
2. Risk assessment: incl. flood map, value map and risk map. (mandatory)
3. Municipal Spatial Plan: incl. integration of CCA into the main structure of the municipal spatial plan and designation of risk areas (long term)
4. CCA action plan (short term)

The guidelines also included recommendations on how to deal with the cross-sectoral nature of CCA. Figure 6 (right side) and Figure 7 illustrates the Danish Nature Agency's

[26] Danish Nature Agency, 2013, "Climate Change Adaptation Plans and Climate Zoning Plans – Guideline", Danish Ministry of Environment [Naturstyrelsen, 2013, "Klimatilpasningsplaner og klimalokalplaner - Vejledning", Miljøministeriet].

recommendations on the importance of coordination of plans and stakeholders, respectively. The latter involves, besides the municipalities' themselves, the water utilities, neighbouring municipalities and utilities, citizens, businesses and other organisations cf. Figure 7.

In spite of the fact that the CDR is not an authority in this area, it offered the municipalities a template to ease their work. The aim was not only to help the municipalities, but also to motivate to strengthen the CCA plans by including sustainability and social factors in the template. The CCA template can be downloaded via the homepage of CDR[27].

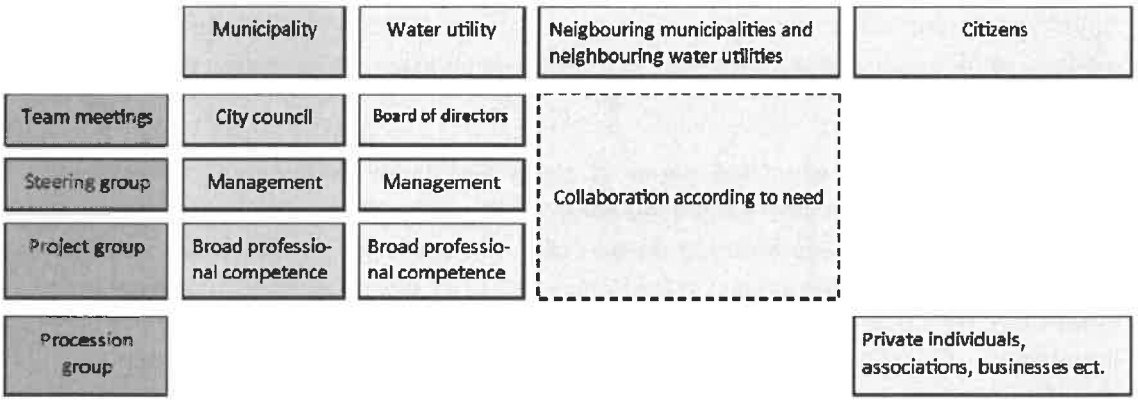


Figure 7: Stakeholders relevant in the process of the CCA planning (after Danish Nature Agency, 2013).

C2C CC

The C2C CC IP builds on the fruitful cooperation between regional initiatives to support local governments on the one hand and local governments' own measures on the other. The IP reflects this combination of local interests and regional tradition for offering capacity building and coordination on a voluntary basis. The complementary projects reflect the outreach of partners in their local community and an answer to one fundamental question: How are societal means and tax-payers money used most cost-efficiently to create sustainable CCA solutions? There is an ongoing dialogue between local governments and e.g. wastewater companies on how to enhance innovative solutions. Furthermore, there are ongoing dialogues between authorities and other stakeholders such as NGOs, companies and knowledge institutions on how to prioritize.

Thus, basing their CCA plans on a common foundation (cf. above), and though they prioritized differently according to experience and needs, local governments in the CDR expressed a wish to focus on what became the core elements of the IP – both the cross-cutting capacity building activities dealing with aspects of the hydrological circle and their related local demonstration actions. Later, and mainly because of the urgent need to handle the issues around the western Limfjord, three local governments in the North Jutland Region have joined. Together and as a totality, the 24 activities are meant to

[27] Link to CDR's CCA template: https://www.rm.dk/regional-udvikling/klimatilpasning/tidligere-initiativer/skabelon-for-klimatilpasningsplaner/

support local authorities in many ways – in particular the cross-cutting actions governance and tools.

Initially, the area of coverage was determined by the confines of the CDR. Because of previous years' cooperation and co-creation, it was natural to offer all local governments to join a project which would support them in implementing their CCA plans and manage climate change challenges, further cross-border cooperation, and boost work on CCA, which had never before been done. During the process, this procedure was endorsed, but also adjusted since a few municipalities chose not to join, and others (in a neighbouring region) chose to be part of the IP. In the end, the area of coverage is appropriate to work on cross-border CCA issues, further develop capacities and solve concrete problems. Local governments and civil cervants having signed a Letter of Support will be invited to activities such as workshops and conferences, and other secondary stakeholders will be invited on an ad hoc basis.

Being an IP dealing with CCA plans in cities and local communities, the partnership involves the local authorities, since they control CCA plans – politically and administratively. In some cases, there was a strong desire from – in particular – wastewater companies to join as well, because the project would influence their priorities. Other partners represent innovation, research and pilot projects topical in the CDR and that are of common interest. In addition, 17 organisations have formulated and signed Letters of Support to join in specific activities. Last, but not least, local secondary stakeholders take part in actions in municipalities. They are the result of a practice of involving citizens and associations in general, but this involvement needs to be re-thought, as CCA is a new area.

Apart from discussing concrete CCA challenges and finding sustainable solutions, the purpose of the IP is to enhance institutional and technical capacity of the local authorities of the project. The preparations of the proposal revealed the needs for greater knowledge of the crosscutting issues, mutual committment and exchange of best practices.

During the first 2.5 years, the activities will start up, politicians are engaged in a dialogue, citizens are made aware of CCA challenges, companies involved, national agencies included etc. as a consequence of the C2C CC IP.

Long term (beyond 2.5 years):

The municipal spatial plans are reviewed every fourth year, and most plans are to be reviewed by 2017. The Danish Ministry of Environment and Food is in collaboration with The Ministry of Business and Growth Denmark and Danish Ministry of Energy, Utilities and Climate with an evaluation of the CCA plans. According to the Danish Nature Agency, this evaluation will provide the basis for any adjustments to the framework for local CCA, including municipal planning. The evaluation is expected published in May 2016.

The implementation of The Water Framework Directive and The Floods Directive into the municipal spatial planning supports the long term implementation of the CCA plans. The mandatory risk assessments also provide as a solid knowledge base for future CCA actions.

It is the purpose of C2C CC to aid the municipalities in enhancing their capacity to deal with CCA through setting up a framework that can handle climate changes now and if/when they aggravate in the future. Not only will CCA actions be implemented, but also BAT will be used, and newest knowledge in order to add value to the many great investments and solutions implemented in the years to come will be taken up. C2C CC iis about water management in a strict sense, but it is to a large degree about CCA as a development and growth path for a more resilient society. Other core values of Life will be furthered as a consequence of the IP such as the marine strategy, biodiversity, water quality.

EU ADDED VALUE OF THE PROJECT AND ITS ACTIONS

Extent and quality of the contribution to the objectives of LIFE

Objectives	Contributing directly	Contribution on strategic level
The 'Life Regulation'[28] and An EU Strategy on adaptation to climate change[29].	Actions dealing directly with flooding: C8, C9, C10, C11, C12, C13, C14, C15, C16, C17, C18, C19, C22, Actions dealing with rivers: C2, C9, C10, C11, C12, C13, C16, Actions dealing with cities: C4, C14, C15, C16, C17, C18, C23 Actions dealing with vulnerable coastal areas: C1, C8, C9,	All actions increase partners' ability to sustainable contribution to Life objectives: C5, C6 and C7 contribute to enhancing partners' capability. Innovative actions such as C20 - C24 serve to spread the knowledge of CCA.
The Floods Directive	C11, C12, C13, C18.	
The Water Framework Directive	All actions dealing with watercourses are subject to WFD regulation: C9, C10, C11, C12, C13, C16.	
The overall objective of the Marine Strategy Framework Directive	C1, C8, C9, C11, C14	
The targets of EU Biodiversity Strategy and EU Habitats Directive	C8, C9, C10, C11, C13, C16, C21	On the long run, municipalities that have not included this issue in their work, can benefit from C1, C2 and C4 and other workshops, if they want to include it later.
Innovation, tourism and public-private cooperation	C7 (innovation) Nature-based tourism directly and tourism in cities: C8, C9, C11, C16, C20, C21, C24	

Extent and quality of the mobilisation of other funds

'Other funds' cover a number of sources – some requested during the writing of the Concept Note, and decisions have been made, some funding will be mobilised during the project as actions progress. In many cases, contact has been established between local utilities and project partners during spring 2016, and local utilities have shown interest in getting involved in the project, because their eventual investment will be of higher quality.

Nature of mobilised fund	Action	Name of the funding	Allocation
EU FUNDS			

[28] REGULATION (EU) No 1293/2013 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 11 December 2013 on the establishment of a Programme for the Environment and Climate Action (LIFE) and repealing Regulation (EC) No 614/2007

[29] COM(2013), 216 of 16/4/2013. An EU Strategy on adaptation to climate change.

DJ

Not yet requested	C5	ERDF	Tbd.
Requested	C7 C17	ERDF (+ CDR) Horizon2020	2.5 mio € Total budget 1.8 mio. € of which 19,000 € is for LK
Granted	C3, C6	Interreg	TOPSOIL: 7.34 mio € of which 840.000 € is for CDR
NATIONAL FUNDS			
Not yet requested	C1 C2 C22 C23	Realdania Fiskerifonden MUDP MUDP	Tbd. Tbd. Tbd. (around 500.000 €) Tbd. (around 300.000 €)
Requested	C5	Velux Foundation	1.6 mio. €
LOCAL FUNDS			
Not yet requested	C4 C14 C20	Municipal funding Waste water utilities funding Horsens Waste Water Utility SVF	Estimated 16 mio. € Estimated 135 mio € pa. Tbd. Tbd.
Requested			
Granted	C8 C9 C13 C17	Hedensted Waster Water Company LVS Vestforsyning LVS	3.4 mio. € 2.9 mio. € 6 mio. € 2.9 mio. €

Two EU funded projects were submitted in June 2015 and granted earlier this year – TOPSOIL and WaterCoG. One Horizon project has been submitted (to complement C17), the prospect of is – as is well-known – around 15%. In case it passes, it will form a major part of the project, using satellite-basd measurements of land. An application has been submitted to the Growth Forum for ERDF funding (and expects to be funded) – a project which will support export of water solutions to city innovation. Another two EU funded Interreg projects will be sought to support C1 – C4: 'Climate Adaptation Measures' and 'Transition to Green Economy Cooperation with Industries'. Furtherthe project will be in contact with and actively coordinate the implementation of the LIFE proposal with the European Regional Development Fund Operational Programme managers in the region (the Growth Forum).

A number of national public funds will be mobilised too. C22 and C23 plan to apply the Danish Environmental Technology Development and Demonstration Program (MUDP) to support the study of how climate roads can be integrated with other SUDS solutions, and to examine how water delaying measures can be integrated with SUDS solutions. Danish Eco-Innovation Programme (MUDP) and similar national funds are potential, and accessible, sources of financing.

Among national, private funding are: Realdania and the Velux Foundation, both prioritizing CCA in various ways. Realdania's forthcoming programme focuses on coastal urban areas, and a project within the region will support the IP by making an urban area resilient towards flooding from the sea. Contact has been made, but no specific application has been elaborated yet. The Velux-foundation will be mobilised to support a project on no-till – alternative ways to do sustainable farming by adoptiong Conservation Action practices by Aarhus University. This action supplements C5 and C14 by testing, how changed

PS

agricultural praxis can reduce flooding. This project is accepted for full application in May 2016, VELUX Foundations.

As expected, the major source to mobilise and coordinate would be wastewater utilities' investments in CCA and sewage systems and the municipal and regional investments on CCA. During the preparation of the full proposal, numerous contacts to the utilities were made, and large funds will be mobilised and integrated into projects that are to the benefit of CCA plans. As of now, five utilities have signed A8 confirmations of their engagement in the following actions: C8, C9, C13, C15, C17, and more are expected to come.

Quality of multi-purpose mechanism, synergies and integration

Due to the wide – though targeted – approach containing cross-cutting activities as well as demonstration/pilot/innovative actions involving partners, stakeholders and others, the C2C CC is a truly multi-purpose mechanism, building synergies and integrating essential aspects of the hydrological circle as well as providing sound basis for concrete decisions on CCA. To mention a few examples of this multi-purpose mechanism, the cross-cutting activities (C1-C7) serve to unite partners in networks, knowledge-sharing capacity building events, involving 16 concrete actions (C8-C24). Desk-analyses provide most actions with the background for a sound methodology for future conceptualization and for evaluation of actions. Synergies are created by partners sharing best practices with each other, thereby multiplying results through inspiration and mutual learning in a cost-effective manner.

Replicability and transferability

The project management unit has the overall responsibility for replicability and transferability. Creating awareness about the project and its results on CCA is a vital part of the project's dissemination activities (cf. E-actions); however, it is important to state that replication goes beyond dissemination.

Plan at the outset for replicability and transferability

In Phase 1, the most important task is to determine exactly how C2C CC can be replicated and to whom.

Firstly, a dialogue will be started with a number of relevant stakeholders/networks, which are already interested or could potentially be interested in replicating C2C CC. For example:

- Zealand Region: this region is a good location to replicate C2C CC in as it has a similar administrative structure as well as similar challenges in relation to water, e.g. Roskilde Fjord could use the results obtained at Thyborøn Kanal (cf. C9)

- North Denmark Region: as three municipalities from this region are partners in C2C CC, they can help replicate the results to their entire region

- South East and South West England: these have a similar terrain as CDR and they work similarly with issues such as integrative planning and citizen involvement.

- KLIKOVAND (20 municipalities in the Capital Region working on CCA and water): a letter of support has been signed, wherein KLIKOVAND commits to support and cooperation activities, participation in events and networking activities, and discussions on tools.

- Water in Urban Areas: 150 Danish organisations, which work with CCA and water

- Confederation of Danish Industries: can especially assist with replication of innovative elements of C2C CC

- Mayors Adapt: this network is used to inform, mobilise and support other cities in using e.g. C2C CC best practices, tools and governance.

- ENCORE: a political network of regions in Europe on the topic of environment (cf. action E3.5)

This initial outreach will clarify needs and how the results and methods can be transferred to other locations. The first two years of C2C CC will be spent on this dialogue as the consortium wants to ensure, that replication is not begun on activities, which are either not possible to replicate nor demonstrating the desired effects. During this time, Danish-speaking stakeholders (including Nordic nationals) will be invited to participate in workshops to gain first-hand experiences with the capacity building of the C2C CC.

In the following two phases, tangible results will be available from C1-C24 and thus the focus shifts to replicability and transferability of the actual solutions for each project. Especially those activities described as best practices, pilots and innovation (cf. section B3) are relevant in this regard.

Thirdly, in Phase 3, an additional element is added to the plan; namely monitoring of the effect of replication.

This plan helps to ensure that it is highly likely and anticipated that both Danish and European cities and regions can and will replicate C2C CC in their local environments.

An evaluation strategy

This strategy links to the monitoring section (cf. D-actions).

The evaluation strategy is divided into two parts: activities, which CDR already excels in, and C8-C24 activities, which are expected to generate long-lasting and successful results in relation to CCA.

Through previous projects and experiences, it is recognised that CDR excels in certain activities, e.g. co-creation, governance, groundwater tools and the Danish models of integrated planning and designation of risk areas, and these can therefore be replicated without excessive research (hence the activity is placed in Phase 1). However, when it comes to actions C1-C24, they need to be evaluated in order to assess, which elements can be replicated with the greatest success rate. In addition to researching which C2C CC elements could be replicated, it is also necessary to research which elements fit where, e.g. co-creation is most likely not interesting for a region in Southern Europe, but it is interesting for other Danish and Nordic regions.

As mentioned in the plan above, the execution of this strategy is scheduled for Phase 2.

A capacity building strategy

Skills and communication: This strategy focuses on building up skills in external parties, so that these are capable of replicating C2C CC in their local environments. They will be made aware of the various tools, techniques, models, etc. which are created within C2C CC (cf. C1-C24) by the following ways of communication:

- Holding meetings and seminars, where the project management unit and/or project owners inform about the projects and the elements, which can be replicated and motivate the participants to try this

- Inviting these external parties to join the conferences and study trips in order for them to gain a first-hand understanding of the replicable elements of C2C CC.

Funding: the project management unit works on replicability and transferability, and there is thus allocated man hours in the budget to this area.

A legacy strategy

The aim of the legacy strategy is to ensure that C2C CC will be replicated in a short and medium term perspective after the end of the project. This strategy will be drafted at the beginning of Phase 3 as all C1-C24 actions, at this point in time, will be well on their way to completion, and thus the project management unit has more resources to spend on replication.

It is expected that future complementary CDR led EU and/or national projects will incorporate C2C CC results into their work packages in relation to e.g. CCA integration, co-creation and tools. This will be the case with future Interreg projects and Water in Urban Areas.

Master Classes are workshops hosted by e.g. Durban and Amsterdam on CCA, and this forum will be used to discuss common problems and issues as well as best practices with interested stakeholders.

Transnational, green procurement, uptake of research results:

Geographically, the two regions in question do not provide easy transnational cooperation. But transnational aspects in the handling with CCA is prominent in other ways: the CDR already has a strong partnership with other EU countries on which it can base its outreach transnationally – one example are the two Interreg funded projects that have already been approved. More international projects are expected to supplement this international outlook and the replication of results will include other regions across the EU and outside.

CDR is part of a public partnership on green procurement and has committed to ensure that all procurements and tenders are delivered according to the procedures for sutainable requirements (these requirements are listet at the public partnership webpage for green procurements: grønneindkob.dk). The partnership works for developing green and binding cost-effective purchasing objectives that have an effect on the environment both globally and locally. Purchasing objectives helps to identify relevant environmental requirements and processes, and thus functions as a shortcut for public institutions that want to impose environmental requirements in their procurement and work actively for a green transition.

Three research institutions are directly involved in the IP as part of a C2C CC Advisory Committee. These three research institutions are well known for their applied science within CCA and they are very much engaged in national neworks such as Water in Urban Areas

Network (Vand I Byer). The Advisory Committee has the purpose to service the C-actions and the partners with best practice knowledge within specific areas of CCA from hydrological modelling to citizen involvement. The Advisory Committee has the purpose to raise the quality of the CCA actions and build capacity among local officials through seminars and workshops and access of best practice knowledge. Furthermore, the IP includes two business PhD projects to carry out research on the actions of C2C CC.

BEST PRACTICE / INNOVATION / DEMONSTRATION CHARACTER OF THE PROJECT

BEST PRACTICE:

The majority of the C-actions are based on best practice. C8-C24 use best practice in particular with: data loggers (C8, C18), hydrological models (C8-C12, C17-C19), economical or financial methods (C9, C11, C15, C21), and citizen- and stakeholder involvement (C8, C10, C14-C22, C24). C1-C7 supports these actions with capacity building activities and development of tools.

The best practice elements of the IP will deliver CCA improvements in CDR using cost effective and acknowledged models and approaches to analyze and address the climate challenges of the region. The main target municipalities outside CDR will be the Northern Denmark Region, Zeeland Region and the Southern Denmark Region, both facing similar challenges as CDR and havning a long tradition of collaborating across regional borders. The 15 major cities/municipalities facing climate change adaptation problems in-land ánd at the coastline, benefitting from the new integrated C2C CC approach and lessons learned during the project, wil be : Aalborg (205.000 inhabitants); Esbjerg (116.000);Vejle (112.000); Sønderborg (75.000); AAbenraa (59.000); Haderslev (56.000); Kolding (92.000); Fredericia (51.000); Billund (26.000); Faaborg-Midtfyn (51.000); Assens (41.000); Nyborg (32.000); Frederikshavn (60.000); Hjørring (65.000); Thisted (44.000).

The best practice elements in relation to hydrological models are in the majority of the C-actions based on models developed by the Danish Hydrological Institute (DHI), research institutes or engineering consultancy companies e.g. MIKE11, MIKE URBAN, MIKE FLOOD, SCALGO. These models are acknowledged and well-known from many previous projects nationally and internationally. In regard to the applicability of the use of best practice hydrological models, these models are, however, not well integrated with each other and thus finds its limits modelling all elements of the hydrological cycle, each model is developed with a specific purpose on e.g. watercourses (MIKE11) or sewer system in urban areas (MIKE URBAN). Several of the C-actions will collaborate on the possibilities of linking or integrating different models, e.g.: a) C11 and C12 in relation to modelling of the River Gudenaa with the model of Randers Fjord, C14 in relation to three watercourses and Horsens Fjord, C10 in relation to River Grenaa and Kattegat; b) C17 and C18 on modelling the interlinkage between sea level rise or stormsurge with rising groundwater level. It is likely, that the results from these actions may show demonstration character.

Citizen and stakeholder involvement is an activity included in the majority of the concrete actions, due to the novel and cross-cutting nature of CCA involving various stakeholders in order to make actual implementation possible. Stakeholder involvement in the needed extent is not custom among most municipal technical departments, however, the approaches and methods applied will be based on best practice. Best practice is secured through capacity building activities in C5, C4.3 and support from the C2C CC Advisory

DS

Committee bringing in experts in applied science on citizen involvement from Aalborg University and Aarhus University.

Best practice outside Denmark (in particular The Netherlands, Germany and the UK) is integrated in the IP through desk research (e.g. A1.2, C1.1.7, C3.3, C4.2, C5.1), study trips to Germany, the Netherlands and the UK and participation in international conferences (E3).

The wastewater utilities will implement the wastewater plans in urban areas according to best practice within the wastewater sector. It is the aim of C2C CC to broaden the perspective of best practice to involve alternative means related to SUDS.

DEMONSTRATION:

The design of C2C CC has the core in C1-C7 that gathers knowledge and experiences within sea and fjords, rivers and lakes, groundwater, rainwater, governance, tools and innovation. C1-C7 are demonstrated geographically through C8-C24 (table 4 – Overview of the C-actions), which put into practice, test, evaluate and disseminate actions, methodologies or approaches that are new or unknown in the project's specific context, and that could be applied elsewhere in similar circumstances. Several of these actions will adapt known models and approaches to the specific context (as mentioned above).

In particular, this IP will deliver thorough demonstration of integrative planning and network governance. This counts for the IP consortium itself, and further is several of the actions of C2C CC characterized with many partners or many stakeholders e.g. The Western Part of the Limfjord (C9) consist of a partnership between 7 municipalities and 7 utilities, and The River Gudenåen (C11) consist of a partnership between 7 municipalities and 1 utility. C2C CC will demonstrate establishment of and experience with integrative planning processes incl. network governance, which is expected to benefit both the academic society as well as European CCA practice.

Capacity building activities is the backbone of the IP and is carried out throughout the concrete actions with demonstrating character. The capacity building activities involving the C2C CC partners will involve more thorough monitoring (D1).

Among more traditional IP actions with demonstration character, our action C23 and C3 can be highlighted as examples. C23 applies known methods: infiltration tests, drillings, geophysical mapping, high-precision geophysics and quantitative correlations, however, in a new context: to produce detailed infiltration potential maps for urban development areas. C3 bring in experiences from other EU countries (e.g. the Netherlands, Germany or Belgium) on management of surface-near groundwater and it also draws on the results of the complimentary project TopSoil to examine the use of excess groundwater for irrigation, heating or cooling. The methods are known in other countries, however, are new in Denmark.

PILOT (INNOVATION):

PS

Innovative aspects are in C2C CC delivered in four ways, through: C2C CC Advisory Committee; action C7, C20 and C21; tools in action C2.2 and C6.1, and two pilot projects C13.3 and C22.

The Advisory Committee (F1.4) delivers state-of-the-art knowledge within various aspects related to the concrete actions. The contact persons of the knowledge institutions within the Advisory Committee are tasked with including relevant experts as needed.

Action C7 deals specifically with enhancing innovation among water businesses in the region, through knowledge sharing and networking between water businesses, utilities and municipalities. Specifically, Dansand, Grundfos, Kamstrup, and NCC will be involved in relevant innovation projects and cooperation fora. C7 also involves counseling of industries for EU funding and training of start-up companies on business development within ecosystem services. Furthermore, CDR has years' of experience within exporting water solutions to Asian countries through the Danish Water Technology Hub – Danish Water Technology House – which is placed in Singapore and helps Danish SME enter the south-east Asian markets. Action C7.4 is targeted to further strengthen this collaboration and opportunity for the water businesses in CDR. Lastly, C7 is demonstrated through action C20 and C21; two innovation hubs on freshwater and seawater, respectively, for business collaborations between commercial players, educational institutions, water utilities and authorities, with possibilities for test facilities, shared office spaces and seminars to promote and generate innovation through business environment.

In particular, two of the developed tools will involve innovative elements C2.2 and C6.1. C2.2 initiates the development of forecast systems with ICT businesses based on models and meteorological forecasts. C6.1. develops a groundwater tool to model the linkage between surface water and rising groundwater level, a tool that does not exist today. The complementary project TOPSOIL complements C6.1 with knowledge on the topsoil and groundwater with case studies in Herning and Horsens.

The IP involves implementation of two pilot projects, C13.3 and C22. The novelty of C13.3 examines the combination of a number of CCA means, which together with a number of other means will increase biodiversity and ultimately, improve the water environment in the sea by reducing the leaching of nutrients. Derived effects with regard to biodiversity and cultivation reliability will be monitored during the project's monitoring phase (D1). C22 implements and test a new and innovative type of SUDS through a climate road build of permeable asphalt, a new technology, which may also have the potential to purify road water before discharge to recipient. These two actions includes thorough monitoring activities (D1).

EFFORTS FOR REDUCING THE PROJECT'S "CARBON FOOTPRINT"

CDR has for every two years calculated the carbon footprint of the region in regard to CO2 emissions per capita to monitor the development of various measures. This monitoring will continue and it is expected that the major common efforts in C2C CC will contribute positively to reduce carbon emissions. Table 2 provides an overview of carbon emissions per capita for CDR and the 19 municipalities of the region. In the beginning of the IP (primo

DJ

2017) the results of the CO2 monitoring for 2015 is available. 2015 will function as baseline for the IP[30].

Table 2: Carbon footprint of CDR and the 19 municipalities in the region

	CO_2 Ton per inhabitant (2013)
Favrskov Municipality	7,6
Hedensted Municipality	10,2
Herning Municipality	5,3
Holstebro Municipality	7,7
Horsens Municipality	8,0
Ikast-Brande Municipality	8,4
Lemvig Municipality	2,9
Norddjurs Municipality	7,1
Odder Municipality	6,4
Randers Municipality	3,6
Ringkøbing-Skjern Municipality	5,2
Samsø Municipality	-1,4
Silkeborg Municipality	8,5
Skanderborg Municipality	6,8
Skive Municipality	5,7
Struer Municipality	3,1
Syddjurs Municipality	7,2
Viborg Municipality	8,6
Aarhus Municipality	6,6
Central Denmark Region	6,7

Expectedly, the following C actions contribute to reducing the carbon footprint of CDR and the 19 municipalities. However, the actions of the IP primarily deals with initial investigations and assessments and reduction of carbon emissions will for the majority of the c-actions occur after the end of the IP, when they are physically implemented. Action C20, C21 and C22 involves physical implementation during the IP. In table 3 below, an overview is provided of how carbon emissions are reduced in each action.

[30] CDR, 2013. *Energy accounts.* CDR (In Danish: *Energiregnskab 2013, Region Midtjylland)*

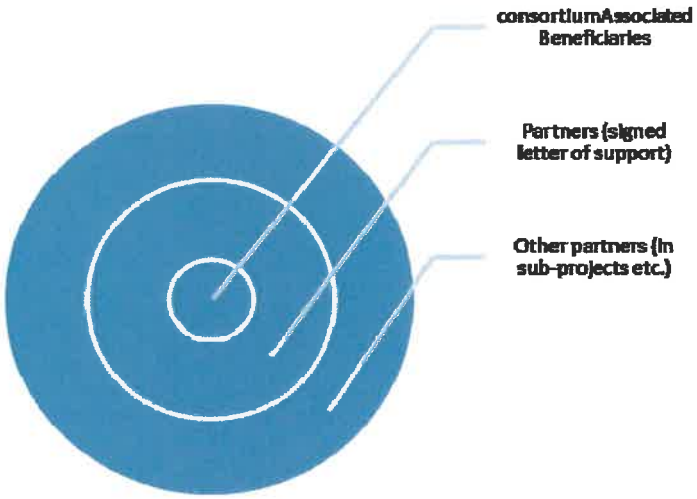
Table 3: Expected reduction of carbon emissions in the c-actions

Action	CO_2 reduction(yes/no)	If yes, how?
C8	Yes	Through wet meadows which will reduce CO2 emissions from peat land and change in land use from one year crops to multiannual crops will bind carbon.
C9	Yes	Through analysis of possibilities for production of renewable energy. most likely wind and wave energy, in connection with a future facility in Thyboron Canal.
C10	Depending on the results of analyses and decided solution	A significant part of the investigation is to assess carbon and methane potentials, these assessments will be included in the decision-making process. If the solution is to reestablish former wetlands or close a pumping association the carbon gain is tremendous. If the solutions is to establish sluices and pumps carbon emissions will be expected.
C11	Yes	Establishing wetlands (primarily on agricultural land) will decrease carbon and methane emissions, amount depending on the choice.
C12	Yes	Establishing of wetlands in low lying areas upstream will reduce CO2 emissions and change in land use from one year crops to multiannual crops will bind carbon.
C13	Yes	Through wetlands and changed landuse from agriculture to natural areas
C14	Yes	Establishing of wetlands in low lying areas upstream will reduce CO2 emissions
C15	Yes	Through land use change from from one year crops to multiannual crops will bind carbon, and some reduction of CO2 emissions through wet meadows on peat land.
C16	Yes	Through establishment of a 8.8 km lgreen corridor along the river Gudenå and Randers Fjord.
C17	Yes	Energy consumption for transportation of water in relation to drainage is a focus point in the action. It is assessed whether the energy in the pumped water can be reused in relation to recreational facilities for play and sports.
C19	Yes	Through recovery of Sørenden from a canal to a watercourse, Sørenden's water will no longer be pumped to Kattegat,and restoration of Besser Made nature area as a wet meadow will reduce carbon emissions significantly.
C21	Yes	The Climatorium building is established according to highest demands to isolation and is designed to consume a minimum of energy. Possibilities for solar cells and other energy producing means on the building is investigated.
C22	Yes	Through analysis of possibilities for production of renewable energy with the climate road. Lowering the energy consumption for transportation of surface water in relation to drainage is a focus point in the action.
C23	Yes	Lowering the energy consumption for transportation of surface water in relation to drainage is a focus point in the action.

DJ

STAKEHOLDERS INVOLVED IN THE PROJECT

The C2C project consists of a number of stakeholders: Associated Beneficiaries in the Consortium, 'primary stakeholders' having signed Letters of Support, and 'secondary stakeholders' involved in all C actions, involved by project managers.



Associated beneficiaries	Primary stakeholders (signed letter of support)	Examples of other stakeholders (C8-C24)
Central Denmark EU Office (CDEU) Central Denmark Region (CDR) Favrskov Municipality (FK) Hedensted Municipality (HEDKOM) Herning Municipality (HK) Holstebro Municipality (HbK Horsens Municipality (Horsens) Lemvig Municipality (LK) Lemvig Water Utility (LVS) Morsø Municipality (MK) Morsø Water Utility (MV) Norddjurs Municipality (NDK) Randers Municipality (RK) Samsø Municipality (SAK) Silkeborg Municipality (SIK) Skanderborg Municipality (SK-KOM) Skanderborg Wastewater Utility (SFV) Skive Municipality (SK) Skive Wastewater Utility (SKV) Struer Municipality (STK) Struer Wastewater Utility (STF) Syddjurs Municipality (SDK)	Concito Danish Emergency Managemet Agency Danish Export Association Danish Industry, DI Danish Technical University, DTU GEUS Ikast-Brande Municipality Odder Municipality Ringkøbing-Skjern Municipality SEGES Danish Technological Institute The Danish Coastal Authority The Danish Insurance Association, DIA The Danish Nature Agency The Freshwater Centre, FwC Vand i byer (Innovation network for Water in Urban Areas)	Citizens Landowners The Limfjord Council Emergency units Thyborøn Harbour Randers Port Drainage associations Farmers Danish Society for Nature Conservation Museums Investors Companies: Grundfos, Dansand, Kamstrup, NCC, etc.

Thisted Municipality (TK) Thisted Wastewater Utility (TV) Vestforsyning (utility) (VESTF) Vesthimmerland Municipality (CHK) Vesthimmerland Water Utility (VV) VIA University College (VIA)[31] Viborg Municipality (VK) Aarhus University (AU)[32] Aalborg University (AAU)		

[31] VIA has signed two A4 forms, due to its participation as both a partner and a member in the Advisory Committee

[32] AU has signed two A4 forms, due to its participation as both a partner and a member in the Advisory Committee

LIFE Integrated Projects 2015 – B6

EXPECTED CONSTRAINTS AND RISKS RELATED TO THE PROJECT IMPLEMENTATION AND MITIGATION STRATEGY

Risk 1: *The national socio-economic environment.*

The Danish government has with the financial law for 2016 is currently a liberal government with priorities within, amongst others, agriculture and business development. In this regard the government published an agricultural policy in February 2016 (in Danish: "Fødevarer og landbrugspakken"), which priorities farming to water environment e.g. by removing existing Danish requirements on 10 meters of agricultural free zones to streams and lakes. However, the government has included 'min-wetlands' as a means for nutrients removal. These wetlands may turn to be an opportunity for integrated measures between river ecology and CCA, an opportunity C2C CC will follow closely.

The Ministry of Environment and Food of Denmark is in collaboration with The Ministry of Business and Growth Denmark and Danish Ministry of Energy, Utilities and Climate with an evaluation of the CCA plans. According to the Danish Nature Agency, this evaluation will provide the basis for any adjustments to the framework for local CCA, including municipal planning. The evaluation is expected published in May 2016. It is unknown whether these adjustments will weaken the legal set up of the CCA plans, however, the implementation of The Water Framework Directive and The Floods Directive into the municipal spatial planning supports the long term implementation of the CCA plans, and also the mandatory risk assessments provide as a solid knowledge base for future CCA actions.

Should the IP be constrained by the national socio-economic environment, support is found in the local socio-economic environment within the region. It is characterised by a large amount of water clean tech companies with large interests in innovation and export possibilities. Furthermore, the IP is carried out by proactive local governments with a local need to adapt to flooding events from storm surges and cloudbursts, and increasing from rising ground water levels.

Risk 2: *The relatively weak institutional set up of CDR in regard to climate change planning.*

CDR is not legally obligated to take on the role as a facilitator or coordinator of CCA activities, and thus it has no legal mandate to undertake responsibilities on CCA. The regions though have the possibilities to include CCA in their Regional Development Strategies as a voluntary guideline for development.

CDR has since 2007 taken an ambitious role on climate challenges common for the region's 19 municipalities. Prior COP15 (UN's Conference of Parties on Climate Change) in Copenhagen in 2009 focus was on mitigation, the need for CCA has though increased accordingly to the experienced increase in flood events, and as a response to the former government's requirement on mandatory CCA plans, CDR initiated collaboration with the municipalities on conducting a template for a CCA plan. A template went further than national requirements by adding parameters of sustainability and development.

Despite the relatively weak institutional set up of CDR in regard to CCA, the municipalities

within the region respect and appreciate CDR's work and acknowledge it as a facilitating, coordinating and networking body (also reflected by the number of signed Associated Beneficiary Declarations and Letters of Intent). CDR has proven this through several projects and also created the basis for the establishment of a strong project consortium.

Risk 3: *The complexity of many stakeholders.*

The IP deals with integrated CCA among the 15 municipalities in the region and three municipalities from another region. The consortium consists of 31 partners and 17 primary stakeholders (LoS), which is a strong and large consortium. The consortium is the strength of the project, but due to its size and the many organisations involved it may also constrain and delay the IP, as CDR has no legal mandate, significant decisions are to be taken at political level among the 18 municipalities.

The C2C CC consortium is very well aware of this weakness, and accommodate this by clear lines of responsibility (cf. F1). The consortium is anchored in a steering group which makes decisions on behalf of the IP and ease the effectiveness of the process.

Furthermore, several stakeholders are involved in the C-actions (C1-C24), these stakeholders are both primary and secondary stakeholders. Processes with many stakeholders may in general be expected to take longer time than normal processes.

The variety of stakeholders supports the cross-sectoral nature of CCA planning and illustrates the novelty of the IP as a real integrated CCA project. The C2C CC consortium expects that the IP will demand skills for extensive network management, for this reason the overall project management lies with CDR, who has the experience in managing networks as well as large EU projects.

The novelty of the IP on network management further relates to research fields within planning, where planning and related planning processes has moved from government, to governance, to network governance. The IP will function as a novel case in modern network governance, with replication relevance for local authorities all over Europe.

Risk 4: *Part of the funding for complementary actions is not mobilised.*

The IP includes several options of eventual complementary projects, and there is a risk that not all applications for complementary projects will succeed in getting funds. The CDR project management and CDEU will assist the partners with applications for funding and look for alternative fund and investment mechanisms.

Risk 5: *Delays related to SEA and EIA processes.*

As the actions are all related to the CCA plans (and thus the municipal spatial plans), there is a certain risk (or possibility) that the actions may involve an SEA screening or SEA. According to the SEA Directive, a SEA must always be carried out. Certain plans and programmes must be assessed in all cases while other plans and programmes must be assessed only when they are likely to have significant environmental consequences:

A. When a plan or programme in one of the following sectors sets a framework for projects listed under the EIA Directive (Annexes 1 and 2 of the Art. 3). The sectors are: Agriculture, Forestry, Fisheries, Energy, Industry, Transport, Waste Management, Water Management, Telecommunications, Tourism, Town and Country Planning or Land-Use.

B. When a plan or programme could impact on a habitat protected area under the Habitats Directive (92/43/EEC).

In addition, the Directive applies in cases where a screening requirement is in place based on level of significance:

C. When a plan or programme covers a small area or minor modifications to plans and programmes mentioned in Sections A and B above, SEA is required in cases where the Member State determines that they are likely to have significant environmental effects/impact.

D. An assessment is required for any plan or programme that sets a framework for development consent of projects, which are likely to have significant environmental effects (Art. 3(5)).

Several of the C-actions involve analysis related to flooding, which may following lead to planning decisions; in cases where the municipalities want to lay out areas for flooding, the plans will be mandatory to SEA even though the measure is formulated in general terms. Thus areas for flooding will be in low laying areas, which are already defined in planning due to topography. Oppositely, dikes and other coastal precautions are context specific, because the setting is not in the same way coherent and more factors are in play, e.g., 1) several options for materials and configuration, 2) location, and 3) which sea level rise scenario to prevent (Kørnøv and Wejs, 2013)[33]. As most of the C-actions mainly deal with initial analyses to aid decision making, SEA processes are not expected to delay the IP.

Three actions (C20, C21 and C22) involve "projects" that fall under the meaning of the EIA Directive and are expected to involve an EIA process prior to construction. The partners are well aware of the EIA process and all three actions includes the competent EIA authorities, which in all three actions are the respective municipalities. The partners have included the EIA process in the time schedule and budget.

[33] Kørnøv and Wejs, 2013, "SEA screening of voluntary climate change plans: A story of noncompliant discretion", *EIA Review*, (41) 64-69.

CONTINUATION / VALORISATION AND LONG TERM SUSTAINIBILITY AFTER THE END OF THE PROJECT

How will you ensure the long term implementation of the plan and beyond?

C2C CC intends to lead to enhanced national legislation and/or international guidelines for integrated CCA – especially on future events after the end of the project. Long-term sustainability of the project is ensured by building up efficient cooperation and coordination structures - cross-boundary as well as multi-level governance. This shall be done by systematic capacity building measures and by creating various forums for exchanging information and best practices – enhancing local authorities' motivation to continue cooperation after the end of the IP.

Furthermore, one of the gaps mentioned previously is that some municipalities have more ambitious CCA objectives/plans than others, which makes it difficult bringing them all together; however, C2C CC will create a common understanding and starting point, which will facilitate further cooperation on CCA in the future.

Officials from the other Danish regions are invited to participate in C2C CC's workshops and this could constitute the starting point of replicability in the cities of their respective regions. This will entail that the methodologies and results from C2C CC will be further developed when replicated in other parts of Denmark.

Business development shall ensure long-term effects of the project by building up capacities in the industry and underpin the pull and push effect of innovative technologies within the CCA sector. Due to the large-scale and cross-boundary elements of the project, C2C CC will ensure that the region stays a frontrunner within water technologies and this will benefit the private sector.

C2C CC includes several large demonstration projects and construction works, and these will accelerate more financing for large projects during and beyond the project's duration. Furthermore, several of the funds mentioned in the Financial Plan (CNg) in relation to complementary projects extend beyond 2022, and therefore it is expected that the local stakeholders will continue to apply for and receive funding within the area of CCA.

Which actions will have to be carried out or continued after the end of the project?

The concrete implementation actions that have to be continued after the end of the IP is C20 AquaGlobe and C21 Climatorium.
Many of the local projects turn out to start by modelling, setting out scenarious, involving stakeholders, laying the ground for decision-making and implementation – i.e. the C2C CC lays the necessary ground for concensus and subsequent investment – during the project or after. This goes for C9, C10, C11, C12, C14, C16, C17, C18 and C19.
Pilot projects such as C13 and C22 testing new methods in water retention and permeable seepage road are expected to be replicated other places in the regions afterwards.

How will this be achieved? What resources will be necessary to carry out these actions and how will those capacities be ensured?

DJ

C20 and C21 are two innovation centres financed by tenants and managed by Skanderborg Utility A/S and Lemvig Waste Water Utility, respectively. C20 and C21 continues after IP by hosting businesses and research institutions and they will continue carrying out the activities included in the IP, that is awareness rising, tourism and corporate touism, show room for BAT within water technologies and with educational elements for pupils and students. The business models of the centres will secure the continuation of C20 and C21.

It is, furthermore, expected that the awareness rising and educational activities of action C22 pilot project on seepage road will continue after the IP and managed by VIA till the technology is outdated. The maintenance costs of the road falls under the authority of Hedensted Municipality.

Will the staff recruited/trained during the project continue to work on the implementation of the plan?

It is expected that the officials recruited and trained during the IP will continue after the IP.

How, where and by whom will the equipment acquired be used after the end of the project? (if relevant)

- Horsens (C14): 2 laptops
- RK (C16): equipment for showroom
- VIA (C18): monitoring equipment for urban water catchment

To what extent will the results and lessons of the project be actively disseminated after the end of the project to those persons and/or organisations that could best make use of them (please identify these persons/organisations)?

The organisations that could best make use of the C2C CC results are especially municipalities and wastewater utilities in Denmark and in countries with similar challenges such as Northern Europe.

The website and online platform will continue for a minimum of 5 years after C2C CC has finished. The consortium expects the project to continue even after 2022 and it is therefore planned to finance C2C CC in a new and/or continued version by either applying for a new LIFE funds or via other EU or national funds. However, for a continuation to be possible, it is necessary to continue the dissemination activities, and this is why it is important to ensure that at least the website and online platform works and is kept up-to-date.

Three C2C CC conferences (cf. E-actions) will be held throughout the project's lifetime, and all stakeholders – both national and international – are invited to participate. The first one will be held after the first year (2018), the second conference is held in 2020 and the third and final conference is held in year 2022. All demonstration projects will be concluded for the final conference, but as the overall objective is measuring climate change resilience in the region, it is relevant to host follow up conferences/events after e.g. 5 and 10 years of C2C CC's completion.

International dissemination and networking with other projects are also activities that will continue after C2C CC. The results and best practices from C2C CC are interesting for

other climate change adaptation projects in Europe, and therefore the partners involved (especially CDR and CDEU) will communicate and disseminate the project to all interested parties in the following years. Furthermore, if/when the region achieves climate change resilience; it will attract large numbers of people working in the energy and climate sectors as well as tourists to the region.

The results and lessons learned will actively be disseminated through C20 AquaGlobe and C21 Climatorium as national and international show rooms for the IP's results and BAT also after the end of the IP. Furthermore, the results are disseminated at international conferences E3, where practitioners from most of Europe can attend.



LIFE Integrated Projects 2015

Climate Action

Stage 2 – Full proposal

TECHNICAL APPLICATION FORMS

Part C – detailed technical description of the proposed actions

Important notes:

- **All calculations and detailed cost breakdowns necessary to justify the cost of each action should be included in the financial forms F. In order to avoid repeating the financial information (with the risk of introducing incoherencies), Part C should only contain financial information not contained in the financial forms (e.g. details explaining how the cost of an action has been estimated).**
- **All forms in this section may be duplicated, so as to include all essential information.**
- **Each action described should have a clear indication of its physical target (e.g., action 1 will take place in area "X" and/or will target species "Y"). Whenever this is relevant, the location of these actions should also be identified on one or several maps which must be provided in annex.**
- **Any action that is sub-contracted should be just as clearly described as an action that will be directly carried out by the beneficiaries.**

DS

C. Concrete implementation actions

This section will present the 24 actions (7 crosscutting capacity building actions and 17 demonstration actions).
Table 4 provides an overview of the C-actions, the responsible associated beneficiaries and which other actions, the individual action is linked to.

Table 4: Overview of the C-actions

Action	Action short name	Partner name	Primarily linked to actions
Cross-cutting capacity building actions			
C1	Sea and Fjords	CDR	C8, C9, C10, C11, C12, C14, C16, C17, C18, C21, C24
C2	Lakes and Rivers	CDR	C10, C12, C13, C14, C15, C16, C19, C20, C21, C24
C3	Groundwater	CDR	C8, C10, C15, C17, C18, C20, C23,
C4	Rainwater	CDR	C10, C14, C15, C16, C17, C19, C20, C22, C23, C24
C5	Governance	CDR	C8, C9, C11, C12, C13, C14, C15, C16, C17, C18, C19, C24
C6	Tools	CDR	C10, C11, C13, C14, C17, C18, C19, C22, C24
C7	Innovation	CDR	C15, C20, C21, C22, C23, C24
Regional actions dealing mainly with the open land			
C8	Håb til Håb	HEDKOM	C1, C3, C5, C24
C9	Thyborøn Channel and the Western Limfjord	LK, HbK, MK, SKK, STK, TK, VHK + LVS, MF, SKV, STF, TV, VESTF, VV	C1, C2, C5
C10	The Grenaa Catchment	NDK, SDK	C1, C2, C3, C4, C6
C11	Randers Fjord	NDK, RK	C1, C2, C5
C12	The River Gudenå	SIK, FK, HEDKOM, Horsens, RK, SFV, SK-KOM, VK	C1, C2, C5
C13	The River Storå	HK, HbK	C2, C5, C6
Regional actions dealing mainly with urban areas			
C14	Horsens Town Centre	Horsens	C1, C2, C4, C5
C15	CCA in Hedensted og Tørring	HEDKOM	C2, C3, C4, C5
C16	Climate Ribbon	Rk	C1, C2, C4, C5, C7
C17	Thyboron City and Harbour	LK, LVS	C1, C3, C4, C5, C6
C18	Citizen driven CCA in Juelsminde	HEDKOM	C1, C3, C5,
C19	SUDS as recreational elements	SAK	C2, C4, C5, C6

DJ

Cross-cutting innovative actions			
C20	Aqua Globe	SFV	C2, C3, C4, C7, C21
C21	Climatorium	LVS	C1, C2, C7, C20
C22	Permeable coating	VIA	C4, C6, C7, C23
C23	Potentials for increased infiltration	VIA	C3, C4, C7
C24	Climate history	AU	C1, C2, C3, C4, C5, C7, C8

DETAILS OF PROPOSED ACTIONS

A. Preparatory actions (elaboration of management/action plans, obtaining licences and permits, trainings, etc.)

Beneficiary responsible for implementation: C2C project management (PM)

Role:

- To carry out preparatory actions
- To coordinate with C2C CC beneficiaries and stakeholders
- To have dialogue with national ministries and agencies

A1. Legal barriers to integrated CCA, current CCA integration and policy recommendations

Budget: 17.130€

Number of days estimated spent on action in phase 1: 40 Days

What:

One of the major barriers for implementation of CCA plans can be found in the legal framework for municipalities', wastewater companies' and citizens' rights and obligations. This action has a double purpose: on the short run; to provide decision makers of partner municipalities with (equal) knowledge on legal barriers and past practice, and, on the longer run, to generate policy recommendations to legal changes. Both objectives are prerequisites to better CCA implementation: optimized information will make it possible for municipalities to better implement actual plans, whereas changes to existing regulation will optimize implementation in the longer run.

Since regulation of CCA is a relatively new phenomenon, legal barriers can be found within all spheres of the hydrological circle: sea and fjords, rainwater, groundwater, as well as lakes and rivers. Contending issues cover: who should pay for CCA? What are municipalities/wastewater companies/citizens allowed/obliged to do? Does CCA conflict with regulation in other (e.g. environmental) areas?

Regarding sea and fjords, holistic solutions against storm surges are hindered by inexpedient division of responsibilities between citizens and authorities; conflicting view of nature vs. efficient adaptation, multi-level governance, municipalities' conflict of role as owner vs. regulator, etc. In addition, coastal regulation is very complex, which is a burden to CCA projects.[1]

Regarding rainwater, a major issue concerns the responsibilities and possibilities of the wastewater companies in participating in CCA projects in the municipalities. The newest legal regulations

[1] Rambøll, 2015 pp. 31 ff

enabled wastewater companies a new co-financing role in CCA projects, but these regulations suffer significant limitations, which have proven an intricate challenge for the companies, while their incentives to initiate new projects appear hamstrung by municipally conditions of a political and technical nature. Hence, many wastewater companies still use the traditional or the quality project model for financing CCA related projects.

Regarding lakes and rivers, CCA is not yet legally part of the WFD and the river basin management plans. Some CCA means are not coherent with the river basin management plans, e.g. in relation to the hydrological impact of a watercourse, and the balance between watercourse ecology and CCA. However, several means can be implemented with synergies to both CCA and watercourse ecology e.g. wetlands and meadows, and within the frames of the river basin management plans.

Regarding groundwater, CCA in regard of SUDS conflicts with groundwater protection in regard to infiltration of rainwater from roofs and roads and potential pollution of the groundwater resource, which hinders implementation of SUDS in areas with vulnerable groundwater resource. In regard to flooding caused by rising groundwater level, CCA means are only in the very beginning to be defined in the Danish context, and legislative conflicts may occur during the IP life time.

This action feeds directly into E3.1 and indirectly to all C and D actions.

How:

1. Conduct a thorough desk analysis of the legal framework, review all relevant documents relating to the water sectors, and gather information related to challenges in other EU countries' legal systems
2. Prepare a presentation on this extensive topic to be presented at a seminar in June 2017 (cf. E3.1)

Where:

The premises of the C2C CC secretariat

When:

Phase 1: 1/1/2017-31/3/2017

Reasons why this action is necessary:
This preparatory action is necessary as it provides crucial information to the consortium on legal barriers, CCA integration and on possible policy recommendations. The C2C CC partners need this information as background knowledge in order to work towards successful integration of CCA into the planning process and to accommodate any potential issues on this.

Constraints and assumptions
Any significant constraints are not expected for this action.

Expected results:

DS

The expected results are a comprehensive understanding og the legal framework on CCA, the water sector and relevant practices of other EU countries' legal systems, and capacity building of C2C CC partners on how to navigate national legislation on CCA.

Cost estimation:
Based on working days, will salary of 47 € per hour and 347,5 € per day per senior employee and 35 € per hour and 259 € per day per junior employee. External assistance is based on prior experience.

Estimation of the costs for the total project management staff is based upon prior experience from other similar projects. The previously mentioned CDR staff assigned the action will correspond to the budget categories of academic senior and academic junior, where their more specific tasks described above further subdivides them into additional costs categories. The days assigned to each the academic senior and academic junior category types in the budget are considered to cover the staff assigned for the actions mentioned above and the actual costs will be defined in the employment phase.

Deliverables:

Action	*Deliverables*
A1.1	A memo sent to the beneficiaries explaining what the main findings of the research is and how the project management unit plans to present this in a clear and concise way at the seminar (E3.1)
A1.2	PowerPoint presentation

Milestones:

Action	*Quantifiable milestones*	*Date by end of*
A1.1	Desk research and interviews are conducted before this date	31/5/2017
A1.2	PowerPoint presentation is ready	31/5/2017

A2. Analyse state-of-the-art of current mainstreaming of CCA into local planning and possibilities for cross-sector cooperation

Budget: 17.130€

Number of days estimated spent on action in phase 1: 40 Days

What:

Danish municipalities are obliged to integrate and mainstream CCA into local planning. As a result of very different experiences with climate change, political attention, and capacities at their local level, municipalities have developed very different approaches to mainstreaming. Consequentially

a significant need for obtaining knowledge of what constitutes best practice for mainstreaming CCA exists. It is therefore relevant to analyse which approaches the municipalities use, and how this affects the mainstreaming of CCA plans into their local planning. CDR has created a CCA template, which can also be used in this regard to further raise the level of CCA planning in the region.

Municipalities face major coordinating challenges in several sector areas: Within the environmental sector, challenges arise in coordinating the local plans and strategies. Secondly, in the coordination of the environmental area's plans and strategies with other sectorial areas. Some municipalities even apply a trial-and-error approach to using local plans as a toolkit to further CCA integration, which might be suboptimal. Lack of interdisciplinary and inter-sectoral cooperation is another challenge, which inhibit CCA mainstreaming. This is especially the case in larger municipalities having extensive specialised units and personnel with diverse professional background. It creates a lack of unified perspective and an environment infused with multiple – and often conflicting – interests. This especially materialises in abstract strategic planning, and less so in concrete projects. An understanding of how cross-sector cooperation is dealt with will provide a strategy (including tangible toolkit) for dealing with this and to ensure that cooperation with other sectors is ensured and prioritised in C2C CC. Beneficial possibilities for cross-sector cooperation remain potentially great and further analyses of CCA mainstreaming and cooperation could prove advantageous for applying best-practices in future CCA mainstreaming.

This action feeds into C1-C24

How:

1. Gather best practices at local, national and European level in order to present information on how CCA is being mainstreamed into local planning (desk research). Research will focus on Denmark and countries with a comparable climate and political environment. Issues of particular interest are among others:

    - Cross-sector co-opertion and network/cluster formation
    - Mainstreaming (formalised) into local regulation vs. informal cooperation fora as a means of co-creation among stakeholders
    - Ad hocism (CCA projects)

2. Research cross-sector cooperation and the challenges, which are found in this area
3. Create a presentation to be used at the seminar in June 2017 (cf. E3.1) informing the consortium about the information and conclusions of the research

Where: The premises of the C2C CC secretariat

When:

Phase 1: 1/1/2017-31/12/2017 (this activity will take place throughout the project period, however, the main work load is placed in the first year of the project)

Reasons why this action is necessary:
Danish municipalities face many obligations and challenges in regards to CCA. Many of the C2C CC partners are municipalities, and as the overall objective of C2C CC is to support the full

implementation of the municipal CCA plans, it is crucial to gain an understanding of these challenges at an early point in the IP's lifetime.

Constraints and assumptions
No significant constraints are expected for this action.

Expected results:
The results are a comprehensive understanding of what successful CCA mainstreaming entails and how to incorporate cross-sector cooperation. Capcity building of CCA partners and stakeholders on how they mainstream their CCA actions into other planning.

Cost estimation:
Based on working days, will salary of 47 € per hour and 347,5€ per day per senior employee and 35 € per hour and 259 € per day per junior employee. External assistance is based on prior experience.

Estimation of the costs for the total project management staff is based upon prior experience from other similar projects. The previously mentioned CDR staff assigned the action will correspond to the budget categories of academic senior and academic junior, where their more specific tasks described above further subdivides them into additional costs categories. The days assigned to each the academic senior and academic junior category types in the budget are considered to cover the staff assigned for the actions mentioned above and the actual costs will be defined in the employment phase.

Deliverables:

Action	*Deliverables*
A2.1	An overview of best practices in relation to CCA mainstreaming at local, national and European level
A2.2	A strategy on how to work with cross-sectoral cooperation
A2.3	A PowerPoint presentation

Milestones:

Action	*Quantifiable milestones*	*Date by end of*
A2.1	The desk research is conducted before this date	31/12/2017
A2.2	The strategy on cross-sectoral cooperation is drafted and ready to be presented at the forthcoming seminar (cf E3.1)	31/05/2018
A2.3	The PowerPoint presentation is ready	31/05/2018

A3. Collect existing data analyses and reports about the region as basis for integrative CCA planning and combine data in a common database

Budget: 17.130€

Number of days estimated spent on action in phase 1: 40 Days

What:

This background knowledge will help provide an indication on how to enable new planning and governance in the region, and it will provide best practices from other countries, e.g. the Rivers Trust project from the UK (an approved LIFE IP from 2014) and on relevant topics such as water areas/themes in connection with the River Basin Management Plans. Furthermore, a thorough understanding of all relevant EU directives, policies and strategies needs to be obtained by the project management unit, so it understands the context in which the project operates. All cross-cutting capacity building actions and demonstration projects will need access to this information in an easy and accessible way and the accumulated information will therefore be made available in a database on the online platform (cf. E2.1), which can be accessed from the project's website via the intranet for the project partners.

This action feeds into C5.1.1 (*New paradigm and a common regional strategy integrating municipal CCA plans*) and it is important to ensure that all the sub-projects/demonstration projects have access to up-to-date knowledge in the area.

How:

1. Conduct desk research
2. Conduct interviews with regional and municipal officials

Where: At the premises of the project management unit

When: Phase 1: 1/1-2017 – 31/07/2017

Reasons why this action is necessary:
It is crucial to collect existing data analyses and reports about the Central Danish Region in relation to integrative CCA planning to ensure that the project management unit and all partners have the necessary knowledge.

Constraints and assumptions
No significant constraints are expected for this action.

Expected results:
Comprehensive data analyses and reports that together with regional and municipal officials' opinions and experiences with CCA planning provide basis for integrative planning in the region.

Cost estimation:
Based on working days, will salary of 47 € per hour and 347,5€ per day per senior employee and 35 € per hour and 259 € per day per junior employee. External assistance is based on prior experience.

Estimation of the costs for the total project management staff is based upon prior experience from other similar projects. The previously mentioned CDR staff assigned the action will correspond to the budget categories of academic senior and academic junior, where their more specific tasks

described above further subdivides them into additional costs categories. The days assigned to each the academic senior and academic junior category types in the budget are considered to cover the staff assigned for the actions mentioned above and the actual costs will be defined in the employment phase.

Deliverables:

Action	*Deliverables*
A3.1	A database showing information from previous data analyses and reports
A3.2	A document showing both quantitative answers from the interviews, e.g. in statistics, and qualitative answers in full text

Milestones:

Action	*Quantifiable milestones*	*Date by end of*
A3.1	Desk research is conducted before this date	31/03/2017
A3.2	Interviews are conducted before this date	31/03/2017

A4. Interview municipal and utility officials

Budget: 21.065 €

Number of days estimated spent on action in phase 1: 20 Days

What:

After the initial desk research and review of current mainstreaming of CCA into local planning, the project management unit will interview municipal and utility officials in order to understand how these work with - and around - the legal barriers to integrated CCA planning. The PM will schedule the interviews at the officials' workplaces, and will schedule at least one interview per C2C CC municipality and per water utility. The interviewees will help identify where policy/legislation is a barrier to CCA planning and they are also able to make recommendations on methods to address these barriers. The interviews will be qualitative in nature in order to obtain as much information as possible from the interviewees. After all interviews are conducted, the answers will be analysed and when relevant translated into quantitative data. The conclusions from this research will be presented at the forthcoming seminar, cf. E3.1.

This action feeds directly into E3.1 and indirectly into C1-C24

How:

1. Conduct interviews with municipal and water utility officials
2. Analyse the interviewees' answers and convert these into quantitative and qualitative data
3. Present the research and conclusions at the forthcoming seminar (cf. E3.1)

Where: This activity takes place throughout the region of Central Denmark.

When: Phase 1: 1/4/2017-31/5/2018

Reasons why this action is necessary:
The initial desk research described in the previous A-actions are mainly focused on desk research, however, after information about legal barriers and existing and current mainstreaming of CCA has been reviewed, it is necessary to meet with and interview municipal and utility officials in order to understand how these work with the legal barriers to integrated CCA planning

Constraints and assumptions
All interviewees will need to allocate time for the interviews, however, in order to ensure as many as possible can take part in these, the duration of the interviews will be kept at approximately 30 min. It is therefore assumed that all relevant officials can take part in the research.

Expected results:
Quantitative and qualitative insight and overview of municipal and water utility officials' way of working and experiences with CCA integration, and presented to C2C CC as background information of current practice.

Cost estimation:
Based on working days, will salary of 47 € per hour and 347,5€ per day per senior employee and 35 € per hour and 259 € per day per junior employee. External assistance is based on prior experience.

Estimation of the costs for the total project management staff is based upon prior experience from other similar projects. The previously mentioned CDR staff assigned the action will correspond to the budget categories of academic senior and academic junior, where their more specific tasks described above further subdivides them into additional costs categories. The days assigned to each the academic senior and academic junior category types in the budget are considered to cover the staff assigned for the actions mentioned above and the actual costs will be defined in the employment phase.

Deliverables:

Action	*Deliverables*
A4.1	A script used for conducting the interviews
A4.2	A document providing an overview of the answers (quantitative and qualitative)
A4.3	A PowerPoint presentation used to disseminate the information

Milestones:

Action	*Quantifiable milestones*	*Date by end of*
A4.1	The interview script is drafted	15/04/2017
A4.2	The document is finalised providing an overview of the interviewees' answers	31/05/2018
A4.3	The presentation is done for the seminar cf. E3.1	31/05/2018

A5. Start dialogue with Local Government Denmark (LGDK) and relevant ministries and agencies

Budget: 10.598 €

Number of days estimated spent on action in phase 1: 20 Days

What:

Local Government Denmark (LGDK) is the interest group of Danish municipalities and it therefore important to keep it informed on C2C CC objectives to ensure; that it provides support to a regional project involving almost 20 % of all Danish municipalities. LGDK is furthermore an important forum when it comes to replication and disseminating information about the project and how the results can be replicated in other parts of Denmark.

In Denmark, the relevant ministries for the C2C CC project are:

- the Danish Ministry of Energy, Utilities and Climate
- the Ministry of Environment and Food of Denmark
- the Ministry of Business and Growth Denmark

Two government agencies are primary stakeholders in C2C CC, i.e. the Danish Coastal Authority and the Danish Nature Agency. These are both agencies of the Ministry of Environment and Food of Denmark.

How:

1. Start dialogue with LGDK (continuous activity throughout the project period). Pinpoint contact persons and hold meetings to ensure the full backing of the municipalities' organisation in a project, where the overall objective is to support the full implementation of municipal plans.
2. Start dialogue with relevant public authorities (continuous activity throughout the project period). Hold meetings with the abovementioned ministries, including the corresponding relevant agencies to present the progress and more technical aspects of the project (e.g. C1-C24). In addition, these meetings are important forums for creating awareness and disseminating information about achieved milestones and results.

This action feeds into C1-C24 and F actions.

Where: This action takes place throughout Denmark as LGDK and the ministries are located in Copenhagen.

When: 1/1/2017-31/12/2022

Reasons why this action is necessary:
It is relevant – and necessary - to have the backing of the municipalities' organisation and the public authorities in Denmark when it comes to dissemination and progress reporting to external stakeholders. Despite the fact that this is a regional project and that some of these stakeholders are not included as primary stakeholders in C2C CC, it is important to include them as CCA is an issue which needs to be raised at the highest administrative level, and not merely at municipal and/or regional level.

Constraints and assumptions

DS

It is assumed that C2C CC will have the interest of the public authorities in Denmark and that these stakeholders can see the value of supporting it and potentially assisting with dissemination activities. As no other region in Denmark is conducting such an extensive CCA project, the consortium expects a lot of focus to be given to the Central Danish Region.

Expected results:
The results of preparatory actions are an insight and overview of the legislative and practical barriers and challenges for CCA implementation. Officials within LGDK and relevant national ministries and agencies are pinpointed and a line of dialogue is established to ease implementation of CCA. Capacity building of C2C CC partners and stakeholder on how to navigate legislation and praxis.

Cost estimation:
Based on working days, will salary of 47 € per hour and 347,5€ per day per senior employee and 35 € per hour and 259 € per day per junior employee.

Estimation of the costs for the total project management staff is based upon prior experience from other similar projects. The previously mentioned CDR staff assigned the action will correspond to the budget categories of academic senior and academic junior, where their more specific tasks described above further subdivides them into additional costs categories. The days assigned to each the academic senior and academic junior category types in the budget are considered to cover the staff assigned for the actions mentioned above and the actual costs will be defined in the employment phase.

Deliverables:

Action	*Deliverables*
A5.1	A memo is sent round to the C2C CC partners stating the names of the contact persons and what meetings are foreseen in the first year
A5.2	A memo is sent round to the C2C CC partners stating the names of the contact persons and what meetings are foreseen in the first year

Milestones:

Action	*Quantifiable milestones*	*Date by end of*
A5.1	Initial contact is made with LGDK and the first meeting is set up	31/03/2017
A5.2	Initial contact is made and the first meetings are set up	31/03/2017

C. Concrete implementation actions

This section will present the 24 actions (7 crosscutting capacity building actions and 17 demonstration actions).
Table 4 provides an overview of the C-actions, the responsible associated beneficiaries and which other actions, the individual action is linked to.

Table 1: Overview of the C-actions

Action	Action short name	Partner name	Primarily linked to actions
Cross-cutting capacity building actions			
C1	Sea and Fjords	CDR	C8, C9, C10, C11, C12, C14, C16, C17, C18, C21, C24
C2	Lakes and Rivers	CDR	C10, C12, C13, C14, C15, C16, C19, C20, C21, C24
C3	Groundwater	CDR	C8, C10, C15, C17, C18, C20, C23,
C4	Rainwater	CDR	C10, C14, C15, C16, C17, C19, C20, C22, C23, C24
C5	Governance	CDR	C8, C9, C11, C12, C13, C14, C15, C16, C17, C18, C19, C24
C6	Tools	CDR	C10, C11, C13, C14, C17, C18, C19, C22, C24
C7	Innovation	CDR	C15, C20, C21, C22, C23, C24
Regional actions dealing mainly with the open land			
C8	Håb til Håb	HEDKOM	C1, C3, C5, C24
C9	Thyborøn Channel and the Western Limfjord	LK, HbK, MK, SKK, STK, TK, VHK + LVS, MF, SKV, STF, TV, VESTF, VV	C1, C2, C5
C10	The Grenaa Catchment	NDK, SDK	C1, C2, C3, C4, C6
C11	Randers Fjord	NDK, RK	C1, C2, C5
C12	The River Gudenå	SIK, FK, HEDKOM, Horsens, RK, SFV, SK-KOM, VK	C1, C2, C5
C13	The River Storå	HK, HbK	C2, C5, C6
Regional actions dealing mainly with urban areas			
C14	Horsens Town Centre	Horsens	C1, C2, C4, C5
C15	CCA in Hedensted og Tørring	HEDKOM	C2, C3, C4, C5
C16	Climate Ribbon	Rk	C1, C2, C4, C5, C7
C17	Thyboron City and Harbour	LK, LVS	C1, C3, C4, C5, C6
C18	Citizen driven CCA in Juelsminde	HEDKOM	C1, C3, C5,
C19	SUDS as recreational elements	SAK	C2, C4, C5, C6
Cross-cutting innovative actions			
C20	Aqua Globe	SFV	C2, C3, C4, C7, C21
C21	Climatorium	LVS	C1, C2, C7, C20
C22	Permeable coating	VIA	C4, C6, C7, C23

C23	Potentials for increased infiltration	VIA	C3, C4, C7
C24	Climate history	AU	C1, C2, C3, C4, C5, C7, C8

***ACTION C1*: Sea and Fjords**

Beneficiary responsible for implementation: Central Denmark Region

Budget: 132.723 €

Number of days estimated spent on action in phase 1: 150 Days
Number of days estimated spent on action in phase 2: 116 Days
Number of days estimated spent on action in phase 3: 117 days

Role: C2C CC project management (CDR) take on the role as a facilitator, coordinator and networking body of the CCA activities.

Relation to CCA plans:
14 out of the 21 municipalities as well as 4 risk management plans mention flood risk from the sea and fjords as a major challenge in their CCA plans (cf. Figure 1). In the region, two cities are appointed to be risk-prone from the sea or fjords with reference to the EU floods Directive, these being Randers and Juelsminde. In Randers the flood risk is related to sea level rise, storm surges and combined events between river and fjord. In Juelsminde the risk is related to sea level rise and storm surges. Besides these two areas, the land facing the western part of the Limfjord is already experiencing flooding from storm surges regularly, especially during autumn and winter storms.

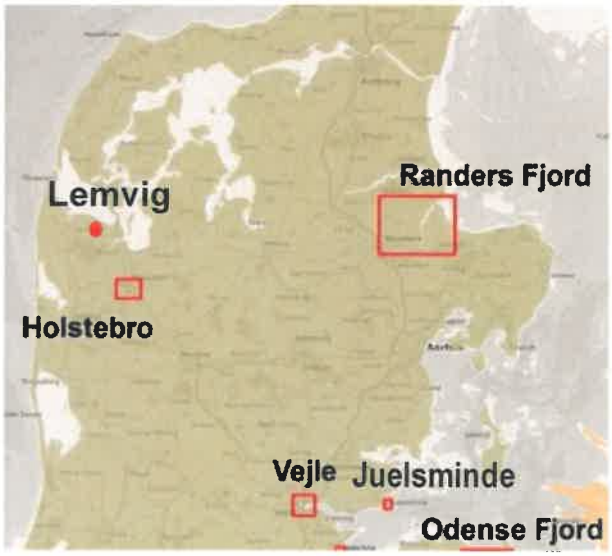


Figure 8: Risk Management plans under the EU Floods Directive in Central Denmark Region. The city Vejle is situated just south of Central Denmark Region, in South Denmark Region.

Linked to Complementary Actions
CCA in coastal urban areas: Urban development and construction project on CCA of an urban area facing the sea. Realdania's forthcoming program focuses on coastal urban areas, and a project within the region will support the IP by making an urban area resilient towards flooding from the sea. [Funded by Realdania].

Description (what, how, where and when):
The region has approximately 1000 km of coastline and is experiencing increasing challenges related to storm surges. The largest event occurred in relation to the December storm in 2013 (in Denmark the storm was named Bodil), with the highest registered water level in Lemvig with 195 cm above normal and just 10 cm from flooding a recently established floodwall in Lemvig (cf. Figure 9). The increasing power of the storms due to higher sea temperatures are already experienced in Denmark and among the region's coastal areas. Sea level rise will only increase the risk of flooding of coastal habitats and livelihoods.

The objective of this action is: To increase the coastal resilience taking into consideration the environmental state and marine biodiversity and to enhance urban resilience.



Figure 91: Lemvig floodwall during the December Storm, December 2013.

C1.1 The CCA challenges of the coastlines:

What:
Many of the cities in the eastern part of the region are facing the sea of Kattegat, the landscape is formed by the ice age and is characterized with fjords and/or small river deltas. These cities experience similar challenges in handling coastal flooding. Municipalities are not always using the same climate scenarios in their risk maps, and thus may plan for preventive actions differently, e.g. two neighboring municipalities may both plan to establish dikes along the coast, however, not following the same climate risk scenario. There is a need to create an overview of the used climate risk scenarios and planned actions, and to establish fora for the municipalities to coordinate both design measures for preventive action and timing of implementation. The coordination of east coast plans and actions has specific attention in the IP (cf. actions C8 and C11).

At Thyboron Canal and Western part of the Limfjord the challenges are unique due to the location of an emergency harbor in Thyboron for ships in distress with a need for access to The North Sea,

through Thyboron Canal. The canal is impacted by erosion and sedimentation from the increased number and size of storms, and the maintenance of the canal impacts the water ecology of Western Limfjord. This west coast area has specific attention in the IP (cf. actions C9 and C17).

The challenges are different at the West Coast, the Danish Coastal Authority has for years had the responsibility for coastal protections in this area, spending millions of Euros on sand feeding along the coast, and establishing and maintaining dikes and sluices to protect towns and land. This area thus has less attention in the IP.

How:

1. Desk analysis and identification of knowledge gaps; CDR will review the CCA and risk management plans and gather knowledge in similarities and differences in the risk maps and planned actions. Knowledge across the CCA plans and risk management plans on the challenges and planned actions to handle increased storm surges and sea level rise have not yet been gathered. Related to this action are demonstration projects C8, C10, C11, C14 and C18 dealing with the cities of Juelsminde, Horsens, Randers and Grenaa. Experiences of these projects will benefit other coastal cities at the east coast, as well as benefit the five actions.

2. CDR facilitates common tenders and procurements, and gather national and international inspirational experiences to be disseminated at common meetings. Dialogue with partners on which capabilities and experiences which may provide some common benefits and contribute to tackling the challenges.

3. Study tour: Bus trip to Germany and The Netherlands to study CCA solutions on coastal challenges. CDR has good experience in facilitating and organizing similar study tours with visit to a number of important CCA sites and organizations responsible for implementing actions. Other Relevant cross-cutting actions (C2-C7) may benefit from a study your, which may easily cover other important aspects of CCA from lakes and rivers to innovation.

4. Workshop: Creation of a common understanding between stakeholders of sustainable solutions (economically, environmentally, socially and long term) with a focus on land use, cost-effective measures, planning, implementation, maintenance and operation. Relevant actions (C8, C9, C10, C11, C14, C17, C18) are challenged by the C2C advisory committee and CDR facilitates the dialogue.

5. Workshop: Developing and testing different organizational and management models for integrating and sustaining collaboration between stakeholders: citizens, associations, organizations, authorities and businesses with the aim of raising the quality of stakeholder collaboration and integrated coastal zone management. Inspired from the study trip in May 2018 to the Netherlands and spoken wishes from the partners, we will continue to introduce Mutual Gain Approach as a method.

6. Workshop. In a workshop we will become wiser on climate scenarios and work on setting common scenario choices for increases in water rises etc .

7. Workshop: To assess synergies and possibilities of integrated solutions for the fjords at the East Coast CDR will host a one day workshop for the municipalities to discuss how to coordinate future actions related to flooding along the east coast, and how to integrated this coordination in future CCA- and risk management plans.

8. Gathering of best practice experiences, dissemination and preparation for replication. Extra efforts are made for replication to other regions (nationally and internationally) and to other CCA associations (e.g. DNNK)
9. Integration of accumulated experience and ideas in work with a common strategy for climate adaptation in CDR

10. At the end of each phase, an evaluation and assessment with focus on the needs on future integrated cross partner actions within will be conducted. This done to secure the direction and processes are carried out in the right way.

Where:
CDR

When:
Phase 1: Activity 1-3 and 10
Phase 2: Activity 4-6 and 10
Phase 3: Activity 7-9

C1.2 Interaction between rivers and coastline

What:
The catchment areas of the fjords at the east coast of the region cause challenges with flooding in the coastal towns located at the mouths of rivers and in the bottom of the fjords. The challenges arise especially in coupled events combining heavy rains and storm surges. Solutions may be found in a combination of measures. Dikes and sluices may trap water from the catchment and cause flooding behind the coastal protections. Solutions to retain surface water upstream such as large wetlands may prevent floodings from heavy rains. A combination of solutions may have multiple purposes Actions C9, C10, C11, C12 and C13 may benefit from this action.

How:
1. CDR will facilitate knowledge sharing meeting for the project groups of action C9, C10, C11, C12 and C13 during the start-up of the actions. Experiences are drawn from the project 'Water from the country side' (Vandet fra landet) and international projects such as the Dutch project "Room for the river" project (www.ruimtevoorderivier.nl/meta-navigatie/english/room-for-the-river-programme/)
2. An afternoon workshop for all partners and municipalities in the region on the results and experiences drawn from the projects.
3. Participate in a partnership with Realdania and the Danish Environmental Agency through the project "Byerne og det stigende havvand" (Cities and the rising sea) and create partnerships with other international actors for strategic cooperation.

4. Planning the establishment of a permanent Danish integrated river-coastline network among municipalities and other stakeholders. Focus on organization, objectives and funding.
5. At the end of each phase, an evaluation and assessment with focus on the needs on future integrated cross partner actions within will be conducted. This done to secure the direction and processes are carried out in the right way.

Where:
CDR – location not decided, meeting rooms of CDR or the Municipalities, alternatively conference facilities organized through procurement agreements of CDR.

When:
Phase 1 : Activity 1 and 5
Phase 2: Activity 2 and 5
Phase 3: Activity 2 - 4

Reasons why this action is necessary:
Within CDR, major areas are affected during storm surges, which due to climate change are increasing in intensity and frequency. Table 5 and figures 10-13 shows the affected areas of a 100 year storm surge event in 2050. There is a risk that each municipality defines and constructs solutions for coastal protections without regards to neighboring municipalities and/or sustainability and long term effects. Capacities within this field are in most municipalities lacking as it is a relatively new challenge, whereas the municipalities have the potential to gain from each others experiences and work together on gathering external expertise.

Table 5: Extent in m^2 and km^2 of a 100 year storm surge event for selected areas in 2050

Location	**m^2**	**km^2**
Western Limfjord	215.634.746	216
Thyborøn	74.371.965	74
Randers Fjord	99.885.696	100
Juelsminde	9.518.353	10



Figure 10: The flooded areas of the Western part of the Limfjord in a 100 year event in 2050 (The Danish Coastal Authority, NIRAS, 2015).

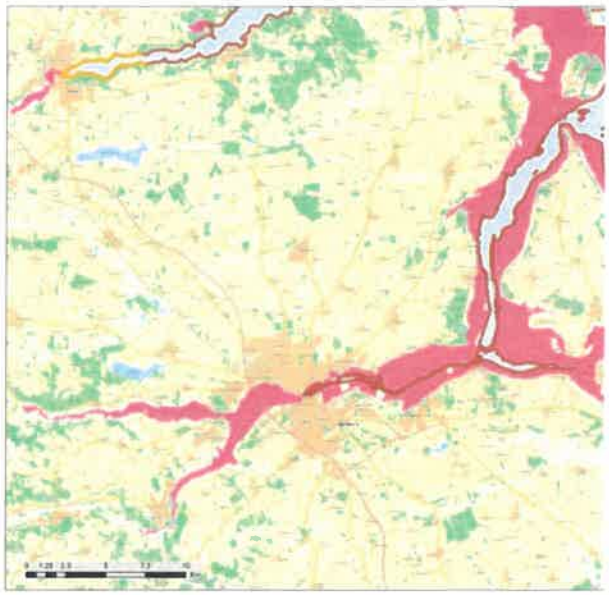


Figure 11: The flooded areas of Randers Fjord in a 100 year event in 2050 (The Danish Coastal Authority, NIRAS, 2015).

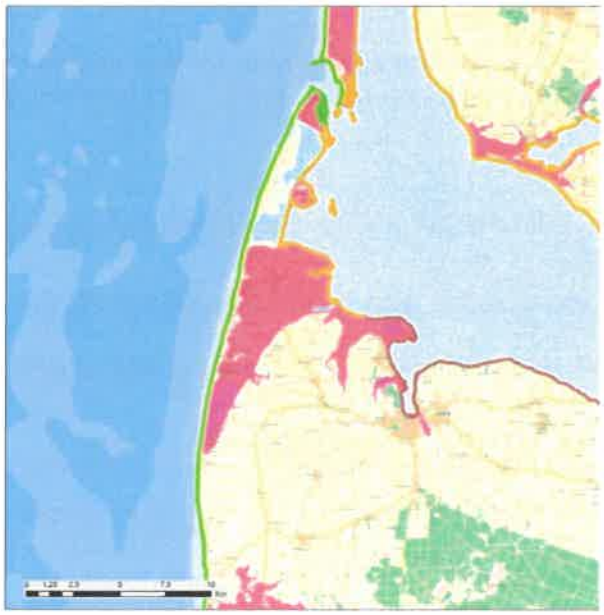


Figure 12: The flooded areas of Thyboron in a 100 year event in 2050 (The Danish Coastal Authority, NIRAS, 2015)

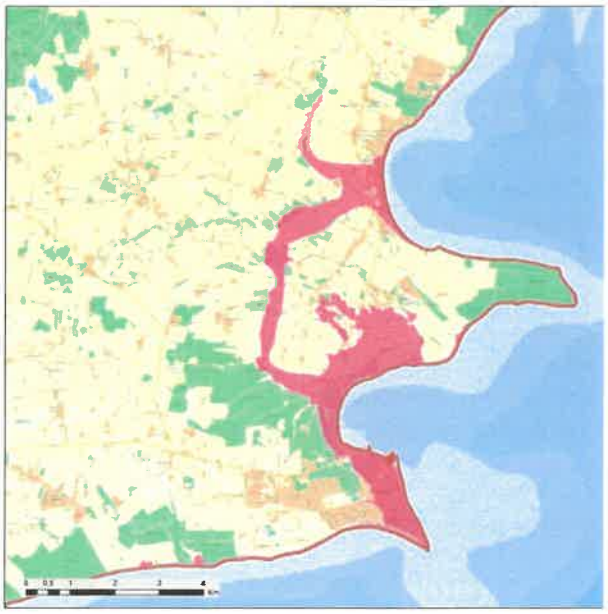


Figure 13: The flooded areas of Juelsminde in a 100 year event in 2050 (The Danish Coastal Authority, NIRAS, 2015).

Constraints and assumptions

One constraint is that the actions (C8, C9, C10, C11, C14, C17, C18) will not follow the same time schedule, whereas some activities of C1 may not be of same relevance for all actions. This is

accommodated by action C1.1.2 and following knowledge sharing meetings and workshops to secure sufficient capacity building.

Expected results:
C1.1.
Phase 1: The results of C1 provides insight in the needs of the partners in regard to knowledge, analyses and tools on coastal issues. Capacity building of at least 25 professionals on national and international best practice on coastal protection. One study trip with at least 25 professional to the Netherlands and Germany to increase the inspiration on best practice. Development of common tenders and adjustment of Phase 2.

Phase 2: Awareness rising and capacity building of at least 25 professionals on holistic approaches and synergies between sustainability and coastal protection measures. Show casing and development of novel and innovative stakeholder organization- and governance models involving app. 25 professionals.
Adjustment of Phase 3.

Phase 3: Identify integrated and holistic solutions together with at least 25 professionals for coastal protection from inside and outside the partnership. Suggestions for how to raise the level of coastal protection in risk areas. Insight in other regions working with sea and fjords relevant for replications of C8, C9, C10, C11, C14, C17, C18.

C1.2:
Phase 1: Capacity building of at least 25 professionals on combined scenarios on Rainfall and storm surges.

Phase 2 and 3: Information and establishment of a capacity building network for and among the partners on CCA and coastal challenges (to be continued after the end of the IP) 25 professionals involved.

Cost estimation:
Based on working days with salary of 47 € per Hour and 347,5 € per day per senior employee and 35 € per hour and 259 € per day for junior employee.

Workshops and meetings includes budgets for lunch coffee and conference venue 75 € per participant
Workshops includes preparations in advance and hours spend during workshop and after the event for output material
Workshop transport is calculated via an average of 100 km and 0,487 € kr. per km

Deliverables:

Action	Deliverables:
C1.1	**Phase 1:** Report on the desk analysis of knowledge gaps Minutes and presentations of meetings and workshops accessible on www.c2ccc.eu Evaluation of the meetings (digital form) Specifications on the tender materials Study tour dissemination material to be used before and after the study tour Common tender material to be used in the partnership **Phase 2:** Presentations on sustainable approaches to coastal protections. Accessible on www.c2ccc.eu Presentations on new governance and involvement models. Accessible on www.c2ccc.eu

	Minutes and presentations of meetings, training courses and workshops accessible on MidtRum Evaluation of the meetings (digital form). Accessible in MidtRum **Phase 3:** Minutes of meetings accessible on www.c2ccc.eu Evaluation of the meetings (digital form) One note on replication of the findings in the project One note on synergies based on workshop
C1.2	**Phase 1:** Minutes of meetings accessible on MidtRum Evaluation of the meetings (digital form). Accessible in MidtRum **Phase 2:** Minutes of meetings accessible in MidtRum Evaluation of the meetings (digital form). Accessible in MidtRum **Phase 3:** Note on the continuation of a CCA and coastal challenges network after the IP incl. recommendations on purpose, organisation and financing. Report on results and initiatives from the project "Cities and the rising sea" Note on the results and experiences drawn from the projects (C8 – C24) from afternoon workshop with all partners.

Milestones:

Action	*Quantifiable milestones:*	*Date by end of*
C1.1	**Phase 1:**	
	One Desk analysis of knowledge gaps	01/08/2017
	One Study tour arranged and implemented	01/06/2018
	Specifications of the tender materials	01/12/2017
	One common tender material to be used in the partnership	01/02/2018
	Recommendations for changes in phase two	01/12/2018
	Phase 2:	
	One Workshop on sustainable approaches to coastal protections	01/06/2019
	One Workshop on new governance and involvement models	01/06/2020
	Phase 3:	
	One Workshop on synergies	01/12/2021
	One note on replication and gathering of experience	01/10/2022
C1.2	**Phase 1:**	
	One Knowledge sharing meeting	01/10/2017
	One Recommendations for changes in phase 2	01/12/2018
	Phase 2:	
	One Workshop on results	01/12/2020
	Phase 3:	
	One workshop on results and experiences	01/12/2021
	Report on results and initiatives from the project "Cities and the rising sea"	01/12/2021
	Report on the establishment of a permanent Danish integrated river-coastline network.	01/06/2022

***ACTION C2*: Rivers and lakes**

Beneficiary responsible for implementation: Central Denmark Region

Budget: 141.130 €

Number of days estimated spent on action in phase 1: 155 Days
Number of days estimated spend on action in phase 2: 142 Days
Number of days estimated spent on action in phase 3: 63 Days

Role: CDR takes on the role as a facilitator, coordinator and networking body of the CCA activities.

Relation to CCA plans:
9 of the 21 municipalities as well as the 2 risk management plans mention issues related to lakes and rivers in their CCA plans (cf. Figure 1).

Linked to Complementary Actions

1. *Watercourse restoration:* Actual restoration of watercourses supplementing C2C CC by retaining water flow upstream and improving biodiversity. Complements C3. [Funded by the Danish AgriFish Agency under the EAFRD 2014-2020]

Description (What, how, when and where):
The objective of this action is: To increase the resilience of land alongside river banks taking into consideration the environmental state and biodiversity and to enhance urban resilience.

This action has a twofold purpose. Firstly, to secure knowledge sharing, inspiration and capacity building across the actions dealing with lakes and rivers within C2C CC. The following actions deal with river systems in different ways: C10, C11, C12, C13, C14 and C16. These actions will individually develop knowledge on CCA and rivers within different aspects, which can benefit the other actions. Furthermore, the actions can gain from each other's thoughts and processes, whereas continuous contact between the actions will encourage knowledge sharing. This is underlined by the fact that modeling, interpretations, analysis and data sampling are similar in the different catchments. Secondly, to draw on specific aspects across C10, C11, C12, C13, C14 and C16, which will benefit the CCA agenda nationally as well as within the EU. These aspects are currently the highly debated themes of the synergies and trade-offs between CCA and water ecology, the need for warning systems related to flooding of rivers and local contingency planning, and the synergies between farming and wetland restoration. In regard to the latter, Denmark is traditionally a country with a long agricultural history and an ongoing national debate deals with the delicate balance between agricultural development and the environment.

C.2.1 Experiences with modeling large catchments:

What:
This action takes its point of departure in gathering and sharing knowledge between the C2C CC river projects (action C10, C11, C12, C13, C14 and C16) to secure that the projects gain from each

other. Today modeling of rivers are often based on the models of Danish Hydrological Institute (DHI), which have largely divided modeling systems in rivers, sewer systems, coastal flooding and groundwater. These models are not easily integrated in a holistic model of the hydrological cycle. In the projects of C10, C11, C12, C13, C14 and C16, the need for integrated assessments are evident and it is important to knowledge share about the experiences of the approaches, methods, data sampling, storage and modeling. In order to make integrated analyses it may be relevant to involve water sector ICT businesses on modeling watercourse flow on catchment level.
Many of the catchment models has the same need for forecasting different scenarios. Therefore there is a need to work on developing an overall public offering to be used by the different projects (C10, C11, C12, C13, C14, C15 and C16).

A screening tool for overall risk on catchment level is developed in C6.2. To implement the use of the tool there will be initiated some activities related to the tool.

How:
The following sub-actions have the purpose to gather experiences, share knowledge between action and create a common tender to be used by the actions C10, C11, C12, C13, C14 and C16:

1. An initial consultation workshop between the project partners of action C10, C11, C12, C13, C14 and C16 on the background knowledge of the respective projects and their initial plans for watercourse modelling. Discussion of different approaches and unknowns with participation and input of the 'Advisory Committee'.
2. An interview process to initiate the common tender process
3. Preparation of a public tender on modelling of catchments
4. A workshop when the modelling of C10, C11, C12, C13, C14 and C16 are in process, with the main purpose to discuss the challenges and how to overcome the challenges with e.g. data, methods, and models.
5. A workshop on knowledge sharing on results and initial discussions on possible solutions.
6. Process to ensure that the screening tool presented in C6.2 is giving the right answers to be prepared for the tender process
7. Interactive 3D decision support tool on the water flow in catchment areas across municipal borders.
8. A workshop presenting the Interactive 3D decision support tool on water flow in catchment areas.
9. A workshop discussing need for future needs for data and tools and how to use the new data from the 2 government developed tools – HIP (Hydrologic Information and prognoses program) and KAMP (Climate adaptation and Land use tool for environment and planning staff).
10. At the end of each phase, an evaluation and assessment with focus on the needs on future integrated cross partner actions within will be conducted. This done to secure the direction and processes are carried out in the right way.

Where:
SDK, NDK, RK, HbK, HK, Horsens, HEDKOM, SK-KOM, SIK, FK, and VK.
The 3D decision support tool is developed to cover the whole region.

When:
Phase 1: Activities related to bullet 1-6 and 10

DS

Phase 2: Activities related to bullet 7, 8 and 10
Phase 3: Activities related to bullet 9

C2.2 Warning system

What:
The public resilience to sudden events like flooding could increase significantly by providing access to information and forecasted data. Therefore there is a need to transform the existing and collected data to a format which may be distributed to the potential affected citizens. By alerting citizens and giving them information on how to act in a given flood situation they may act and prevent damage to their values. Development of forecasting systems with ICT businesses based on models and meteorological forecasts to ensure resilience act as key elements in this activity.

How:

1. Gathering of experiences of other relevant projects' use of warning systems incl. Aarhus Municipality.
2. Map the needs and wishes for working with Warning Systems in the partnership.
3. Workshop presenting the knowledge and experience within the field of early warning systems open to public
4. Study trip to England to gain experience and inspiration – one of the themes is warning systems
5. Initiate the development of forecast systems with ICT businesses based on models and meteorological forecasts. The development will be implemented and integrated in the catchments for Gudenåen (C12) and Storå (C13).
6. Partner workshop on the topic 'Warning systems, civil protection and contingency planning" using the case histories from C12 and C13 and integrate knowledge from England and from the government developed tools HIP and KAMP.
7. At the end of phase 2, an evaluation and assessment with focus on the needs on future integrated cross partner actions within will be conducted. This done to secure the direction and processes are carried out in the right way.

Where:
Regional activities in CDR

When:
Phase 2: Activities related to activities 1, 4 and 7
Phase 3: Activities related to activities 5-6

C2.3 The role of land use management and wetland restoration in CCA

What:
Often the most cost effective way to flood-prone urban areas in the context of CCA is by retaining great amounts of water outside the cities, because the construction here is less costly than in the cities. Agriculture involve the largest land owners in DK (About 60% covered by agriculture) and it is therefore essential to cooperate with farmers when doing CCA outside or adjacent to urban areas. Cooperation and thereby CCA may result in the implementation of projects of different

nature including restoration of streams and establishment of wetlands. Drainage can be a challenge for agriculture in flat, wide river valleys, because of the slower water flow in the river, which increases the risk of critical high water levels and flooding. However, agricultural land facing the river banks may have less value for the farmers due to poor harvest, whereas there is a potential for farmers to lease land for CCA to the utilities and municipalities (however, not yet investigated in Denmark). CCA outside cities in demarcated areas often will benefit downstream agriculture and cities. Furthermore, wetlands remove nutrients such as nitrates and phosphorus, as well as degrade pesticides, and may thus be a beneficial mean to secure river ecology. A national political agreement further increases the implementation of wetlands as a measure to lower nutrient outwash from agricultural areas (Agreement on Food and Agricultural Policy). C2C CC will encourage the partnership to include the wetlands as a CCA measure. The actions will also draw on the experiences of the Danish project: "The farmer as a water manager", a project looking at the synergies (instead of the barriers) between CCA, river ecology and farming.

How:

1. Dialogue with the Secretariat of Utilities (Forsyningssekretariatet) in regard to possibilities for utilities to lease agricultural land in case of extreme flood events. Linked to preparatory action A1.
2. Dialogue with the Danish Agency of Nature on the implementation and possibilities of funding related to the newly approved Agreement on Food and Agricultural Policy which includes mini-wetlands as means for removal of nutrients (and CCA).
3. Develop business models incorporating city safety and compensation of farmers based on experiences from actions in C2C CC and other project.
4. Screen for possible low lying areas in some of the catchments for delaying the water flow through the landscape and how these areas can be used in preventing flooding.
5. Gathering of state-of-the art knowledge on the synergies between agriculture, CCA and low lying areas (peatland). How to use the method "Multifunctional land consolidation" to make room for climate water. One workshop to present the results and to discuss possibilities.
6. Test and demonstration of conceptual design in one of the catchments (Aastrup Kær – C8 Håb til Håb) included in the project. Testing the proposed business models and synergies.
7. At the end of each phase, an evaluation and assessment with focus on the needs on future integrated cross partner actions within will be conducted. This done to secure the direction and processes are carried out in the right way.

Where:
CDR

When:
Phase 1: Activities related to activities 2 and 7
Phase 2: Activities related to activities 1, 3-5 and 7
Phase 3: Activity related to activities 4-6

C2.4 Impacts of CCA on freshwater ecology

What:

DS

CCA in DK includes separation of rain water and waste water. Rain water is often discharged to recipients as streams and lakes, which includes a risk of increased exposure of the ecosystem.

Ecosystems consist of a number of biotic and abiotic elements. The biotic elements are composed of populations, manufacturers, consume and decomposers. The abiotic elements covering temperature conditions, oxygen level and light. As an example temperature differences due to increased discharge of rainwater can result in deterioration of living conditions and reproduction of trout. Another issue associated with CCA is the discharge of hazardous substances. Discharge of varying amounts of rainwater into streams and lakes containing various contaminants like metals, oil substances, pesticides and nutrients can potentially have a negative impact on the ecosystem as the abiotic factors may change in the recipient. The effect of varying amounts of rainwater containing hazardous substances can vary from acute toxicity to slow accumulation in the food chain. Discharge of hazardous substances can potentially change the competitive relationship and living conditions of plants and fauna, and ultimately foster unwanted species. The discharge of rainwater to recipients is regulated by the Water Framework Directive (WFD) and by Danish law (Danish environmental protection law and waste water order) which seek to minimize impacts on the ecosystem. Discharging rainwater to any recipient requires a discharge permit, which contains specific requirements related to e.g. hydraulics and toxic substances.

However, little knowledge is available on the long term effects of CCA on freshwater ecology, but research and knowledge from practice is currently developing. This action will collect data across the actions related to lakes and rivers: C10, C11, C12, C13, C14 and C16, but also to selected actions related to rainwater, as the source of the discharges originates from SUDS and the utilities' rainwater pipes (C4.1, C4.2, C4.3, C19, C22).

How:
Gather knowledge through:

1. Gathering of the actions' C10, C11, C12, C13, C14 and C16, technical reports
2. State-of-the art research through the Advisory Committee' partners
3. 1 partner workshop on the topic 'Impacts of CCA on freshwater ecology'
4. A study trip to England to exchange experiences and possibly jointly developing ideas.
5. At the end of phase 2, an evaluation and assessment with focus on the needs on future integrated cross partner actions within will be conducted. This done to secure the direction and processes are carried out in the right way.

Where:
CDR

When:
Phase 2

DJ

Reasons why this action is necessary:
This action accommodates the pressing need of coordination and knowledge sharing across local authorities with similar challenges. Since the structural reform in 2007, the responsibility of water and environment lies with each individual municipality. Previously, the responsibility and knowledge related to the whole catchment area were based at the counties, which have now ceased to exist. New arenas of catchment based coordination and planning are emerging, not at least in the spin-off of the river basin management plans under the WFD. However, CCA is not yet included in this process. This action will contribute to rebuilding catchment based planning and will aid the future integration of CCA within the implementation of the WFD. The action contains comparative analysis and modeling in different basins. By tendering from a common pool and prepare specifications in the procurement through interdisciplinary collaboration, processes are optimized and the work carried out becomes more efficient.
Further, the optimization of corporation between up-stream land owners and flood risk threatened cities down-stream may encourage sustainable long lasting solutions via new public-private partnerships and business models for preventive CCA actions.

Constraints and assumptions
The actions of C10, C11, C12, C13, C14 and C16 will not be implemented concurrently in their respective processes. Thus it may be a challenge to plan inspirational meetings and workshops at times, benefitting all parties. However, as all the actions will start up in Phase 1, initial steps such as new approaches to integrative modeling of the catchments (action C2-1) may benefit all.

Expected results:

C2.1:
Phase 1: Three workshops on knowledge sharing and capacity building on integrative modelling of water courses between the partners of action C10, C11, C12, C13, C14 and C16 (Involving 120 professionals). An interactive 3D decision support tool on the water flow in catchment areas across municipal borders (same as action C6.2), used by 10 municipalities. Common tendering material to be used in the individual catchements. Adjustment of Phase 2.

Phase 2: Two workshops on knowledge sharing between the partners of action C10, C11, C12, C13, C14 and C16 on their proposed solution in the respective catchment areas (Involving 80 professionals).

Phase 3: One Workshop discussing need for future monitoring and sharing of knowledge from the development on HIP and KAMP (Involving at least 35 professionals).

C2.2:
Phase 2: State-of-the art knowledge on warning system practice as input to tool development. One workshop supporting capacity building among all partners with knowledge on 'Warning systems, civil protection and contingency planning' (100 professionals benefitting).

Adjustment of Phase 2.

DS

Phase 3:

1 ICT businesses develop a forecast system based on models and meteorological forecasts.

Knowledge sharing about early warning systems through one workshop for at least 35 professionals.

C2.3:
Phase 1: Push for new CCA solutions to retain water upstream cities. Dialogue with two ministries initiated. Adjustment of phase 2. Phase 2: three different business models for incorporating city safety and compensation of the farmers (Used by 15 municipalities). 5 Municipalities apply for funding for wetland projects. Newest knowledge on the synergies between agriculture, CCA and wetlands. Adjustment of phase 3.

Phase 3:

Maps showing low laying areas in the region for delaying water flow trough the landscape.

Sharing knowledge about Multifunctional Landconsolidation, as a method to release low laying aras from farming.

One test and demonstration of conceptual design in one of the catchments included in the project. Testing the proposed business models and synergies.

C2.4: Phase 2: Capacity building of 35 professionals build up among all partners with knowledge on 'Impacts of CCA on freshwater ecology'.

Cost estimation:
Based on working days with salary of 47 € per Hour and 347,5 € per day per senior employee and 35 € per hour and 259 Euros per day for junior employee.

Workshops and meetings includes budgets for lunch coffee and conference venue 75 Euros per participant
Workshops includes preparations in advance and hours spend during workshop and after the event for output material
Workshop transport is calculated via an average of 100 km and 0,487 € kr. per km

Deliverables:

Action	Outputs
C.2.1.	Phase 1: Activity 1+4. Minutes and presentations of meetings accessible on the webpage www.c2ccc.eu Activity 2 +3. An interactive 3D decision support tool on the water flow in catchment areas across municipal borders (same as C6.2). Evaluation of the meetings (digital form)Activity 10: Phase 1 report Phase 2: Activity 5. Minutes and presentations of meetings accessible on the webpage www.c2ccc.eu Activity 10: Phase 2 report Phase 3: Activity 9: Materials and presentations from the workshop. Follow-up-rapport with recommendations
C.2.2.	Phase 2: Activity 1, 2+4: Workshop material on 'Warning systems, civil protection and contingency planning' accessible on www.c2ccc.eu Activity 2: 1 forecast system based on models and meteorological forecasts available for the public

	Activity 4: Phase 1 and phase 2 report Phase 3: Activity 5: Minutes of meeting concerning the development of the early warning system Activity 6: Materials and presentations from the workshop
C.2.3.	Phase 1-2: Activity 1 and 2: 1 Note on new concept for utilities to pay farmers to retain water upstream cities, and thus save costly investments in the cities. Activity 8: Phase 1 and 2 report Activity 5: 1 report on different business models to ensure win win solutions between the agriculture and urban areas. 7: Action Report on the synergies between agriculture, CCA and wetlands Phase 3: Activity 4: Rapport, describing the possibilities in delaying climate water in low laying areas (peatland) Activity 5: Rapport form the state of art-study and the materials and presentations form the workshop Activity 6: Materials that shows where the method/concept has been used
C.2.4.	Phase 2: Activity 1+2+3: 1 report on 'Impacts of CCA on freshwater ecology'. Activity 4: Phase two report

Milestones:

Action	*Quantifiable milestones:*	*Date by end of*
C.2.1 –C2.4	**Phase 1:** 4 interviews on model tender	01/03/2017
	Report on specifications for the tender	01/09/2017
	Four workshops will be arranged (one every half year), 160 participants	01/07/2017; 31/12/2017; 01/07/2018; 31/12/2018 01/06/2018
	Report on experience of warning system compiled	31/12/2018
	Investigation on possibilities of areas that can be flooded and possible funding of the investment	31/12/2019
	Phase 2: Three different business models investigated and developed	01/07/2019; 31/12/2019; 01/07/2020;
	Four workshops will be arranged. (160 participants).	31/12/2020
	Forecast model developed	31/12/2020
	Report on description of effects on fresh water ecology	31/12/2019
	Phase 3: Workshop – future tools (HIP and KAMP), (35 participants)	31/12/2021
	Design of forecast system	01/07/2021 31/12/2021

	Workshop about warning systems Test and demonstration of business model in one catchment area	31/12/2022

***ACTION C3*: Groundwater**

Beneficiary responsible for implementation: Central Denmark Region

Budget: 131.591 €

Number of days estimated spent on action in phase 1: 160 Days
Number of days estimated spent on action in phase 2: 139 Days
Number of days estimated spent on action in phase 3: 83 Days

Role: C2C CC project management (CDR) take on the role as a facilitator, coordinator and networking body of the CCA activities.

Relation to CCA plans
18 of the 21 municipalities mention challenges related to groundwater in their CCA plans (cf. Figure 1).

Linked to Complementary Actions

1. *"WaterCoG":* A project around the North Sea involving eight beneficiaries from DK, NL, SE and UK. The focus is on improved water governance in the private and public sector and includes pilots in the region. Testing and demonstrating new management tools. The WaterCoG and C2C CC will have strong synergies in relation to water management, planning and stakeholder involvement. Complements C0. (funded by InterregVB).
2. *"TOPSOIL":* Focusing on issues related to rising groundwater levels and related climate change implications. Includes beneficiaries from DK, DE, NL, BE and UK and will add European aspects on groundwater to C2C CC. Complements C4 (funded by InterregVB).

Description (what, how, where and when):
Climate change in Denmark is expected to lead to increased rainfall in autumn and winter, and less during summer, causing increased near-surface groundwater levels, especially during autumn and winter. An increase in groundwater levels varies across the regional geography and depends on e.g. geology, distance to the sea, land use, drainage and elevation of the area. This challenge is new, and municipalities are uncertain about how to deal with the problems of high groundwater levels. First, there is a lack of knowledge - where can we expect the groundwater to rise? How do we measure the changes? Secondly, there is a lack of measures - what is the right thing to do in the areas prone to rising groundwater levels?



Figure 10: Investigations on soil conditions



Figure 11: A groundwater flooded area in the eastern part of CDR

The objective of this action is to increase the knowledge and resilience towards rising near-surface groundwater optimizing the use of surplus groundwater.

C3.1 Interaction between rainwater and rising groundwater level

What:
To support the described tool in section C6.1 there is a need to identify the needs and challenges in the municipalities. The challenges have a geographical variation. Groundwater levels in coastal areas are linked to sea level rise and hydraulically connections. Further, low lying areas inland are interacting with the river and lake systems. Work around the tool on groundwater is focused on gathering data and conducting desk analysis in order to define knowledge gaps for understanding the near-surface groundwater and bridge knowledge-gaps by involving applied knowledge and science. In advance, an examination of the need will be conducted to ensure that the tool is developed to support the challenges in the municipalities. After and during the development of the tool, sessions focusing on teaching and adaptation of the tool will be carried out.

How:
Activities:

1. Sessions and workshops with municipalities and "Advisory committee' experts on groundwater and modelling to ensure the groundwater tool will be a useful tool for the municipalities, to ensure all relevant data is captured and the challenges gathered. In advance of the workshop, the municipalities will be consulted to target the workshop.
2. Preparation of a public tender on modelling groundwater levels as described in the action C 6.1.
3. Halfway workshop where a supplier presents preliminary model tool results
4. Educational sessions for staff at municipalities to implement the groundwater tool, understanding results and following consequences.
5. Identification of areas in the region threatened by groundwater flooding by using the groundwater tool (same as action C6.1).
6. Work on using the tool including training sessions to fine tuning the tool. Some of the training and fine-tuning will be coordinated together with "SDFE" (Styrelsen for Dataforsyning og Effektivisering - The Danish Agency for Data Supply and Efficiency), and their new governmental tools HIP and KAMP. HIP and KAMP was developed by

the Danish Agency for Data Supply and Efficiency, which is a public agency that provides national tools to municipalities, utilities and other actors related to e. g. climate adaptation. The tools are public available and provides easier access to data in climate adaptation. There is a close collaboration between C2C CC and SDFE in the development of these tools, drawing on knowledge from the tools developed in C2C CC.

7. At the end of each phase, an evaluation and assessment, which focus on the needs on future integrated cross partner actions, will be conducted. This is done to secure the direction and processes of the actions are carried out in the right way.

Where:
CDR

When:
Phase 1: Activity 1, 2 and 7
Phase2: Activity 3, 4, 5 and 7
Phase 3: Activity 6 and 7

***C3.2* Advanced local adapted investigations and hydrogeological models:**

What:
In selected areas a detailed local model is set up focusing on groundwater, surface and/or seawater (e.g. action C8, C10, C12, C17). Models are based on the present data and collections of new data sets e.g. geophysical data. In the context of CCA it is rather new to have detailed geological and geophysical mappings and models and the use of them on local scale. There is an interest to examine how precise the tools are, and how they can be used in e.g. forecasting planning and involvement of stakeholders. Furthermore, the benefits of running detailed mapping and local scale hydrological models in comparison to the developed tool described in C6.1 will be investigated in order to make recommendations for what type of modelling is preferable in different settings. In addition, the complementary InterReg project "TopSoil" will be investigating the threat of rising groundwater level in an area north of Herning, where this action will draw on the modelling methodology and results of Topsoil.

How:
The action will test and demonstrate tools to map groundwater levels and examine the use of advanced local adapted hydrogeological models by the following activities:

1. Examine the tools available and make test and demonstrations in local areas in corporation with the "Knowledge Committee" and the complimentary project TopSoil.
2. Examination the combined tool (ground- and surface water) in 2-3 subprojects and combine the results with existent data/model results
3. Workshop with a focus to share knowledge in using the tool and compare results/test toward existent data. The workshop will be made together with the TopSoil project and "SDFE" and the Environmental Portal.
4. Formulate guidelines on when to use the tool developed in C2C CC and when to use the governmental developed tools HIP and KAMP.

DS

5. At the end of each phase, an evaluation and assessment with focus on the needs on future integrated cross partner actions within will be conducted. This is done to secure the direction and processes are carried out in the right way.

Where:
CDR, with focus on action C8, C10, C12, C17 and TOPSOIL

When:
Phase 1 Activity 1 and 5
Phase 2: Activity 2, 3, and 5
Phase 3: Activity 4

***C3.3* Reuse of excess groundwater:**

What:
This sub-action will bring in practical inspiration to management of surface-near groundwater from other EU countries (e.g. the Netherlands, Germany or Belgium) and also draw on the results of the complimentary project TopSoil. C3.3. will examine the use of excess groundwater for e.g. irrigation, heating or cooling. This is especially relevant in areas where e.g. the heating costs are high and allow for alternative solutions such as the use of excess groundwater, or where the challenges with high groundwater levels are so high, that remedial measures are necessary despite the running costs. This action calls for the involvement of heating-utilities, industries, research institutions and municipalities. It is important to note, that this action will primarily deal with the near-surface groundwater, as it is the upper levels which cause challenges of rising groundwater levels. Action C3.3. will thus not have environmental impacts on the groundwater resource extracted for drinking water. Furthermore, the use of excess groundwater may have the potential to store groundwater and discharge to watercourses in periods with normal or low flow capacity (and avoid discharge in periods with high flow capacity).

How:
C3.3. involves the following activities:

1. Gather information on possible conflicts with rules and regulations on use of excess water and related tax systems and make recommendations available for relevant stakeholders.
2. Local workshops in relevant areas to identify win-win solutions
3. Regional workshop targeting stakeholders (farmers, energy industry, local citizens) from the region – brainstorming on possible future measures. The activity will be coordinated with C2.3 – for the part concerning farmers and the Topsoil project.
4. Gathering material from the e.g. Netherland, Northern Germany, the U.K and southern Denmark on how to tackle present and future groundwater levels in a sustainable way.
5. It is the aim to make a study tour to relevant countries learning on their management systems and solutions related to groundwater flooding, it is however, depended on the development of COVID-19. The Study tour will be planned in collaboration with TOPSOIL.
6. At the end of phase 2, an evaluation and assessment with focus on the needs on future integrated cross partner actions will be conducted. This is done to secure the direction and processes are carried out in the right way.

Where:
CDR and study tour to relevant countries

When:
Phase 2: Activity 1, 2 and 6
Phase 3: Activity 3-6

Reasons why this action is necessary:
Rising groundwater levels are a not well-lit factor in relation to climate change. Cities experience increased challenges with rising groundwater levels e.g. with flooded basements during autumn and winter time. In the countryside rising groundwater levels cause saturated soils, which in case of long-term rains impact the water levels and flow of watercourses and cause flooding downstream in cities and on agricultural land. There is a great need to define and develop sustainable solutions.

Constraints and assumptions
The constraints of action C3 are mainly related to sub-action C3-1 and C3-3. C3-1 is depended on the developed tool in action C6.1 and whether the requests of the municipalities to the functions of the tool can be technically fulfilled. In regard to action C3-3, solutions to use excess groundwater for alternative and innovative purposes may have possible conflict with the existing tax system on water consumption. C2C CC will in that case be in dialogue with the Danish Ministry of Environment and other relevant ministries in order to change the system.

Expected results:
C3.1: Phase 1: Knowledge on the requests and needs on regional groundwater modeling of the municipalities. Tender specifications on local needs to be implemented in the tool C6.1. Adjustment of Phase 2.

Phase 2: User feedback from the municipalities to modify the tool to local needs and common tendering material to be used in the individual catchments. Capacity building of municipal officials and training materials. Interactive maps to be used for local adaptation strategies (same as action C6.1). Final modification of the tool to local needs and training in the use of the tool. Ensuring that changes are implemented for future needs

Phase 3: In phase 3 the task is important to develop the groundwater tool with the new data generated in the two new governmental tools HIP and KAMP. This will give the partners access to new data and maintain their possibilities for flood mapping in the future.

C3.2: Phase 1: Identification of relevant tools to use when mapping groundwater levels locally.

Phase 2: Capacity building of relevant professionals on 'local scale and regional scale groundwater modelling'. Capacity building of at least 25 professionals on groundwater modelling and scale issues. Recommendations on the use of local and regional scale models.

Phase 3 focuses on combining HIP, KAMP and C2C CC groundwater tool and through cooperation with "SDFE" and The National Environmental Portal, ensure that the three tools complement each other as much as possible.

C.3.3: Phase 2: Identification of conflicts built in the present tax system on energy and water consumption. Stakeholder input from at least 50 professionals on relevant use of excess groundwater in the region and other areas. Adjustment of phase 3. Phase 3: Regional recommendations to tackle future groundwater flooding challenges based on regional ideas and experiences from other countries. European inspiration on excess groundwater through study tour with 30 professional attending.

Cost estimation:
Based on working days with salary of 47 € per Hour and 347,5 € per day per senior employee and 35 € per hour and 259 Euros per day for junior employee.

Workshops and meetings includes budgets for lunch coffee and conference venue 75 Euros per participant

Workshops includes preparations in advance and hours spend during workshop and after the event for output material
Workshop transport is calculated via an average of 100 km and 0,487 € kr. per km

Study tour expenses are based on a bus rental and the experiences with similar arrangements

Deliverables:

Action	Deliverables
C3.1.	**Phase 1:** 1+2. Minutes from the workshops. Specifications on the tendering of the tool C6.1 7: Phase 1 report **Phase 2:** 3-6. Minutes and workshop material. Output maps of groundwater flood prone areas distributed in the whole of CDR. Maps are adjusted to the local conditions. Training material made and distributed for the users.
C3.2.	**Phase 1:** Report on the available tools on groundwater mapping including relevant test and demonstrations 5: Phase 1 report **Phase 2:** 2+3: Workshop report on the results discovered. General report on the potential needs for local models in groundwater flood prone areas based on the results from the test in 2-3 subprojects. 4: Guideline on local scale and regional scale modeling. 5: Phase 2 report **Phase 3:** Activity 4: Guideline in how to use the C2C CC tool in combination with the governmental developed tools HIP and KAMP
C3.3.	**Phase 2:** 1. Report - Identifying conflicts built in the present tax system on energy and water consumption. 2. Local reports containing Ideas for relevant use of excess groundwater in other areas. 3. Report on relevant use of excess groundwater on a regional and local scale. 5. Report on study tour 6: Phase 2 report **Phase 3:** 4. Catalogue of measures for reducing flood risk from rising terrain near groundwater (made together with TOPSOIL). 5. Report on study tour 6: Phase 3 report

Milestones:

Action	*Quantifiable milestones:*	*Date by end of*
C3.1- C3.3	**Phase 1:**	
	Specifications on tendering for tool C6.1 developed	01/10/2017
	One tender workshop, 10 participants	01/10/2017
	Description of available tools for groundwater mapping	31/12/2018
	Phase 2:	
	One mapping workshop, 25 participants	01/03/2019
	Outline of groundwater flood prone areas on a regional basis	31/12/2019
	One regional workshop, 25 participants	31/12/2019
	Training material developed for use on groundwater levels	31/12/2019
	Report on local use of excess groundwater	31/12/2019
	Report on conflicts with existing tax system and legislation	31/12/2020
	Workshop on conflicts with existing tax system and legislation, 50 participants	31/12/2020
	Phase 3:	
	Guideline in how to use the C2C CC tool in combination with the governmental developed tools HIP and KAMP finalized.	31/12/2021
	Catalogue of measures finalized on reducing flood risk from rising levels of the terrain near groundwater.	31/12/2021
	Study tour with approximately 30 professionals	01/07/2022

DS

ACTION C.4: Rainwater

Beneficiary responsible for implementation: Central Denmark Region

Budget: 148.094 €

Number of days estimated spent on action in phase 1: 158 Days
Number of days estimated spent on action in phase 2: 167 Days
Number of days estimated spent on action in phase 3: 54 Days

Role: C2C CC project management take on the role as a facilitator, coordinator and networking body of the CCA activities.

Relation to CCA plans:
19 of the 21 municipalities' CCA plans as well as one risk management plan mention rainwater as a major problem and the use of SUDS as a means to retain and reduce rainwater run off (cf. Figure 1).

Linked to Complementary Actions
Municipal and Water Utility CCA projects: the municipalities and the region are to mobilize and invest at least 16 mill. € on CCA projects[1] within the project period. Likewise, the Danish utilities are to spend app. 135 mill. €[2] annually on climate investments[3] over the next 25 years. C2C CC will contribute with added value and influence the municipal CCA plans and waste water plans and the utilities' future construction projects [Financed through taxes and water fees]. Tax and water fee financed CCA projects support the overall goal by making the region more climate resilient. However, it is also the aim of C2C CC to influence these projects towards more green and flexible solutions serving more purposes. There is a need for increased knowledge among the utility companies on the possible means and tools to be used when dealing with natural infiltration of rainwater.

Description (what, how, where and when):
Handling rainwater and extreme rainfall occurs mostly locally. However, experiences of problems and solutions can be shared between the municipalities and utilities, on technical as well as on organizational and process implementation challenges. Furthermore, incidents with extreme rainfall is the most experienced effect of climate change in Denmark, and thus also the challenge with the largest knowledge base. A large proportion of the knowledge base is placed in Greater Copenhagen area, were extensive cloud bursts have initiated a climate adaptation strategy incl. hundreds of local initiatives to cope with the heavy rain falls. The activities in this action, therefore, aim at bridging the knowledge gap within urban hydrology (E.g. surface groundwater interactions) and in water quality when rainwater is managed on the surface (instead of in the sewer).

C4.1 Urban Hydrology and quantity

What:
Towns and cities in CDR are planning to use SUDS as a part of the means to deal with cloud bursts. Though there are many unknowns within the use of local infiltration such as: What is the

[1] Based on: 19 municipalities and 1 regional authority each spending approximately 135,000 EUR per year in 6 years.
[2] Approximately 27 mill. EUR per regional authority per year.
[3] Danish Association of Water Companies (DANVA) (2015). "Dansk Vand Magasin #3 juni 2015", DANVA. p. 32-34. (in Danish).

capacity in sealed paving areas? What is the capacity in the surrounding unpaved areas? How does the level of the groundwater table impact the possibility of leaching and infiltration?
There is a need to gather and collect the experiences from CDR and other areas like greater Copenhagen to define experiences with hydrological conditions to implement SUDS and the requirements of maintaining the SUDS after installation. Further to identify knowledge gaps within implementation of SUDS seen in a urban hydrological system. The identification will include experience of the setup models (C10, C12, C17) and testing of SUDS within CDR. Related to this action are demo-projects C14, C15, C19 and C23. Cross boundary experiences and guidelines will create a solid base for moving forward in a sustainable way and avoid sub optimization.

How:
C4.1 will include the following activities:

1. Collect and gather knowledge and experiences with capacity and SUDS and required conditions for a successful implementation. Learn from experiences in Greater Copenhagen area on how to tackle the excess rain water and the retention capacity in the natural hydrological system in an urban area.
2. Workshop on the hydrological system based on models setup in CDR and experiences from e.g. Copenhagen area. A special focus on the capacity in the soils and open spaces in the towns and cities.
3. Workshop about SDGs as instrument for choosing sustainable solutions.
4. Gathering information on relevant tools to deal with retention of water in an urban environment based on relevant studies in C2C CC.
5. Workshop on new findings on water retention and water quantity.
6. At the end of each phase, an evaluation and assessment with focus on the needs on future integrated cross partner actions within will be conducted. This done to secure the direction and processes are carried out in the right way.

Where:
Workshops will take place in CDR.

When:
Phase 1: Activity 1, 2 and 6
Phase 2: Activity
Phase 3: Activity 3 - 5

C4.2 Knowledge on SUDS' effectiveness in water treatment and maintenance

What:
SUDS are increasingly implemented by the municipalities and waste water utilities to manage rainwater on surface. The SUDS elements are varied and range from rainwater basins to urban green elements (cf. figure 12). Synergies are many with regard to green infrastructure, urban liveability etc. However, knowledge on discharge of toxic substances such as heavy metals like Ni, Cu and oil components like PAHs are not fully understood. Research is ongoing within this topic. Some research results point to accumulation of most substances in the basin sediments, which through maintenance can be removed and replaced by clean sediments. There is a need to gather

existing knowledge from e.g. urban SUDS, rainwater basins along roads and on the demand of SUDS maintenance.

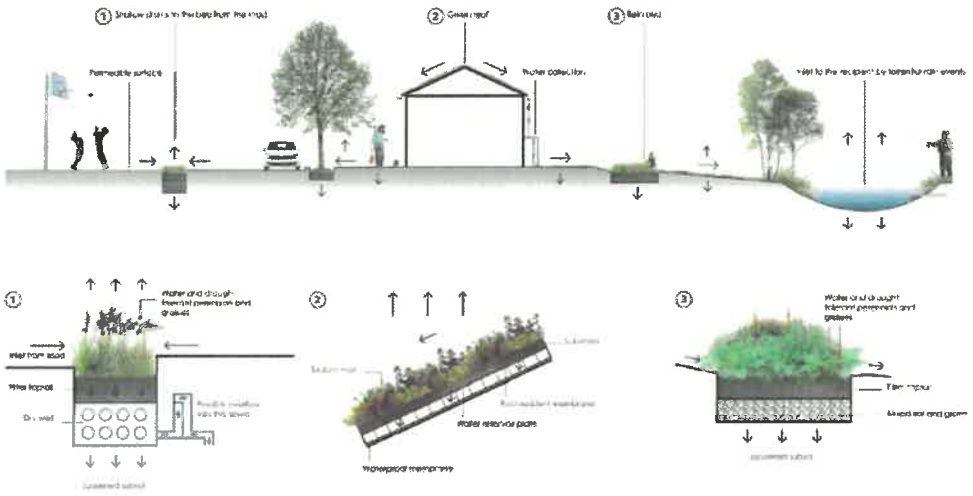


Figure 12: Illustration of SUDS in an urban area (source: NIRAS).

How:
The following activities are part of C.4.2:

1. Gather existing knowledge and practice within the EU e.g. research results, assessment reports and current practice on SUDS, their ability for retaining polluting components and the demand for maintenance. The study will include knowledge gaps, uncertainty and need for further testing and demonstration
2. Workshop on the present knowledge in water quality in relation to SUDS
3. Involve industries and research institutions to bridge knowledge gaps. This activity will focus on the experiences of SUDS, what works and what doesn't, and to facilitate collaboration on improving existing practice. This activity is carried out together with Technological Institute (TI).
4. Arrange workshop in the field of water quality and SUDS inviting stakeholders within industry, research institutions, municipalities, utilities, NGOs as well as citizens (cf. C7). This activity was initiated already in Phase 1, and will be continued with at least one workshop primo 2019. This activity is carried together with Water in Urban Areas and TI.
5. Gather the experiences within C2C CC in the field of permeable pavements (results from C22) and on alternative SUDS constructions (e.g. experience from complementary projects carried out by the utilities) and actions C14, C15, C19 and C23.
6. Test and demonstrate relevant SUDS technologies in corporation with relevant businesses, utilities and authorities. (cf. C7)
7. At the end of each phase, an evaluation and assessment with focus on the needs on future integrated cross partner actions within will be conducted. This done to secure the direction and processes are carried out in the right way.

Where:
Workshops will be arranged in CDR. Workshops will be carried out in cooperation with existing networks like Water in Urban areas and KLIKOVAND. Test and demonstration will be carried out in CDR.

When:
Phase 1: Activity 1, 2 and 7
Phase 2: Activity 3, 4 and 7
Phase 3: Activity 5 and 6

C4.3 Citizen involvement

What:
When rainwater is managed on surface, many actors are involved, including businesses, industries and single house owners, In Denmark these land owners are to pay for handling rainwater (up to a 5 year event) on their private estate, whenever rainwater is to be managed separately from the sewage. This is implemented throughout Denmark, and house owners are involved in two circumstances: 1) decoupling rainwater from sewage by either establishing a two string system (a sewage pipe and a rainwater pipe) or 2) managing rainwater on surface using SUDS. The house owner has to pay for the separation on his/hers property, which is costly and typically around 50,000 DKR (ca. 6,700 €) per property for establishing a two string system. Furthermore, to solve flooding down-stream or in low lying areas, retention is to be implemented up-stream, meaning that house owners, who do not suffer from flooding, are to retain rainwater to secure citizens down-stream.

Traditionally, citizen involvement has been voluntary for people e.g. in urban development projects, CCA adds the dimension of 'must' involvement followed by a requirement of payment. This often results in dissatisfied citizens, complaints and sometimes also conflicts. However, managing rainwater on surface involve possibilities of increasing liveability and urban biodiversity in a neighbourhood, whereas competences in citizen involvement processes is needed by the municipalities and waste water utilities.

How:
1. Collect and gather the experience in CDR and other regions of Denmark on the involvement process in decoupling sewage and rainwater systems. What has been successful and what needs to be adjusted
2. Gathering good and bad examples of SUDS on private estate including experiences from the citizens
3. Workshop arranged with the purpose of evaluating experience on sewage separation and the involvement of stakeholders from different areas. Sessions involving citizens from different areas from CDR and including their views on managing rainwater on their own property. Session will be carried out in the areas in C2C CC working on separation of sewers but involves citizens from different areas within the C2C CC project (Actions C14, C15, C19, C23).
4. Sessions on regional basis to inspire local authorities and utilities on how to deal with rainwater on private property based on results from the pilot studies in C2C CC and experiences from other areas like greater Copenhagen. This activity is concretized to 1 day course on citizen and stakeholder involvement. Invitations outside the partnership are considered. External participants would pay for participation.
5. Workshops about using the SDGs in co-creating with citizens

6. At the end of each phase, an evaluation and assessment with focus on the needs on future integrated cross partner actions within will be conducted. This done to secure the direction and processes are carried out in the right way.

Where:
CDR and Horsens (C14), Hedensted (C15, C23) and Samsø (C19).

When:
Phase 1: Activity 1, 2, 3 and 6
Phase 2: Activity 4 and 6
Phase 3: Activity: 5 and 6

Reasons why this action is necessary:
CCA in Danish towns and cities all have a component of local infiltration and retention. During the last 5 years, wastewater utilities have spent billions on implementing separate sewer systems to manage the increased amount of rainwater to avoid overflow of sewage. There is a need to learn from experiences within the field of SUDS and to identify the knowledge gaps for successful implementation of SUDS, which includes sustainable water quantity and quality in the urban areas. Knowledge within this field needs to be gathered and distributed.
Further innovations in cooperation with the manufacturers of the installations are needed to make solutions fit the demands of the market. A close cooperation and involvement with the citizens is essential to ensure a sustainable implementation of CCA. Further meaningful implementation pushes the society towards more ownership in the field of CCA.

Constraints and assumptions
Collaboration with businesses are needed. These businesses need to be identified in a process. CDR is hosting a lot of manufacturers of water solutions. In the application we assume that the businesses are interested in joining the project and learn from the experiences.

Expected results:
C4.1: Phase 1: Overview on state of the art on dealing with water in urban areas related to water quantity and SUDS. Capacity building and knowledge sharing of app. 50 officials from local authorities.

Phase 2: Capacity building on relevant SUDS systems to be implemented as water retention systems in urban areas (Workshops arranged for 50 partners).
At least half of the partners use SDGs as guideline for integrative planning.

Phase 3: Capacity building of utilities and authorities of SUDS used in C2C CC in urban areas, including specifications and detailed descriptions of the pros and cons. Distribution and implementation of knowledge around the C2C CC findings within SUDS and Water quantity for 200 participants.

C4.2: Phase 1: Overview of experiences and state of the art with SUDS in relation to water quality and the need for more knowledge. Capacity building and knowledge sharing via overview on the challenges and experiences on maintenance of SUDS systems on workshop with 50 professionals attending.

Phase 2: Capacity building of businesses in relation to SUDS via engagement and innovation pull from the experiences on need for development on SUDS systems and demands on maintenance.

DJ

This will be done via bilateral meetings and workshops with an estimation of 100 professionals engaged.
At least half of the partners use SDGs as guideline for integrative planning.

Phase 3: Presentation of new tools meeting the demands of a modern SUDS facility on workshop with around 30 professionals attending.

C4.3: Phase 1: Capacity and knowledge sharing via Danish learnings on involvement of stakeholders in work on separation of sewer systems. Citizens learning across boundaries in CDR.

Phase 2: Involvement of and inspiration of local authorities and utilities on how to deal with involvement of stakeholder in cases of dealing with rain water on their own property (Involving 75 professionals)

Phase 3: Capacity building of local authorities and utilities on how to deal with involvement of stakeholders in a sustainable way (Involving 75 professionals)

Cost estimation:
Based on working days with salary of 47 € per Hour and 347,5 € per day per senior employee and 35 € per hour and 259 Euros per day for junior employee.

Workshops and meetings includes budgets for lunch coffee and conference venue 75 € per participant
Workshops includes preparations in advance and hours spend during workshop and after the event for output material
Workshop transport is calculated via an average of 100 km and 0,487 € kr. per km

Deliverables:

Action	Deliverables
C4.1.	**Phase 1:** 1. Evaluation report on the capacity of SUDS and the limitations set by the local hydrology, geology and other framing conditions. 2. Minutes and output material from the workshop. Accessible on www.c2ccc.eu 6: Phase 1 report and recommendations for phase 2 **Phase 2:** 3: Output report and material on relevant SUDS to be used. Accessible on www.c2ccc.eu 6: Phase 2 report and recommendations for phase 2 **Phase 3:** 4+5. A report on SUDS used in C2C CC and possible SUDS systems to be introduced as means to prevent flooding from heavy rain events. Distributed in the whole of CDR and accessible on www.c2ccc.eu
C4.2.	**Phase 1:** 1, 2 and 3: Workshop output report on the experiences and state of the art with SUDS in relation to water quality and the knowledge gaps and experiences on maintenance. Accessible on www.c2ccc.eu 5: Phase 1 report and recommendations for Phase 2 **Phase 2:** Engagement of relevant producers of SUDS and giving them relevant learnings to be built in in future products 5: Phase 2 report and recommendations for Phase 3 **Phase 3:** A report on learnings in the field of SUDS in urban areas in relation to water quality and presentation of the newest and most modern SUDS products. Closely linked to 4.1. Accessible on www.c2ccc.eu

C4.3.	**Phase 1:** 1+2+3: Report on the learnings within stakeholder involvement in relation to sewage separations and SUDS. Accessible on www.c2ccc.eu 5: Phase 1 report and recommendations for phase 2 **Phase 2:** 4. Training and inspirational material for the authorities and utilities to inspire the citizens on the possible solutions. Accessible on www.c2ccc.eu **Phase 3:** 5. Report on the learnings in using the SDGs in co-creating with citizens

Milestones:

Action	*Quantifiable milestones:*	*Date by end of*
C4.1- C4.3	**Phase 1:** Evaluation report on use of SUDS quantity	01/03/ 2018
	Workshop on quantity elements and SUDS, 50 participants	01/03/2018
	Overview report on state of the art SUDS knowledge in relation to water qualitative aspects including knowledge gaps. Overview of learnings within SUDS and stakeholder involvement and ownership, 100 participants	31/12/2018
	Phase 2: Report on overview on relevant SUDS as tools for water retention	01/06/2019
	Involvement, engagement and delivery of knowledge gaps and needs to producers and manufacturers of SUDS , 30 participants	01/06/2019
	Training and inspirational material for authorities and utilities on how to involve local land owners in implementing SUDS, 75 participants	31/12/2020
	Phase 3: Workshops and presentation material on SUDS experience in C2C CC	01/06/2021
	Distribution of knowledge and implementation	31/12/2021
	Evaluation on the SUDS experiences within C2C CC.	31/12/2021

ACTION C5: Governance

Beneficiary responsible for implementation: CDR

Budget: 190.560€

Number of days estimated spent on action in phase 1: 175 Days
Number of estimated days on action in phase 2: 190 Days
Number of estimated days on action in phase 3: 160 Days

Role: CDR takes on the role as a facilitator, coordinator and networking body of the CCA activities.

Relation to CCA plan
14 of the CCA plans and three of the risk management plans mention the importance of cooperation in relation to CCA.

Linked to Complementary Actions

- "Plowing Free Denmark - a green twist of agriculture towards conservation agriculture" Aarhus University The action supplements C5 by changed agricultural practice to reduce flooding. [Accepted for full application in May 2016, VELUX Foundations].
- *"WaterCoG":* A project around the North Sea involving eight beneficiaries from DK, NL, SE and UK. The focus is on improved water governance in the private and public sector and includes pilots in the region. Testing and demonstrating new management tools. The WaterCoG and C2C CC will have strong synergies in relation to water management, planning and stakeholder involvement. Complements C5. [Funded by InterregVB].
- *Citizen awareness:* Outreach and communication to strengthen citizens' awareness to act on climate change. In cooperation with researchers, teaching staff and children. Complements C5. [Funded by Regional Development Funds].

Description (what, how, where and when):

The aim of C5 is building capacity for a new CCA governance paradigm stressing integrated planning and accommodating the entire hydrological cycle. The objective is to increase resilience through capacity-building, strengthened network governance and cross-border coordinated planning.

C5.1 New paradigm and a common regional strategy integrating municipal CCA plans

What:
The aim of this action is to gather best practices related to integrative planning, which may be used as inspiration to develop a new paradigm for integrative CCA planning practice with emphasis on sustainability and capacity development; first of all among the partners of C2C CC, and secondly to feed into the international agenda on integrative CCA planning with state-of-the-art knowledge.

The first part of the action will gather knowledge on integrative planning within the water and environment sector, including experiences from the Danish river basin management plans (under the Water Framework Directive), other EU supported projects (e.g. catchment based approach in Usserød River (Usserød Å[1]), which is a LIFE Environment project).

[1] www.catchmentbasedapproach.org & http://ec.europa.eu/environment/life/project/Projects/index.cfm?fuseaction=search.dspPage&n_proj_id=4268

This knowledge is specifically applied in C2C CC through actions C9, C10, C12, C15, C18, C19, C24 and through the C2C CC consortium and network. It is however relevant for all C2C CC actions. It is further applied in the formulation a common regional strategy that supports future coordination and integrative planning of the municipal CCA plans. This strategy will be a voluntary document with no official legal authority. However, as there is a broad mutual understanding between the municipalities of the need for a common approach and strategy, this document may form a strong basis for future collaboration and activities across administrative borders. The strategy will also serve as documentation of the collaborative process and a basis for applying for funding for future integrative projects. Following, the experiences of the review of best practice, state-of-the-art demonstration projects are gathered in a report and will serve to give recommendations for local governments in general.

On the basis of the CDR's decision to use UNs Global Sustainable Development Goals as guidelines for all development work, the same basis is taken for the work on a common strategy in C2C CC.

How:
The following activities will be conducted:

1. Collaboration with research institutions on state-of-the-art in integrative planning
    - Expert consultations to raise awareness on the importance of integrative planning and to motivate programme actions to have a holistic approach and to analyze the opportunities of synergies between CCA, climate change mitigation, biodiversity, nature, tourism/recreation, agriculture, and environmental issues.
    - Review of European reports and project experiences related to integrative planning in the water and environment sector incl. experiences from the EU LIFE IP project Rivers Trust in England.
2. Interviews with Danish Ministry of Environment on the network management of the River Basin Management plans and with Aalborg University, Aarhus University and KLIKOVAND on the experiences on network governance of CCA in Denmark.
3. Study tour to Germany and The Netherlands to study organizational and practical solutions on CCA and coastal challenges.
4. Continue the dialogues from Action A5 with LGDK and other relevant public authorities in order to maintain actual knowledge and ideas about integrative planning and development paradigms. This knowledge will be important in developing the common regional strategy for climate change adaptation
5. Training course in integrative planning processes and network governance for officials in and outside the partnership
6. Workshop: about SDGs as instrument for choosing a sustainable solution. The partnership is invited for introduction to the SDGs, including presentation of best practice from corresponding actors. A process is facilitated, so the partnership is inspired to use the SDGs in future in cross-cutting holistic planning. CDR has a regional development strategy based on the SDGs. This will be the same with municipal development strategies and municipal plans as a basis for a subsequent work to create shared vision and relationships across the partners in C2C CC.
7. The secretariat re-visits action A1. Legal barriers to integrated CCA, current CCA integration and policy recommendations, and updates the knowledge gathered under Action A1. In addition, the partnership develops best practices in handling barriers and proposals for renewed rules.
8. Common regional strategy:

DS

- 6 catchment based workshops with C2C CC partners to define cross-cutting issues and activities and to decide on a common framework for integrative planning.
- Development and formulation of a common regional strategy on CCA with the outset in integrative planning and network governance.
- At least one of the 6 C2C CC thematic partner seminars (stormøde) has adopted integrative planning as a common theme.
    - Making the common regional strategy will be coordinated with the complementary project DK2020, which implemented in a partnership of the fund Realdania, the five Danish regions, the national association of municipalities, a number of municipalities and the think tank Concito

9. At the end of each phase, an evaluation and assessment with a focus on the needs on future integrated cross partner actions within C2C CC will be conducted. This done to secure the direction and processes are carried out in the right way.

Where:
CDR and Study tour.

When:
Phase 1: Activities 1-3 and 9
Phase 2: Activity 4-6 and 9
Phase 3: Activity 7-8

C5.2 Networking and knowledge-sharing
What:

CDR's approach to networking and knowledge-sharing is illustrated in Figure 13. The backbone of this approach is dialogue, and CDR invites all relevant stakeholders to participate in networking activities and to contribute to defining mutual challenges in order to create a common understanding of the core matters. Stakeholders are different and have varying interests, and often specific issues must be clarified, analyzed or explained before the network is able to decide on common solutions to the mutual challenges. This foundation for decision making is procured by the CDR by dealing with the best national consultants and international knowledge institutions. On this basis, the network defines a common strategy, and jointly determines who are able to contribute what, in order to reach the common objectives. CDR is able to take on leadership because of the region's impartiality and with point of departure in the regional development strategy (Regional Udviklingsplan (RUP)), which emphasizes sustainable development.



Figure 13: CDR's approach to networking and knowledge sharing.

How:
Activities

1. In collaboration with the advisory committee and steering group, a workshop every year will be held with a special focus not covered by the other initiatives and actions.
2. At the end of each phase, an evaluation and assessment with focus on the needs on future integrated cross partner actions within will be conducted. This done to secure the direction and processes are carried out in the right way.

Where:
CDR and collaborative research institutions

When:
Phase 1: Activities 1-2
Phase 2: Activities 1-2
Phase 3: Activities 1-2

C5.3 Use of the Advisory Committee
What:
The Advisory Committee includes, amongst others, experts in planning processes and network governance. Experts will aid the demonstration actions in how to act in processes with many actors. This action builds upon theoretical schools relating governance theory to the development from government to governance and further to network governance, and it draws on experiences from the projects "Water in urban areas" and "The farmer as a water manager".

Several of the actions of C2C CC are characterized by many partners or many stakeholders e.g. The Western Part of the Limfjord (C9) consist of a partnership between 7 municipalities and 7 utilities, and The River Gudenåen consist of a partnership between 7 municipalities and 1 utility. Furthermore, CCA projects consist many more actors and professionals than public authorities are accustomed to handle. These actors are among others different departments within their own organizations, utility companies, land owners (e.g. citizens and farmers) and NGOs. There is thus a need to build capacity in how to govern integrative development processes in this multi-stakeholder framework.

DJ

How:

1. Six individual workshops between the Advisory Committee and the actions C9, C10, C11, C12, C13 and C14.
2. Call service, where the partners can call the Advisory Committee for advice.
3. One half day seminar with expert presentations on theoretical aspects and partner presentation with initial experiences.
4. At the end of each phase, an evaluation and assessment with focus on the needs on future integrated cross partner actions within will be conducted. This done to secure the direction and processes are carried out in the right way.

Where:
Central Denmark Region

When:
Phase 1: Activities 1-4
Phase 2: Activities 1-4
Phase 3: Activities 1-3

C5.4 Capacity-building of officials and water professionals on CCA, stakeholder involvement and civil protection

What:
This action involves many capacity building activities with the aim to improve the prerequisites for implementing the CCA plans among especially the municipalities and their respective utilities and further to learn from these processes to develop new professional practices. Activities are focused on topic specific training courses, workshops and masterclasses, with point of departure in the challenges experienced by the partners. Training courses serve the purpose to provide officials with competences to carry out actual tasks e.g. on how to involve citizens when implementing local SUDS. Workshops will focus on mutual exchange of ideas and experiences between C2C CC actions and related projects. Masterclasses take their point of departure in one or more municipalities' concrete challenges and needs and the possible solutions identified by C2C CC partners.

Some of the challenges already expressed by the partners are among others stakeholder and citizen involvement, issues related to rise in groundwater level, issues related to larger and more frequent storms and coastal management, local contingency planning and cross-border contingency planning.

How:
Capacity building of government officials aims at value-creating climate adaptation so that the heavy investments in climate adaptation not only creates climate robust solutions but also support aspects of livability, sustainability and green growth. A process is being carried out based on university staff to facilitate knowledge generation, learning and development of innovative practices. The approach takes the outset in action learning in which systematic learning processes are integrated in the working with the actual projects. Alongside, we aim at develop and test new forms of teaching material and governance manuals for wider use with value-creating climate adaption. The process includes:

- A survey covering all municipalities in C2C CC, including supportive municipalities will combine a general exploration of experiences and challenges with researchers facilitating

DS

the projects in relation to value creation. The survey reveals experienced challenges and opportunities to be addressed as well as the existing experiences in value creation in the municipal project work. This includes exploring identifying the values actually worked with in projects as well as the documentation and assessment methods developed to support the implementation process

- Based on the general survey, 4-5 projects / municipalities will be selected to further investigate and address specific issues and challenges relevant for more municipalities. This will produces in-depth knowledge of implementation dynamics and challenges and from this case description will be produced to disseminate the work of C2C CC.
- Based on the survey and contemporary university research as well as on the teaching of the Municipality of Hedensted in Phase 1, a master class training course will be organized to support the municipalities in their actual work in order to push the projects to reach their potentials. This also aims at supporting systematic learning processes and developing the professional practices for future planning and projects. Alongside a targeted and innovative teaching material / governance manual is developed to support professionals among and besides the participating municipalities and utilities in their effort to support value creating climate adaptions.
- Aalborg University plans to link a research effort to the process and to based on the survey and development of the master class training program produce international research publications.

All workshop and network activities arranged by the project management of C2C CC will be evaluated by the participants (cf. D1), special attention is paid to wishes and needs for training courses within specific subjects. According to the feedback of the C2C CC partners courses may also be arranged on ad hoc basis.

1. CDR develops a capacity development program for the C2C CC partnership to be held in Phase 2 and 3 on the basis of the evaluations and dialogue with partners.
2. Training courses:
   - 1 training course on stakeholder and citizen involvement
   - 1 training course on emergency/contingency planning and roles of citizens and stakeholders during emergencies
   - Training course on Mutual Gain Approach as method to negotiate and make co-creation with stakeholders. Based on actions in C2C CC, the method is introduced and will be implemented among the partners.
   - At least three additional courses according to needs
3. Workshops:
   - Evaluation workshop organised as an Experience (ERFA)-meeting on the progress of the municipalities' emergency/contingency plans and activities.
4. Master classes:
   - A master class training course on making added value in corporation with all relevant stakeholders locally and broader as described above.
   - At least 1 masterclass among municipalities and local emergency centres on their respective emergency/contingency plans.
5. 5. At the end of each phase, an evaluation and assessment with focus on the needs on future integrated cross partner actions within will be conducted. This done to secure the direction and processes are carried out in the right way.

Where:

DS

CDR – location not decided, meeting rooms of CDR, the Municipalities or at the universities, alternatively conference facilities organized through procurement agreements of CDR.

When:
Phase 1: Activity: 1, 2 and 5
Phase 2: Activities 2, 3 and 5
Phase 3: 2, 4 and 5

Reasons why this action is necessary:
As also stated in Form B section 1.1. the present gaps and shortcomings that hinder effective implementation of the plans are at least threefold. Firstly, the cross-sectoral nature of CCA, which demands a new governance paradigm stressing integrated planning accommodating the entire hydrological cycle. Secondly, lack of knowledge, knowledge sharing and capacity building on commonly shared issues and solutions among local authorities hinders integrated CCA planning. Thirdly, the difference in level of ambition and implementation between the prosperous and less prosperous municipalities decrease resilience especially among the less prosperous.

Constraints and assumptions
There are no significant constraints in implementing the mentioned governance actions, as CDR has extensive experience in organizing and facilitating workshop and course activities. However, one constraint may be related to securing the quality of a workshop e.g. that the scope meets the need of the municipalities. CDR has and will continue to have thorough dialogue with the partners of C2C, where expressed needs and wishes for capacity building and knowledge sharing of the partners will be met. It is expected that new needs will occur during the project period. Another constraint may relate to choosing the right lecturers for a course who possess sufficient knowledge and are good facilitators. In this regard CDR will involve the network of the Advisory Board, the partners and CDR itself.

Expected results:
C5.1: Phase 1: Awareness on the importance of integrative planning and motivation for working with multi-functional, sustainable and holistic solutions. Capacity building on international and national experiences with network governance. Participation of at least 100 partners and stakeholders at C2C CC workshops in at least two workshops/networking arrangements.

Phase 2:
Awareness on the SDGs as instrument in planning sustainable. During interviews, the secretariat will investigate the dissemination of SDGs as a basis for interdisciplinary planning in the partnership.

Participation of at least 100 partners and stakeholders at C2C CC workshops.

That the MGA is implemented in the organizations at least half of the partners.

Phase 3: 1 common CCA strategy to guide the individual CCA plans to incorporate sustainability, whereas at least 15 C2C CC partners have contributed to the development of the common CCA strategy.

C5.2: Networking and knowledge-sharing of at least 200 persons (4 persons from each partner and an additional number of stakeholders) in an annual workshop through phase 1 and phase 2.

DS

C5.3: The Advisory Committee builds capacity among C2C CC partners on how to manage processes with many actors and stakeholders. Improved network governance processes specifically in actions C9, C10, C11, C12, C13 and C14. At least 300 participants from C8-C24 participates in 6 initial workshops between the Advisory Committee and the actions. Call service used twice a month, where the partners can call the Advisory Committee for advice, 1 half day seminar with expert presentations on theoretical aspects and partner presentation with initial experiences.

C5.4: Phase 1: The capacity building development program will ensure that the officials improve their ability to work holistically with CCA and in close collaboration with relevant actors and stakeholders.

Phase 2: The capacity building activities will result in better designed and performed CCA plans and actions. 30 participants per course is expected, corresponding to at least 150 participants in the two courses on stakeholder and citizen involvement and emergency/contingency planning, and additional courses according to needs. At least 60 participants attending the evaluation workshop emergency/contingency plans and activities. At least 50 selected participants attending master classes

Phase 3: The program further develops and test innovative teaching material / governance manual to support professionals among and besides the participating municipalities and utilities to support value creating climate

Cost estimation:
Based on working days with salary of 47 € per Hour and 347,5 € per day per senior employee and 35 € per hour and 259 Euros per day for junior employee.

Workshops and meetings includes budgets for lunch coffee and conference venue 75 € per participant
Workshops includes preparations in advance and hours spend during workshop and after the event for output material
Workshop transport is calculated via an average of 100 km and 0,487 € kr. per km

Deliverables:

Action	*Deliverables:*
C.5.1.	Program, presentations and evaluations from all meetings/workshop, available at www.c2ccc.eu Newsletter, information at website and press releases for each meeting Inspiration material on experiences and recommendations for future practice in Danish and English. Published in 200 copies and available at www.c2ccc.eu Study tour report
C.5.2.	Program, presentations and evaluations from all annual workshops, available at www.c2ccc.eu
C.5.3.	**Phase 1, 2 og 3:** Newsletter on the activities of the Advisory Committees available at www.c2ccc.eu Small videos on the experiences, benefits and recommendations of the C2C CC actions available at www.c2ccc.eu Reports on expert consultations **Phase 3:** Peer reviewed journal article on the experiences of network governance in C2C CC.

DS

	1 guideline for network governance based on the experience in C2C CC
C.5.4.	**Phase 1:** A capacity development program for training courses, workshops and master classes available at www.c2ccc.eu A master class training course on making added value in corporation with all relevant stakeholders locally and broader as described above. **Phase 2:** Innovative teaching material / governance manual on value-creating climate adaptation. Course and workshop materials available at www.c2ccc.eu One article in a Danish journal for professionals such as 'Teknik og Miljø' 1-2 international research publications **Phase 3:** Course and workshop materials available at www.c2ccc.eu

Milestones:

Action	*Quantifiable milestones:*	*Date by end of*
C.5.1	**Phase 1:** Report on Expert consultations and two workshops, 100 participants Review report of European reports and projects Interviews with Danish ministries, networks and universities, 10 interviews Study tour to Germany and The Netherlands to study organizational and practical solutions on CCA and coastal challenges, 25 participants One evaluation and assessment **Phase 2:** Training course in integrative planning processes and network governance, , 200 participants Training course on SDG's (45 participants) 6 catchment based workshops with C2C CC partners to define cross-cutting issues and activities and to decide on a common framework for integrative planning (all six workshops) **Phase 3:** Development and formulation of a common regional strategy on CCA with the outset in integrative planning and network governance. At least one of the 6 C2C CC thematic partner seminars (stormøde) has adopted integrative planning as a common theme. One evaluation and assessment report	 31/12/2017;31/12/2018 31/03/2017 01/07/2017 31/10/2017 31/12/2018 31/12/2019 31/12/2019 01/07/2019 30/09/2022 01/01/2022 01/06/2022
C.5.2	**Phase 1:** Two annual workshops, 200 participants each **Phase 2:** Four annual workshops, 200 participants each **Phase 3:** Two annual workshops, 200 participants all together	 31/12/2017; 31/12/2018 31/12/2019, 31/12/2020; 31/12/2021: 31/12/2022
C.5.3	**Phase1:** Six workshops (all six workshops), 200 participants total Functional call service up and running, where the partners can call the Advisory Committee for advice One half day seminar with expert presentations on theoretical aspects and partner presentation with initial experiences	 31/12/2018 01/07/2017 31/12/2017

PS

	Phase 2 and 3: 2 times six workshops (six workshops every two years), 400 participants total Call service, where the partners can call the Advisory Committee for advice (to be continued from phase 1) One half day seminar every two years	 31/12/2020; 31/12/2022 31/12/2020; 31/12/2022
C.5.4	**Phase1:** Capacity development program for the C2C CC partnership **Phase 2:** A survey among all municipalities to asses and describe the valuation creation A Masterclass on value creation One article in a Danish Publication for professionals 3 training courses, 150 participants all together Evaluation workshop organized every at the end of Phase 2, 60 participants Masterclass , 50 participants Teaching material **Phase 3:** Five training courses, 150 participants Evaluation workshop organized at the end og the Phase 3, 60 participants 1-2 international publications in review	 31/10/2017 31/12/2020; 31/12/2020 31/12/2021 31/12/2020 31/12/2020 31/12/2021 31/12/2022 31/12/2022 31/12/2022

DS

***ACTION C6*: Tools**

Beneficiary responsible for implementation: Central Denmark Region

Budget: 655.704€

Number of days estimated spent on action in phase 1: 10 Days
Number of days estimated in phase 2: 30 Days
Number of days estimated in phase 3: 373 Days

Role: Central Denmark Region will take on the role as initiator of developing common crosscutting tools which can be used by the 21 municipalities and the water utilities in C2C CC.

Description (what, how, where and when):
The objective of this action is to increase resilience through enhanced decision-making processes.

Relation to CCA plans:
In all the CCA plans there is a demand on an increased level of knowledge, and in particular tools to address specific challenges such as high groundwater tables. During workshops held to prepare the C2C CC project, the municipalities underlined the importance of developing tools to increase the knowledge on groundwater changes locally. Furthermore, there have been a general interest in making a surface/stream water module, which may model the effect of changes.

Linked to Complementary Actions
"WaterCoG": A project around the North Sea involving eight beneficiaries from DK, NL, SE and UK. The focus is on improved water governance in the private and public sector and includes pilots in the region. Testing and demonstrating new management tools. The WaterCoG and C6 will have strong synergies in relation to benefitting from the tools developed. [Funded by InterregVB].
"TOPSOIL": Focusing on issues related to rising groundwater levels and related climate change implications. Includes beneficiaries from DK, DE, NL, BE and UK and will add European aspects on groundwater to C2C CC. Complements C6.1 in relation to produced knowledge on the topsoil. [Funded by InterregVB].

Description (what, how, where and when):
In C6 there is a special emphasis on building up tools to be used across the whole of the CDR region.

C6.1 High resolution groundwater-surface water model for Central Region Denmark

What:
The purpose of this action is to develop a coupled groundwater-surface water model which covers the entire region and provides an integrated description of the entire water cycle in Central Denmark Region with an unprecedented level of detail. The resolution of the model should be high enough to provide a reliable prediction of areas prone to waterlogging and inundation, whether flooding is caused by groundwater or surface water. A model will be able to quantify the effects of adaptation measures, not only at the place where the action is implemented but also on downstream or neighboring locations. The model will support local activities as it will be the common foundation for analysis of climate change and CCA in local areas, e.g., in urban areas where even higher resolution is needed, and where special anthropogenic interactions should be considered. Hence, results from

DJ

the model will be available for all activities undertaken in the actions and will ensure a common basis for all activities. The model will be available for all municipalities. The design of the tendering process and training is worked on in action C3.1

How:
Activities:

1. A model is developed on the basis of the national water resources model, which has proven to produce reliable results for groundwater resources and protection, but suffers the level of detail to describe the near surface water levels. Hence, the national model (500 m resolution) is further developed in the Central Denmark Region on a number of aspects. The resolution of the model is improved to 100 meters scale. High precision digital elevation data should be used to specify the land surface. A new description of natural and artificial drainage (drainage pipes and channels) should be implemented. All input data to the model should be modified to match the 100 meters discretization.
2. The model should be calibrated against an extended database of hydrological observations including near surface observations of groundwater levels that are specifically collected as part of the project.
3. The model should be forced by results from selected climate models to ensure that the inherent climate projection uncertainty is represented by the model. The climate model data will be downscaled and bias corrected prior to being used as data for implementing physical plans and structures.
4. Subsequently, the model will transfer to an operational phase where it will serve and support the activities in the different actions, predicting results for present and future climate scenarios on e.g. groundwater levels, interaction between groundwater and surface water, and discharge of fresh water from river catchments (e.g. the River Storå, the River Gudenå, and the River Grenå, etc.).
5. Climate sensitivity will be mapped by feeding the model with a number of design storms, each defined by intensity-duration-frequency curves representing specific return periods. Hereby, it is possible to identify areas where the groundwater table will rise above a certain threshold (e.g., 1 meter) for a given design storm.
6. The combined tool (ground- and surface water covering C6.1 and C6.2) will be implemented in the municipalities and utilities in the partnership and other municipalities/utilities in Central Denmark Region
7. The combined tool (ground- and surface water) will be tested in 2-3 of the subprojects and the partnership will be examined in how to use the tool (as described in C3).
8. Maintenance of the tool
9. The partners get support from Central Denmark Region and SCALGO to map climate scenarios on relevant local activities.
10. In dialog with the users small errors in the tool will corrected.
11. At the end of each phase, an evaluation and assessment with focus on the needs on future integrated cross partner actions within will be conducted. This done to secure the direction and processes are carried out in the right way.

Where:
Central Denmark Region

PS

When:
Phase 1: Activities 1-5
Phase 2: Activities related to 6-11
Phase 3: 8 and 9

C6.2 Regional screening assessment tool of flood risk from rivers and the sea

What:
Climate changes increase precipitation, every day and extreme rains respectively, and increase the run offs into streams and rivers leaving especially low lying areas in risk of flooding. There is a need for a tool that visualizes and assesses the risk of flooding and illustrates the effect of potential solutions.

By the use of the best available tool (BAT) on the market, an illustrative river model is set up for the streams and rivers of the region. The tool should be developed as a web-based tool developed for screening potential flooding from cloud bursts, rivers and sea level risings. It should be based upon well-known principles for water flow, water level and flooding based on Manning's formula and specific cross sections (cf. figure 14). The innovativeness of this action is to combine the web-based tool with a river model jointly with a statistical model for combined events of storms and heavy rains in future climate scenarios. The model for the region should be based on existing digital data for streams and rivers inclusive cross sections (cf. Figure 14 (right side)), underpasses and vegetation. The model should include water flow and water level at delta areas, which should make it possible to simulate coupled events by different run off scenarios (defined by water flow) and storm surges (defined by water level). Input data are: existing knowledge on run off in catchment areas, and the implementation of a statistical model. The statistical model should look at future climate time series, where especially coupled events between water flow and sea level are interesting.

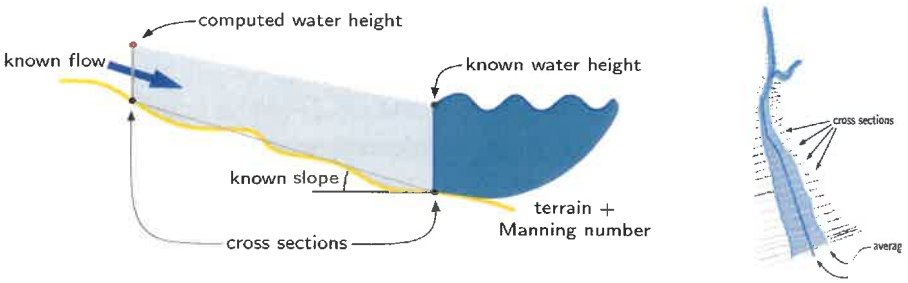


Figure 14: Illustration of the principles of the web-based tool.

How:
Activity:

1. The tool will provide the municipalities with an interactive 3D screening and decision support tool, which gives a knowledge base for a more focused dynamic hydraulic modelling
2. The tool is combined with C6.1 and the activities are described above.

DJ

Where: Central Denmark Region

When:
Phase 1: Activity 1

C6.3: Warning systems

What:
Early warning systems are in the beginning of being build up in Denmark. The systems can be advanced models coupled to weather and climate scenarios or simple warnings based on the weather forecast. They all have in common that they inforce the resilience capacity via digital warnings. Warnings can be coupled to web pages, mobile phones or other digital platforms. In C2C CC there is a need to increase the use of warning systems.

How:
Activities:

1. Explore the known warning systems in DK and in other countries dealing with water management and warning systems
2. Recommend test and demonstrations
3. Test and demonstrate simple and advanced warning systems in the catchment model for Storå and Gudenåen. The activity runs together with the activity in C2.2 "Warning system"
4. At the end of each phase, an evaluation and assessment with focus on the needs on future integrated cross partner actions within will be conducted. This done to secure the direction and processes are carried out in the right way.

*Where: C*entral Denmark Region

When:
Phase 2: Activities related to 1, 2 and 4
Phase 3: Activities related to 3

Reasons why this action is necessary:
Knowing the scale and extension of a flooding event is essential for local and regional contingency plans to become effective. On a regional level, DEMA (The Danish Emergency Management Agency) has a broad range of manpower and equipment ready for preventing flooding from the sea, rivers, groundwater and cloudbursts, and municipalities, utilities and private owners have additional manpower and equipment, but to make the best use of the different resources in a timely manner, it's essential to know where to react in due time. An combination of weather prediction models, hydraulic models and warning systems are important to make the contingency management plans function in practice. The two tools, C6.1 and C6.2, are needed in CRD in order to create the knowledge base for planning for future impacts from rising groundwater level and flooding from rivers. Combined with warning systems these may by relatively small efforts increase the resilience capacity of CDR.

Constraints and assumptions:

DS

It is assumed that the existing warning system in Denmark under DEMA may function as a functional platform for the implementation of a flood warning module for the system, and that DEMA's regional staff and municipalities may find an interest in the model and tools developed for prediction.

Expected results:
C6.1: Phase 1: A model is developed, 2 municipalities have applied the tool and use the results in decision making and spatial planning.

Phase 2: All CDR municipalities have applied the combined (C6.1 and C6.2) tool and use the results in decision making and spatial planning.

C6.2: Phase 1: A screening tool is developed and tested.

C6.3: Phase 2 and 3: Known warning systems in DK and in other countries are explored. Simple advanced warning systems with flood prediction are tested and demonstrated. DEMA and 5 municipalities have applied an extended warning system module for flood prediction.

Expected results linked to expected complementary actions:
WaterCoG will demonstrate new tools to improve flood resilience and water governance. TOPSOIL's results support C3 and C6.1 on the interlinkages between climate change and groundwater and brings in European experiences.

Cost estimation:
Based on working days with salary of 47 € per Hour and 347,5 € per day per senior employee and 35 € per hour and 259 € per day for junior employee.

Workshops and meetings includes budgets for lunch coffee and conference venue 75 € per participant
Workshops includes preparations in advance and hours spend during workshop and after the event for output material
Workshop transport is calculated via an average of 100 km and 0,487 € kr. per km

Deliverables:

Action	*Deliverables:*
C6.1	A High resolution groundwater-surface water model in combination with the interactive 3D decision tool (C6.2) Report on model construction. Report on model calibration. Report on climate projections and climate impacts. User guideline for the model
C6.2	An interactive 3D decision support tool on the water flow in catchment areas across municipal borders in combination with the groundwater-surface water model (C6.1) Technical background report User guideline for the tool.
C6.3	Report on known warning systems in DK and abroad

DS

	Test and demonstration of warning systems DEMA and 2 municipalities have adapted the new improved system

Milestones:

Action	*Quantifiable milestones:*	*Date by end of*
C.6.1	Groundwater-surface water model constructed	01/07/2018
	Observation data collected and groundwater-surface water model calibrated	31/12/2018
	Projection of the impact of climate change using a representative set of climate model results	01/04/2019
	All CDR municipalities have applied the tool and use the results in decision making and spatial planning	31/12/2022
C.6.2.	3D decision support tool/groundwater-surface water model is constructed	01/07/2018
	Testing completed towards existent data	31/12/2018
	All CDR municipalities have tested the tool and use results in decision making and spatial planning	31/12/2022
C6.3	Exploring and testing of warning systems done	31/12/2022
	DEMA and 2 municipalities have tested an extended warning system module for flood prediction	31/12/2022

ACTION C7: Innovation

Beneficiary responsible for implementation: Central Denmark Region

Budget: 438.167€

Number of days estimated spent on action in phase 1: 182 Days
Number of estimated days spent on action in phase 2: 190 Days
Number of estimated days spent on action in phase 3: 261 Days

Role of Central Denmark Region as main responsible

- Facilitator, coordinator and networking body of the CCA activities.
- Coordinates activities with partners, such as Central Denmark EU Office, and stakeholders, such as private companies, universities and NGO's
- Coordinates with other C actions on innovation such as C.20, C.21, C.22 and C.23

Linked to Complementary Actions
To support C7.4, Central Denmark Region will be applying ERDF (via Growth Forum CDR) for funding to support its efforts to boost export of water solutions globally. The project is called 'Smart Water Cities' and integrates environmental and societal challenges into business opportunities in emerging city markets for water management and water supply solutions. The expected sum is: 1.600.000 €

Description (what, how, where and when):
C2C CC innovation action gathers and makes use of a number of business-related activities which take place in C1-C7 and within the actions C8-C24. Besides, this action has a number of own activities to promote sustainability of C2C CC. On the long run, resilience is increased by generating jobs and green investments in the region, and this action takes its point of departure in a strong regional emphasis on business development and public-private cooperation in general and in the water sector in particular. It also promotes the development of sustainable and high-quality coastal, nature and business tourism.

C7.1 Networking and knowledge-sharing as a backbone for innovation

What:
This activity creates a number of informal forums to unite important stakeholders within water businesses serving several purposes. First of all, to show case climate change and water technologies. Secondly, to gather useful information and best practices from cross-cutting and demonstration activities - e.g. C.4 on SUDS, C.3 on technological development to solve problems with rising groundwater level incl. means to reuse excess water, C.16 on city development in Randers, C.22 on permeable pavements, C.6 on development of flood models for early warning systems, etc. Furthermore, these forums will set the stage for discussions between public owned water companies and companies to discuss public private cooperation and enhance innovation.

DS

Water clean tech companies e.g. Dansand, Grundfos and Kamstrup, and engineering and consultancy companies such as NCC and NIRAS will be involved in relevant innovation projects and cooperation fora.

How:

1. Informal annual/biannual network meetings where water related companies, universities and relevant NGO´s will be invited to discuss business opportunities as a result of the findings in C2C CC.
2. Master classes, where an organization presents a challenge, instead of presenting the good experiences and results. Presentation of major challenges or dilemmas e.g. issues related to flooding of basements in an urban area due to rising groundwater form the basis of the cross-disciplinary master class. In the master class, companies, experts, municipalities and utilities work together in a workshop-like set-up on how to solve specific "wicked problems". This provides the companies with detailed inside knowledge on already experienced challenges and needs, and it provides the municipalities and utilities with different aspects on proposed solutions. If some private companies see business opportunities in the challenges, their R&D departments should develop further on the findings. Perhaps their work could form the basis of new master classes for knowledge sharing and mutual inspiration. The work will be led by the two beacons AquaGlobe (C20) and Climatorium (C21).
3. At the end of each phase, an evaluation and assessment with focus on the needs on future integrated cross partner actions within will be conducted. This done to secure the direction and processes are carried out in the right way.

Where:
Central Denmark Region

When:
Phase 1: Activity 1 - 3
Phase 2: repetition of activity 1 - 3
Phase 3: repetition of activity 1 - 3

C7.2 Counseling of innovative industries on applying for EU funding

Central Denmark EU-Office is responsible on this action.

What:
This activity intends to ease water companies' access to various forms of finance in order to enhance innovation and to secure greater export of water solutions (as identified by EU initiative EIP on Water[1]). Many CDR companies are unaware of EU funding possibilities, the reason why CDR engaged actively in one of the first Action Groups, FINNOWATER[2]. Action C.7.2 builds on two pillars: awareness-raising and support to companies with innovative water solutions.

How:

[1] EIP on Water Strategic ImplementationPlan
[2] http://www.eip-water.eu/FinnoWater

PS

1. Development of information material on EU support and funding possibilities to be sent to companies, relevant networks (regional as well as national e.g. DANVA (the Danish association of water companies), and municipal business promoters.
2. Individual counseling - and where needed coaching – of companies by Central Denmark EU Office.
3. At the end of each phase, an evaluation and assessment with focus on the needs on future integrated cross partner actions within will be conducted. This done to secure the direction and processes are carried out in the right way.

Where:
Central Denmark Region, locally at companies at times, when they are available

When:
Phase 1: Activity 1 - 3
Phase 2: Activity 1 and 2
Phase 3: Activity 1 - 3

C7.3 Train relevant stakeholders on innovation within ecosystem services (ESS)

What:
CCA in CDR closely relates to nature restoration, tourism in general as well as business tourism (C20 and C21). Many rivers and lakes will eventually prosper from greater fishing possibilities and change of forestry, and several actions deal with integrating nature-based experience and tourism (C.8, C.9, C.11, C.12 and C.16). However, Danish companies and authorities are not in the habit of including ecosystem services as part of their business development. But interest is widespread, also in industrial associations, and C2C CC wants to promote this valuation of ecosystem services further. Experience from other regions show that investments on ecosystem services related to better environment, nature conservation and conditions for e.g. sports fishing, may have a positive impact on emerging new business, such as the "pike-factories" in Region Zealand[3]. This action is coordinated with action D3 in regard to ESS and MAES.

How:
1. Dialogue with relevant stakeholders on the potential for evaluation of ecosystem services and develop training material to support them
2. Meeting – virtual or real – with the EIB to assess possible projects for NCFF funding
3. Coaching of stakeholders
4. At the end of each phase, an evaluation and assessment with focus on the needs on future integrated cross partner actions within will be conducted. This done to secure the direction and processes are carried out in the right way.

Where:
Central Denmark Region

When:
Phase 2: 1-4
Phase 3: 1-4

[3] http://fishingzealand.dk/en/

DS

C7.4 Dissemination of Danish Water concepts

What:
C2C CC will support the national goal of increasing the export of Danish BAT within water with 25%. C2C CC do this by show-casing water solutions and CCA solutions to a Danish, European and global public in order to generate more awareness and sustainable solutions.

How:
1. Strengthen collaboration and coordination between Danish water sector stakeholders
2. Establish and promote a strong Water Hub in Central Denmark Region run by an external player
3. At the end of each phase, an evaluation and assessment with focus on the needs on future integrated cross partner actions within will be conducted. This done to secure the direction and processes are carried out in the right way.

Where:
Central Region Denmark

When:
Phase 1: 1-3
Phase 2: 1-3
Phase 3: 1-2

Reasons why this action is necessary:
In spite of Central Denmark Region having a large share of the water clean-tech companies in Denmark (55 out of 219), due to a lack of coordination, the presence of the newest knowledge and best available technologies (BAT) are not utilized – not in the Region, not in Denmark. According to the Confederation of Danish Industry (DI), Danish BAT within water could double by 2025 compared to the present level. There is thus an unused potential for capacity building and innovation within the region among the municipalities, the utilities, water companies and research institutions.

Constraints and assumptions:
There are no significant constraints in implementing this action. CDR has extensive experience in organizing and facilitating workshop and course activities and cooperating with the relevant stakeholders. On their part, the stakeholders will find the offer to get acquainted with EU funding positive and possible financing of innovation projects.
However, a constraint in implementing this action is a new statutory saying that the regions (regional governments) are no longer permitted to perform promotion of trade lawfully as per 1. January 2019. C2C CC aims to provide data on Danish water export from the Ministry of Environment for Denmark and Central Denmark Region, respectively. These data exist, however, C2C CC is depending on their accessibility.

Expected results:
C7.1: At least three innovation projects arise on the basis of triple helix/quadruple helix approach.

C7.2: 6 workshops on best practices and/or topical issues. Advising 10 companies on EU funding, following 4 applications submitted for EU funding.

DS

C7.3: Contact to 10 potential stakeholders with an interest in ecosystem services, at least 2 applications for funding (EU or national) submitted, Interviews of selected clean-tech water companies.

C7.4: Support the increase of exports within Danish BAT within water in Central Denmark Region by at least 25% by 2022.

Cost estimation:
Based on working days with salary of 47 € per Hour and 347,5 € per day per senior employee and 35 € per hour and 259 € per day for junior employee. Workshops and meetings includes budgets for lunch coffee and conference venue 75 € per participant. Workshops includes preparations in advance and hours spend during workshop and after the event for output material
Workshop transport is calculated via an average of 100 km and 0,487 € kr. per km. Subsistence costs are also based on prior experience and can be further subdivided into Hotel costs, Daily allowances/Payment for meals and local transportation categories, as shown below for this action's subsistence costs items:

Travels	**Trip to DK. Advising of clean tech / water firms.**
Partners / *Cost categories:*	**CDEU**
Hotel cost:	554
Daily allowances/Payment for meals cost:	238
Local transportation costs:	0
Total subsistence cost:	792

Deliverables:

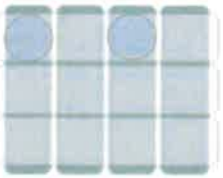
Action	*Deliverables:*
C.7.1	Information material on best practice cases
C.7.2	Information material on EU support and funding possibilities Four applications for EU-funding
C.7.3	Two applications for funding (EU og national)
C.7.4	Report describing potentials for a Water Hub in Central Denmark Region and recommendations for After LIFE

35

Milestones:

Action	*Quantifiable milestones:*	*Date by end of*
C7.1	Evaluation after each of the six workshops on best practice and/or topical issues carried out as a questionnaire via survey exact	31/12/2017 31/12/2018 31/12/2019; 31/12/2020; 31/12/2021 31/12/2022
C7.2	Information material on EU support and funding possibilities available for partners 10 companies have received advice Four applications for EU funding submitted Progress evaluations of action following Phase 1, 2 and 3 done.	 31/12/2017 21/12/2020 31/12/2018; 31/12/2018; 31/12/2020; 31/12/2022
C7.3	Development of training material on ESS is finalised. Training workshop on ESS assessments has been held before this date Two applications for EU funding submitted	31/12/2021 31/12/2021; 31/12/2022
C7.4	Report on support for export done	31/12/2022

DS



C8: Håb til Håb

Development of the Coastal land between Glud Håb and Håbet

The project focuses on involving stakeholders, politicians, administration, the wastewater utility, etc. in an effort to create a common understanding of the CCA challenges in order to make long-term sustainable choices. It is primarily linked to governance within sea & fjords and rainwater.

Main responsible beneficiary: Hedensted Municipality Budget: 238.788€

Number of days estimated spent on action in phase 1: 94 Days
Number of days estimated spent on action in phase 2: 94 Days
Number of days estimated spent on action in phase 3: 94 Days

Beneficiary responsible for implementation: HEDKOM

Role of HEDKOM:

- Is the project manager
- Cooperates with Aarhus University providing climate and culture historical consultation services (financed through C.24) and Hedensted Waste Water Company on the complementary project,
- Engages and involves politicians, citizens, citizens' organizations, etc.
- Reports to C2C CC project-leader and cooperates with other C2C CC partners

Relation to CCA plans
The action is part of Hedensted CCA municipal plan, which aims to prevent the consequences of climate changes, where major exiting assets are threatened (p. 21), taking into consideration guidelines for lowland areas and wetlands, as well as guidelines for technical installations.

Relation to cross-cutting capacity building actions (C1-C7) and innovative actions (C20-C24)
Activity C8 Håb til Håb will gain from actions under C1 relating to desk analysis and identification of knowledge gaps and reviews of in the risk maps and planned actions. Experience will be exchanged between demonstration projects C10, C11, C14 and C18 dealing with the coastal cities of Horsens, Randers and Grenaa. A common understanding between stakeholders of sustainable solutions (economically, environmentally, socially and long term) with a focus on land use, cost-effective measures, planning, implementation, maintenance and operation will be shared and developed across actions C9, C10, C11, C14, C17, C18 and facilitated by CDR. Under C1 a workshop will be held to assess synergies and possibilities of integrated solutions for the fjords at the East Coast. Under action C3, in selected areas a detailed local model is set up focusing on groundwater, surface and/or seawater. Models are based on the present data and collections of new data sets e.g. geophysical data and C8 will benefit from this model. Under action C5 specific training courses, workshops and masterclasses, with point of departure in the challenges experienced by the partners will be implemented for the benefit of Action C8 and other actions. C24 focuses among other things

on innovative communication of the coupling between climate history and culture. Project C8 will function as a pilot where citizen-driven climate adaption will include an environmental and cultural-historical dimension.

Linked to Complementary Actions

C8 is linked to a complementary action by Hedensted Waste Water Company. It is commonly known that sewer systems must be maintained and renovated, but at the same time, there is a fear that solutions will be short-termed and not sufficiently sustainable. Hedensted Waste Water Company is responsible for the maintenance of the sewer, and will inter into cooperation with Hedensted Municipality and involved stakeholders in order to base decisions on the scenarios that are developed during the C2C CC project. In this way, decision on introducing certain sewer systems do not hinder innovative solutions in the long run. 3.4 mio. € has been allocated to this activity.

Description (What, how, where, and when)

What

The C.8. project focuses on involving stakeholders – citizens, politicians, administration, the waste water company, etc. – in an effort to create a common understanding of the CCA challenges in the project area in order to make long-term sustainable choices. Furthermore, the project underlines the need for growth and development and, of course, climate proofing the project area, preparing scenarios for how the area can develop, taking first step(s) from idea to action.

People have lived in the coastal area between Juelsminde and Snaptun since the beginning of the current warm period (Holocene). The coastal settlements are a particular feature of the area, and today the area is one of the most attractive outdoor leisure areas in Hedensted Municipality. Together with Juelsminde, it is the center for costal tourism in the municipality.

Much of the river valleys are cultivated. The natural areas consist of cliff forests, meadows (mostly peatland) and marshland connected to watercourses. In terms of geology, the area contains moraines, freshwater peats and organic silts, and marine saltwater formations.

DS

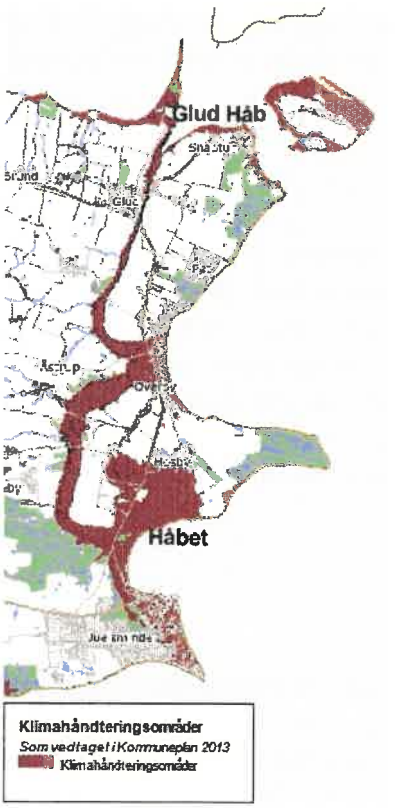


Figure 15: CCA areas in the municipal plan

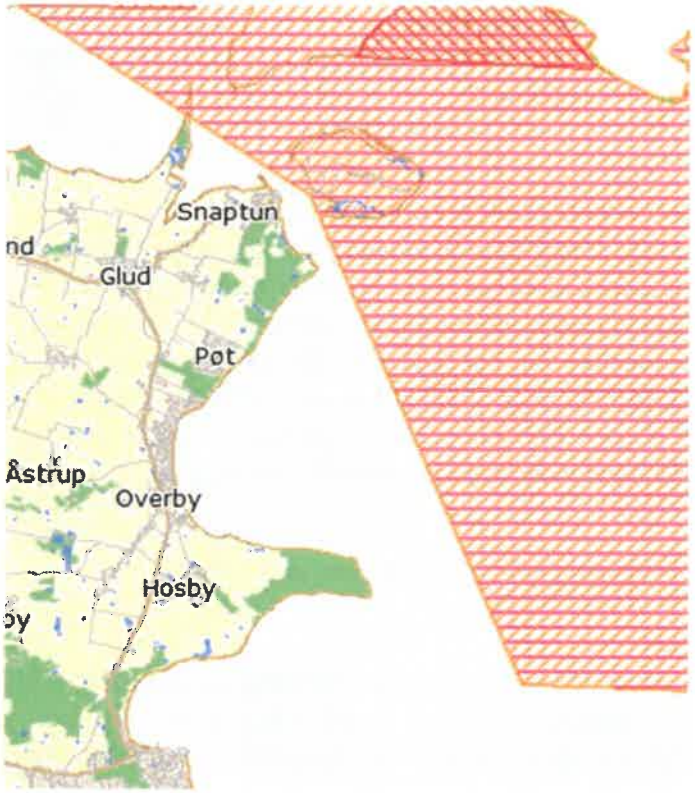


Figure 2: NATURA2000 areas at Horsens Fjord and the sea



Figure 17: The project area (the area threatened by seawater and freshwater flooding is shown in blue)

DS

The area is close to a migration path for birds following the route along Jutland's coast. The area is close to one of the most important resting grounds for seabirds in Habitat Site no. 52, "Horsens Fjord, havet øst for og Endelave" (Horsens Fjord, the sea to the east and Endelave).

The challenges from changed climate consist of higher sea levels and greater volumes of water being transported from several watercourses in the coastal hinterland. Today, two sluices regulate the relationship between draining fresh water to the sea and the flow of saltwater from the sea to the hinterland.

It has a long-term impact on the assets in the widespread holiday home areas, on the continued possibility for cultivating agricultural areas using crop rotation, and the possibility of maintaining and developing a good ecological condition in the watercourses. There is approx. a 15 km watercourse, which has a base elevation of 0 or lower. It is also a complex task to simultaneously protect settlements from flooding, develop the area as an outdoor leisure and tourist area and ensure good ecological conditions in the watercourse and in the countryside. Taking action also increases the storage of carbon and reduce the emissions of carbon from peatlands, or create new resting and breeding areas for seabirds and wading birds, to compensate for the salt-affected meadows, which might disappear when the sea level rises.

The Hedensted Municipal Plan 2013-2025 fixes guidelines for lowland areas, laying down potential flooding areas as CCA areas. This has been continued in the new municipality plan 2017-29. In the open countryside, these areas may only be changed to nature areas, wetlands and recreational areas. This means that with conversion, it strengthens the area's natural, so that the water environment plan's goals are maintained and that it becomes possible to remove nutrients.

The challenges that the area faces in particular: A more natural interplay between the coast and the coast's hinterland, and optimal cohesion between investments in good water environment and natural assets, in CCA, in CO_2 reduction and in the development of the area. Furthermore existing challenges include for example: finding solutions for the lowest lying holiday homes; dealing with wastewater and rainwater in an area affected intermittently by saltwater and rainfall effects, ensuring a good lifetime for the main traffic routes and other infrastructure, which complement the Municipality Plan 2013–2025 (and the new plan 2017-29), describing that new infrastructure like roads, etc., will be built to withstand raised sea levels; and ensuring accessibility for emergency services to Juelsminde.

C8.1 *Developing of scenarios – descriptive as well as prescriptive*

What

To form the basis for subsequent decision-making and as an important element of the awareness raising and involvement of the citizens, three descriptive challenge based scenarios will be developed: 1) if doing nothing, 2) if the area between sea and watercourse is opened and follow nature's and the climate's developments, or 3) close the area using sluices and dikes, so as to pump fresh water out into the sea. The scenarios are based on historical and Quaternary geological data, as well as on an assessment of the future environmental developments. These scenarios also build on the analysis on climate cultural history, made by Aarhus University, because it mobilizes citizens' interest in the area.

How:
The action will include the following activities:

Phase 1
Based on previous data, setting up three data loggers in the watercourse system for collecting data on the water level and salinity, as well as a trial with an "open sluice" to get an indication of the effect of any eventual dismantling of the sluices, the three scenarios are prepared.

How:

1. AU and an external consultant is involved in the designing of the descriptive scenarios, securing a continuity of the common knowledge and understanding of the area and is a method to keep focus for the municipal administration.
2. The descriptive scenarios and the climate history are visualised and presented to the public (see C.8.2).

Phase 2
Each scenario will contain: a long-term development goal (What will it look like in the future? How will the area be experienced? What will it mean for selected stakeholder groups? How may tourism be affected and can the cultural heritage narrative make the area more attractive?), project ideas (to test new solutions), detailed proposal for a first stage.

In 2nd phase dialogue continues among stakeholders (cf. C8.2) on the three descriptive scenarios in order to secure consensus about the eventual CCA approach. Knowledge, results, and the project's progress will be disseminated (at the internet, at themed meetings, and field tours with land associations). During this phase, Aarhus University will continue the dialogue on the future cultural environment and the storytelling of the project area. The climate story serves a dual purpose – it mobilizes local interest, and it brands the area and attracts more tourism. During Phase 2, the chosen descriptive scenario will be elaborated into a number of development scenarios with solutions to choose from.

3. 1-3 concrete scenarios for the area's development will be prepared in cooperation with stakeholders.
4. In cooperation with stakeholders at least three project will be visualized.

Phase 3
During Phase 3, the chosen scenario for the area's development will be elaborated into a number of development projects to choose from.

Where: The scenario development shall take place in project area.
When:
Phase 1: Activities 1 and 2
Phase 2: Activities 2, 3 and 4
Phase 3: Activities 2, 3 and 4

DS

C8.2 *Citizens' engagement*

What:
A number of activities targeted citizens and stakeholders take place during the project period (and beyond). Citizens must be made aware of the consequences of the(ir) choices and empowered to take the right decisions. This activity deals with the proper engagement of citizens stakeholders in the process.

How:
Phase 1
To reach a common understanding of the CCA challenges, stakeholders and citizens are invited to join in discussions and make field trip to areas with similar problems to investigate solutions that may serve as inspiration. In this way, stakeholders get a deeper understanding of the area and learn about the world around them.

Phase 2
Discussions among stakeholders and citizens continue in order to prioritize and to reach the eventual decision on how best to implement CCA. As Phase 1 was much focused on awareness raising, later activities are focused on the proper decisions. In collaboration with AAU, develop interdisciplinary engagement in the CCA work
Concrete activities are:

1. 2 field trips and excursions among stakeholders to investigate best practices of how the challenges are handled elsewhere (e.g. for agriculture, enterprises, summer houses, etc.),
2. 1 – 2 workshops and working groups
3. Based on workshops an citizens engagement a stakeholder analysis and stakeholder mapping will be elaborated
4. Workshop aimed at the purpose of inspiring other administrations for activities that support the direction of development. And to develop cross-cutting projects.

Where: destinations of the excursions within and outside the project area. Workshops will take place in the project area.

When:
Phase 1: activities 1 and 2
Phase 2 Activities 3 and 4
Phase 3: Activities 3 and 4

C8.3 *Political discussion and decision-making*
This action deals with the transition from scenarios to concrete decisions on how CCA can be carried out in a complex area in an interplay between knowledge about culture, nature, biodiversity and carbon sequestration. Whereas C8.2 was targeted stakeholders and their interests, this activity involves the political level and broader perspectives.

How:
Phase 1
Political discussions and survey of the challenges.

1. Hold a final conference, where the City Council discusses scenarios with citizens and stakeholders and creates local project groups.
2. Political deliberations in the City Council, with a choice of the most suitable scenario for the area's development by 2022.

Phase 2 and beyond

3. Prepare complementary projects based on the proposal for "test projects" and "first stage projects".
4. Initiate the complementary projects with external co-financing, if required.

Where: HEDKOM

When:
Phase 1: activity 1 and 2
Phase 2: activity 1 and 2
Phase 3: activity 2, 3 and 4

Reasons why this action is necessary:
The action is necessary to handle the complexity of such a large area with so many effects in a municipality, where resources are not plentiful. Furthermore, there are many possibilities and scenarios, and it can be difficult to move from ideas to scenarios and via decisions to concrete actions. In general, to keep up a dialogue on the long run between citizens, politicians, and other stakeholders to take sustainable solutions is difficult, but the C8 method is to involve all parties in an innovative process, empower stakeholders to take part in the right solution, and be part of the story of the local climate history.

Constraints and assumptions
There is a risk that stakeholders do not want to discuss the challenges and options and will not participate in the process. However, this will be dealt with by making the negative outcomes from climate challenges clear – thus, the scenarios. Furthermore, when the City Council has to decide, if stakeholders have not been involved, there is no basis for a decision. This is dealt with by ensuring the selected scenarios are highly clarified and clear. Finally, it must be ensured that the City Council and the stakeholders can endorse the pilot projects, which will be dealt with by creating an open and involving process.

Expected results:
C8.1: Phase 1: Thorough awareness among stakeholders in the project area (and beyond) of the consequences of climate change – on nature, biodiversity, tourism and landowner interests; Knowledge on the climate history of the area. Phase 2 and beyond: Thorough discussion on concrete scenarios, their implications and eventual solution. 800 hectares (net), 3500 hectares (brut) land screened.

C8.2: Thorough knowledge among stakeholders on how CCA is handled in similar areas. Discussions among stakeholders on appropriate – and eventual – solutions to the challenges. 2,000-3,000 stakeholders involved in the process.

C8.3: Phase 2: Political engagement in the climate change challenges – in the City Council and outside. A choice of CCA solution, which is sustainable and takes into consideration the interests of the stakeholders.

Cost estimation:
Expenses for direct personal costs are based on person days for HEDKOM personnel based on present salaries and pensions, etc. For HEDKOM the total number of person-days per year is based on the basis of the total working hours/days according to national legislation, collective agreements, employment contracts, etc. – budgeted at 214 days per year. Expenses for external expert help is based on prior experience with external assistance to local projects in HEDKOM. This external help is necessary to investigate the natural values in the area, and to help HEDKOM deliver the modelling. Estimations for expenses in Phase 2 and beyond take the same point of departure. No costs are allocated AU, as C24 will provide analyses etc. to C8 as part of its project.

Deliverables:

Action	Deliverables
C8.1	**Phase 1:** Report on three descriptive scenarios for the area's development with different actions. Report on recommendations on the area's development for the City Council. Report on Cultural heritage description **Phase 2:** Development efforts divided into stages. Detailed proposal for first stage. Visualisation examples. 1-3 scenarios for the area's development. Test project, which test new solutions. An account of the area. At least one pilot project, which shows the option for action and the clearness of the effect. At least one project description ready for execution **Phase 3:** Detailed proposal for first stage. Test project, which test new solutions At least one project description ready for execution
C.8.2.	**Phase 1:** Report of each excursion and minutes Report from workshop
C.8.3.	**Phase 1** Report from citizen-politician workshop on descriptive scenarios Minutes on decision from City Council meeting **Phase 2:** Project ideas selected and deselected Project ready to be executed

DS

	Phase 3: Project ideas selected and deselected Project ready to be executed

Milestones:

Action	Quantifiable milestones	Date by end of
C8.1	**Phase 1:**	
	Three overall descriptive scenarios finalised	31/12/2018
	Cultural heritage description finalized	31/12/2018
	One risk and value map finalised	31/12/2018
	Phase 2:	
	1-3 concrete scenarios for the area's development finalised	31/12/2020
	Visualisation of examples of projects from at least three project ready	31/12/2020
	Phase 3:	
	Areas and project ideas selected	31/12/2021
	Pilot project details prepared	31/07/2022
	At least one project ready for physical construction	31/12/2022
C.8.2.	**Phase 1:**	
	Report on stakeholder analysis and stakeholder mapping ready	31/12/2019
C 8.3.	**Phase 2:**	31/12/2020
	Citizen-politician workshop	30/06/2022
	Phase 3:	
	Projects selected and deselected.	



C9: The Thyborøn Channel and the Western Limfjord

The project deals with a major problem at the western part of the Limfjord; rising sea level combined with changes in the Thyborøn Channel morphology leads to a situation in the Western Limfjord in which, within less than 50 years, water levels due to storm surges will increase up to 60 cm higher than equivalent levels of today, having almost insurmountable effects technically and economically. The project has 4 sub-projects: thorough mapping of the area, cooperation models with emergency management, innovative financial plans, and preparation of conceptual design for the project area. This project is primarily linked to governance within sea & fjords an rivers.

Main responsible beneficiary: Lemvig Municipality Budget: 1.158.508€

Number of days estimated spent on action in phase 1: 625 Days
Number of days estimated spend on action in phase 2: 601 Days
Number of days estimated spent on action in phase 3: 612 Days

Beneficiaries responsible for implementation: The project engages a total of 14 partners around the western Limfjord, of whom 7 are Municipalities: Lemvig Municipality (LK), Holstebro Municipality (HbK), Morsø Municipality (MK), Skive Municipality (SKK), Struer Muncipality (STK), Thisted Municipality (TK), and Vesthimmerland Municipality (VHK) and 7 are utilities: Lemvig Vand og Spildevand A/S (LVS), Morsø Forsyning A/S (MF), Skive Vand A/S (SKV), Struer Forsyning A/S (STF), Thisted Spildevand A/S (TV), Vestforsyning A/S (VESTF), Vesthimmerland Vand A/S(VV).

Role of LK

- Is the project manager for the implementation of the action
- Is the Secretariat for the project team, consisting of one representative from each of the 7 municipalities and of the 7 utilities. The project team coordinates the activities across municipalities.
- Engages other partners, primary and secondary stakeholders in the project, such as Danish Coastal Authority, The Limfjord Council, CDR, the Fire Department of North West Jutland (Nordvestjyllands Brandvæsen), the Emergency Management Unit North Jutland (Nordjyllands Beredskab), Thyborøn Harbour
- Coordinates with complementary projects (to begin with: Lemvig Vand, partner)
- Monitors project progress, reports and cooperates with C2C CC Project Management

Relation til CCA plans

- LK CCA plan p 25
- TK CCA plan p 29
- MK CCA plan p 21
- VHK CCA plan p 12

- SKK CCA plan p 71
- STK – CCA plan under elaboration
- HbK (indirectly, p 9)

Relation to cross-cutting capacity building actions (C1-C7) and innovative actions (C20-C24)

Action C9 Thyborøn Channel and the Western Limfjord will gain from actions under C1 relating to desk analysis and identification of knowledge gaps and reviews of in the risk maps and planned actions. Experience will be exchanged between demonstration projects C8, C10, C11, C14 and C18 dealing with the coastal cities of Juelsminde, Horsens, Randers and Grenaa. A common understanding between stakeholders of sustainable solutions (economically, environmentally, socially and long term) with a focus on land use, cost-effective measures, planning, implementation, maintenance and operation will be shared and developed across actions C9, C10, C11, C14, C17, C18 and facilitated by CDR. Under C1 a workshop will be held to assess synergies and possibilities of integrated solutions for the fjords at the East Coast. Under action C2 knowledge on CCA and rivers developed under different actions will be shared. Modelling, interpretations, analysis and data sampling are similar in the different catchments and C9 will benefit from this knowledge sharing. Scientific aspects currently the highly debated within EU, e.g. on the synergies and trade-offs between CCA and water ecology, the need for warning systems related to flooding of rivers and local contingency planning, and the synergies between farming and wetland restoration will also be shared and discussed for the benfit of action C9. Under action C5 specific training courses, workshops and masterclasses, with point of departure in the challenges experienced by the partners will be implemented for the benefit of action C9 and other actions.

Linked to Complementary Actions

C9 is linked to a complementary action focusing on sewer system maintenance and innovation in LK. Future investments in renewing sewer systems at the coastal areas are varied, but essentially very expensive. Therefore, LVS is cooperating closely with the C9 action to secure optimal investments. The C2C CC project will feed data and analyses into the decision-making of the wastewater company. 2,9 mio € is allocated to this complementary action.

Description: What, how, where, when

C9. deals with a major problem at the western part of the Limfjord, uniting municipalities, national agencies, NGO's, etc in a common pursuit of greater resilience of the area, multilevel governance and capacity-building. Rising sea level combined with changes in the Thyborøn Channel morphology leads to a situation in the Western Limfjord in which, within less than 50 years, water levels due to storm surges will increase up to 60 cm higher than equivalent levels of today[1]. Such water levels will eventually have a completely destructive effect on the cities, ports, coastal stretches, dykes, etc. of the area. Climate profing the cities and the installations of the western Limfjord will technically and economically be an almost insurmountable task to do locally. The project has four sub-projects: thorough mapping of the area, cooperation models with emergency management, financial plans, and preparation of conceptual design for the project area.

[1] The Danish Coastal Authority: "Thyborøn Channel and Western Limfjord" from august 2012

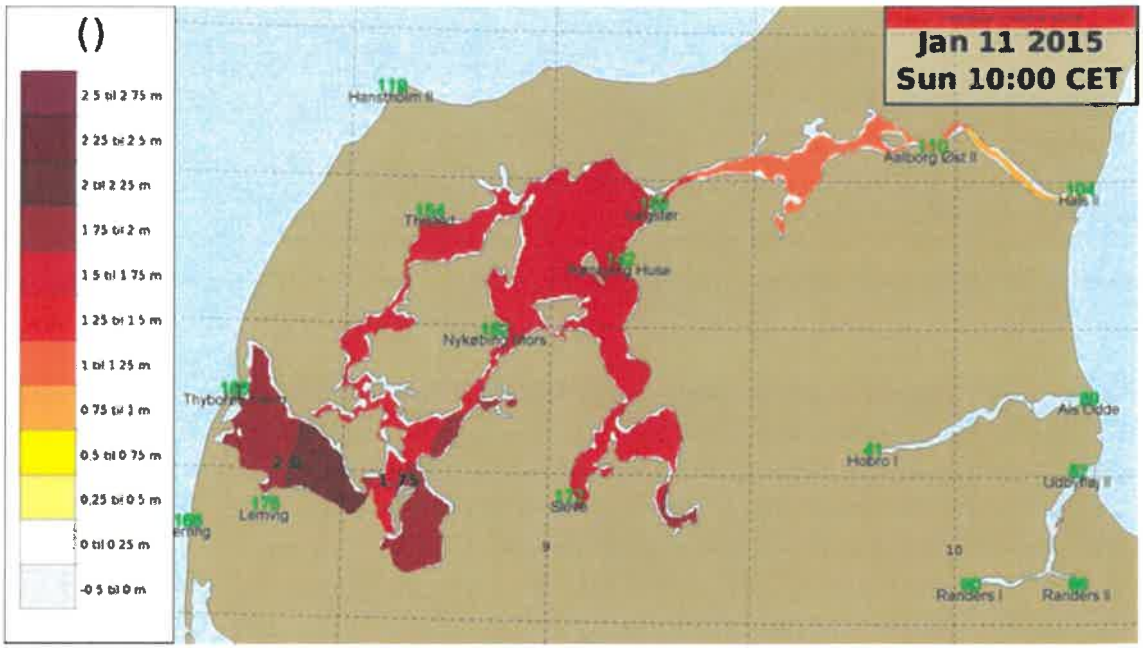


Figure 18: Storm surges of the December Storm 2015 (In Danish Bodil) in the Western Limfjord.

C9.1 *Mapping of (secondary effects of) the project area*

What

Based of the review from 2012 by the Danish Coastal Authority (and as a further investigation into the consequences of the CCA challenges), all significant secondary effects on the marine environment, biodiversity and business development in the Limfjord and its surrounding rural areas are mapped. This mapping, which takes place in Phase 1, feeds into C9.4 as well as for knowledge-sharing among C2C CC partners.

How

Phase 1

1. Analyses of derived effects such as the implications on the marine environment of the Limfjord, the biodiversity of the Limfjord and its catchment areas, the implications for the commercial ports' business opportunities and for the utilities' coastal infrastructure.
2. Identification and engagement of more relevant stakeholders.
3. Based on the mapping, an in-depth analysis of positive and negative secondary effects of the proposed solutions of the Coastal Authority's report will form the basis for the political decision-making of a common, regional solution to the climate challenge. The partnership has ascertained that a number of scenarios (storms) need to be tested in our model. This is necessary to make sure that our results regarding storm surge water level are sufficient.
4. One seminar for the relevant decision-makers to discuss results of analyses and mapping.

Where:

The project area

When:
Phase 1:
Activities related to bullet 1 - 4

Phase 2:
Activities related to bullet 1, 3 and 4

C9.2 *New forms of cooperation with emergency management*

What:
CCA is an ongoing balancing act to achieve the optimum level of protection. A permanent protection against extreme events that occur very, very rarely is not cost-effective. A clear plan for preparedness, however, is. The purpose of C9.2 is to identify optimal, permanent protection of the Western Limfjord and at the same time be prepared to deal with extreme events. Both authorities and civilians must be empowered to handle extreme events.

How:

1. In cooperation with the two regional emergency management units (civil protection) - North and South of the Western Limfjord, respectively, a project team will be established and will prepare analyses of the ideal level of protection for urban communities and other areas along the coast.

2. The joint building (the project team and the emergency management units) of a capacity – professional as well as civilian – to handle storm surges.

3. Jointly (the project team and the emergency management units) to build a cross-border emergency management system for handling of storm surge events above the permanent level of protection.

Phase 3:
Activities related to bullet 1 - 3

Where:
The project area

When:
Phase 1
Activities related to bullet 1.

Phase 2
Activities related to bullet 2 and 3.

Phase 3:
Activities related to bullet 1-3.

C9.3. *Financial planning*

DS

CCA projects need agreement on financing. The responsibility for – and the financing of – CCA in coastal areas belongs in principle to the private property owner. However, in case a CCA project is in the public interest, national and local coastal protection authorities can implement and finance it. If a regional CCA solution to Thyborøn Channel is to be found, concrete ideas as how to finance it must be put on the table. Thus, C9.3 is targeted the elaboration of one or more proposals for funding that can be the starting point for political negotiations. This activity takes place in phase 2.

How:

1. In cooperation between municipalities, utilities, the insurance companies, the Danish Coastal Authority, and other parties having an economic interest in climate protection, a number of funding model options will be developed. The development of financial models based on e.g. utility principles can speed up the process and thus the timely CCA across Denmark. Inspiration found in other, similar European regions (e.g. the Netherlands and Northern Germany). These proposals for financial models will be discussed at the 5th seminar for decision-makers and stakeholders.

C9.3 is worked with parallel with C9.4, because the good value-added solutions have impact on the financing models in relation to the distribution of costs, attracting investors, seeking funding, etc.

Where:
In the seven municipalities (partners) in the project

When:
Phase 3:
All activities related to C9.3.

C9.4. *Requirement specification for conceptual designs*

What:
To secure a possible establishment of the installations at Thyborøn Channel, one or more conceptual designs will be prepared. The requirement specification for the conceptual designs will reflect the work carried out in the preceding sub-actions. This activity takes place after the 1st phase.

How:
Phase 2

1. The project team prepares requirement analyses to conceptual design based on C9.1 - C9.3.

Phase 3

2. The project team prepares requirement analyses to conceptual design based on C9.1 – and coordinated with C9.2 and C9.3.
3. An architectural competition is held in which architects and consulting engineering firms are invited to deliver conceptual designs that deal with the CCA and, simultaneously, add value in other areas. Conceptual designs may also include ongoing CCA in the form of, e.g.

DS

reducing the Channel's cross sectional area as new technology and more knowledge about CCA needs emerge.

4. Against this background, the implemented design competition, which should lead to a number of projects, providing CCA solutions as well as value added in other areas.
5. In the last year, there will be focus on the planning of a possible construction phase.

Where:
The project area

When:
Phase 2
Activities related to bullet 1

Phase 3
Activities related to bullet 2 - 5

Reasons why this action is necessary:
Rising water levels in the Limfjord due to storm surges is a burning platform for municipalities, utilities, and, not least, citizens along the coast of the Western Limfjord. Today, many millions of euros are invested in development projects in coastal towns at the Western Limfjord. The great uncertainties about future water levels due to storm surges lead to individual and thus sub-optimal CCA solutions. Socio-economical gains from a joint regional solution are potentially very large. C9 will help achieving C2C CC overall objective by crafting a regional strategy on CCA of urban communities at the western shores of the Limfjord. The project will support the networking and knowledge sharing across municipalities, utilities and other climate stakeholders regionally, nationally and internationally. The project will build capacity to withstand and manage future storm surges.

Constraints and assumptions:
C9.1 presumes cooperation with NGOs, knowledge institutions and leading professionals. To deal with possible resistance, contacts with secondary stakeholders have already been made. The 14 partners also have direct access to professionals in the field of EIA. C9.2 requires close cooperation between the emergency management unit, municipalities, and utilities. Such cooperation already exists. However, due to structural reform (2016), the emergency management units have been merged into larger units. The project team will therefore work to ensure a continued good and even closer cooperation between these new units, municipalities and utilities. C9.3 requires a political will to look for alternative funding models. This is dealt with by engaging all of the 7 municipalities as project partners on the basis of political decisions. The Technical Committees and the City Councils as well as the Boards of the utilities will be informed and involved in the subproject on a regular basis. C9.4 requires a political decision-making process, before starting the preparation of conceptual designs. Politicians will be informed and involved throughout the project - right up to the ultimate goal.

Expected results:
9.1: Phase 1: The major stakeholders are investigated as a basis for future action. Insight into significant secondary effects of a regional CCA solution by Thyborøn Channel. The socio-

economic review aids decision-making for a political decision on which CCA solution to be worked on with.

9.2: Phase 3: An analysis of the optimal, permanent protection for submission to policymakers and stakeholders. Strengthening of the professional and the civilian capacity to handle storm surge events, and a cross-border emergency and contingency plan for handling storm surge events significantly increase resilience.

C9.3: Phase 3: One or more financial models will support that the optimal CCA project is to be implemented.

C9.4: Phase 3: The conceptual designs address the climate challenge in the Western Limfjord and contribute with added value for the coastal communities and the habitat areas.

Cost estimation:
Expenses for direct personal costs are based on person days for the 7 municipalities' and the 7 utilities' personel based on present salaries and pensions, etc. These expenses are used for in-house analyses and assessments, as far as possible, and for meetings with stakeholders, citizens, national agencies etc. Expenses for external expert help is based on prior experience with external assistance and necessary for all activities. Expenses cover the initial analyses of secondary effects of CCA solutions to the project area as well as the work on better emergency planning in cooperation with stakeholders – primary as well as secondary, etc. During Phase 2 and beyond, expenses will cover partners' and stakeholders' work on the financial model as well as the work on a conceptual design for the eventual CCA solution at Thyborøn Channel.

Deliverables:

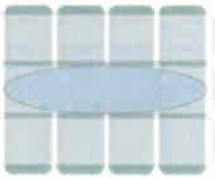
Action	Deliverables
C9.1	**Phase 1:** A survey of major stakeholders and significant secondary effects of a regional CCA solution by Thyborøn Channel. Deadline 31. Dec 2017 a socio-economic review, which may form the basis for a political decision on which climate solution to be worked on with. Deadline 31. Dec 2018
C9.2.	**Phase 2:** An analysis of the optimal, permanent protection for submission to policymakers and stakeholders. Deadline 30. June 2019 **Phase 3:** An analysis on the strengthening of the professional and the civilian capacity to deal with the storm surges at the Western Limfjord. Deadline 31. December 2021 A cross-border emergency preparedness plan for handling of storm surges. Deadline 30. June 2021
C9.3.	**Phase 3:** A review of proposals for financing models that can support that the optimal CCA project can be implemented. Deadline 31. Dec 2021
C9.4	A number of conceptual designs addressing the CCA in the Western Limfjord and add value. Deadline 31. December 2021

DS

Milestones

Action	Quantifiable milestones	Date by end of
C.9.1	**Phase 1:** Minutes from kick-off Meeting with the entire project team.	31/02/2017
	One agreement with an Advisor on the development of the mapping of key stakeholders and development of socio-economic statement	30/06/2017
	Final stakeholder mapping report.	20/11/2019
	Final statement available.	20/11/2019
C.9.2.	**Phase 2:** One agreement with an Advisor on the preparation of analysis of the optimal, permanent protection level for submission to policymakers and stakeholders.	31/05/2019
	Analysis of the optimal level of protection available.	30/11/2019
	Seminar for the relevant decision-makers.	31/12/2018
	Seminar for the relevant decision-makers	06/02/2020
	Phase 3: Project team established with the participation of emergency management units North and South of the Western Limfjord.	31.01.2021
	One agreement with an Advisor on the assistance for building professional and civil capacity to deal with the storm events at the Western Limfjord	31/03/2021
	One agreement with an Advisor on assistance for the preparation of a cross-border emergency preparedness for handling of storm surge events	31/03/2021
	A cross-border emergency management for handling of storm surge events.	31/12/2021
	A review of the strengthening of the professional and the civilian capacity to deal with the storm events are available.	31/12/2021
	3rd Seminar for relevant decision makers.	30/06/2022
C.9.3.	**Phase 2:** Conclusion of Advisor agreement on assistance with the preparation of proposals for financing models	09/11/2020
	Phase 3: The establishment of the project team with the participation of municipalities, utilities, insurance companies, Danish Coastal Authority, and other parties having an economic interest in climate protection.	31/03/2021
	A number of proposals for funding are available.	31/12/2021
	Seminar for relevant decision makers.	30/06/2022

C9.4	**Phase 2:** Conclusion of Advisor Agreement for assistance with preparation of requirement specifications for climate solution by Thyborøn Channel. **Phase 3:** At least three conceptual designs addressing CCA challenges in the Western Limfjord and contribute with added value are available. Seminar for the relevant decision-makers.	09/11/2020 31/12/2021 30/06/2022



C10: The River Grenaa Catchment

In the towns alongside the watercourses of Kolindsund and Grenaa, climate change have major implications – not least in relation to the areas used for agricultural production and in the meadow areas along the river basins. Taking into account the present land use, future climate changes (more precipitation, greater quantities of water in catchments, rising groundwater, rising water level in Kattegat and – possibly – salt water intrusion), as well as cost-benefit and societal analyses, a number of realistic CCA scenarios will be analyzed to provide a robust and valid basis for political decision-making. This action is primarily linked to developing tools within the whole hydrological circle.

Main responsible beneficiary: Norddjurs Municipality Budget: 1.064.250€

Number of days estimated spent on action in phase 1: 285 Days
Number of days estimated spent on action in phase 2: 701 Days
Number of days estimated spent on action in phase 3: 250 Days

Beneficiaries responsible for implementation: Syddjurs Municipality (SDK) and Norddjurs Municipality (NDK)

Role of NDK

- Is the project-leader
- Works with stakeholders: Aqua Djurs, Syddjurs Spildevand, other wastewater companies, landowners, drainage associations, NGOs etc.
- Serves a Steering Committee (composed of Syddjurs and Norddjurs project-leaders, technical directors and politicians) and a Monitoring Group (composed of wastewater companies, Kolidsunds Venner, drainage associations, possibly politicians)
- Feeds into homepage and project portal to ensure local ownership and political consensus
- Reports and cooperates with C2C CC PM and other C actions

Relation to CCA plans

- Norddjurs CCA plan: (Kolindsund mentioned pp. 23-24, 26, 30-31, 37)
- Syddjurs CCA plan: http://www.syddjurs.dk/sites/default/files/PDF/KPT07.pdf (Kolindsund mentioned pp. 9, 11 og 12)

Relation to cross-cutting capacity building actions (C1-C7)

Activity C10 The Grenaa Cathment will gain from actions under C1 relating to desk analysis and identification of knowledge gaps and reviews of in the risk maps and planned actions. Experience will be exchanged between demonstration projects C8, C11, C14 and C18 dealing with the coastal cities of Horsens, Randers and Juelsminde. A common understanding between stakeholders of sustainable solutions (economically, environmentally, socially and long term) with a focus on land use, cost-effective measures, planning, implementation, maintenance and operation will be shared

DS

and developed across actions C8, C9, C11, C14, C17, C18 and facilitated by CDR. Under C1 a workshop will be held to assess synergies and possibilities of integrated solutions for the fjords at the East Coast.

Under action C2 knowledge on CCA and rivers developed under different actions will be shared. Modelling, interpretations, analysis and data sampling are similar in the different catchments and C10 will benefit from this knowledge sharing. Scientific aspects currently the highly debated within EU, e.g. on the synergies and trade-offs between CCA and water ecology, the need for warning systems related to flooding of rivers and local contingency planning, and the synergies between farming and wetland restoration will also be shared and discussed for the benfit of action C10.
Under action C3, in selected areas a detailed local model is set up focusing on groundwater, surface and/or seawater. Models are based on the present data and collections of new data sets e.g geophysical data and C10 will benefit from this model. Under action C3, in selected areas a detailed local model is set up focusing on groundwater, surface and/or seawater. Models are based on the present data and collections of new data sets e. g. geophysical data and C10 will benefit from this model.

Under Action C4 Rainwater, C10 will gain from the identification and experience of different setup models and testing of SUDS within CDR. Under action C6, the groundwater-surface water model and screening tool is developed and tested, and known warning systems in DK and in other countries are explored, and simple warning systems with flood prediction are tested and demonstrated, all activities which may benefit C10 directly.

Linked to Complementary Actions
As of now, C10 is not linked to complementary actions, but the preparation of complementary projects are inherent in activities (cf. C10.3).

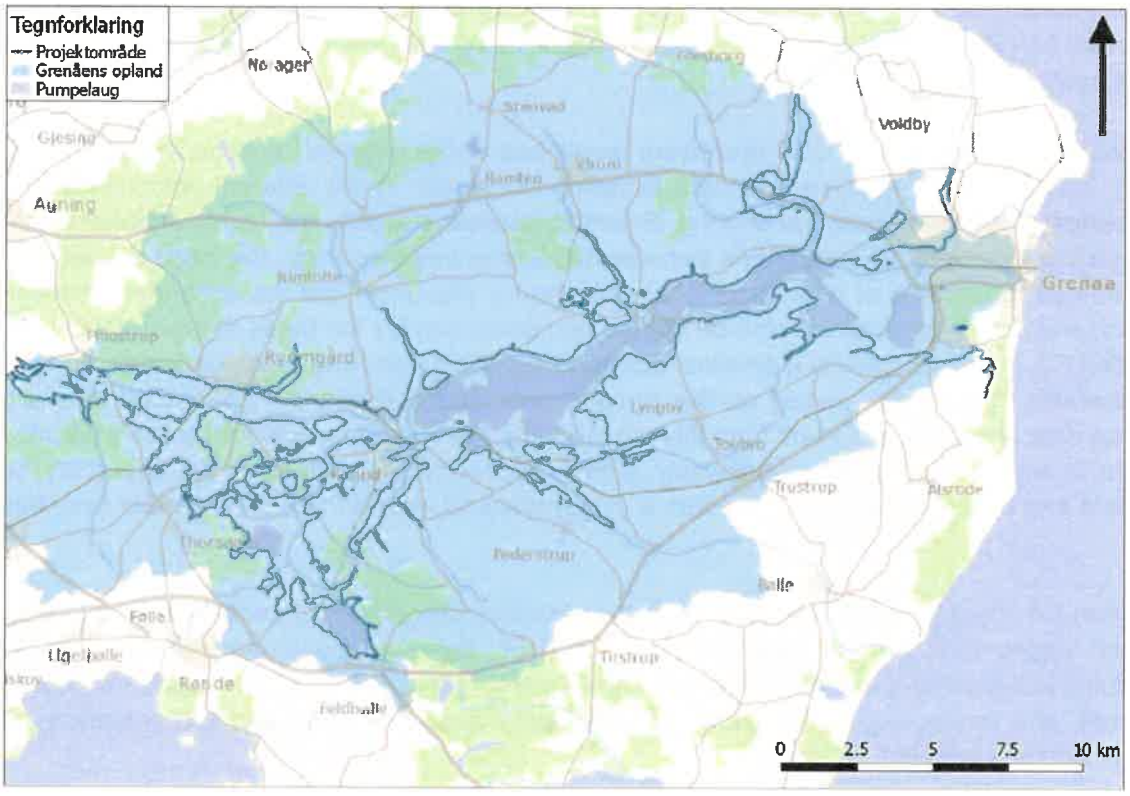


Figure19: The catchment area of River Greenaa

Description (what, how, where, when)

What:

When preparing the CCA plans, analyses of the Grenaa Catchment revealed major challenges related to water management: surface water, groundwater and seawater. The project area covers 466km². The challenge is particularly complex due to the size of the area, and different – conflicting – interests. The river estuary of the River Grenaa is the city of Grenaa, which is challenged by the future rising sea levels and water flows from the various catchments, leading to floods and problems with water supply.

In the towns alongside the watercourses of Kolindsund (the sound of Kolind) and Grenaa, climate change have major implications – not least in relation to the areas used for agricultural production and in the meadow areas along the river basins (also areas upstream of Kolindsund).

Taking into account the present land use, future climate changes (more precipitation, greater quantities of water in catchments, rising groundwater, rising water level in Kattegat and – possibly – salt water intrusion), as well as cost-benefit and societal analyses, a number of realistic CCA scenarios will be elaborated and analysed to provide a robust and valid basis for political decision-making. Where relevant, these scenarios will be extrapolated 25, 50, and 100 years to take into account future climate developments.

Among others, the following elements will be included:

DS

- Risk assessment
- Climate-proofing of the city of Grenaa, the Kolindsund and other infrastructure in the project area (minimizing flood risk, controlled flooding, unsanitary conditions as a consequence of the overflow of the waste water systems)
- Technical requirements for climate protection in relation to agricultural production
- Implications of possible salt water intrusion for the agricultural production and the supply of drinking water
- Improved CO_2 score due to CO_2 retention from reintroducing wetlands
- Assessments of societal values (existing nature, outdoor recreation, settlement, and other recreational values)

Phase 1 deals with the collection of data for the hydrological model, setting up of expert/citizens forums and the creation of a website, whereas phase 2 and beyond deals with the calibration of the hydraulic model, setting up the solution scenarios, economic assessment of scenarios, qualification of the model and scenarios by organizing workshop, choose solution through economic assessments, and develop a comprehensive proposal for solutions for the project area.

C10.1 *The set-up of a hydrological model*

What:
To understand the hydrological processes in the River Grenaa catchment, to secure common knowledge and understanding of the CCA challenges among stakeholders, and eventually to make the proper decisions, it is necessary to set up a hydrological model. Maximum cohesion and robustness is secured by a number of workshops with experts and stakeholders. The output of this process is a combined groundwater and salt water model to assess the CCA impacts on the River Grenaa catchment and its hinterland able to assess the cumulative effects and impact of the flooding, saltwater intrusion and other water balance considerations. The model is a dynamic 3-D model (surface-ground water incl. full 3D coupled unsaturated-saturated zone) that can handle the time-related variations in the system. The following data will calibrate the model: rainfall, runoff, time-series for groundwater level, salinity, activities in drainage associations, potential evaporation, drainage, wastewater data, nitrogen / phosphorus etc. Especially in relation to groundwater, more data is needed to set up a model. Furthermore, tenders for model setup will be elaborated.

How:
Phase 1:
The following sub-actions are part of the hydrological modeling:

1. Collection of data and preparing the sett up a hydological model
2. Workshop on needs for data to be included in the model. Participants: the C2C CC Advisory Committee, hydrologists, geologists, , , farmers' organizations, NGO's, land users, local organizations.
3. Elaboration of a tender for a model setup

Phase 2:
Subsequent phases deal with modelling, calibration, and scenarios (2019-2020) and impact assessment of selected scenarios (2021-2022), among others:

4. Continuing data collection for model set up

Phase 3

5. Continuing model setup with data and input from stakeholders and citizens
6. Model calculations for risk assessments (based on the UN climate scenarios, cumulative impacts of rises of ground water and sea level as well as increased rainfall. Sensitivity analyzes in order to qualify the risk assessments.)
7. Model calculations for the screening of possible scenarios/combinations for CCA of the agricultural interests, Grenaa City, Kolind and Ryomgaard and other infrastructure. Sensitivity analysis will determine the robustness of the scenarios.
8. Initial socio-economic analyzes (to decide upon the scenarios for further screening analysis). Focus on local areas: Mørke, Ryomgård, Kolind, Grenaa and open land in between.
9. Impact assessment of selected scenarios, both technically and economically.

Where: The project area
When:
Phase 1: activities 1-3
Phase 2: activities 4
Phase 3: activities 5-9

C10.2 *Public awareness rising: website and citizens meetings, etc.*

What:
To secure widespread awareness on the CCA challenges of the Grenaa catchment, and empowering stakeholders, eventually leading up to a political decision-making, a website and a portal will be created and citizens meetings held. The website (incl. A dialogue portal) is going to be dedicated interested stakeholders and citizens to provide input and engage in dialogue on the project. The website will also regularly present analyses. Citizens meetings will be set up, where there is a need for a more direct dialogue with citizens in the communities of Kolind, Ryomgård and Grenaa.

How:
Phase 1:

1. Launching of a website incl. Life logo and linked to C2C CC website
2. 1 – 2 Citizens meetings to disseminate results. Depending on how many sign up to the citizens' meetings, one will be in the east and one in the west of the project area to secure that all citizens are heard.

Where:
Norddjurs and Syddjurs municipalities; the website, which is a local instrument to serve the action, will be linked to the C2C CC website.

When: This activity is an important element of the project and will take place all years and beyond.

Phase 2:

Ongoing meetings with land users/-owners, NGO's, local organizations, and specialist for qualifying model set up and relevant scenarios for the future strategic plan for climate adaption of the area together with landowner and local NGO's

Phase 3:
Stakeholder meeting and meetings with citizens for local areas for cataloging potential future solutions and visions for climate adaption in and adaptive plan with short, medium and long time horizon.

C10.3 *Laying the basis for decision-making*

What:
Finding solutions to the Grenaa catchment CCA challenges not only require thorough analysis and awareness raising, but eventually also a political dialogue – among local stakeholders and across municipal boundaries. A dialogue within the Steering Committee and the Monitoring Group will deal with trade-offs. This dialogue is to create ownership, and continuing discussion and decision on the project and its scenarios. This ensures dialogue with politicians, stakeholders and interest groups represented in either group. And to secure even better basis for decisions, workshops with the participation of representatives from the Advisory Committee will be organized, and findings from C2C CC analyses on the legal and administrative fields will be included. As a result, scenarios to be further investigated in Phase 3 will be chosen.

Phase 1:

1. Public meetings and a conference with representatives from the Norddjurs and the Syddjurs City Councils, discussing scenarios with citizens and other stakeholders to secure political attention and cooperation between the two neighboring municipalities on this issue
2. If need be, local project groups wanting to work deeper on aspects of the project will be established.

Phase 2:
In phases 2 the prioritization tools are supposed to include aspects such as outdoor recreation, recreational, health, tourism, etc. apart from the technical assessments, as well as cost-benefit analyzes of the chosen solution. Additional complementary projects will be established.

Phase 3
If needed, local project groups which wants to work deeper on aspects of the project, will be established.

Further collection of data and dialog with citizens and stakeholder in order to make a local catalog for future adaptive climate adaption will take place. local and all together in the catchment area of Grenaa.

Where: Norddjurs and Syddjurs Municipalities
When: Phase 1-3 and beyond

DS

Reasons why this action is necessary:
Climate changes put extreme pressure on cities and agricultural areas within the whole project area. CCA must be carried out to the benefit of citizens, society and the area itself. However, within the area, many interests and issues are in conflict, but may eventually complement and match one another. To reach that situation, the landowners, drainage associations, interested companies including wastewater companies and organizations must be engaged, and a thorough modelling and review analysis including analyses of various parameters, the handling of accumulated effects are necessary to involve stakeholders and to include them in defining the possibility of a solution. The models and tools form the basis for a common understanding among the two municipalities and its stakeholders when having to decide on CCA solutions and its impact on e.g. biodiversity, environment CO_2, socio-economic benefit and legal questions. In addition, the project, in combination with the other C2C CC sub-projects, will provide knowledge and generate manuals and initiate innovative elements for handling CCA that can create value locally, regionally, nationally and in general in the EU. The large project area contains many divergent interests to be weighed and lifted to a common strategy for the area's CCA.

Constraints and assumptions:
Over the past years, the Grenaa catchment has been subject to much debate and strong interest in maintaining the existing land use for agriculture, or if old landscapes with wetlands should be restored. These conflicting interests have often been publicly debated, and political debate and strong attitudes and ideologies have been put to the open. The project intends to clarify and provide answers to questions and solutions to the issues that have flourished for many years. Being holistic, the project will help to balance the various interests. A common platform of knowledge to communicate from a common strategy for the region in the long term shall help in this endeavor. Municipalities prioritize that the project is transparent and call for a great deal of dialogue, based on mutual respect. The Steering Committee and the Monitoring Group shall, as well as an ongoing dialogue in the project phase, shall ensure this.

Expected results:
C10.1: Phase 1: Knowledge and a common understanding of the CCA challenges linked to the Grenaa Catchment and the Kolindsund.Total number of hectares screened: 470.

C10.2: Phase 3: Public awareness and public discussion on CCA and the challenges linked to the Grenaa Catchment and the Kolindsund. Number of citizens reached: around 500.

C10.3: Phase 2: Awareness and knowledge is built at political level and dialogue between politicians of the two municipalities is established. Phase 3 further awareness and knowledge for the climate change in the areas and consequences of different scenarios of climate change and adaption, and decisions of 1 or more integrated solutions, incl. costs and proposed financing are presented to politicians of both municipalities to be decided on.

Cost estimation:
Expenses for direct personal costs are based on person days for NDK and SDK personnel based on present salaries and pensions, etc. Expenses for external expert help is based on prior experience with external assistance to local projects in the municipalities. External assistance will be used for highly needed expertise in relation to the modeling. During Phase 2 will cover the further development of the model, calibration and calculating various scenarios under various conditions

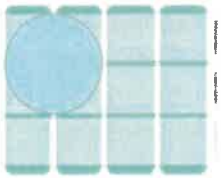
and including socio-economic assessments, incl. environment and nature. During Phase 3 expenses will cover final works on models, comparisons, tools, guidelines, a meeting with citizens.

Deliverables:

Action	***Deliverables***
C10.1	Calibrated hydraulic model for the Grenaa Catchment Idea catalogue with possible solutions and assessments for CCA in the project area Catalogue with selected solutions and their in depth analysis
C10.2	Website incl. a dialogue portal
C10.3	Strategic plan for the area and its climate adaptation

Milestones:

Action	***Quantifiable milestones***	***Date by end of***
C10.1	**Phase 1:**	
	Workshop held on qualifying data sampling	31/12/2018
	Collection of data for the model and other assessments done	31/12/2018
	Tendering material developed for model and impact assessment	31/12/2018
	Phase 2:	
	Phase 3 :	
	Elaboration of model and calibrating done	31/12/2022
	Screening and qualifying options incl. risk assessment done	31/12/2022
	Assessment on environment, nature and recreational values done	31/12/2022
	Impact assessment of chosen scenarios and prioritization (2021-2022)	31/12/2022
	Solutions for political decision-making identified	31/12/2022
C10.2	Launching of Website incl. a dialogue portal	31/12/2018
	Citizens meetings held, 500 participants	31/12/2022
C10.3	Public meetings and a conference with representatives from the Norddjurs and the Syddjurs City Councils, 100 participants	31/12/2022



C11: Randers Fjord

Loss of Territory to the Water: Benefit or loss?

According to the Floods Directive, the Randers Fjord is designated a risk area, and risk management plans have been made. The content of this project is to map the areas, and develop a strategy focusing on active integrating CCA, nature, inhabitants, development. and economy. The subsequent implementation of the strategy will lead to a coherent, sustainable, and adequate land use. This action is primarily aligned with governance and tools within seas & fjords and rivers.

Main responsible beneficiary: Norddjurs Municipality Budget: 177.280€

Number of days estimated spent on action in Phase 1: 158 Days
Number of days estimated spent on action in Phase 2: 128 Days
Number of days estimated spent on action in Phase 3: 58 Days

Beneficiaries responsible for implementation: Randers Municipality (RK) and Norddjurs Municipality (NDR)

Role of Nordjurs Municipality:

- Is the project manager
- Works with the following dike associations as secondary stakeholders: (at NDR side) Drammelstrup Enges Landvindingslag, Hollandsbjerg-Bode-Stenalt Enges Landvindingslag, Hejbækkens Landvindingslag, Karholme Landvindingslag, Allingåbro Enges Landvindingslag, Vivild-Hevring Enges Landvindingslag, Holbækgård Pumpelag, and (at RK side) Albæk pumpelag, Tjærby- Vestrup pumpelag, Assentoft m.fl. Byers pumpelag, Kristrup enges pumpelag, Dronningborg Tjærby enges landvindingslag, Støvring enges landvindingslag, Udbyneder enges landvindingslag, Romalt enges landvindingslag, Øster Tørslev m.fl. byers, landvindingslag, Råby m.fl. enges landvindingslag, Gjerlev, Ø. Tørslev m.fl. enges landvindingslag, Dronningborg Vestre enges pumpelag
- Reports and cooperates with PM (CDR) and C12 project manager

Relation to CCA plans
NDR CCA plan pp. 14-16
RK CCA plan p. 35 and risk management plan p. 71.

Relation to cross-cutting capacity building actions (C1-C7)
Action C11 Randers Fjord will gain from actions under C1 relating to desk analysis and identification of knowledge gaps and reviews of in the risk maps and planned actions. Experience will be exchanged between demonstration projects C8, C10, C14 and C18 dealing with the coastal cities of Juelsminde, Horsens and Grenaa. A common understanding between stakeholders of sustainable solutions (economically, environmentally, socially and long term) with a focus on land use, cost-effective measures, planning, implementation, maintenance and operation will be shared and

developed across actions C8, C9, C10, C12, C14, C17, C18 and facilitated by CDR. Under C1 a workshop will be held to assess synergies and possibilities of integrated solutions for the fjords at the East Coast. Under action C2 knowledge on CCA and rivers developed under different actions will be shared. Modelling, interpretations, analysis and data sampling are similar in the different catchments and C11 will benefit from this knowledge sharing. Scientific aspects currently the highly debated within EU, e.g. on the synergies and trade-offs between CCA and water ecology, the need for warning systems related to flooding of rivers and local contingency planning, and the synergies between farming and wetland restoration will also be shared and discussed for the benfit of action C11. Under action C5 specific training courses, workshops and masterclasses, with point of departure in the challenges experienced by the partners will be implemented for the benefit of action C11 and other actions.

Linked to complementary projects
As of now, no complementary projects have been sought. However, the RK is providing supplementary financing to the C11 action.

Description: What, How, Where, When,
C11 is a cross-border action targeted finding common solutions to a huge CCA risk involving two fjords, a number of cities, of which one is designated flood risk area, and vested interests in dike associations.

According to the Floods Directive, the Randers Fjord is designated a risk area, and risk management plans in both RK and NDK have been made. The content of C.11 is to map the areas, and develop a strategy focusing on active integrating CCA, nature, populations, development and economics. The subsequent implementation of the strategy will lead to a coherent, sustainable, and adequate land use. The strategy must go public and can be used as a manual for other planning authorities in Denmark and the rest of the EU.

The Randers Fjord constitutes the estuary of the River Gudenå and the watercourse Alling Å. A number of communities lie at the fjord e.g. Udbyhøj, Allingåbro, Uggelhuse and Randers, and floodings directly affect around 3,000 people as well as essential infrastructure, values, and large areas of farmland. Finally, Randers Fjord is essential for both tourism and protection of natural areas.

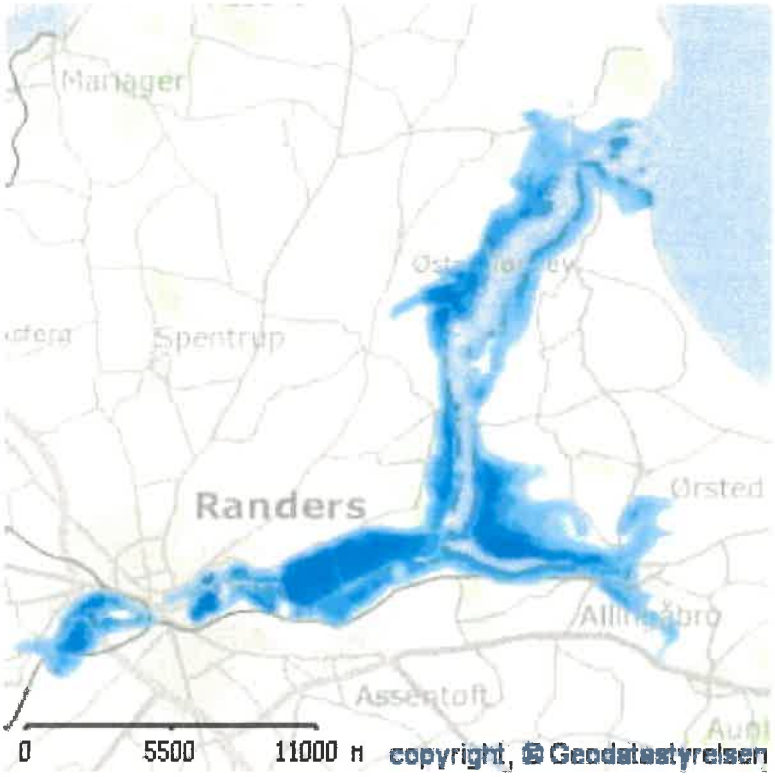


Figure 20. The project area along Randers Fjord, where large values are threatened by extensive flooding in both floods and the term of the term sea level rise.

As a supplement to the river model for the River Gudenåen (C12), a corresponding 'fjord model' calculating the consequences of relationships between runoff from rivers, tides, flooding and air pressure in relation to the topography close to the fjord as well as the urban communities must be developed. The desired set-up of this 'fjord model' is to ensure that future solutions to address flooding in Randers Fjord do not affect ecosystems in the fjord unnecessarily. This is due to the fact that Randers Fjord has several designations (cf. Habitats Directive). Furthermore, since Randers Fjord is the estuary for the River Gudenåen, an altered ecology in the Randers Fjord due to CCA of the fjord may result in ecological impacts upstream in the protected areas.

The project aims at shedding light on this loss of values caused by the floods – both in terms of permanent loss of cultivated areas and acute loss due to flooding.

C11.1 *Development of a 'fjord model' and cost-benefit analyses*

What:
A 'fjord model' is to be developed as a counterpart to the "river model" for the River Gudenå and an interconnection to this. To be coordinated with C.12 relating to illustrate the effects of water retention at field level.

DS

In continuation a cost-benefit analysis will be conducted focusing on loss of values as well as gains of how climate change solutions may create added value at local level.

How:

Phase 1

1. Survey and analysis of Randers Fjord at different scenarios for rising sea levels, flooding, runoff, flora / fauna and the effects of inlet and meadows. This together form a fjord model which will connect to the many natural and physio-chemical balances in the fjord.
2. Based on the fjord model we will prepare a cost-benefit analysis. This is a holistic value analysis linking the multilateral considerations that the fjord carries today to ensure a long term climate risk assessment and reduction of risk around Randers Fjord. A value analysis will be based on primarily economical considerations evaluating the different CCA solutions of Randers Fjord.

Phase 2

There will be made a fjord model in cooperation with the government Kystdirektoratet, a Mike 21, the Mike 21 will be combined with the Mike 11 from C12 project.
Where: The project area, figure 20

Phase 3

The fjord model is finish by Kystdirektoratet, model delivered to Cowi. Cowi will calculate on different scenarios, for instance they will calculate on climate adaption with of sluice. A challenge in the area are, that a sluice for best placement will be in the middle of Natura 2000 area. Therefore, we need to make modelling of climate adaption without a sluice too.

When:

Phase 1: activities 1 and 2

C11.2 *Assessment of the consequences of establishing a sluice*

Concurrently with Actions 1 and 2, a project assessing the possibilities of establishing a sluice on the fjord estuary. Impact on the nature and the environment, economy, tourism, etc. must be assessed. The activity leads to a report that will serve as a feasibility study into a possible subsequent EIA for a dam project.

How:

Phase 1

Impact assessment of the effects on the nature and the environment, economy, tourism, etc. For the construction of a tilt lock at Udbyhøj. The activity will culminate in a report that serves as a feasibility study into a possible subsequent EIA for a dam project.

Phase 2

The fjord model will involve a calculation of a scenario, where establishing a sluice. And alternative scenarios to a sluice due to regulation and legislation from the government.

DS

Phase 3
The calculated scenarios will be evaluated, and we expect a need for more scenarios, which then will be calculated.

Where:
The project area

When:
Phase 1

C.11.3 A *strategy for decision-making*

What:
Based on C11.1 and C11.2, a fjord model is designed, and a strategy for the choice of the areas to be protected from water and the areas to be converted to other uses such as nature-based tourism is elaborated. It is determined which areas could add value to nature. It is clarified how the loss of value can be turned into value gain - how the area around Randers Fjord might reverse the trend, attaching new values to the estatuary as the old values must be abandoned? This activity mainly takes place in phase 2 and beyond.

How:
Phase 3

1. Draw up a model and strategy for land use in and around Randers Fjord and its communities.
2. Coupling of the project to other projects around Randers Fjord including Natural Park Randers Fjord.

Where:
The project area

When:
Phase 2 and Phase 3

Reasons why this action is necessary:
A flooding in the risk areas of Randers Fjord can cause major damage to urban areas. A storm surge event of a 100 year magnitude will directly affect about 3,000 residents in the towns of Allingåbro, Uggelhuse, Udbyhøj and Randers, as well as a number of buildings in the open countryside, highway embankment E45 (at the passage of the River Gudenåen), as well as the railway embankment (at the River Gudenåen's passage). Randers Fjord is designated as a risk area for EU Floods Directive on the basis of a statement of a potential loss in value by storm surge of up to 5.7 billion. DDK. The action will highlight the possibilities of adaptation of the risk area and create better opportunities to prevent future flooding. Whether adaptation occurs through various combinations of the laying of flood areas or barricades to keep water away from certain areas. This will enhance climate resilience of the Randers Fjord area.

Constraints and assumptions

The important and necessary task of analyzing the fjord landscapes and finding viable answers to questions such as: how can land be given up? which areas should be preserved and protected in relation to business? how can land increase its value and change function? must be done in a mutual effort of both municipalities. The largest constraint is financial, since the municipalities do not have the expertise in-house. There is therefore a risk of delay of a few years. The C2C CC project provides the means to initiate this analysis and hence to provide decision-makers with proper analysis.

Expected results:
11.1: A Fjord Model and scenarios for future CCA of the project area, and a complete list of possible solution scenarios and their cost-benefit analyses make it possible to suggest concrete solutions. 11,000 hectares screened.

C11.2: An independent assessment of the scenario of a sluice solution in relation to CCA of the project area will show whether it is feasible.

C11.3: will result in a future and long term strategy and approach for the project area.

Cost estimation:
Expenses for external expert help is expected to amount to 82,675 € based on prior experience with external assistance to local projects in NDK and RK. Estimation of person days for NDK and RK is based on present salaries + pension. Expenses cover the analyses of the Randers Fjord in order to prepare the 'fjord model' and impact assessments. External assistance is necessary because neither NDK nor RK have enough means to deliver the analyses and assessments in-house. During Phase 2 and beyond, expenses are expected to cover the drawing up of the fjord model and the eventual choice among alternatives, depending on how elements are prioritized.

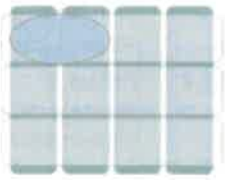
Deliverables:

Activity	Deliverables
C11.1	**Phase 1** Report on mapping and analysis of Randers Fjord at different scenarios for the preparation of the Fjord Model. Technical background report, and a fjord model. Report on cost benefit analysis, a holistic value analysis for climate protection of the fjord, **Phase 2** Report assessing the impact on nature, the environment, economy, business mm. the establishment of the sluice at Udbyhøj
C11.2	**Phase 3** A feasibility study into a possible subsequent EIA for a dam project
C11.3	**Phase 3** Reports on modelling tools and two municipal strategies for land use in and around Randers Fjord

Milestones

Activity	Quantifiable milestones	Date by end of
C11.1	**Phase 1:**	
	Data collection for the 'Fjord model'; the preparation of this model done	31/12/2018
	Analyses of different scenarios for future climate adaptation done	31/12/2018
	Phase 2:	
	Report assessing the possibility of a sluice solution finalised	31/12/2020

	Phase 3: Report assessing the possibility of a sluice solution finalized A modelling tool developed for the Randers Fjord, calibrated with respect to the River Gudenå Model.	 30/06//2022 30/06/2022
C11.2	**Phase 3:** Strategy developed for future land use around Randers Fjord to climate adapt area Stakeholder meeting held	 31/12/2022 31/12/2022
C11.3	**Phase 3:** A model and strategy developed for land use in and around Randers Fjord and its communities. Description of the coupling of the project to other projects around Randers Fjord including Natural Park Randers Fjord	31/12/2022 31/12/2022



C12: The River Gudenå

The project is a cross-border project involving the 7 municipalities along the River Gudenå and one utility. A hydrological model is developed for the watercourse, the land use is mapped, the possible actions to handle increased volumes of water is identified. Test scenarios for different solutions in the model will be made. This mapping lays the basis for a common understanding of the consequences of climate change in the catchment. Next step is the creation of a vision and a goal for a CCA approach. Furthermore, stakeholders will prepare conceptual designs for physical solutions in the River Gudenå catchment, and identify suitable approaches to dealing with water. This action primarily links to governance within sea & fjords and rivers.

Main responsible beneficiary: Silkeborg Municipality Budget: 801.946 €

Number of days estimated spent on action in phase 1: 618 Days
Number of days estimated spent on action in phase 2: 416 days
Number of days estimated spent on action in phase 3: 260 days

Beneficiaries responsible for implementation:
Seven partners (municipalities) directly affected by the River Gudenå CCA challenges: Silkeborg (SIK), Hedensted (HEDKOM), Horsens (Horsens), Skanderborg (SK-KOM), Favrskov (FK), Viborg (VK), and Randers (RK). Furthermore, Skanderborg Waste Water Utility (SFV) is partner, since the water level directly affects its operations and systems.

The role of SIK:

- Is the project manager
- Cooperates with the six other municipalities and Skanderborg Waste Water Company
- Works with secondary stakeholders in *each* municipality - such as, in the case of SIK - Vandløbslauget for Gudenåen (Silkeborg til Kongensbro), Grundejereforeningen Sølyst (Silkeborg Langsø), Silkeborg Fiskeriforening, Danmarks Naturfredningsforening (local branch).
- Reports and cooperates with PM (CDR), C11 project manager, and C14 project manager as well as other C2C CC partners

Relation to CCA plans

- HEDKOM: Municipal spatial plan pp. 21-24, 29-30, 61-63, 98-100
- Horsens CCA plan pp. 24 -26 and 30-32
- SK-KOM CCA plan pp. 41-42, CCA action plan pp. 9-18
- SIK CCA plan pp. 21-23 + 37
- FK CCA plan p. 15
- VK Municipal spatial plan p. 14
- RK CCA plan p. 10.

Relation to crosscutting capacity-building actions (C1-C7)

DS

Action C12 River Gudenå will gain from actions under C1 relating to desk analysis and identification of knowledge gaps and reviews of in the risk maps and planned actions. Experience will be exchanged between demonstration projects C8, C10, C11, C14 and C18 dealing with the coastal cities of Juelsminde, Horsens and Grenaa. A common understanding between stakeholders of sustainable solutions (economically, environmentally, socially and long term) with a focus on land use, cost-effective measures, planning, implementation, maintenance and operation will be shared and developed across actions C8, C9, C10, C11, C14, C17, C18 and facilitated by CDR. Under C1 a workshop will be held to assess synergies and possibilities of integrated solutions for the fjords at the East Coast, of which the River Gudenå is an integrated part. Under action C2 knowledge on CCA and rivers developed under different actions will be shared. Modeling, interpretations, analysis and data sampling are similar in the different catchments and C12 will benefit from this knowledge sharing. Scientific aspects currently the highly debated within EU, e.g. on the synergies and trade-offs between CCA and water ecology, the need for warning systems related to flooding of rivers and local contingency planning, and the synergies between farming and wetland restoration will also be shared and discussed for the benefit of action C12. Under action C5 specific training courses, workshops and master classes, with point of departure in the challenges experienced by the partners will be implemented for the benefit of action C12 and other actions.

Linked to complementary actions
A number of complementary actions to support C12 will be explored during the project. One type of complementary projects are the ones that support nature-based tourism. Another type of project are the ones that focus on CCA at specific areas at the River Gudenå to alleviate high water levels (e.g. at Bjerringbro). Some of these projects amount to 6 mio. €, others are smaller – 250,000 €. Expected source of financing: municipalities.

What:
The C12 project is a cross-border project involving 7 municipalities and a utility company along the River Gudenå hereby launching their practical cooperation on CCA because of the work on the C2C CC project.

The River Gudenå is the longest river in Denmark measuring 146 km, running through large part of eastern Jutland. The catchment area is 3,200 km^2. It runs through seven municipalities and ends at the east coast in Randers Fjord (cf. close cooperation with C10). The River Gudenå and its tributaries pass several cities and towns such as Tørring, Silkeborg, Ry, Bjerringbro, Hadsten and Randers (cf. cooperation with C14 on SUDS). The catchment area comprises nature, of which 11 Natura 2000 areas exist in the catchment[1], urban settlement and – not least – agriculture. The River is important for water drainage from the cities, the highlands and particularly from low-lying agricultural areas.

Part 1 of the project develops a hydrological model for the watercourse, maps the land use, identifies the possible actions to handle increased volumes of water, and tests scenarios for different solutions in the model. This mapping lays the basis for a common understanding of the CCA issues and thus Part 2, which involves a number of stakeholders, develops a vision and a goal for the CCA approach, prepares conceptual designs for physical solutions in the River Gudenå catchment, and identifies suitable approaches to dealing with water. Finally, the above solutions are related to other issues in the seven municipalities CCA plans.

C.12.1 *Models for the scenario descriptions*

What:

[1] http://naturstyrelsen.dk/vandmiljoe/vandplaner/vandplaner-2009-2015/hoeringer/hoering/basisanalyser/15-randers-fjord/.

DJ

Rising volumes of runoff and heavier cloud bursts due to climate change, increasing amounts of vegetation in parts of the River Gudenå, plus requirements of good ecological status due to the river basin management plans, increase the needs for a better knowledge of the relationship between precipitation, runoff, groundwater and flooding, as well as land use mapping in the areas affected by water level in the river. There is thus a need to assess the effects of a number of actions that could potentially minimize conflict over land as result of rising volumes of runoff and heavier rain events.

Some of the tools already known can be extremely costly. In addition, some of the possible actions may be detrimental to national and international nature conservation interests and efforts to achieve good ecological status of water bodies under the EU Water Framework Directive (WFD). On the other hand, floods inflict damage to buildings, roads and private property, cultural heritage and recreational interests.

Impoundment of water may help to meet the objectives of the WFD. Restoring the natural hydrology can thus reduce nitrogen and phosphorus content in streams, lakes and in the Randers Fjord. Moreover, it may increase biodiversity and provide new recreational opportunities, such as more fishing tourism. Therefore, the project should identify the greatest extent possible of CCA while at the same time living up to the environmental objectives of the WFD. In addition, there is a need to evaluate possible actions from a legal and socio-economic point of view.

How:

Phase 1

A key tool for understanding the dynamics of the river is a hydrological model, which takes its point of departure in historical climate events and is used to predict future events. The present model only covers part of the river and needs to be updated and expanded to the entire river in order to describe the effect of different volumes of runoff. An updated model should also be used as one of several support tools to assess the impact on water levels in the different scenarios for compensatory measures as well as for future protection measures.

Concrete actions:

1. Development of hydrological model
2. Development of reports and catchment tool
3. Web portal with warning and exchange of experiences, lessons mm.
4. Model Setup and scenario runs
5. Catalogue of solutions, costs, etc.
6. Mapping of land use
7. Scenario Run measuring the effect of individual measures
8. Legal and social consequences of possible actions

Related to the establishment of the model, the following data common for the entire river is collected: water flow, elevations, discharge areas, submerged vegetation, water level loggers etc.

The model and the analysis of the surface area are used to evaluate the eventual usage of the following compensating scenarios:

- Retention of water in low-lying areas and the tributaries in the form of wetlands, etc.
- Deepening of river cross profiles on parts of the river stretch
- The establishment of a parallel flow on parts of the river
- Removal of any deposits on parts of the river stretch
- Limitation of drainage volumes from fortified and submerged land in the catchment
- Land distribution, acquisitions etc. of low-lying areas
- Intensified watercourse maintenance

DS

- Altered / optimized operation of established barriers in the watercourse
- Other compensatory measures to alleviate the distress due. Elevated water levels

Furthermore, the environmental, legal and societal implications of each scenario will be assessed.

C12 will benefit from two other actions, the C11 Randers Fjord and the C14 Horsens city center. The latter deals with opportunities to retain water in low-lying areas and reducing run-off from paved areas in the catchment as well as from cultivated land.

Where:
The entire catchment area



Figure 21: The catchment of River Gudenaa marked with red. The municipal borders are indicated as black lines.

When:
Phase 1 1-8 (section concerning phase 1, page 3-4)
Phase 2 1-7 and 9-11 (section concerning phase 2 and 3, page 6)
Phase 3 8 and 12 (section concerning phase 2 and 3, page 6)

C.12.2 *Stakeholder involvement, choice of projects and the development of vision and goals, etc.*

What:
The water challenges in the River Gudenå catchment involves numerous authorities, businesses and citizens, and stakeholder involvement is vital. The project is based on the regional, catchment scale, as the project focuses on cross-border issues and works to handle the challenges pertinent

for the whole catchment area, avoiding sub-optimization. This work involves particularly the 7 local authorities in the catchment area. It takes mainly place during Phase 2 and beyond.

Involvement of stakeholders will happen in cooperation with the Masterplan for Gudenåen. This new project will focus on handling Gudenå's rising water volumes by June 2021. The masterplan must outline proposals for initiatives and initiatives in the Gudenå and its catchments. The drafting of the overall plan has been approved in the 7 municipalities on the basis of a mayor's decision in February 2020.

Stakeholder involvement in the two projects will be coordinated under the auspices of both projects. There will be coincidences of technicians. Gudenå committee is the follow-up group for both projects.

How:
This action creates even closer collaboration between stakeholders and the development of a common vision and goals. Eventually, actions will be selected.

Phase 1
In the spring of 2017 the task was defined and the tender compiled. Meanwhile, the 8 partners created an overview of existing data and collected the data in a database.

After clarification of procurement rules, 5 companies were examined. 3 companies were qualified to make their bids, within a defined financial framework. One of the companies who were not chosen, got associated as client advisor.

2 companies got the opportunity to present their bid. DHI was chosen and a final contract was signed in March 2018.

DHI are working on developing a hydrological model in cooperation with the C12 partners. The hydrological model is expected set and calibrated in 2018. DHI and the project Group (8 partners) cooperate finding scenario and to describe the effect of the scenarios.

In the autumn of 2018 a prototype of the Warning model and web portal will be set up.
The delivery was delayed and not delivered to the municipalities until summer 2020.

During phase 1 the project-group have experienced challenges in cross-municipal co-operation, among other because of different political interests. An analysis which identify challenges in cross-municipal co-operation will be made, which is expected to facilitate the further process.

Phase 2
Citizens meetings to discuss the model will be held, meetings and workshops among partners and stakeholders to discuss scenarios from phase 1 and to put forward proposals for concrete measures, and the 3D simulation model will be presented.

Experience in involving stakeholders will be gathered from the similar projects, for example checking for letter templates and methods in involving stakeholders across municipalities and across the groups. Then a wide stakeholder analysis will be conducted, with all the vital and relevant stakeholders involved. The Gudenå-committee is seen as a vital stakeholder, and the municipalities wish to involve this committee to be the steering committee for creating the vision and involving the public in the project.

Phase 3
The municipalities are agreeing on shared targets to be set for Gudenå river.
Validation of the hydrological model and *implemented in municipal climate adaptation plans*

JRS

Phase 2 - 3
Concrete actions:

1. Stakeholder analysis: Broad analysis of who the stakeholders are, and what their stake in the project are: Gudenå committee, shore owners, landowners effected by the water levels in the river system, owners of infrastructure, owners of dams, fishermen, recreational users of the river, authorities, Grønne Råd etc.
2. Identify challenges in cross-municipal co-operation
3. Prepare letter templates and methods in involving stakeholders
4. The Gudenå-committee is appointed to govern involving the public in the project.
5. Developing a shared vision for handling the River Gudenå's water. The Gudenå-committee get involved in developing a shared vision
6. Integrating various water challenges of the River Gudenå.
7. Adjusting the scenarios and responses (C.12.1).
8. Agreeing on targets to be set among the Gudenå River municipalities
9. Listing of possible projects
10. Setting goals for water coming in and out of the municipalities
11. Preparation of financing models for compensatory actions
12. Validation of the model (trust in the model): Municipal authorities + citizen involvement +political involvement

Moreover, work with the citizens and stakeholders can help to achieve a more robust hinterland where flooding occurs controlled. This is done by building the capacity of those involved and those who can do something about the challenge.

The master plan for Gudenå is to be delivered in the summer of 2021, after which the delivery will completed in C12.

Where:
In the seven municipalities along the River Gudenå and STF.

When:
Phase 2: 1-7 and 9-11
Phase 3: 8 and 12

Reasons why this action is necessary:
There is a general need in Gudenå hinterland to adapt to climate change. The pressure on the water system is increasing and wetter winters and dry summers make it worse. There is increased demand among stakeholders to act to avoid flooding and loss of values. With such a large catchment area which Gudenåen and the many authorities, there is a risk of sub-optimization that only benefit locally.

The cooperation between the municipalities of the River Gudenå have cooperated for many years – just not on CCA. C2C CC produces knowledge on how the areas along Denmark's longest river, which is necessary to establish a common understanding of how solutions could be designed to the benefit of all and avoid discussion on data validity etc. Solutions that are holistic and take into account private property and infrastructure, protected natural and recreational interests. Climate resilience is thus enhanced by cooperation, providing data and formulating a common vision on the appropriate solutions.

Constraints and assumptions
C12.1:

JS

Development of models depends on data quantity and quality. The models will have to rely on available data. To meet this challenge and ensure the best possible data quality, external expertise must be involved.

C12.2:
The project's many partners make it vulnerable to disagreement. The success rate also depends on the will of the local politicians to work together to tackle common challenges and allocate resources. The individual municipalities may have different priorities. For example, one municipality prioritizes improving conditions for salmonids while another prioritizes drainage. Conflicting priorities can be solved by strengthening the political level and work on consensus through common data base and common reference that create common understanding. Finally, it is necessary to put on the agenda how to reach an agreement on financing models for subsequent actions.

The involvement of the political stakeholders provides a further challenge due to the few yearly meetings in the Gudenå committee and, in general, the response time from when an agenda item is being produced and the decisions are made.

Expected results

C12.1: Common knowledge on the CCA challenges and the prerequisites for CCA solutions among the River Gudenå municipalities with the objective of formulating a common understanding and eventually a common vision on CCA solutions.

A common tool for shedding light at a variety of scenarios. The tool will be available in the specific actions to be decided in C.12.2. Furthermore, it will be available for future scenario analyzes and compensating actions. The objective is to create a 'common reference' / 'common language' used by the municipalities of the River Gudenå when making decisions that affect water flow across the basin. The tool designates the effects acts in the hinterland will give the water quantity, quality and costs.

Analyses will be described in a report. Number of hectares to be screened: 2.643 km² (catchment area).

C12.2: Thorough involvement of stakeholders and development of the vision and goals will secure that CCA implementation is practically feasible. A number of workshops held by the Gudenaa municipalities looking towards specific initiatives and actions that can be implemented will concretize solution possibilities. Insights on secondary impacts on biodiversity, environmental effects / nitrogen removal /, CO2, economy-cost benefit, legal aspects will aid decision making for holistic solutions.

The development of a series of targeted information for landowners throughout the River Gudenå system will inform them on the following issues: How can I protect myself against water from the river? What does the course of the river mean for the runoff? Why is the river not just being expanded and deepened? Can the drainage system help to keep the water?

A web portal is created for data and for citizens to share ideas and finding good advice on flooding and create community resilience through bottom up means.

Some of the issues will be presented to the quality assurance by the stakeholder group before calculations and the notification presented to the citizen late in the project in phase 2 and 3.

Cost estimation:

DS

All partners are expected to contribute man hours to the project and pay for the implementation of the eventual CCA solution after the end of the Life IP. Estimation of person days for the municipalities working on C12 is based on present salaries + pension. For HEDKOM the total number of person-days per year is based on the basis of the total working hours/days according to national legislation, collective agreements, employment contracts, etc. – budgeted at 214 days per year. The other partners use the standard calculation of 1720. The hydrological model to be made is large, and external assistance is necessary. Expenses for this external expert help is expected to amount to 213.374 €.. A contract has been concluded with a consultant. Expenses for external assistance in phase 2 and 3 is expected to remain 161.907 €. The total amount for external assistance is expected to be 375.281 €.

In order to create the necessary consensus, quite a lot of meetings and networking is foreseen. Expenses build on prior experience in holding workshops and meetings. Subsistence costs are also based on prior experience and can be further subdivided into Hotel costs, Daily allowances/Payment for meals and local transportation categories, as shown below for this action's subsistence costs items:

Travels	**Travel for project officers around the region**							
Partners: / *Cost categories:*	**HEDKOM**	**FK**	**Horsens**	**RK**	**SIK**	**SK-KOM**	**SFV**	**VK**
Hotel cost:	100	100	100	100	100	100	100	100
Daily allowances/Payment for meals cost:	25	25	25	25	25	25	25	25
Local transportation costs:	63	63	63	63	63	63	63	63
Total subsistence cost:	188	188	188	188	188	188	188	188

Deliverables:

Deliverables:

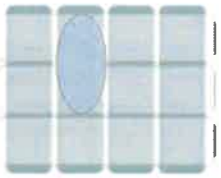
Action	Deliverables
C12.1.	**Phase 1:** Report and catchment tool Web portal with warning and exchange of experiences, lessons learned etc. Catalogue of solutions, costs, etc. 3D simulation model developed Scenario Run measuring the effect of individual measures Assessment of legal and social consequences of possible actions **Phase 2:** Extern validation of the model Listing of possible projects for those affected Identify challenges in cross-municipal co-operation Adjusting scenarios and responses **Phase 3:** Ensure ease of use of the river alert model Other initiatives in Gudenåen's catchment in local CCA plans
C12.2	**Phase 1:** Mapping of land use **Phase 2:** Developing a shared vision for handling River Gudenås water Stakeholder analyses Identify and report challenges in cross-municipal co-operation **Phase 3:** Develop a financing models for compensatory actions Prepare key parts of the project to be incorporated into climate adaptation plans Reporting the project

Milestones:

Action	Quantifiable milestones	Date by the end of
C12.1.	**Phase 1:**	
	Development of reports and catchment tool	28/02/2019
	One report on data analysis for the model	28/02/2019
	Report on the establishment of a model and calibration of the model	28/02/2019
	Three scenarios developed	
	Phase 2:	31/12/2020
	Stakeholder Involvement meeting held	31/12/2020
	Political process initiated. Minutes of municipal board meetings	31/12/2020
	Selection of projects done	
	Phase 3:	
	Measures in the municipal climate adaptation plans implemented	31/12/2022
C12.2	**Phase 1:**	
	Political process initiated. Minutes of municipal board meetings	28/02/2019
	Agreeing of water challenges of the River Gudenå	28/02/2019
	The Gudenå-committee is involved in creating the vision	28/02/2019

DJ

	Phase 2:	
	Agreeing in methods involving stakeholders	31/12/2020
	Stakeholder involvement meeting held	31/12/2020
	The Gudenå-committee is involving the public in the project	31/12/2020
	Phase 3:	
	Measures in the municipal climate adaptation plans implemented into the project	31/12/2022
	Cross-municipal political agreement on the selection of projects	31/12/2022



C13: The River Storå

The watercourse system Storå upstream at Holstebro has a catchment area of 830 km² shared between three municipalities. This project is a cross-border cooperation to test new ways to detain water and thereby avert flooding in Holstebro, which is designated a risk area according to the Floods Directive. Among the new methods are: disconnection of drainage, establishing mini wetlands, periodic increased drainage, and storage of water during different seasons. The project is carried out in cooperation with famers and a local water utility, and examines the combining of a number of CCA approaches, which together with a number of other means will increase biodiversity and ultimately, improve the water environment in the sea by reducing the leaching of nutrients. This action primarily links to governance and tools within rivers.

The project's theme is common with subproject "CCA in the hinterland and in regard to agriculture (C15.2). Parties from this project participate as sparring partners throughout the project. In Phase 2 there will be cooperation with the progress of consultancy assistance to common knowledge processing.

Main responsible beneficiary: Herning Municipality Budget: 161.861€

Number of days estimated spent on action in phase 1: 179 Days
Number of days estimated spent on action in phase 2: 136 Days
Number of days estimated spent on action in phase 3: 101 Days

Beneficiaries responsible for implementation: Herning Municipality (HK) and Holstebro Municipality (HbK)

Role of HK:

- Is the project manager
- Cooperates with HbK (partner) and Ikast-Brande Municipality (Primary Stakeholder, participates because the River originates in Ikast-Brande).
- Engages and involves stakeholders such as: Utility companies, landowners, Rådgivningscentret Heden og Fjorden, SEGES (Primary Stakeholder), the local branch of the Danish Society for Nature Conservation, the Danish Nature Agency, etc.
- Enters into special dialogue with a farmer in HK[1] who is being engaged in the project with an area of agricultural land in HK.
- Reports to C2C CC project-leader and cooperates with other C2C CC partners

[1] The identity of the landowner is known. Negotiations are being held at the moment.

Relation to CCA plans

- HbK: CCA plan p. 16 (7.2 – 7.4)
- HK: CCA plan p. 22 (92-93)
- Ikast-Brande: CCA plan p. 27

Relation to cross-cutting capacity building actions (C1-C7)

Action C13 River Storå will gain from actions under C2, where knowledge and experience on CCA and rivers developed under the different actions will be shared and discussed. Modeling, interpretations, analysis and data sampling are similar in the different catchments and C13 will benefit from this knowledge sharing. Scientific aspects currently highly debated within EU, e.g. on the synergies and trade-offs between CCA and water ecology, the need for warning systems related to flooding of rivers and local contingency planning, and the synergies between farming and wetland restoration will also be shared and discussed for the benefit of action C13. Under action C5 specific training courses, workshops and master classes, with point of departure in the challenges experienced by the partners will be implemented for the benefit of action C13 and other actions. Under action C6, the groundwater-surface water model and screening tool is developed and tested, and known warning systems in DK and in other countries are explored, and simple warning systems with flood prediction are tested and demonstrated, all activities which may benefit C13 directly.

Linked to complementary action

C13 is linked to a complementary project on Climate protection in Holstebro. It is focusing on approaches and installations to catch large amounts of water (up to 3 mio m^3 water) upstream, in the river valley, at a very, very short notice. On the basis of prior dialogue between Holstebro and Forsyningsselskabet Vestforsyning A/S, an application will be forwarded on 15 April. The C2C CC (and C13) will constitute an important factor in this retention effort to stop water, before it reaches the city of Holstebro.

In phase 2 of this project, there will be a cooperation between C13.3 and C15.2 including a systematic exchange of knowledge and a common progress with consultancy assistance.

Description (what, how, where and when):

The watercourse system Storå upstream at Holstebro, constitutes a run-off area of 830 km2 shared between Ikast-Brande, HK and HbK. All three municipalities operate with issues with water management in open countryside, as areas that need attention in their CCA plans. In addition, the three municipalities have established a joint experience and collaboration forum[2] related to the Storaa catchment area. Thus, C13 is a genuine cross-border pilot project to investigate how 'theories' on local storing of rain water in the open landscape works in practice. The specific project area is around 25 ha agricultural area, which belongs to the farmer, participating in the project. Agricultural areas close to the watercourses in the whole catchment are potential project areas.

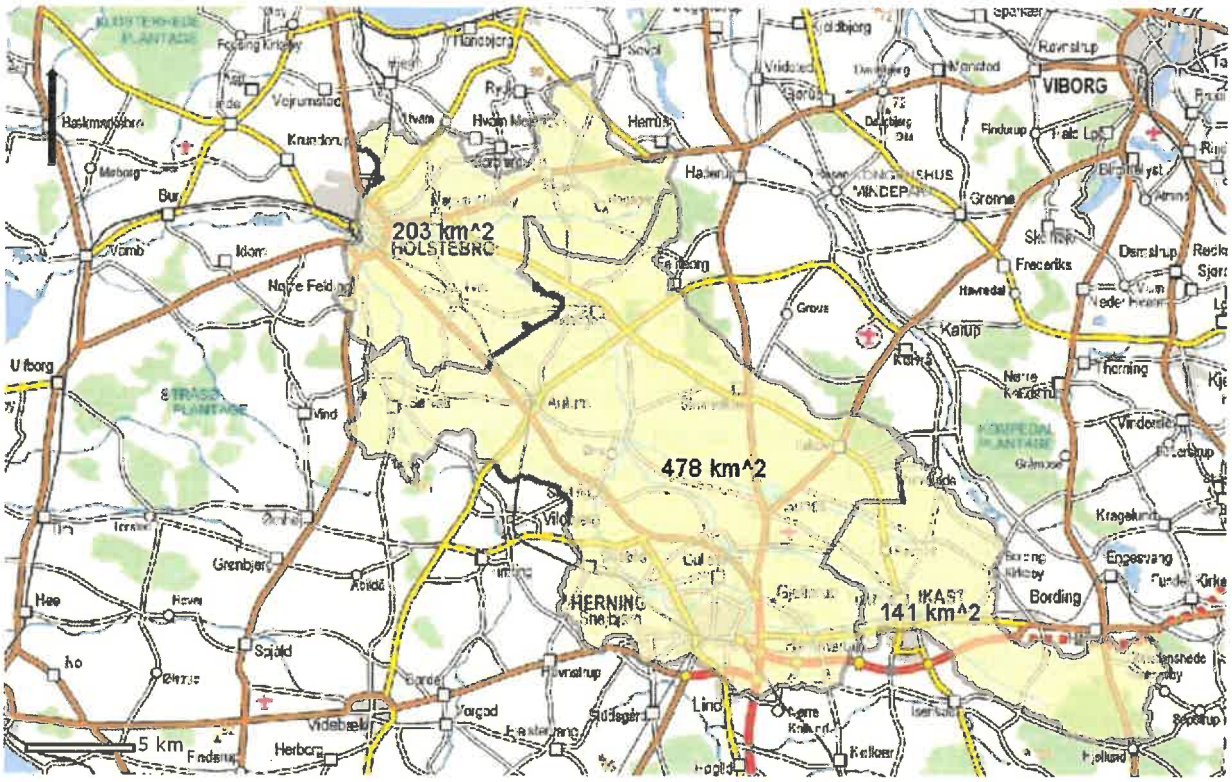
C13 turns the national development and demonstration project "Landmanden som vandforvalter"[3], and the pilot project "Vandet fra Landet"[4], both focusing on how the open countryside can be used as a way to store the continued increasing volume of precipitation, and thus minimize the risk of

[2] Can be found at www.herning.dk and www.holstebro.dk

[3] https://www.landbrugsinfo.dk/miljoe/landmandensomvandforvalter/sider/startside.aspx (network of farmers acting as water managers)
[4] http://www.klimatilpasning.dk/vandet-fra-landet.aspx (Water from the Country, financed by Danish Forest and Nature Agency)

flooding in urban areas, into a concrete pilot. To do this, there is a need to investigate how the project ideas work in practice, and how flooding of open areas influences the use of the areas and existing nature reserves. There is thus a need to establish pilot projects (field projects), testing theories in practice, covering the consequences for the areas and for nature as well.

The possibilities for using the disconnection of drainage, establishing mini wetlands, periodic increased drainage and storage of water during different seasons will be examined in more detail, including the effect on famers' operations and any loss of crops. The project examines combining a number of CCA approaches, which together with a number of other means will increase biodiversity and ultimately, improve the water environment in the sea by reducing the leaching of nutrients.



Figur 22: The Store Å catchment

C13.1 *Dialogue with stakeholders, identification of suitable land,*

What
C13 builds on the above two nationally funded projects and engages local stakeholders in a pilot to test its viability in practice. Since 'the solution is not necessarily found, where the problem lies', a dialogue with farmers, landowners, NGOs, etc. is vital to try to avoid flooding in e.g. in Holstebro city further upstream and/or in lowlands. Dialogue with stakeholders takes place in Phase 1, leading up to subsequent testing and the pilot. An important part of this engaging process is a visit to the UK to see how the Rivers Trust has managed to involve farmers in their work. This will also make a link to

the EU funded Life IP 'Integrated water management approach to delivery of the North West England River basin management plan'[5].

How

1. Right after C2C CC has been approved, workshops will be held for partners and interest-groups to launch the concept and explain the need for carrying out the pilot
2. Study trip to the UK with stakeholders to study solutions
3. Negotiations with farmers on allocation of land for the pilot project. Other interested farmers having their land in the wider project area are being contacted through local agricultural associations and their adviser

In subsequent phases, dialogue is continued in order to secure consensus about the CCA approach. Knowledge, results and the project's progress will be disseminated (at the internet, at themed meetings, and field tours with land associations), and articles will be written.

Where: Dialogue shall take place in the agricultural areas close to the River Storå

When:
Phase 1: Activities related to 1-3
Phase 2: Activities related to 1-3
Phase 3: Activities related to 1-3

C13.2 *Data collection and analyses*

What
Prior to the pilot project, there is a need to map and investigate the designated area in order to assess which approaches will work. This mapping takes place with external assistance from SEGES (who is Primary Stakeholder in the project).

How:

1. Concrete areas in a smaller catchment area will be designated through dialogue with stakeholders and negotiation with the farmers
2. The following issues must be clarified: drainage mapped and drainage conditions. Furthermore, soil conditions, potential dissolved-iron areas and flooding mapped.
3. §3 mapping, amphibian mapping and mapping of habitats and invasive species. This is done by in-house biologists and external consultants
4. Registration of cultivation/area use.
5. Studies in biodiversity and infrastructure, choice of crops, distribution of land, conditions concerning ocher and nutrients, drainage techniques, by agricultural advisers together with knowledge institutions.

[5] http://ec.europa.eu/environment/life/project/Projects/index.cfm?fuseaction=search.dspPage&n_proj_id=5439

During the remainder of the C2C CC project, activities will include: monitoring, presentation of possible solutions and results. The effects of solutions regarding retaining of water, crops, biodiversity, washing and nutrients are being evaluated. In this phase, there will be a cooperation between C13.3 and C15.2 including a systematic exchange of knowledge and a common progress with consultancy assistance. C13 intends to publish results through the C2C CC project.

Where: the project area.

When:
Phase 1: activities 1-5
Phase 2: activities 1-5
Phase 3: activities 1-5

C13.3 *Carrying out the pilot and monitoring*
This the core activity of Phase 2 and beyond. C13.3 builds on results of C13.1 and C13.2, laying the ground for the pilot.

During the remainder of the C2C CC phase, activities include the investigation into the possibilities for using the disconnection of drainage, establishing mini wetlands, periodic increased drainage and storage of water during different seasons will be examined in more detail, including the effect on famers' operations and any loss of crops. The project examines combining a number of CCA approaches, which together with a number of other means will increase biodiversity and ultimately, improve the water environment in the sea by reducing the leaching of nutrients. Derived effects with regard to biodiversity and cultivation reliability will be monitored during the project's monitoring phase.

In Phase 2 this project will demonstrate that water can be delayed where it falls, thereby reducing flooding in cities. The project is a pilot, which will demonstrate solutions in the long term at the field level in the open countryside. On its own, water retention in one field will not solve the problem of flooding, but combined with other measures, and with more delaying fields, it can be a long-term way to maintain the effectiveness of other CCA efforts by minimizing increased pressure caused by increasing climate challenges in the future and thus extend the durability of local CCA initiatives. Specifically, this project will realize a dialogue with farmers in the River Storaa catchment area, who are prepared to test techniques that can delay the run-off of water in the open countryside. The project will contain a monitoring measure to cover the consequences to cultivation reliability, biodiversity and improvement in the natural countryside.

In phase 3 Holstebro Municipality contributes with knowledge sharing.
Like other man-made infrastructure, climate adaptation affects nature and the landscape. Most often, the debate is based on presuming the project drowning all life, and what does not drown is over-fertilized. Is it fair to describe it as a mass extinction by drowning?
Can we learn something about influences by monitoring the dynamics of nature?
Prolonged and extensive natural floods of natural areas in connection with the events of February 2020 have provided the opportunity to investigate and concretize a factual incident against theoretical "worst case scenarios".

The results will be presented at the theme meeting and are followed up by a discussion about perspectives and uncertainties.

Where: the project area

When:
Phase 2: pilot
Phase 3: monitoring, and knowledge sharing

Reasons why this action is necessary:
The future use of land demands a new approach, for a new practice related to area and water management. The challenge is the changed precipitation patterns, which are a consequence of climate change, and the long-established (years) practice and goal of leading water away quickly and efficiently. This creates problems with flooding in urban areas. This is the case in Holstebro, which is regularly hit by floodings because of high water flows in the River Storå, causing major and expensive damages (Holstebro is designated risk prone city in accordance with the flooding directive). The project will collaborate with the farming community and research institutions with practical trials of solutions that focus on agriculture and the open countryside. Water retention at field level cannot by itself and individually solve problems with flooding, but several, individual retentions can be a longterm and sustainable solution, providing local CCA more sustainability.

See also this video: https://www.youtube.com/watch?v=A4tUbQgQAxE

Constraints and assumptions
There is a risk of resistance from landowners. This is dealt with through early inclusion. Possible resistance from green organizations will be dealt with by early inclusion and ongoing transfer of knowledge/communication.

Expected results:
This project will demonstrate that water can be delayed where it falls, thereby reducing flooding in cities. The project is a pilot, which will demonstrate solutions in the long term at the field level in the open countryside. On its own, water retention in one field will not solve the problem of flooding, but combined with other measures, and with more delaying fields, it can be a long-term way to maintain the effectiveness of other CCA efforts by minimizing increased pressure caused by increasing climate challenges in the future and thus extend the durability of local CCA initiatives. Specifically, this project will realise a dialogue with farmers in the River Storaa catchment area, who are prepared to test techniques that can delay the run-off of water in the open countryside. The project will contain a monitoring measure to cover the consequences to cultivation reliability, biodiversity and improvement in the natural countryside.

It involves 3-5 farmers, 2 NGOs and 3-5 stakeholders/landowners, 1-2 representatives from NGOs, 6 municipal professionals, 3 utility professionals, 2-3 knowledge persons

Cost estimations:

Expenses for direct personal costs are based on person days for HK and HbK personel based on present salaries and pensions, etc. Expenses for external expert help is based on a dialogue with SEGES. External assistance will be used for highly needed expertise in relation to the modeling. Budget for meetings and fieldwork is allocated. Subsistence costs are also based on prior experience and can be further subdivided into Hotel costs, Daily allowances/Payment for meals and local transportation categories, as shown below for this action's subsistence costs items:

Travels	**Inspirational Trip no. 1 to Southhampton (UK)**		**Inspirational Trip no. 2 To Drenthe (NL)**	
Partners: / *Cost categories:*	**HK**	**HbK**	**HK**	**HbK**
Hotel cost:	225	225	225	225
Daily allowances/Payment for meals cost:	100	100	100	100
Local transportation costs:	175	175	175	175
Total subsistence cost:	500	500	500	500

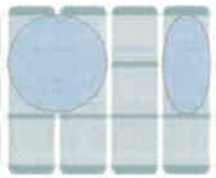
Deliverables:

Action	Deliverables
C.13.1	**Phase 1:** Workshop material from meetings with stakeholders; Programme for a Study Trip to the UK – Rivers Trust – together with landowners and other stakeholders. List of the activities used to transfer knowledge and present the project's progress and results. **Phase 2:** List of the activities used to transfer knowledge/present the project's progress and results. Presentations of the project's results on the internet (C2C CC webpage and locally), at themed meetings and field tours with land associations, and to a wider, national audience, previous partner projects "Vandet fra Landet" and "Landmanden som vandforvalter". Transfer of knowledge/presentation in professional journals and at conferences, such as "Natur og Miljø" (Nature and Environment magazine) and Plantekongres (biggest conference on plant production, planning, the environment, etc., in the Nordic Region).
C.13.2.	**Phase 1:** Report on designation of test areas and mapping of drainage factors; Registration of cultivation/area use. **Phase 2:** Description of solutions for testing.
C.13.3.	**Phase 3:** Report on challenges between climate adaptation projects and nature conservation The delivery is handed over in the form of a note, access to reported material and a presentation at the theme meeting "What happens when the nature close to the river Ådal is flooded?".

	Report on monitoring of the transfer of knowledge of/presentation of possible solutions and results. Report on monitoring of the effect of the solutions on water retention, yields, biodiversity, leaching of nutrients.

Milestones:

Action	Quantifiable milestones	
C.13.1	Report on designation of concrete areas in a smaller catchment area. Report on registration of cultivation/area use. Report on Study Trip to the UK – River Trust – together with landowners and other stakeholders, 25 participants Report on possibilities for multi-functionality in the solutions Presentation to webpage done Presentation at thematic meetings done Presentation to other networks done	31/12/2018 31/12/2018 31/12/2018 31/12/2018 31/12/2020 31/12/2020 31/12/2020
C.13.2.	**Phase 2:** Agreements with farmers Development, establishment and demonstration of solutions Suitable areas designated	 31/12/2020 31/12/2020 31/12/2020
C.13.3.	**Phase 2:** Description of specific retention solutions, disconnection of drainage, dividers, dikes, wetlands, done. Knowledge transferred of the project's progress and results on the internet, Two thematic meetings held Two field study tours with land associations held **Phase 3:** Report on monitoring of the transfer of knowledge of/presentation of possible solutions and results. Report on monitoring of the effect of the solutions on water retention, yields, biodiversity, leaching of nutrients.	 31/12/2020 31/12/2020 31/12/2020 31/12/2020 31/12/2022 31/12/2022



C14: Flood-proofing Horsens Town Centre

The town of Horsens is threatened by floods, because a major part of the town centre is lower than 1.5 meter above the normal sea level in the Horsens Fjord. With rising sea levels and amounts of water from watercourses in the hinterland due to increasing precipitation and more powerful downpours, there is an urgent need for securing the lowest lying parts of the town against flooding. This action analyses and lays out scenarios containing all relevant issues regarding flooding from the fjord, the watercourses and handling of the sewer systems. It also deals with the development of the port area, which is being converted into a residential, recreational and commercial area. This action is primarily linked to governance and tools within most areas of the hydrological cycle apart from groundwater.

Main responsible beneficiary: Horsens Municipality Budget: 709.302€

Number of days estimated spent on action in phase 1: 210 Days
Number of days estimated spent on action in phase 2: 392 Days
Number of days estimated spent on action in phase 3: 344 Days

Beneficiary responsible for implementation: Horsens Municipality is the overall project manager.

Role of Horsens Municipality:

- Is project manager
- Has the contact to C2C CC project management
- Coordinates with HEDKOM on exchange of data about diverted water amounts from walled areas and on the possibilities for retaining water in the catchment area as well as with Vejle Municipality on similar information.

Relation to CCA plans

In the municipality's CCA plan, Horsens town centre is designated as focus area 12, cf. Figure 1 (page 34 in the CCA plan). The figure shows that the focus area is the most critical, assessed on the basis of the parameters risk of flooding and highest value, and it is therefore very important to make it flood-proof.

DS

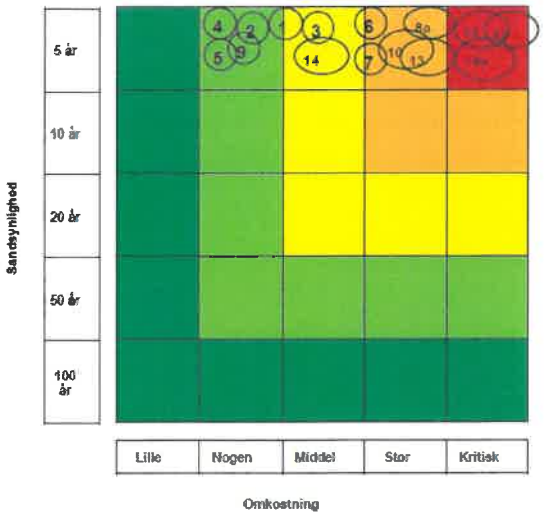


Figure 23: In Horsens Municipality's climate change adaptation plan, Horsens Town Centre is focus area 12, the most critical.

Relation to cross-cutting capacity building actions (C1-C7)

Action C14 Flood-proofing Horsens Town Centre will gain from actions under C1 relating to desk analysis and identification of knowledge gaps and reviews of in the risk maps and planned actions. Experience will be exchanged between demonstration projects C8, C10, C11 and C18 dealing with the coastal cities of Randers, Grenaa and Juelsminde. A common understanding between stakeholders of sustainable solutions (economically, environmentally, socially and long term) with a focus on land use, cost-effective measures, planning, implementation, maintenance and operation will be shared and developed across actions C8, C9, C11, C10, C17, C18 and facilitated by CDR. Under C1 a workshop will be held to assess synergies and possibilities of integrated solutions for the fjords at the East Coast. Under action C2 knowledge on CCA and rivers developed under different actions will be shared. Modelling, interpretations, analysis and data sampling are similar in the different catchments and C14 may benefit from this knowledge sharing in relation to the Bygholm cathment area (figure 25). Scientific aspects currently the highly debated within EU, e.g. on the synergies and trade-offs between CCA and water ecology, the need for warning systems related to flooding of rivers and local contingency planning, and the synergies between farming and wetland restoration will also be shared and discussed for the benefit of action C14. Under Action C4 Rainwater, C14 will gain from the identification and experience of different setup models and testing of SUDS within CDR. Under action C5 specific training courses, workshops and masterclasses, with point of departure in the challenges experienced by the partners will be implemented for the benefit of action C14 and other actions.

Linked to Complementary Actions

C14 will coordinate with Horsens wastewater utility on the integration of an urban hydrological model of the sewer system of Horsens town, which will be completed during 2017.

Description (What, how, where, and when)

What:

Horsens town is threatened by floods, because a major part of the town centre is lower than 1.5 meter above the normal sea level in Horsens Fjord. With rising sea levels and now with more water from watercourses in the hinterland due to increasing precipitation and more powerful downpours, there is a great need for securing the lowest lying parts of the town against flooding, cf. Figure 24 and 25.



Figure 24: Picture of flooding at the outlet of Bygholm Å and in Bygholm Park in December 2013

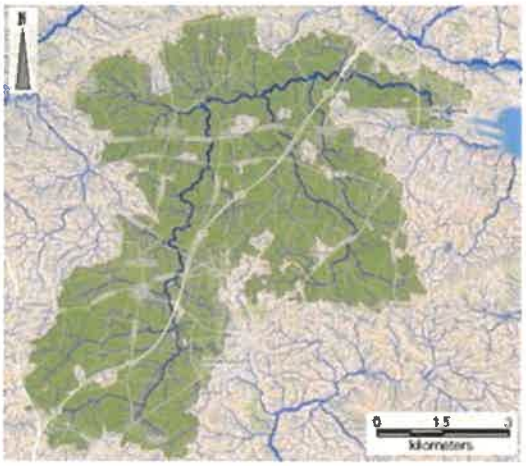


Figure 25: Map of Bygholm catchment area

The aim of C14 is to secure Horsens town centre against flooding when there is a storm surge and/or extreme flows in the three watercourses Dagnæs bæk, Bygholm and Hansted Å, which all run through the town. It requires overall considerations and scenarios of flooding for the fjord, watercourses and sewer systems, and holistic planning and coordination in relation to the port area Nordhaven, which is being converted into a residential, recreation and commercial area. An initial project was carried out by Horsens Municipality (ends April 2016) forms the basis of C14 with the purpose to carry out a detailed project design for flood proofing of Horsens town. The initial project, hereafter the 2016 project, included a simple watercourse model and involves an outline of proposed solutions to prevent flooding from precipitation, watercourses and sea levels under saturated and stationary conditions, respectively. The possible solutions are outlined for short-term flood proofing at a level off 1.8 meter above normal sea level, and a politically adopted long-term flood proofing at a level of 2.6 meter above normal sea level, se example in Figure 24. The results of the '2016 project' proposes water retention in the catchment area and dike solutions using sluices and pumps in Horsens town. However, political reality are likely to change, and there has been discussions on establishing a small-scale barrier solution on the sea floor in Horsens' outer fjord, inspired by the Mose Project in Venice. The '2016 project' sets the basis of C14.
Action C15 supplements action C14 by its nuanced approach to the drainage of water, so that the production potential of farming is developed, and the towns do not end up functioning as delay reservoirs, when the watercourse has high flows. We expect that the two actions can greatly benefit from each other. The aim of C14 is furthermore to provide inspiration to the development of other solutions in other coastal towns that are threatened by rising sea levels and/or water from the hinterland catchment area.



Figure 26: Consequence map for flooding with preliminary outlined proposal that will protect Horsens town in the short term?, equivalent to flood-proofing at a level of 1,8 meter DVR90. The flood proofing will be established using a high tid wall earth dykes and mobile water tubes.

How:

C14 will be contain the following activities: preparation of tender material and tender phase for external expert assistance for step 2 to 5; provision of knowledge in the form of status, data collection and model set-up; scenario calculations and initial stakeholder involvement; preparation of proposals and stakeholder involvement; preparation of project design and invitation to tender material for contractors; flooding related to watercourse Store Hansted Å and the northern part of Horsens town.

C14.1 *Preparation of tender material and tender phase for external expert assistance for activity 2 to 5*

This activity is based upon the above mentioned pilot project and the purpose is to find the most suitable and cost efficient external expert to aid in the following four activities.

Preparation of tender material.

C14.2 *Provision of knowledge in the form of status, data collection and model set-up*

The following sub-activities are involved:

1. A workshop for Horsens Municipality's steering group for CCA, where the status of the pilot project is processed and potential solutions and recommendations to be worked further in C2C CC is decided.
2. The pilot project is based on a simple hydrological model, and it is expected that there is a need for setting up a dynamic model, which can calculate the total flooding for watercourses, the sewer system and seawater. The model will be calibrated at a detailed level and can be used as the basis for the creation of an overall plan for avoiding flooding in Horsens town centre. It may be necessary to conduct further data collection in the form of e.g. water flow measurements, water levels, measurement of the terrain and watercourse, etc.
3. Establishment of an online portal with connection to the portal of C2C CC. The portal will be maintained on an ongoing basis in accordance with the agreement with the C2C CC project management. Confidential and unfinished data and analysis, can not be published as a rule. HORKOM has to take this into account.

DS

4. Preparation of a communication plan of C14 involving when and how stakeholders and citizens can be involved and heard in the action on an ongoing basis. Communication may take place for example, via digital media, written material, stakeholder and citizen meetings, e.g. meetings with NGOs in the municipality, etc.

Phase 2:
Activity *C14.3 to C14.5* is based on a tender comprised in the activities below to illuminate the need for climate adaptation and solutions in Horsens. The on going technical analysis will further clarify the need for activities in the tender executed prime 2019.

The tender expected outlines:
Below is expected content in the tender shown, as presented to the steering committee in April 2018 and still expected on steering comitee meeting in September 2018. The tender will among other elements be based on the initial results obtained in phase 1. The content will be adjusted according to performed analysis during autumn 2018.

C14 tender to select main adviser

Advisers deliveries:

Processing Services:

- Interest analysis and communication plan
- preparation of process plan and ongoing maintenance of project
- arrange and facilitate meetings and workshops with partners and stake holders.
- Interaction with other advisors and planning/project leaders towards a comprehensive master plan for climate change adaptation of Horsens City in the long term:
- Combining the need for cloudbursting solutions and high tide protection with other project and planning trails (traffic plan, the river back to the city center, local plots, port plans, urban transformation, etc.).

Proposals for best climate adaptation solutions:
- pump / locking solutions, if any. And in combination with legitimate agreements with the waste water company, of free discharge, for the lower part of the watercourses in relation to rain water run off from the city.
- stream pattern and parking water on terrain during cloud bursts
- Retention of water in river bassins
- Using buffer solution in Bygholm Sø (Bygholm lake), automatic control of run off through the sluice
- terrain regulations, walls, dikes, etc.

Masterplan:
- Gathering and summarize the above for an illustrated master plan for high-water protection of Horsens City
- The plan must be able to be used in wastewater planning, management of discharge permits, municipal plan, local plans and other planning
- Explain the effects of the master plan

Regulatory Treatment:
Develop a plan for governmental management and associated processes with HK departments

Construction program:

- Compile aggregate construction programs with deliveries corresponding to the FRI's (Performance Management Consultants) performance descriptions including catalog work-up visualization of solutions in the light of the process around the ideological site
- The construction program is a coordinated summary of the municipality of Horsens and SAMN's requirements and wishes for the plan
- The facility program is adapted to the construction project organization

Idea presentation and visualization

- Compile ideas for the individual elements of the master plan with services corresponding to a customized version of FRI and the Danish Architects' Outline Descriptions (Planning and Construction) for ideas including a catalog of initial visualization of solutions.

Process of editing ideas to broad acceptance in Horsens Municipality and SAMN F (utility company) and political level, as well as other selected stakeholders eg. Horsens Harbor.

C14.3 *Scenario calculations and initial stakeholder involvement*

1. Scenarios will be calculated for the contemporary climate with a Planning model, which will be used to provide planning and making decisions for the management of floods. Scenarios will be calculated with the clarification of consequences of:
2. Establishing permanent and mobile dike solutions in the town.
3. Establishing permanent sluices and maybe over time, pumps in the outer port, alternatively in the inner port.
4. The scenarios will be carried out as a combination of the above for the purpose of optimizing the most beneficial solution.
5. Pointing out areas for possible storing water and assess retention potential in the catchment area and urban areas – however to a lesser extent than initially expected. Water retention in the catchment area will reduce the risk of flooding in Horsens town and possibly reduce discharge of nitrogen and sulphur into Bygholm Sø and Horsens Fjord, and there by benefit achievement of the WFD goals of obtaining a good environmental state (Synergies with C12 and C15).
6. Dialogue with stakeholders
7. Coordination and knowledge exchange with Action C12 and C15.
1. Dialogue between HEDKOM about the nature values, needs and possible retention of water in their part of the catchment area.
2. If required preliminary dialogue and survey of locations with the affected landowners, e.g. farmers, for the purpose of establishing a broad ownership of the results.
3. If required preliminary dialogue with the affected businesses and citizens in the town centre.
4. If required, inspirational trips for a committee of representatives from the municipalities.
5. Outlining of solutions: based on model scenarios and the effect of different means (permanent high tide walls, earth dikes, mobile water tubes and dikes, sluices and pumps), and visualisation of reduced flooding in the form of a consequence map.

C14.4 *Preparation of proposals and stakeholder involvement*

1. Preparation of proposals:

2. Decision on the most suitable solution for Horsens town
3. Visualisation of solutions on dispositioning level, and maybe a film sequence illustrating the level of flooding before and after protection.
4. On disposal levels, budgeting of construction costs and calculation of other cost-benefits considerations in relation to prioritised protection of assets.
5. Stakeholder involvement: Visiting other coastal cities in Denmark with politicians, with similar climate adaption challenges.
6. Coordination with the municipality's emergency services and contingency planning team on the use of mobile protection measures.
7. Workshops with HEDKOM on benefits, nature values and retention possibilities in HEDKOM.
8. Continued dialogue with stakeholders.
9. Workshop/seminar with the C2C CC partners with presentation of the results of C14.
10. Stakeholder agreements:
11. Agreements with Horsens waste water utility on overall principles for water management and flooding protection on long term perspective, and for the financing obligations.
12. If needed potential action on a automatic system for smart management of sluices and pumps.

C14.5 *Preparation of project design*

1. Preparation of a construction program and maybe conceptual designs and disposal project for some of the needed solutions.

Plans and projects in the city of Horsens are brought forward due to the continues urban growth and development at present. This affects climate adaptation plans and projects. The construction of storm water protection barriers are planned in the years to come as synergy can be achieved with planned infrastructure projects. To ensure that knowledge discovery achieved in C2C C14 phase 1 and 2 are incorporated in the plans and projects and that the full potential of the phase 1 and 2 results is utilized in the center of the city further progress will be made e.g. with urban projects in C2C C14 phase 3. Thus the Store Hansted Å project part will be reduced.

Phase 3:

C14.6 Flooding risks Store Hansted Å catchment area

1. In continuation of phase 2 the waste water company and Horsens Municipality is working on an application to the supply secretariat regarding co-financing of floodgates and pumps. Number of days budgeted is 50.
2. Partly in C2C, but also in connection with the construction projects, detailed design is carried out for the construction work on road dike, high-water gates and pumps. This is to ensure implementation of knowledge discovery formulation from the C2C project in the construction projects. Number of days budgeted is 40.
3. Mainly outside C2C but with knowledge and support from the C2C project group an application is also being prepared for coastal protection permit and a major environmental assessment report (EIA). Number of days budgeted is 30.
4. Prolonged from fase 2 the project work on a preliminary approach to an overall cloudburst plan for the city of Horsens. The work consists of defining the 52 watersheds of the city and

DJ

prioritise these along with the urban development – two watersheds will be further analysed and a masterplan will be compiled. Furthermore, it is the aim to investigate whether a service level for cloudbursts is ideal for the municipality of Horsens. The work is expected to be completed mid-2021 and with an ambition of political consent at the end of 2021. Number of days budgeted is 170.

5. The C2C project concludes with a brief summary report on measures and planning for future protection against flooding in the city of Horsens. Number of days budgeted is 40.
6. In year 2021-22 C14 a minor investigation and report will be carried out with focus on flooding issues in other parts of the municipality (Horsens CCA plan pp. 25-35) . We expect to give attention to floodings related to the watercourse Store Hansted Å, including the northern part of Horsens town, where houses close to the watercourse periodically are flooded. Number of days budgeted is 50.

Where:
The project area covers Bygholm Å catchment area and extends to HEDKOM and Vejle Municipality, cf. Figure 27. Bygholm Å catchment area drains into the watercourses that flow through Horsens town centre and out to Horsens Fjord. The main focus is on Horsens town centre and covers the port, parts of the inner town and Bygholm Park, which will be flooded with a 5-year storm surge event in 2050 (2.4 m DVR90), cf. Figure 28.

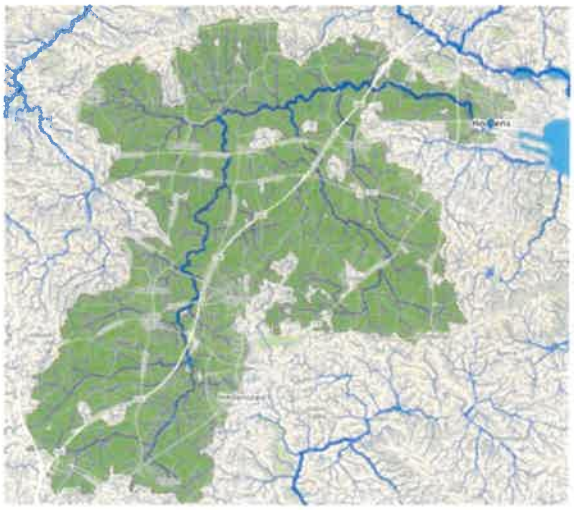


Figure 27 All of the Bygholm Å catchment area with flow paths on terrain.



Figure 28 Flooding in Horsens town with a 5-year storm surge event in 2050, equivalent to 2.4 m above normal sea level (Horsens CCA plan p. 34).

When:
Phase 1: Activity C14.1 - C14.2
Phase 2: Activity C14.3 - C14.5
Phase 3: Activity C14.6

Reasons why this action is necessary:

Horsens town center covers central town functions, including homes, companies, technical installations and a town park. The area consist of major economic assets that are at risk (Horsens CCA plan p. 21, cf. risk map). The project benefits the overall aim of C2C CC in creating a climate resilient town by implementing the local CCA plan's most prioritized challenge and in collaboration with the affected parties.

Constraints and assumptions:
C14 will coordinate with Horsens wastewater utility on the integration of an urban hydrological model of the sewer system of Horsens town, which will be completed during 2017.
C14 may be delayed according to the schedule of this model, since it shall be included as an integrated part of C14 model. In relation to the integrated model carried out in C14, it may be necessary to conduct further data collection (see activity 2), which could affect the schedule. The modelling actions is complex and need advanced modelling skills and adviser. It all takes its time.
Initial correspondence with the municipality of HEDKOM on C14 has taken place, however, resistance to upstream solutions may occur if win-win solutions are not defined. This issue is counteracted by including technicians and politicians from the two municipalities in the project.
Uncertainty related to financing implementation of solutions: internally in Horsens Municipality, between Horsens Municipality and Horsens Waste Water utility, and between the municipalities of Horsens and HEDKOM. Early involvement of the established steering group for CCA and politicians will aim to find a fair solution for financing. The interest has been shared among technical staff, and there is a mutual understanding of needs according to climate adaptation.
These years Horsens Municipality

During these years, Horsens City grows significantly, and many decisions are made, and projects are implemented in a very short period of time. The project team is working intensively to get climate adaptation and the C14 project incoorporated in projects, but the political agenda is interchangeable and it is difficult to predict which projects are being implemented during the project period. This affects both solutions and progress of the project.

Expected results for Phase 2:
The action will result in basis for decision making on which outlined solution possibilities will be worked further and clarify which additional matters that need to be clarified, whereas it is possible to define long-term solutions for protecting Horsens town centre from flooding that meet the politically adopted level of protection for the municipality (stated in the CCA plan).

The following will be defined: Designated local sites and solutions for retaining water in the catchment area in one or several locations – if needed. Designated most suitable positioning of dike reinforcements that protect Horsens town centre. Calculated filling times for any reservoirs, and calculated dimensioning of pumps and sluices with different scenarios in the current and future climate. A smart pump and sluice control system. Solutions for water flow and for the catchment area that promote biodiversity as much as possible, improve water quality and provide recreational options for local residents. With Nordhavnen under redevelopment, solutions shall be provided for traffic connections to the port area and the central neighbourhood. Dikes, sluices and pumps are designed to be visually inspiring and to provide recreational urban spaces, and integrated into the urban life of Horsens town.

Expected results for Phase 3:

Mapped and estimated flooding risks related to the watercourse Store Hansted Å, and the interaction with Horsens Fjord and the lake like Nørrestrand. Prepare a decision base to determine whether climate mitigation are needed and if necessary, decide which climate adaptation actions are to be carried out.

Cost estimations:

Expenses for direct personal costs are based on person days for Horsens personel based on present salaries and pensions, etc. Expenses for external expert help is based on prior experience. External assistance will be used for highly needed expertise in relation to scenario calcultaions.

Subsistence costs are based on prior experience and can be further subdivided into Hotel costs, Daily allowances/Payment for meals and local transportation categories, as shown below for this action's subsistence costs items:

Travels	**Trip for project manager**	**Trip no. 1 for project officer**	**Trip no. 2 for project officer**	**Trip no. 3 for project officer**	**Trip no. 4 for project officer**
Partners: / *Cost categories:*	**Horsens**	**Horsens**	**Horsens**	**Horsens**	**Horsens**
Hotel cost:	0	0	0	0	0
Daily allowances/Payment for meals cost:	180	180	180	180	180
Local transportation costs:	120	120	120	120	120
Total subsistence cost:	300	300	300	300	300

Deliverables:

Action	Deliverables
C14.1	**Phase 1** Status report for pilot project Report on model for scenarios for the total flooding
C14.2	A status report of the '2016 project'. Minute stating steering group decision on outlined solution Report with requirements and expectations for the C14 model Online portal connected with C2C CC online platform incl. LIFE Logo Communication plan for stakeholder involvement Scenarios and sensitivity analysis will be calculated for the contemporary climate with a Status 2018 model, which will be used to provide the basis todays challenges, and for planning and making decisions for the management of floods. Mapping of nature values, and prioritize locations for retaining water in Bygholm Å catchment area.

	Using the lake Bygholm Sø as a reservoir. It is today possible to lower the water level 0.5 m and thus achieve a significant reservoir capacity. The probability of simultaneous contingency between precipitation events, high flow of watercourses and storms is estimated.
C14.3 - 14.5.	**Phase 2** Planning scenarios with technical background report of model methodology and results is delivered Background report with designated local sites and needed solutions Technical report on calculated filling times for reservoirs and dimensioning of pumps and sluices Background report on solutions for water flow and for the catchment area , that if possible improve water quality and provide recreational options for local residents. Proposals for best climate adaptation solutions: Masterplan for long term climate adaptation according to cloud bursts, stream flow and flooding from the fjord A construction program for technical facilities Presentation and visualization The above is part of topics in tender prime 2019 – where use of new infrastructure, recreational urban spaces, sluice, pump solutions is expected to be in focus.
C14.6	**Phase 3** A decision base to determine whether climate adaptation is needed and if necessary, decide what action should be taken.

Milestones:

Action	Quantifiable milestones	Date by end of
C14.1 and C14,2	**Phase 1** Collection of data finalized. A model is set-up to calculate scenarios for the total flooding from the sea, watercourses and sewage systems Consultant for the execution of phase 14.3 and 14.4 is selected, Possible locations identified for retaining water in the Bygholm Å catchment area	 30/06/2018 31/10 2018 31/03/2019 31/03/2019
C14.3	**Phase 2** Possible locations identified for retaining water in the urban areas. Specific solutions proposed for water retention, dikes, pumps and if required, barriers in the fjord	 31/12/2020 31/12/2019
C14.4	If needed CBA analysis finalized in relation to the assets that shall be protected Involvement of politicians in the development of the solutions done, public involvement is carried out according to assessed needs. Construction programme, and cost estimations for construction solutions finalized, part of tender in prime 2019 Final political approval of the described solutions done.	 31/12/2020 31/10/2020 31/10/2020 30/06/2021
C14.5	Preparation of a conceptual design and disposal project for the needed solutions.	31/12/2020
C14.6	**Phase 3** • Application sent to the supply secretariat regarding co-financing of floodgates and pumps. (Deliverable depends on political process and decision). • Detailed designs are completed for the construction work on road dike, high-water gates and pumps.	 30/06/2021 31/12/2021

DS

	• An application is completed about coastal protection permit. • A preliminary and overall cloudburst plan for the city of Horsens is completed. The works is expected to be completed mid-2021 and with the ambition of political consent at the end of 2021, the political consent depends on the political process. • The C2C project concludes with a brief summary report on measures and planning for future protection against flooding in the city of Horsens. • In year 2021-22 C14 a minor report is completed about climate adaption actions and focused on the watercourse Store Hansted Å, and with focus on a minor residential area in Horsens.	31/12/2020 31/12/2021 30/06/2022 30/06/2022



C15: CCA in Hedensted and Tørring

with focus on growth, added value, sustainability and innovation

This action focuses on sustainable CCA through a holistic concept, involving approaches that brings together the environment, society and the economy. The farming sector is important because of its agricultural production, while, at the same time, it manages areas that are important for the CCA of towns and cities. It is important to counteract the decline in residential areas and accommodate the potential for continued production opportunities in farming and for growth in general. Solutions must be implemented in collaboration between local farmers, technical water experts, and, if required, water utilities, that have knowledge of and experience with precipitation, water movement in the soil, drainage systems, hydraulics, watercourses, the use of the area and choice of crops. This action is primarily links to governance and innovation within all aspects of the hydrological cycle apart from sea & fjords.

Main responsible beneficiary: Hedensted Municipality Budget: 203.394€

Number of days estimated spent on action in phase 1: 88 days
Number of days estimated spent on action in phase 2: 118 days
Number of days estimated spent on action in phase 3: 158 days

Beneficiary responsible for implementation: HEDKOM

Role of HEDKOMK

- Is the project manager
- Enters into dialogue with Brian Kronvang of the DEC - Danish Centre for Environment and Energy, and Jørgen Korning of SEGES, who have shown interest in the project.
- Coordinates with PM (CDR) and C13

Relation to CCA plans

HEDKOM CCA plan (page 21) + the related municipal plan's guidelines for low-lying areas and wetlands, guidelines for technical installations, guidelines for towns and cities, and guidelines for agriculture and Biogas are particularly relevant in this action, which qualifies and supports the goal with the towns Hedensted and Tørring: Knowledge generation about areas with water problems (page 23), Value management and assessment of climate initiative (page 21 + page 23), local organizing and local goals (page 24).

Relation to cross-cutting capacity building actions (C1-C7)

Activity C15 CCA in Hedensted and Tørring will gain from actions under action C2 sharing knowledge on CCA and rivers developed under different actions. Modelling, interpretations, analysis and data sampling are similar in the different catchments and C15 will benefit from this knowledge sharing. Scientific aspects currently the highly debated within EU, e.g. on the synergies and trade-offs between CCA and water ecology, the need for warning systems related to flooding

JS

of rivers and local contingency planning, and the synergies between farming and wetland restoration will also be shared and discussed for the benefit of action C15.
Under action C3, in selected areas a detailed local model is set up focusing on groundwater, surface and/or seawater. Models are based on the present data and collections of new data sets e.g geophysical data and C15 will benefit from this model.
Under Action C4 Rainwater, C15 will gain from the identification and experience of different setup models and testing of SUDS within CDR. Under action C5 specific training courses, workshops and masterclasses, with point of departure in the challenges experienced by the partners will be implemented for the benefit of action C15 and other actions.

Linked to Complementary Actions
No actions identified at the moment.

Description (What, how, where, and when)
The outset of C15 is sustainable CCA through a holistic sustainable concept, involving thinking that brings together the environment, society and the economy. Farming is an important enterprise because of the production of agricultural goods, and it is an industry that manages areas that are important for the CCA of the towns and cities. At the same time, it is important to both counteract the decline in residential areas and accommodate the potential for continued production opportunities in farming and for general growth.

C15.1 CCA of Hedensted town

What:
In Hedensted town there are different options for CCA actions to achieve sustainability, added value and growth, focus should be on added value for the citizens, when challenges resulting from changed climate are handled, e.g. when residential areas are adapted to manage surface water. C15.1 works with methods that will be able to value what can be achieved by CCA, and compare with the investments that are required. This valuation can also be used when there is no convergence between the things that benefit from good climate proofing and the things that must support the initiatives for climate proofing and construction. Climate proofing must therefore be handled in larger and/or smaller communities. C15.1 covers the possibilities of achieving protection against flooding, in conjunction with the need for added value for the citizens. This will be done by using economic models as a basis for prioritizing focus areas, efforts, and means and financing models. The experience of C15.1 work in phase 1 has shown that there is a need to change the overall and principle approach to a site-based and concrete approach. That means among other things, that the use of economic models as a basis for prioritizing focus areas, efforts and instruments is being reduced. Instead, greater emphasis is placed on the "place" challenges, opportunities and citizens 'common assessments of what gives them value at their place and the citizens' wishes for how their area is going to evolve. Specifically, a barometer for added value will be devised, which can be used with the prioritization of climate solutions locally in Hedensted town. The change in approach also leads to reconsidering the added value Barometer in phase 2. Based on interactive processes in phase 2, the added value Barometer is adjusted to a catalog of value

JPS

added related to specific locations, climate challenges and land use. Below figure 29 to 34 illustrates the ideas of added value in this action.

How:
Action C15.1 is expected to include:

1. Analysis of the climate proofing area, including: Residential areas, other protection assets (infrastructure, accessibility , valuable cultivated land, etc.), and areas that can be included in the solutions (In the risk area and in the catchment area)
2. Risk analysis from an asset perspective (entire area), involving: defining threatened assets, probability for flooding, value assessment in DKK.
3. Preparation of a catalogue of examples of all of the possible - and impossible – added values with CCA.
4. Stakeholder survey (the entire area)
5. Workshop on assets, solution options and added value, involving: Stakeholders and experts, assets, interplay and paradoxes, and a catalog for added value in collaboration with HbK and HK (C13).
6. C15.1 will finish with planning of climate proofing in one or several test areas: preparation of local zoning plans, development of at least one project, and at least one project is ready for implementation.

Phase 1

Where: Hedensted town and the hinterland

When:
Phase 1*:* Activity 1, 2, 3, and 4.

Phase 2:
Activity 5

Phase 3:
Activity 5 and 6



Figure 29: The marshland in Hedensted is a popular outdoor leisure area for the town's



Figure 10: Gudenåen and pool areas support the basis for the tourist industry at Tørring.

DS

citizens and has a lot of biodiversity and functions already today as a basin for storing surface water from the town.



Figure 31: Uldum Kær – a popular outdoor leisure area by Tørring – and an EU protected area for birds.



Figure 32: Blue and green tourism is important in the Tørring area.



Figure 33: Water provides added value in Uldum Kær.



Figure 2: Hedensted has good experience in engaging citizens in local solutions. Can we engage the citizens in climate change adaptation?

C15.2 CCA in the hinterland and in regard to agriculture

What

There is already some knowledge about which floodings to expect, when the watercourses have extra large volumes of water, and recent rainfall events around the transition from 2015/2016 show a high degree of concordance between HEDKOM's calculation of flooding from the watercourse and the Blue Spot map with the actual flooding – also on elevated land a long distance away from

the watercourses. Despite this, our knowledge about the correlation between the watercourses and flooding caused by precipitation is limited. The same applies to what happens underground, between the cultivated soil and the watercourse, when the soil is saturated. Together these factors can have a crucial impact on the reliability of cultivation for farming activities on elevated land in the future. We need a more nuanced approach to water drainage, so that the production potential is developed, and the cities and towns do not end up functioning as delaying basins when the watercourses carry high flows. The C15.2 will build on a survey of the area around Gesager Å system and knowledge generated from C15.1 and C13 Phase 1 and knowledge about:

- What happens between the cultivated soil and the watercourses;
- Which initiatives can best help optimize the cultivation reliability of elevated cultivated land in relation to changed precipitation patterns;
- What is the optimal land use in the area between the highland and the watercourse - seen in relation to the expected consequences of a changed climate
- What is the optimal design of the watercourse and the drainage system in the transition zone between elevated land and the watercourse?

How can the city's surface water management help to optimize the cultivation reliability of elevated cultivated land in relation to changed precipitation patterns.

Fall and winter 2017/18 were very rich in rainfall and caused major problems with harvesting of crops in 2017, and cold and wet fields in spring 2018. In this way the growing season was shortened. The following summer in 2018 was very hot and dry which also shortened the growing season with a very early harvest with low yield. The wet winter followed by a dry summer indicates that the climate issue for agriculture is essentially about being able to handle water in / on cultivated soil in a way so that the cultivation season can be utilized optimally.

HEDKOM is looking for partners who can and will be part of a collaboration to adjust and possibly expand action C15.2 towards a "sustainable water management on cultivated land" in order to utilize the cultivation season optimally.

How:
C15.2 is carried out in collaboration with HbK and HK (C13), local farmers, municipal watercourse employees and, if required, water institutions that have knowledge of and experience with precipitation, water movement in the soil, drainage systems, hydraulics, watercourses, the use of the area and choice of crops. The project will relate to and use knowledge generated from e.g. Groundwater Model (C6), C15.1 and C13

C15.2 involves assessments in relation to the following levels: cultivated land, below cultivated land, in the transition zone between elevated land and watercourse, discharge into the watercourse, in the watercourse. At least one drainage system will be selected, studied and described in relation to:

1. Drainage in the catchment area, precipitation, use of the area and crops, exposed areas (based on the blue spot areas), the drainage systems' age and type and maintenance, recipient
2. Survey of the farmers' experiences of: Changed precipitation and cultivation conditions, the drainage systems' function, the drainage systems' maintenance

3. Scenarios – we put water onto elevated land.
4. What will happen if the following is changed: Choice of crop, optimization of the drainage system, change of type of installation in the transition zone between the drainage catchment and recipient, change discharge to recipient, change water discharge's look and capacity Assessment and recommendation: recommendations for process, instruments and cooperation on combined urban / open country solutions to common climate challenges
5. Preparation of a leaflet for submission to local stakeholders.
6. It is expected that C15.2 will finish with planning and changed water conditions in one or more test areas.

Where: Gesager Å river system

When:
Phase 1: Activity 1
Phase 2: Activity 1, 2, 3 and 4
Phase 3: Activity 5 and 6

C15.3 Local organizing of CCA in Tørring town

What:
When CCA is established, it is often in a town or an area with many local stakeholders and the project will therefore, taking Tørring town as its point of departure, focus on how work can be done with local organizing and local goals for CCA. The local formulation of goals will be able to provide a different kind of focus on added value and innovation as a result of the in-depth knowledge of the area. The knowledge and the recommendations about the reliability of cultivation and water systems (results from C15.1 and C15.2 as well as results from C12), will be used to look at the water catchment area around Tørring. At the same time, the catalog for added value from Hedensted town, will be included as inspiration to work locally with added value. River Gudenaa is Denmark's longest watercourse. The source of the river begins west of Tørring, and together with the extensive pool areas east of Tørring cf. Figures 29 and 30, it makes it a central area for green tourism in the municipality. Several citizen groups participate already today in voluntary management of the areas.

The project will through these two new approaches, in conjunction with the already existing knowledge, designate one or two smaller areas where in collaboration with local stakeholders, work with local goals will be carried out, where local stakeholders have influence and responsibility for helping to determine local goals. At the same time the project will lay down different options for solving climate proofing as a group. The project will particularly focus on the application and assess the total sustainability of the added value barometer for C15.2, and the organizational model that is chosen in C15.3.

How

Based on existing knowledge and results from C12, C15.1 and C15.2, C15.3 assesses which areas are attractive to work with. An organizational proposal will be prepared and together with the local areas, the following will be assessed:

1. CCA challenges,
2. local need for CCA
3. demarcation of climate proofing areas
4. local goals in relation to climate proofing (Assets, added values, development, and responsibility and influence),
5. local organizing.
6. It is expected that C15.3 will finish with planning of climate proofing in one or several test areas in connection with the Development Council's initiatives. The project will be executed in collaboration with local stakeholders, knowledge institutions and companies.
7. A final review will be carried out, looking at how C15.1, C15.2 and C15.3 have contributed to the overall goal of proofing the basis for living by adapting development to the expected climate changes, focusing on growth, more value, sustainability and innovation

The C15.3 project has already begun in Phase 1, as Tørring Development Council has prepared a draft for a development plan with six concrete, and place specific initiatives. As start of the C15.3 project, HEDKOM has linked each initiative to the challenges of a changed climate. In this way, the issues in C15.3 is reversed and climate adaptation can be incorporated into the initiatives. Climate adaptation also becomes "added value".

Where: Tørring town and the hinterland

When:
Phase 2: Activity 1, 2, 3, and 4
Phase 3: Activity 5, 6 and 7

Reasons why this action is necessary:
Our knowledge about the correlation between the water courses and flooding caused by precipitation is limited. The same applies to what happens under the ground, between the cultivated soil and the watercourse, when the soil is saturated. Together these factors can have a crucial impact on the reliability of cultivation for farming activities on elevated land in the future. We need a more nuanced approach to water drainage, so that the production potential is developed, and the cities and towns do not end up functioning as delaying basins when the watercourses carry high flows. Figure 35 and Figure 36 illustrates recent challenges related to flooding in agricultural and residential areas, respectively.
That which delivers CCA is not necessarily the same as those who benefit from climate change adaptation. It is necessary to have a tool that can value more value to enable the prioritization of efforts in relation to achieving sustainable CCA. At the same time, concrete and useful knowledge of how the water as a consequence of climate changes impacts our fields, drainage and drainage discharge, will mean more options for action for the individual and for the community. This is in conjunction with that there are many local stakeholders within CCA, which provides the opportunity to work with other forms of organization that can promote added value and innovation.

DS



Figure 35: Flooded fields with winter crops in the winter of 2015/2016.



Figure 36: Even newer residential areas have "their **feet in the water" in Hedensted.**

Constraints and assumptions:
As a risk parameter in relation to ensuring the project's progress and results, look at:

- Lack of local participation in the towns of Hedensted and Tørring, respectively.
- Lack of understanding of and acceptance of that it is not always sufficient to carry out CCA where the problem is, and that changed precipitation can affect people and the business community in different ways.
- To gain ideas for creating added value in Hedensted town.

Through expert consultation, we will ensure that we create a good framework for local participation in the towns of Hedensted and Tørring. Our work will be broad in relation to new thinking (added value). Together with experts from the C2C CC advisory committee, we will designate the relevant areas for including citizens with the subsequent concrete reason for the designation, so that the local stakeholders are clear about the climate change issue in their entire local area.

Expected results:
C15.1: Through a site-based and concrete approach as a basis for prioritizing focus areas, efforts, and means an added value catalog is developed to prioritize CCA solutions in Hedensted town. The prioritization involves results based on risk analysis from an asset perspective. The results from the stakeholder survey contributes aspects of added value. At least one project is ready for execution by the end of the action.

C15.2: This sub-action provides knowledge on CCA, watercourses and cultivated soils and results in definitions of which initiatives are most suitable for optimizing cultivation under new climate conditions, involving e.g. the design of a watercourse in regard to agricultural drainage systems. The survey provides qualitative knowledge on the experienced impacts of climate change on agriculture. The scenario analysis results in options of crops, drainage, discharge, catchment, recipient, flow capacity under different climate scenarios. At least one project is ready for execution by the end of the action.

C15.3: The results of 15.1. and 15.2 is applied in this sub-action and provides recommendations about the reliability of cultivation and water systems for Tørring town and the hinterland. The added value catalog is also applied in involvement of several citizen groups. The result is definition of local goals og options for solving climate challenges as a group. This process results in recommendations on how climate proofing and goals can be executed through local organizing and specific local development projects. A local climate proofing plan formulated by citizens also linked to local development projects.

Cost estimation:
Expenses for external expert help is based on prior experience with external assistance to local projects. Estimation of person days for HEDKOM is based on present salaries + pension etc. Expenses will cover consultation for all of the points, with supplementary professional experts from HEDKOM organization, to ensure integration with local know-how. Furthermore, C15.2 will imply travel expenses for collaboration with the C13 project. For HEDKOM the total number of person-days per year is based on the basis of the total working hours/days according to national legislation, collective agreements, employment contracts, etc. – budgeted at 214 days per year.

Deliverables:

Action	Deliverables
C.15.1	**Phase 1:** Technical background reports (bullet 1 and 2) A catalogue of examples of added values with CCA (bullet 3) Stakeholder map (bullet 4) **Phase 2:** Report from workshop on assets, solution options and added value (bullet 5) An added value catalog for Hedensted, including a method description (bullet 5) **Phase 3:** The stakeholders' (Citizens) local climate proofing plan(s) for Hedensted town (bullet 6)
C.15.2.	**Phase 1** Report on drainage systems bullet 1) **Phase 2:** Report from workshop on combined urban / open country solutions to common climate challenges bullet 4) **Phase 3:** 1 leaflet with recommendations (bullet 6) Recommendations for process, instruments and cooperation on combined urban / open country solutions to common climate challenges (bullet 5) One project is ready for execution by the end of the action. (bullet 7)
C.15.3.	**Phase 2** A process report/description on how climate proofing and the setting of goals has occurred through local organizing. An added value catalog for Tørring, including a method description Stakeholder map

DS

	Phase 3 The stakeholders' (Citizens) local climate proofing plan(s) for Tørring. 1-3projectproposals

Milestones:

Action	Quantifiable milestones	Date by end of
C.15.1	**Phase 1:**	
	Risk and value mapping done	31/12/2018
	Interest and stakeholder mapping done	31/12/2018
	Phase 2:	
	Added value catalog done	31/12/2019
	Local plans finalized	31/12/2020
	Phase 3:	
	At least one project is prepared	31/12/2021
	At least one project is ready for execution	31/12/2022
	Stakeholder integration done	31/12/2021
C.15.2.	**Phase 2** Workshop on combined urban / open country solutions to common climate challenges bullet 4)	31/07/2020
	Phase 3:	
	Report for one area on elevated land done	31/07/2021
	Leaflet about elevated land done	31/07/2022
C.15.3.	**Phase 2:**	
	Risk and value mapping done	31/12/2020
	Stakeholder mapping done	31/12/2020
	More value catalog done	31/12/2020
	Phase 3:	
	Local organization finalized	31/12/2021
	Local plans finalized	31/12/2021
	1–3 project proposals drafted	31/12/2021
	At least one project is ready for execution	31/12/2021
	Review of the project finalized	31/12/2022

DS



C16: Randers Climate Ribbon

CCA as a Driver for urban Innovation

Randers City Council has a vision to connect the city to the water by 2021. Historically an industrial city with a busy port, the city now faces its back to the water and the nature. However, soon the industrial area will be abolished, and a possibility for the city to turn to the water has emerged. New CCA measures will be developed and implemented while fully respecting the unique nature of the Randers Fjord and the River Gudenå, bringing biodiversity closer to the city and generating nature based recreational activities close to the city center. The project defines the contents of the Climate Ribbon and the subsequent launch of an international competition for innovative nature-based solutions. The project involves investors, citizens, politicians and other stakeholders. This action is primarily linked to governance within all aspects of the hydrological cycle apart from groundwater.

Main responsible beneficiary: Randers Municipality Budget: 678.111€

Number of days estimated spent on action in phase 1: 1206 days
Number of days estimated spent on action in phase 2: 411 days
Number of days estimated spend on action in phase 3: 197 days

Beneficiary responsible for implementation: Randers Municipality (RK)

Role of RK

- Is the project leader
- Works with the following secondary stakeholders: Randers Spildevand (Randers Wastewater), Randers Havn (Randers Port), landowners within the Climate Ribbon as well as with citizens, investors and others
- Reports and cooperates with C2C CC PM, and other C2C CC demo projects

Relation to CCA plans

- Randers Municipality CCA Plan: pp 11-13 + appendix pp. 35-37
- Randers risk management plan: pp 3; 13-23; 28-31; 33-38; 52-55; 58 + appendix s. 68-71

Relation to cross-cutting capacity building actions (C1-C7)

Action C16 Randers Climate Ribbon will gain from actions under C1 relating to desk analysis and identification of knowledge gaps and reviews of in the risk maps and planned actions. Experience will be exchanged between demonstration projects C8, C10, C11, C14 and C18 dealing with the coastal cities of Horsens, Grenaa and Juelsminde. A common understanding between stakeholders of sustainable solutions (economically, environmentally, socially and long term) with a focus on land use, cost-effective measures, planning, implementation, maintenance and operation

DS

will be shared and developed across actions C8, C9, C11, C10, C14, C17, C18 and facilitated by CDR. Under C1 a workshop will be held to assess synergies and possibilities of integrated solutions for the fjords at the East Coast. Under action C2 knowledge on CCA and rivers developed under different actions will be shared. Modelling, interpretations, analysis and data sampling are similar in the different catchments and C16 may benefit from this knowledge sharing in relation to the Gudenå cathment area. Scientific aspects currently the highly debated within EU, e.g. on the synergies and trade-offs between CCA and water ecology, the need for warning systems related to flooding of rivers and local contingency planning, and the synergies between farming and wetland restoration will also be shared and discussed for the benefit of action C16. Under Action C4 Rainwater, C16 will gain from the identification and experience of different setup models and testing of SUDS within CDR. Under action C5 specific training courses, workshops and masterclasses, with point of departure in the challenges experienced by the partners will be implemented for the benefit of action C16 and other actions. Action C7 creates a number of innovative fora to unite important stakeholders within water businesses and to show case climate change and water technologies. Secondly, C7 will aim at gathering useful information and best practices from cross-cutting demonstration activities, such as C16.

Linked to complementary projects

As of now, no complementary projects are linked to C16.

The Climate Ribbon is an area between the city and the River Gudenå/the Randers Fjord, and is a significant part of the city's overall urban development project "The City to the Water". The area is appointed as a risk area R1 in the municipal CCA Plan. The CCA plan refers to the Flood Risk Management Plan regarding implementation of initiatives, and within the latter, the project "City of Water" is a major part of the plan containing several purposes and actions.

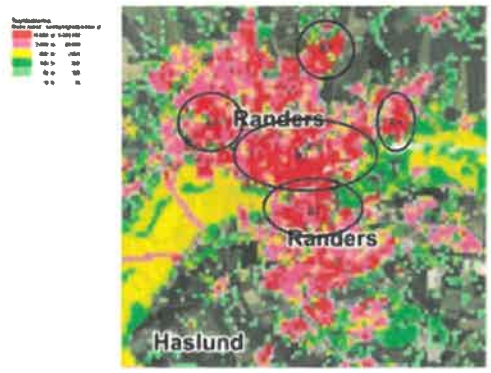


Figure 37. With 62,000 inhabitants (the 6th largest city in DK), Randers is situated at the river mouth of the northern part of the River Gudenå at the estuary of Randers Fjord, between the hillsides of the valley of the River Gudenå to the north and south.

Randers City Council has a vision to connect the city to the water by 2021. Historically an industrial city with a busy port, the city now faces its back to the water and the nature. However, soon all port functions shall be totally relocated to another area along the fjord, the industrial area will be abolished, and a possibility for the city to turn to the water has emerged. Thus, convening the city, the nature, and the water constitutes a major potential for future urban development. New CCA measures should be developed and implemented while at the same time fully respecting the unique nature of the Randers Fjord and the River Gudenå, bringing biodiversity closer to the city and generate nature based recreational activities close to the city center.

DS

'The City to the Water' covers 92 hectares along the River Gudenå and the Randers fjord. The previous industrial and port area must be climate-proofed for urban development without losing its direct, attractive location at the center of nature with easy access to the water. In this process, RK is seeking means to find new, innovative CCA solutions and mobilize investments (the C16 action) protecting the city against flooding by storm surge, while keeping direct and close contact with unique nature and future access to water.

Traditional CCA based on embankments, dams and dikes saves the city from water damage, but also creates new barriers between the city and the water, resulting in a poorer experience of nature and greater distance between the city and the water. New buildings on high plinths create closed facades and dreary spaces that are not pleasant to pass by.

An important feature of the urban development project is the creation of a new large coherent 'Climate Ribbon' connecting the city with the countryside to the east and west and at the same time connecting it to the water. The Climate Ribbon is a green corridor of 8.8 km, winding between the city and the water. Here, docks and embankments, urban nature, infrastructure, buildings, urban spaces, and city life integrate into one large CCA project.

Furthermore, the relocating of the port operations, and reducing of the traffic on Randers Bridge, two types of water could easily merge with a positive impact on biodiversity in this area. The meeting between the salty water of the Randers Fjord and the fresh water of the River Gudenå an improved water environment create the basis for a healthy and stable ecosystem with the potential of more animals and plants as well as new species of fish, birds and insects.

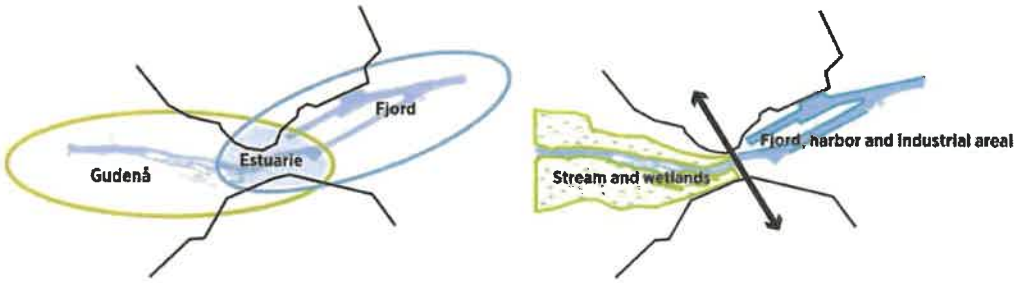


Figure 38: the merger of the two types of water – the fresh water of the River Gudenå and the salty water of Randers Fjord

The ultimate goal is to avoid new barriers between the city and the water, and instead include water as a positive resource and an active part of the solution to the city's challenges. However, solutions are not evident, so the purpose of the project is to gather knowledge and innovative CCA answers, disseminate and consolidate this knowledge, and create new experiences and eventually generate investments and continued momentum in the realization of the project.

Phase 1 deals with collecting relevant data on the contents of the Climate Ribbon and the subsequent launch of an international competition for innovative nature-based solutions.

DS

C16.1 *Inspiration from EU projects, international projects, as well as C2C CC partners*

What
With the help of external expertise, gained from other sub-projects, the complexity of the CCA should be completely illuminated. In order to mark out a particular zone for future works, prior analyses and studies of the Climate Ribbon should assess the real content and identify the Climate Ribbon area, soil conditions, establishment of sluice in the basin, controllable water mirror in the northern basin, nature content and terrain. These assessments feed into the development of a program for an international competition (C.16.2) on the development of innovative solutions to CCA in the context of urban development, maintaining access and contact with the nature and the water as the main parameter.
How:

1. Thematic meetings with stakeholders, experts, institutions, universities, water companies, etc., to involve best practice from the European projects,
2. study tours,
3. Create new study environments for research, the involvement of college students.
4. Create a professional workshop with the aim to illuminate risk and barriers as well as potentials for synergies related to the complexities of implementing and financing actual CCA measures integrated in staged urban development processes in a context of uncertainty.

When:
Phase 1: activities 1 - 3
Phase 2: Activities 2-4
Phase 3: Activities 2-4

Where:
The project area is a zone of about 8.8 km alongside the Gudenå River and Randers Fjord within the Randers City Center area.

C16.2 *Launch of an international Climate Change/landscape/architectural competition*

What
This activity deals with a professional international competition (with prequalification of teams) that in the best possible way can bring forth innovative CCA solutions highlighting the greatest possible contact between the city and the water. A major theme in the competition and for the subsequent project is the manner in which the energy of the water can be used as a defense against water by the storm surge as well as in other innovative nature based CCA solutions. The expected results must be holistic and include several professional disciplines. This content can be seen as a kind of 'Toolbox' of CCA solutions depending on the development of the city and the urban spaces, buildings as well as the establishment of the natural areas. Possible solutions should to the greatest extent assess the potential for gain and/or recovery of biodiversity in the area, as well as creation of growth in business development, (nature-based) tourism, and employment.

The competition should attract professionals within climate change, innovative people across disciplines from landscape architects to hydrologist, biologist and engineers. Solutions should be

DS

found in the interaction between disciplines, and adapted to the specific socio-cultural-natural surroundings at the "Climate Ribbon" with a focus on CCA, innovation and applicability. It is important to attract international teams, as these may assure that the best available practices and knowledge will be at hand. We are looking for urban solutions which do not create physical barriers between the city and the water, but integrated solutions where city and water may go hand in hand with CCA, urban development, recreational activities and urban life. We want holistic solutions, which may be a future inspiration for urban development cum climate change adaptation across Europe.

A demand for the competing teams will be digital presentations presenting present risk scenarios through videos, holograms or digital 3D modelling. Solutions will be shown in the workroom /Showroom (C16.3), which will be publically accessable in the city of Randers. The results of the international competition will be used for public dissemination of ideas for citizens and the city council.

How:

1. An international competition on the Climate Ribbon underlining the holistic approach, resulting in innovative and visionary CCA solutions as exemplary projects for other port and coastal cities of the EU
2. The competition takes place in 2018 and the best CCA solution will be selected by a jury of professional judges, local politicians etc.
3. Dissemination of results: communication and awareness raising, where investors, citizens, politicians and other stakeholders get information on the solution and CCA effects on city-life in general.
4. Establishment of project website at byentilvandet.randers.dk to be used for dissemination of results aimed at local citizens as well as a broader audience.

When:
Phase 1: Activities 1-3
Phase 2: Activity 3-4
Phase 3: Activity 3

Where: As above

C16.3 *Establishing of a showroom and workroom*

What:
C16.3 focuses on communicating and branding the Climate Ribbon's vision for innovative solutions. A showroom/workroom in the city are established and maintained conveying the competition results and the further development of the Climate Ribbon and its urban context. The showroom will consist of

- Visualizations of the ideas
- Models of the possible solutions
- A digital communication in the form of a movie showing one team's suggestions

DS

- and a webbased application allowing citizens to participate in urban development and development of integrated CCA solutions and show visually how this might look.

The workroom will be named Havnegadeboksen (directly translates to "The harbor street box") and will be a workshop-like area in an altered container structure, in which different models and pictures can be displayed. The mobile container structure allows the workroom to be established directly in the project area close to the city center and be moved later on should this be relevant.

The box will be open to the public at regular intervals. Moreover, special events will be held when there are important news on the project. Moreover, schools, learning institutions, universities and museums with be invited to the box to participate in the development of ideas for the Climate Ribbon.

The objective is to show what a storm surge means for the city as it looks today without CCA, but also what the city *wins* by making the right solutions with a focus on protection against storm surge and strengthening of the relation with nature. The goal is to tell about the Climate Ribbon's solutions locally, nationally and internationally.

Schools and universities are offered information and study possibilities in order to ensure sustainability. Specifically, a constructive collaboration has been established with the University of Aalborg, which will further be developed with the box as one of many objects of research.

How:

1. Establishment of a showroom/workroom for communication of solutions, methods and experiences
2. Maintenance of the showroom with at least one yearly update on the content
3. At least two annual events in the box aimed at different types of citizens engagement plus informal opening hours depending on demand and news activity.
4. Interaction with local schools, college students and university students through thematic courses, internships or similar.

Where: Havnegadeboksen, Kornkajen 4, 8900 Randers

When:
Phase 1: 1-4
Phase 2: 2-4
Phase 3: 2-4

C.16.4 *Development of financial plans and plans for the implementation of the climate ribbon in the city of Randers*

C16.4 focuses on developing the Climate Ribbon's content together with citizens, investors and property owners as well as encouraging the establishment and realization of CCA solutions. Many stakeholders – the municipality, future constructors and investors, existing site owners/property

owners, etc. – are involved in the realization of the project, facing both gains and challenges, and all of them must grasp the basic approach.

The first step is to further develop and specify the ideas from the toolbox (16.1), thus ensuring that the CCA measures are fully integrated into the planned urban development and all potentials for added value are harvested. Therefore, the principle solutions developed in C16.1 will be used directly in the development of a masterplan for the urban development project "The City to the Water". The masterplan will thus not only set the course for the next 20 years of urban development – but also describe the CCA measures to be implemented.

An overall and long-term strategy for the CCA of Randers City and Randers Fjord will be conducted, combining the initial results of C11 and C12 as well as C16. This allows us to decide the optimal protection levels in Randers City short and long term. In this strategy, a particular focus is put on how to meet the need for flexibility in relation to the uncertainties in CC until 2100 and beyond.

An initial budget for the CCA measures in the Climate Ribbon is produced, in a light and full version showing the possibilities of upscaling and downscaling ambitions depending on funding options. For each version, a brief analysis of the benefits for urban development, nature, biodiversity etc. will be carried out.

Thereafter, an investigation of different strategies for the funding of CCA measures will be undertaken. Specifically, an initial financial model will be developed showing how the budget is expected to be divided amongst potential contributors. Moreover, the legal requirements and opportunities for co-financing CCA solutions integrated into an urban renewal project will be thoroughly investigated.

After phase 1 and 2 we have gained a lot of relevant knowledge that we can use in phase 3. In phase 3 we want to develop the project further and update the knowledge we have gained in the past years. The next step is to use that knowledge to get closer to a concretization and realization of the first stages of the climate ribbon.

How:

1. A description of future CCA measures in the Climate Ribbon is developed as part of The City to the Water – Masterplan (udviklingsplan for Byen til Vandet).
2. An thorough analysis of the optimal protection levels with particular focus on flexibility in regard to the uncertainties in CC until 2100 and beyond.
3. An analysis of different financial models for implementation urban CCA in Randers as well as an initial expected financial model for the Climate Ribbon as part of the urban development project The City to the Water.
4. A budget for realizing the Climate Ribbon in a light- and a full version, as well as an analysis of the added value gained for each version.
5. A strategy for the staged development of the Climate Ribbon, showing which stages may be implemented first and later, as dependent on the urban development project.
6. Maturation of the first stages of the Climate Ribbon

Where: the city of Randers

When:
Phase 2: Activities 1-3, 5
Phase 3: Activities 3-6

Reasons why this action is necessary:
Climate changes within the next hundred years can lead to an increase in sea level of up to 1 meter compared to normal times. Randers city's location by the Gudenå River and the Randers Fjord offers challenges and a special obligation to be ready when the water threatens. In other words, local solutions are needed to a global problem. The River Gudenå and the Randers Fjord is designated as one of the 10 areas in Denmark most at risk of flooding by a storm surge. With the prospect of future climate change with rising sea levels, the whole existence of Randers town as well as the city's overall urban development potentials is at stake. Also the unique peri-urban nature by Gudenåen and Randers Fjord will be threatened due to erosion and floods due to rising sea levels.

Constraints and assumptions
As elsewhere, lack of public and private funding necessary for investments in CCA may exist. Furthermore, it may be difficult to visualize the construction of dikes, embarkments, walls and other CCA solutions that will cut off the city from the water. To overcome this and in order to ensure the implementation of the Climate Ribbon, the objective is to create a synergy – also in investments – between CCA and the various sub-elements of the urban development projects, especially nature and water, but also with new infrastructure, new buildings, new connection between city and nature and new urban spaces. The objective is to create added value in all new solutions, to retain direct physical and visual access to the water, as well as to secure that CCA plays together with the urban development project, and does not become a new climatic barrier between the city and the water in the form of dikes, embankments, walls and new buildings on high plinths.

Expected results:
If Randers city is flooded, the total damage amounts to about 5-6 billion DKK. A large part is financed by insurance companies, increasingly reducing the possibilities for full coverage of buildings, etc. in areas with a high risk of flooding by storm surge. In the context of urban development, the 'City to the water' project intends to enhance avoidance of costly damage by conditioning the construction of new buildings on the new CCA guidelines - including direct contact with the water and the nature rather than the construction of new houses on elevated pedestals behind walls, dykes and embankments. Therefore, the expected result of the project is that the municipality in cooperation with citizens, stakeholders, investors and property owners can reduce the risk of negative consequences for human health, the environment, cultural heritage and economic activity in case of extreme flooding. A total number of 50,000 visitors are expected to visit the Climate Ribbon showroom.

In phase 2, expected results furthermore include:

DS

- Thorough investigations conducted on at least one sub area prior to a sale to a specific developer
- CCA measures is implemented for at least two sites within the project area for The city to the water.

Cost estimation:
Working on the Climate Ribbon – and linking it to city development – is a huge task, and a lot of personnel cost is allocated to it. Furthermore, expenses for external expert help is expected to amount to 241,452 € based on prior experience with external assistance to local projects and best judgements. Estimation of person days for RK is based on present salaries + pension etc.
A professional international landscape/arhictectual competition (C16.2) will cost an estimated €187.796.We expected that to attract the best innovative teams from all over Europe, we will need a prize winning sum of €134.128, including prizes for the 1., 2. and 3. runner up in the competition. Additonal we will need funds to prepare the material for a round of prequalification to select 6-10 competitive participants, from where we will find the winners. The residual sum of €53.668 will cover external prossional help for writing up the programme description and competition rules, transalation of the material for the selection committee, meetings and public presentations of the competition proposals. Subsistence costs are also based on prior experience and can be further subdivided into Hotel costs, Daily allowances/Payment for meals and local transportation categories, as shown below for this action's subsistence costs items:

Travels	**Study travel to relevant location in DK**	**Study travel to relevant location in EU**	**Travel to project meetings**
Partners / *Cost categories:*	**RK**	**RK**	**RK**
Hotel cost:	0	578	0
Daily allowances/Payment for meals cost:	100	0	150
Local transportation costs:	163	0	120
Total subsistence cost:	263	578	270

Deliverables:

Action	Deliverables
C16.1	**Phase 1** Report on best practice from other EU projects, similar international and national projects and other knowledge (01/06/2016) Report on the identification of the Climate Ribbon's exact size as well as geographical, biological circumstances (e.g. groundwater layers, soil, contamination etc) (01/10/**2017)**

DS

	Phase 2 Brief evaluation from study trip published Minutes of meetings accessible on MidtRum **Phase 3** Summary of meeting on implementation of CCA measures Minutes of meetings accessible on MidtRum
C16.2	**Phase 1** Publication of program for an international professionel competition on the Climate Ribbon (01/01/2018) **Phase 2** Publication of summary report from Climate Ribbon Competition ("Klimabåndskonkurrencen") (01/01 2019) The project website is online and updated with relevant materials available Minutes of meetings accessible on MidtRum **Phase 3** Dissemination of results: communication and awareness raising Minutes of meetings accessible on MidtRum
C16.3	**Phase 2** Report on best practice from showroom/workroom og events, seminars as well as methods for development of digital forms of communication (01/12/2019) Evaluation of the collaboration with schools and college students Minutes of meetings accessible on MidtRum **Phase 3** Final summary of best practices in CCA communications with citizens with a particular emphasis on digital methods and young people Maintenance of the showroom with at least one update on the content At least two events in the box plus informal activity Minutes of meetings accessible on MidtRum
C16.4	**Phase 2** A masterplan for The City to the Water with CCA integrated into urban development Memo on storm surge protection levels with a particular focus on flexibility in regard to the uncertainties in CC until 2100 and beyond. Brief report on available methods for financing CCA and the expected model for financing the Climate Ribbon and related CCA measures A long-term strategy for CCA in Randers Fjord and Randers City, integrating C11, C12 and C16, and with a focus on long-term effects and uncertainties. Minutes of meetings accessible on MidtRum

DS

	Phase 3 An initial budget for the Climate Ribbon full and light versions A strategy for staged development on the Climate Ribbon An evaluation of C2CCC C16 The Climate Ribbon with strategy for the continuous development of CCA within the city of Randers Maturation of the first stages of the Climate ribbon

Milestones:

Action	Quantifiable milestones	Date by end of
C16.1	Review of existing knowledge from other EU projects, international and national projects and experiences finalized.	01/06/2017
	Area of the Climate Ribbon identified.	01/10/2017
	Analyzes and studies of geographical and biological conditions within the Climate Ribbon finalized.	01/11/2017
	Studies of groundwater layers, former depot grounds, soil, pollution, foundations opportunities finalized	01/11/2017
	Brief evaluation from study trip published	31/12 2020
	Summary of meeting on implementation of CCA measures	31/12 2020
C16.2	Competition programme for an international professional competition for the Climate Ribbon's future content, design and realization opportunities publicized.	01/01/2018
	Prequalification of 4-6 teams done	01/03/2018
	Launching competitive process done	01/03/2018
	Announcement of the winner of the international "Climate Band Competition"	01/10/2018
	Publication of summary report "Climate Band Competition"	01/01/2019
	Website online and updated	15/07/2019
C16.3	Opening the show room / workroom	01/08/2018
	2 annual events and a seminar held	01/04/2022
	Methods for the use of digital communication developed	01/08/2018
	Evaluation of the collaboration with schools and college students	31/12 2019
	Final summary of best practices in CCA communications with citizens with a particular emphasis on digital methods and young people	31/12 2022
C16.4	A masterplan for The City to the Water with CCA integrated into urban development	31/12/2019
	An overall and long-term strategy for the CCA of Randers City and Randers Fjord	31/12 2020
	Investigation of expected model for financing the Climate Ribbon and related CCA measures	31/12 2020
	Phase 3 An initial budget for the Climate Ribbon full and light versions finalized	31/12 2022

DS

	A strategy for staged development on the Climate Ribbon	31/12 2022
	An evaluation of C2CCC C16 The Climate Ribbon with strategy for the continuous development of CCA within the city of Randers	31/12 2022

DS

C17: Thyborøn City and Harbour

As well as the Harboøre Tange

The town of Thyborøn is among the most climate vulnerable in Denmark and is challenged by climate change from all sides. This is aggravated by the fact that large parts of Thyborøn underground is based on filling material from the past. In some areas of Thyborøn, subsidence of 1 cm per year can be seen. At the same time, Harboøre Tange is massively polluted due to the fact that the factory Cheminova has occupied the area since 1952. Based on prior work, the project partners initiate together with relevant stakeholders the development of a dynamic adaptation model describing groundwater level as a function of seawater level, groundwater level, subsidence and wind conditions. Innovative methods to extend the lifespan of pipelines will feature as an important part of this action. This action primarily links to governance and tools within all aspects of the hydrological cycle apart from rivers.

Main responsible beneficiary: Lemvig Municipality Budget: 651.545€

Number of days estimated spent on action in phase 1: 404 Days
Number of days estimated on action in phase 2: 353 Days
Number of days estimated spent on action in phase 3: 322 Days

Beneficiaries responsible for implementation: Lemvig Municipality (LK), Lemvig Vand og Spildevand A/S (LVS), and CDR

Role of LK:

- is project manager
- monitors project progress
- Integrates and cooperates with complementary project
- reports and cooperates with C2C CC PM

Role of CDR

- contributes to the model focusing particularly on polluted areas at Harboøre Tange[1]

Role of LVS

- is responsible for cooperation on innovative development of new methods to extend the lifespan of pipelines in areas with land subsidence.

[1] http://ec.europa.eu/environment/life/project/Projects/index.cfm?fuseaction=search.dspPage&n_proj_id=3701

Relation to CCA plans
Lemvig Municipality CCA plan p 26.

Relation to cross-cutting capacity building actions (C1-C7)
Activity C17 Thyborøn City and Harbour will gain from actions under C1 relating to desk analysis and identification of knowledge gaps and reviews of in the risk maps and planned actions. Experience will be exchanged between demonstration projects C8, C11, C14 and C18 dealing with the coastal cities of Horsens, Randers and Juelsminde. A common understanding between stakeholders of sustainable solutions (economically, environmentally, socially and long term) with a focus on land use, cost-effective measures, planning, implementation, maintenance and operation will be shared and developed across actions C8, C9, C10, C11, C14, C18 and facilitated by CDR. Under C1 a workshop will be held to assess synergies and possibilities of integrated solutions for the fjords at the East Coast from which the western city of Thyborøn and its harbor may also benefit.

Under action C3, in selected areas a detailed local model is set up focusing on groundwater, surface and/or seawater. Models are based on the present data and collections of new data sets e.g geophysical data and C17 will benefit from this model. Under action C3, in selected areas a detailed local model is set up focusing on groundwater, surface and/or seawater. Models are based on the present data and collections of new data sets e.g geophysical data and C17 will benefit from this model.

Under Action C4 Rainwater, C17 will gain from the identification and experience of different setup models and testing of SUDS within CDR.
Under action C5 specific training courses, workshops and masterclasses, with point of departure in the challenges experienced by the partners will be implemented for the benefit of action C16 and other actions. Under action C6, the groundwater-surface water model and screening tool is developed and tested, and known warning systems in DK and in other countries are explored, and simple warning systems with flood prediction are tested and demonstrated, all activities which may benefit C17 directly.

Linked to complementary projects
C17 is linked to a complementary project by LVS. In the coming years, LVS is going to invest in maintenance and innovation of sewer systems and other measures to make LK infrastructure to drainage more sustainable. The eventual investment strategy of the renewal of the sewer system is highly linked to the C17 action. Furthermore, the analyses and models of the action will affect the choises of future investments in coastal areas. 2.9 mio € are allocated to this project.

Description (What, how, where, when)
Heavy or prolonged rain events are becoming an increasingly problem in Thyborøn. The top soil layer is saturated, and the water can neither infiltrate nor drain off. The result is water on roads that can only slowly be drained. There is an increasing need to climate adapt Thyborøn, which will require large investments. These investments must be multifunctional, providing added value to citizens and others who must finance climate solutions.

C.17.1 *Providing sound data of the project area and building a dynamic model*

What:
Based on previous work by among others Lemvig Municipality, the Danish Coastal Authority, Geodatastyrelsen, the Harbour of Thyborøn, CDR, the need for further data will be assessed. Many factors influence future climate challenges in Thyborøn: How much and how rapidly is groundwater rising? Where, how much and how quickly is the subsoil subsiding in Thyborøn? A solid database to provide a qualified estimate of future investments is required. During Phase 1, a thorough mapping will take place supplemented with a study and monitoring program to construct a dynamic CCA model that adapts to the reality that we measure.

How
Phase 1

1. Building on existing work, a more detailed mapping of the groundwater level and subsidence in Thyborøn takes place. Thyborøn City should be divided into zones having different degrees of CCA needs. Low-lying areas where the groundwater is high and subsidence is prominent need urgent reaction.
2. Establishing a more detailed monitoring program on groundwater levels and subsidence in Thyborøn. In cooperation with the Agency for Data Supply and Efficiency (SDFE), a plan for the monitoring of subsidence in Thyborøn will be developed. Project partners are already engaged in a Horizon 2020 application from SDFE as end-users (cf. complementary project), in which the possibility of using satellite-based measurements of land is examined. In addition, an even more comprehensive monitoring program of groundwater levels in Thyborøn is to be established. Project partners' skills will here be supplemented by external advisors.
3. Around the polluted areas, existing data collated and assessed what new data is needed.
4. The project partners initiate together with relevant stakeholders the development of a dynamic adaptation model describing groundwater level as a function of seawater level, groundwater level, subsidence and weather conditions. This includes: analysis and the modeling of the interaction between rainwater, groundwater and seawater on the basis of a simplified hydrogeological model. Another model will form the basis for an assessment of the impact from the contaminated areas facing the vulnerable natural areas at Harboøre Tange.

Phase 2

5. The subject for the C18 ("Citizen-driven climate adaptation in Juelsminde") is the modeling of rising groundwater after high tide. We expect that the two projects can benefit greatly from each other as rising groundwater after high tide is a key challenge in Thyborøn.
6. Weather conditions and seawater levels are already monitored today, and data are publicly available at national level. It will be studied whether there is a need for a more detailed local monitoring.
7. The dynamic adaptation model must be a user-friendly tool for both professionals and lay people, providing an overview of climate changeimpact on a local scale in the next 5, 10 and 50 years.

Where: the project area around Harboøre Tange and Thyborøn

DS

When:
Phase 1: activities 1-4
Phase 2: activities 5-7

C.17.2 *Dialogue with citizens and other stakeholders*
It is crucial to achieve local support and understanding of the work on CCA and thus secure the future of Thyborøn City and Harboøre Tange. So far, the Municipality of Lemvig and Lemvig Water and Wastewater has primarily informed the public about the challenge through press releases in local newspapers and local TV. The aim has been to describe the climate challenge on the basis of valid data, before involving citizens actively in finding solutions. However, the municipality has already had many inquiries from citizens not being able to infiltrate surface water, and that surface water covers roads and large areas because of cloudbursts and longer-lasting rainfall. Therefore, contact with the citizens is highly prioritized in this project – through more public meetings, workshops, cooperation with companies and other stakeholders. There is also a need for a close dialogue between relevant authorities (the municipality, the CDR, the Danish Nature Agency, the Coastal Authority, Environmental Agency) and companies (such as the chemicals company FMC/Cheminova) in order to ensure broad support for the efforts and effective implementation of solutions.

How:
Phase 1 and 2

1. The project includes a series of public meetings and workshops where citizens and other stakeholders are informed of the progress of the project and in various ways encouraged and motivated to take part in the process of mapping the climate challenge to concrete proposals for solutions.
2. A technical advisory group (partners, the Coastal Authority, Thyborøn Harbour, Danish EPA, etc.) participates. Such a forum for cooperation on handling climate challenges already exists in Thyborøn today.
3. In addition, we will establish an advisory group of key stakeholders - local citizens' associations who contribute to disseminate the project's progress, the Danish Nature Agency in Western Jutland, which has significant of interest in the area around Thyborøn.

Where: the project area around Harboøre Tange and Thyborøn

When:
Phase 1: Activities related to 1
Phase 2: Activities related to 2 and 3
Phase 3: Activities related to 2 and 3

C.17.3. *Development of innovative methods to extend the lifespan of pipelines*

DS

Subsidence affects the underground supply infrastructure. Conventional pipelines for the transport of surface water and wastewater last much shorter as local subsidence lead to fracture. This is already a challenge for Lemvig Water and Wastewater, being responsible for underground infrastructure for approximately 50 mio. DKK in Thyborøn. Usual life expectancy of 100 years for pipelines is not realistic in Thyborøn. Part of the solution to the climate challenge in Thyborøn may well be pumping water in order to lower the groundwater level in critical areas. This requires pipelines that last for many years despite local subsidence. Knowledge and monitoring of local land subsidence will be used to make sure that only short and critical sections of the underground infrastructure has to be replaced regularly giving a significantly longer average lifespan of pipelines.

How

Phase 2

1. An innovation work is initiated together with knowledge institutions and private actors in order to develop methods to extend the lifespan of pipelines.

2. Together with specialists different ways to extend the lifespan of pipelines in areas with land subsidence will be investigated.

When

Phase 2: Activities related to 1-2

Where: the project area around Harboøre Tange and Thyborøn

C.17.4. *Providing the basis for decision-making*

Activities C.17.1, 2, and 3 are expected to provide thorough knowledge of climate challenges in Thyborøn, contact with the citizens and businesses, that are landowners in the exposed area. This forms the basis for discussing CCA solutions – organizing stakeholders as well as installations to solve climate challenges. The project also investigates how contamination of Harboøre Tange is expected to be affected by future climate change it forms the basis for designing future preventive measures.

How

1. Based on the survey of the main problem areas in Thyborøn, stakeholders are motivated to organize in order to establish joint solutions at a fair sharing of costs.
2. Architectural competition will be launched for architects and consulting agencies can put forward sketch projects for the drainage of critical areas in Thyborøn. Bids must contain added value in other areas, such as using the pumped water for recreational purposes, water sports or other activity.
3. Solutions to the CCA challenges are sought inside and outside of Denmark (e.g. the Netherlands and Northern Germany)

When

Phase 2: Activities related to 1

Phase 3: Activities related to 1, 2 and 3

Where:
The project area around Harboøre Tange and Thyborøn

Reasons why this action is necessary:
The town of Thyborøn is among the most climate vulnerable in Denmark and is challenged by climate change from all sides: from the top, the bottom, and the sides. It is protected by dikes against storm surges from the North Sea and the Limfjorden, but since the water level in the North Sea affects the groundwater level, the latter is seen to be increasing in the area. This is aggravated by the fact that large parts of Thyborøn underground is based on filling material from the past. In some areas of Thyborøn, subsidence of 1 cm per year can be seen.

At the same time, Harboøre Tange experiences massive pollution due to the fact that the factory Cheminova has occupied the area since 1952. The manufacturing sites are heavily contaminated, as is an old chemical dumpsite (called Groyne 42) on the beach front to the North Sea. Toxins have spread in the Nature2000 area, making wastewater pipe-lines leak and caused numerous accidents over the years. The areas on Harboøre Tange is also affected by climate change because of increased rainfall and rising sea levels, which could potentially mobilize and lead to the spread of the contaminants into the groundwater.

Constraints and assumptions
Monitoring groundwater level builds on cooperation with citizens who must accept the drilling activities. The Project group has a strong knowledge of local stakeholders, being in a dialogue with citizens in great many ways. The model contains many variables that must be handled in a manageable, dynamic model. In cooperation with counsellors, the model will be adjusted so that there is a good balance between the need to be accurate and the need to be simple and clear.
Activity C17.2 requires that citizens and other stakeholders will take responsibility and contribute constructively. This challenge will be dealt with through the many contacts between the municipality and local people in Thyborøn in many other contexts. C17.3 assumes an interest from pipeline manufacturers and knowledge institutions. To counter a lack of engagement, the project team has made initial contact with a pipe manufacturer, who has shown great interest in the project. C17.4 assumes that citizens and other stakeholders are ready both to find solutions and financing solutions actively. The project partners have extensive experience with the establishment of drainage associations and dyke unions where landowners contribute extensively. This experience will enable us to benefit greatly from the process.

Expected results:
C17.1: Phase 1: A detailed investigation and/or surveillance program for monitoring groundwater levels, pollution and land subsidence in Thyborøn and Harboøre Tange provides and essential insight in the actual development. Phase 2: A dynamic adaptation model describing the interaction between e.g. rainwater, groundwater and seawater on the basis of a hydrogeological model create concrete data for decision-making. C17.2 creates broad support from the public and from businesses for the project and climate protection of Thyborøn general. C17.3 results in development of methods to extend the lifespan of pipelines in areas influenced by local land subsidence. C17.4 provides additional funding and financing possibilities for CCA.

Cost estimation:
During Phase 1, expenses for external expert help is expected to amount to 177,651 € based on prior experience with external assistance to local projects. External assistance is used for the dynamic model – but apart from that, partners contribute with personnel for meetings, planning, awareness-raising. Estimation of person days for LK is based on present salaries + pension etc. Subsistence costs are also based on prior experience and can be further subdivided into Hotel costs, Daily allowances/Payment for meals and local transportation categories, as shown below for this action's subsistence costs items:

Travels	**Inspirational trip for staff and politicians**		
Partners: / *Cost categories:*	**CDR**	**LK**	**LVS**
Hotel cost:	300	1.500	1.500
Daily allowances/Payment for meals cost:	200	1.000	1.000
Local transportation costs:	0	0	0
Total subsistence cost:	500	2.500	2.500

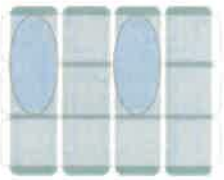
Deliverables:

Action	Deliverables
C17.1	**Phase 1:** A detailed investigation program for monitoring groundwater levels, pollution and land subsidence in Thyborøn and Harboøre Tange. A report on compilation af data on pollution Deadline 31/12 2018 **Phase 2:** A dynamic adaptation model describing the interaction between e.g. rainwater, groundwaterand seawater on the basis of a hydrogeological model. Deadline: 31/12 2019
C17.2.	**Phase 1:** Reporting from citizens meeting 1; deadline 30/6 2018 Reporting from citizens meeting 2; deadline 30/12 2018 **Phase 3:** Reporting from last workshop; deadline 30/11 2022
C17.3	**Phase 2:** Status report on development; deadline: 31/05 2019 Status report on development; deadline: 31/12 2019
C17.4	**Phase 3:** A number of conceptual designs developed, that can solve the climate challenges in Thyborøn and Harboøre Tange; deadline: 30.06.2022

DJ

Milestones:

Action	Quantifiable milestones	Date by end of
C17.1	Kick-off meeting with project group done.	28/02/2017
	Counselor contracted for delivering a detailed program for investigation and surveillance	31/08/2017
	Counselor contracted for delivering a dynamic CCA model	30/06/2018
	Reporting on dynamic CCA model delivered, incl. modeling on contaminated areas at Harboøre Tange	31/10/2019
C17.2.	**Phase 1:**	
	1st large citizens meeting done	31/02/2018
	1st workshop for stakeholders and decision-makers done	30/06/2018
	Phase 2:	
	2nd large citizens meeting done	30/06/2019
	2nd workshop for stakeholders and decision-makers done	31/12/2019
	3rd large citizens meeting done	31/12/2020
	Phase 3:	
	2nd Meeting and workshop for citizens and stakeholders	30/06/2021
	3rd Meeting and workshop for citizens and stakeholders	31/03/2022
	Meeting for decision-makers done	30/09/2022
C17.3.	Contract with private company and counselor on development of new, flexible pipes done	30/04/2018
	Reporting on development of methods	31/10/2020
C17.4	Conclusion of Advisor agreement (architects and consulting engineering) for assistance with preparation of CCA solution including involving citizens and stakeholders.	31/03/2021
	A number of conceptual designs developed, that can solve the climate challenges in Thyborøn and Harboøre Tange and contribute with added value	30/06/2022



C18: Citizen-driven CCA in Juelsminde

The sea level is rising and the high tides are expected to increase and become more extreme with higher sealevels and episodes that last longer. High tides in some locations will push the seawater through the soil matrix in the hinterland, which means the groundwater will rise causing a lot of inconvenience for industry and citizens. The project supports and qualifies the climate actions by gaining renewed knowledge about the interaction between saltwater and groundwater and the associated challenges. Citizen participation is a pre-requisite for success. This action is primarily linked to governance and tools with sea & fjords and groundwater.

Main responsible beneficiary: Hedensted Municipality Budget: 134.042€

Revised budget (September 21st 2018)

Number of days estimated spent on action in phase 1: 104 Days
Number of days estimated spent on action in phase 2: 155 Days
Number of days estimated spent on action in phase 3: 14 Days

Beneficiary responsible for implementation: Hedensted Municipality (HEDKOM) is the project manager, VIA University College is project partner

Role of HEDKOM:

- is responsible for progress in the project, providing advice and contact to the stakeholders.

Role VIA:

- is responsible for carrying out and planning data collection, and producing hydrological models of the area.

Relation to CCA plans

- The action follows HEDKOM CCA plan, which aims to prevent the consequences of climate changes, where major exiting assets are threatened (page 211) and HEDKOM risk assessment plan.

Relation to cross-cutting capacity building actions (C1-C7) and innovative actions (C20-C24)
Activity C18 Citizen-driven CCA in Juelsminde will gain from actions under C1 relating to desk analysis and identification of knowledge gaps and reviews of in the risk maps and planned actions. Experience will be exchanged between demonstration projects C10, C11, C14 and C8 dealing with the coastal cities of Horsens, Randers and Grenaa. A common understanding between stakeholders

DS

of sustainable solutions (economically, environmentally, socially and long term) with a focus on land use, cost-effective measures, planning, implementation, maintenance and operation will be shared and developed across actions C9, C10, C11, C14, C17, C8 and facilitated by CDR. Under C1 a workshop will be held to assess synergies and possibilities of integrated solutions for the fjords at the East Coast. Under action C3, in selected areas a detailed local model is set up focusing on groundwater, surface and/or seawater. Models are based on the present data and collections of new data sets e.g geophysical data and C18 will benefit from this model. Under ation C5 specific training courses, workshops and masterclasses, with point of departure in the challenges experienced by the partners will be implemented for the benefit of Action C18 and other actions.

Linked to Complementary Actions
As of now, there is no complementary action to C18

Description (What, how, where, and when)
The sea level is rising. According to the Danish Meteorological Institute (DMI), the sea level is expected to increase by up to 0.7 m by 2100 cf. Figure 39

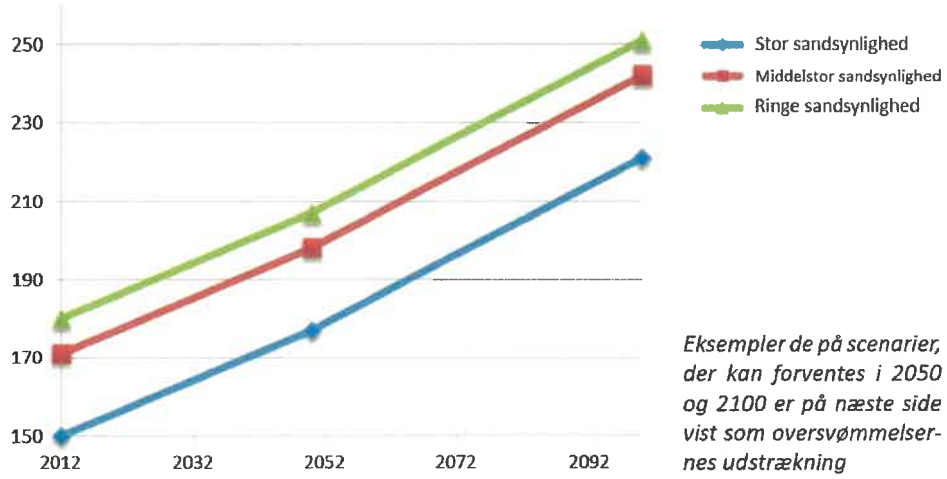


Figure 39: Sea level is expected to rise by up to 0.7 m by 2100 (Source: DMI).

The total number of high tide incidences are also expected to increase and become more extreme with higher sealevels and episodes that last longer. High tides in some locations will push the seawater through the soil matrix in the hinterland, which means the groundwater will rise causing a lot of inconvenience for industry, businesses and citizens. The frequency and impact of these events will vary, for example depending on the geological conditions and the volume of high tide water (scale) and duration. The occurrence of these events can have a significant impact on the future use of the area in the coastal hinterland, the choice of any coastal protection system and for the run-off of surface water into residential areas and in areas where land is cultivated. In urban and holiday home areas, the problem is topical because of the planning of new homes and the replacement of existing homes. The problem is described in the literature, e.g. in Groundwater in a future climate, December 2011 (co-financed by the EU Interreg IV B programme), particularly with regard to infiltration of saltwater into the groundwater and into drinking water.

DS

In HEDKOM's risk assessment plan, three basic challenges for making Juelsminde safe from sea flooding in the future have been identified: at Strandengen, by the harbor, and at the existing dike. The municipality wants citizens and companies to be involved in finding solutions that the town's future will be based on, and which will constitute part of the basis for how the town can develop. At the same time, the action plan states that a dike association will be established during the plan period. This dike association is expected to engage all of the landowners, whose properties currently benefit from the dike's protection, and in addition the landowners, whose properties will be protected by an expansion of the dike in the future. Figure 40-42 illustrates some of the challenges the area faces.

C18 supports and qualifies the climate actions by gaining renewed knowledge about the interaction between saltwater and groundwater and the associated challenges.



Figure 40: High tide at Strandengen



Figure 41: Juelsminde harbour. In the yellow areas, it must be ensured that those areas are protected from the sea penetrating the town, with a medium-large probability already today

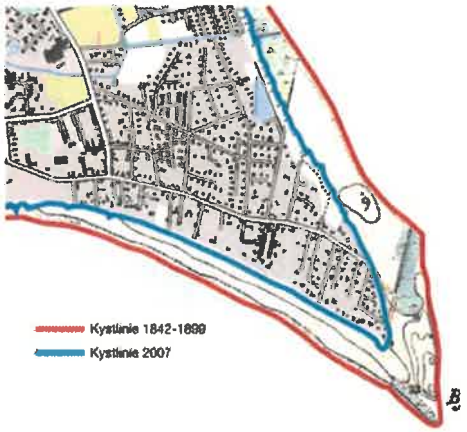


Figure 42: Juelsminde was protected by a coastal headland 150 years ago. Today, the coastline is close to homes and holiday homes

C.18.1 *Interaction between saltwater and groundwater*

What:
This action seeks to find a correlation between high tides and subsequent rising groundwater in the upper soil layer, approx. 0-2 meters below the existing terrain identified in relation to the distance from the sea/fjord and different geological soil types. The project will shed light on the problem in the area between Snaptun and Juelsminde (cf. C8). Tools for modelling the local risk will be set up and tested, based on existing models and local measurements. Recommendations for how to utilize the new knowledge will be devised.

How:
It is proposed that the C18.1 is defined and carried out in a collaboration between CDR, the Danish Coastal Authority and other C2C project partners with an interest in the issue, HEDKOM and VIA. C18 involves the following activities:

1. The establishment of data loggers for measuring water levels and salinity at 0-2 meters depth at different distances from the coastline, and up to 800-"1000 m from the coastline. The data loggers must cover wide geographical conditions e.g." from marine soils to moraine soils. The data logging must be carried out in selected local sites in Juelsminde and between Juelsminde and / or Glud Håb.
2. The data logging is assessed at a midway evaluation point, for local use in area planning and climate change adaptation.
3. Monitoring is carried out on an on-going basis until the end of 2022.

Where: selected local sites in Juelsminde and between Juelsminde and Glud Håb.

When: January 2017 - December 2022.

Phase 1
Activities related to 1 and 3

Phase 2
Activities related to 2 and 3

Phase 3
Activities related to 3

C18.2 *Organizing stakeholders*

What:
The purpose of C18.2 is to establish a shared local understanding of the challenges from climate changes and the basic efforts in this project. Where results related to the challenges of a water from C18.1 will also be included.

When preparing the risk management plan, representatives of the three sub-areas (Strandengen, at the harbour, and at the existing dike) expressed a strong wish to help to find long-term solutions to the challenges. The three groups of (secondary) stakeholders represent respectively, home owners at a particular risk of flooding, companies around the harbour and a large group of home owners and holiday home owners, who today manage the primary protection of Juelsminde against floods. Challenges and solutions to climate changes aremade between the three groups and the municipality's CCA employees.
Juelsminde has a local vision committee, elected by local citizens. The vision committee makes decisions about the development in/of Juelsminde and a working group, which reports to the vision committee, works on a master plan for the town's development. The vision committee and HEDKOM are responsible for the concept 'Juelsminde Strandpark' (beach park), a project to utilie the establishment of the new coastal protection as an opportunity to create an epicenter for the town, harbour and beach.

This action aims to create a citizen-driven development, so that the challenges resulting from climate change, including in particular sea level rises and the solutions for this, are included in the development of Juelsminde.

How:
C18.2 will be carried out in collaboration with the C2C CC Advisory Committee, knowledge institutions and companies that have knowledge and experience in mobilizing and facilitating citizens and companies on interconnected and holistic development, and at the same time, to create broad public support for the solution of the long-term challenges.

C18.2 contain the following elements:

1. Establishing a new dike association
2. Establishment of a shared local understanding of the challenges
3. Evaluation in relation to the three main challenges (Strandengen, at the harbour and at the existing dike).

When:
Phase 1: Activities related to 1 and 2

Phase 2: Activities related to 1, 2 and 3

Phase 3: Activities related to 1,2 and 3

Where:
Town of Juelsminde, Strandengen, the harbour, and the existing dike.

Reasons why this action is necessary:
To acquire the knowledge about how rising sea levels affect an area, climate proofing in an area like Juelsminde is an option. At the same time, there is a need to make climate proofing sustainable and holistic, which is why a well-functioning stakeholder organisation is necessary in an area like Juelsminde. At the same time, the organization is tested in connection with the establishment of the new dike association, which is an important part of the climate proofing of Juelsminde after 2021.

Constraints and assumptions:
C18.1 requires that data collection and monitoring can be carried out in the area. To achieve this, contact with local landowners and stakeholders made early on. C18.2 requires active participation from existing local partnerships in Juelsminde. To achieve this the C2C CC Advisory Committee partners that have knowledge and experience in mobilizing and facilitating citizens and companies will be included.

Expected results:
The data loggers and the ongoing monitoring will result in data and insight in the actual interaction between the sea and the groundwater in Juelsminde and between Juelsminde and Glud Håb. 500-600 hectares of land screened.

The local organising in Juelsminde will result in increased social recilience through establishment of a new dike association and the creation of a shared understanding locally of the challenges and mobilizing local front runners. 5000 citizens involved. The Advisory Committee contributes with best practice knowledge on citizen involvement and recommendations and the methods applied are communicated.

Cost estimation:
During Phase 1, expenses for external expert help is expected to amount to 21,400 € based on inquiries. Estimation of person days for HEDKOM and VIA is based on present salaries + pension etc. C18 will mean expenses for purchasing and setting up data logging equioment for data acquisition and monitoring. It is expected (18.1) that HEDKOM and VIA will contribute by providing advice, data processing and the setting up of a hydrological model. HEDKOM will contribute 100 hours and VIA 600 hours. For HEDKOM the total number of person-days per year is based on the basis of the total working hours/days according to national legislation, collective agreements, employment contracts, etc. – budgeted at 214 days per year. C18.2 will mean external expert consultation for all of the points with supplementary professional experts from HEDKOM to insure integration with local know-how.

Deliverables:

Action	Deliverables
C.18.1	**Phase 1:** Technical reports on data collection and data processing **Phase 2** Technical reports on data collection and data processing Hydrological model of the risk of rising groundwater (saltwater) after high tides Continued monitoring and verification of hydrological model for C18.1. Midway evaluation **Phase 3:** Continued monitoring and verification of hydrological model for C18.1. Recommendations Booklet about rising groundwater in coastal areas Articles for international periodicals, e.g. Journal of Hydrology Conference material from presenting results
C.18.2.	Phase 1: Process description for the establishment of a new dike association. Dissemination of dike association and cost sharing model

JPS

	Phase 2: Evaluation of local organisation for climate change adaptation and development in Juelsminde related to the three main challenges Phase 3: Evaluation of local organisation for climate change adaptation and development in Juelsminde related to the three main challenges

Milestones:

Action	Quantifiable milestones	Date by end of
C18.1	Data loggers established and data logging started. Continued monitoring and verification of hydrological model for C18.1 done Midway evaluation. First tool for local use is prepared. The project is finished with model/tool for general use.	31/07/2017 31/07/2019 31/07/2019 31/12/2022
C18.2	Dike association created Evaluation done of local organisation for climate change adaptation and development in Juelsminde related to the three main challenges	31/12/2019 31/12/2020

C19: Sustainable Urban Drainage Systems (SUDS) as recreational elements to handle coupled events between rainfall and storm surge



The Samsø island wants to implement SUDS solutions with added value for biodiversity and of recreational use for the citizens. The municipality and Samsø Waste Water Utility are in dialogue on alternative locations to accommodate both heavy rains and storm surges. The east coast lies at very low elevation, which results in flooding inland in situations of coupled events. The project will focus on stakeholder and citizen involvement on the design of SUDS to create added value. Conceptual designs and hydraulic modelling will be developed. This action is primarily linked to governance and tools within rivers and rainwater.

Main responsible beneficiary: Samsø Municipality

Budget: 239.911€

Number of days estimated spent on action in phase 1: 65 Days

Number of days estimated spent on action in phase 2: 154 Days

Number of days estimated spent on action in phase 3: 149 Days

Beneficiary responsible for implementation: Samsø Municipality (SAK)

Role of SAK

- is project manager
- cooperates with Samsø Waste Water Utility
- coordinates with C2C CC project leader

Relation to CCA plans

- SAK CCA plan is included in SAK spatial plan at pp. 8-28 and mentioned in the plan.

Relation to cross-cutting capacity building actions (C1-C7)

Action C19 Sustainable Urban Drainage Systems will gain from action C2 sharing knowledge on CCA and rivers developed under different actions. Modelling, interpretations, analysis and data sampling are similar in the different catchments and C19 will benefit from this knowledge sharing. Scientific aspects currently the highly debated within EU, e.g. on the synergies and trade-offs between CCA and water ecology, the need for warning systems related to flooding of rivers and local contingency planning, and the synergies between farming and wetland restoration will also be shared and discussed for the benefit of action C19. Under Action C4 Rainwater, C19 will gain from the identification and experience of different setup models and testing of SUDS within CDR.
Under action C5 specific training courses, workshops and masterclasses, with point of departure in the challenges experienced by the partners will be implemented for the benefit of action C19 and other actions. Under action C6, the groundwater-surface water model and screening tool is developed and tested, and known warning systems in DK and in other countries are explored, and simple warning systems with flood prediction are tested and demonstrated, all activities which may benefit C19 directly.

Linked to Complementary Actions

As of now, no complementary projects are linked to C19

Description (What, how, where, and when)

What:

SAK has a long history in engaging and activating local entrepreneurs in energy and climate aspects. By local entrepreneurship and community action SAK has obtained to implement solutions within renewable energy to an extent that it today is not only self-sufficient with renewable energy, it is delivering a surplus (cf. Table 2). For that reason, SAK is famous as the "Energy Island" and attracts corporate tourists from all over the world.

The local Samsø spirit also affects how planning is carried out in other aspects than energy. In regard to CCA, SAK wants to implement SUDS solutions with added value for biodiversity and of

DS

recreational use for the citizens. Often several meetings are held with interest groups, where the first meeting is held locally and the following meetings are held at the Island's Energy Academy or at the City Hall.

In relation with Samsø Waste Water utility is to establish two retention ponds, SAK and Samsø Waste Water Utility are in dialogue on alternative locations of the two ponds around Tranebjerg to accommodate both heavy rains and storm surges. The East coast of SAK lies at very low elevation, which results in flooding inland in situations of coupled events, whereas it is important to retain rain and surface water in SUDS. Furthermore, establishment of new sewers at Tranebjerg, Langemark, Torup and Besser an opportunity arises to change the stream Sørenden from a drainage channel into a real watercourse. Sørenden have originally gone to Stavns Fjord, but to protect Stavns Fjord against pollution by nutrients and sewage, Sørenden's water has been pumped to Kattegat via sea pipes since 1976. The recovery of Sørenden also means that the restoration of Besser Made as a wet meadow area is possible. Such wetland will promote biodiversity with species such as geese, whooper swans and lapwings, which is linked to fresh meadow and marsh areas. If Besser Made subsequently nurtured by grazing, hay or other follow-up care, nutrient discharge to the sea will be reduced. In addition, there will be created even an attractive natural area on the island.

Protection of breeding birds and wildlife will have top priority, but in some places it is possible to meet the recreational needs of the construction of trails and shelters. The restoration of Besser Made is an important part of SAK's efforts in relation to the Natura 2000 area Stavns Fjord.

How:
The action will include the following activities:

Phase 1: Year 2017-18

1. Analyses of alternative locations for the two retention ponds together with Samsø Waste Water Utility: incl. GIS, site analysis and hydraulic modelling using different climate scenarios.
2. Analyses of Tranebjerg, Samsø Golf Course, Besser Made and Ballen: incl. GIS, site analysis and hydraulic modelling using different climate scenarios. Moreover, additional sites are investigated to further retain water upstream

Phase 2:

3. Stakeholder and citizen involvement on the design of SUDS, recovery of Sørenden, restoration of Besser Made and recreational value. The stakeholder involvement will at least include: Samsø Golf Course, land owners and the Besser Made Association.
4. Based on activity 4 and 5, conceptual designs will be developed.

Phase 3:

5. Hydraulic modelling incl. zero-alternative, coupled events and climate scenarios will be concluded in a report, concerning climate actions and coastal protection. The process will be initiated in the fall of 2020 and finalized within phase 3.

DS

6. Report of conceptual design for the area around Samsø Golf Course and design for rainwater retention and coupled events at Ballen will be done.
7. Documented press coverage in minimum 20 articles will be delivered before the project ending.
8. Preliminary investigations, initial stakeholder involvement and technical background report for modelling in Ballen.
9. Conceptual Designs for Samsø Golf Course and rainwater retention and coupled events at Ballen will be done.

Where: Samsø Island



Figure 43: Map of Samsø Island

When:

Phase 1

Activities 1-3

Phase 2

Activities 4-6

Phase 3

Activities 4-9

Reasons why this action is necessary:
Retention of rainwater is necessary in situations where cloudbursts or long term heavy rains cause flooding in urban low laying areas. This situation combined with storm surge provides an even greater demand for rainwater retention upstream to delay surface water from the watercourse till the water level has decreased back to normal. This is especially important on Samsø, where urban areas are located in low elevation, near a watercourse and with short distances to the sea.

Constraints and assumptions:
A general constraint is the fact that resources are short and not prioritized till a disaster has hit. In this case, traditional solutions are often chosen, and the opportunity of an integrated solution that also creates added value for the citizens is missed. The added value is often what makes a project interesting for stakeholders and citizens, and an important parameter for a good involvement process and interesting outcome. The involvement of the local community is essential for the success of the action. The many local projects established through Samsø's Energy Island efforts were only realized because of the engagement of the local community and entrepreneurs.

Expected results:
Hydrologic modelling with different scenarios: zero-alternative, coupled events between heavy rains and storm surge, and climate scenarios provides background knowledge for the demands of the SUDS' design. Engagement of local stakeholders benefit with knowledge on locals' use of the area and aspects that benefit added value for the local community. Furthermore, conceptual designs for: SUDS at Tranebjerg, the area around Samsø Golf Course and Besser Made, rainwater retention and coupled events at Ballen will be made. This results in a truly holistic CCA project combining usage of town and hinternland in an integrated solution, that also make nature restoration possible.

Cost estimation:
- Personel costs (Form F1): € 41.139 . A consequence of the Analyses of Tranebjerg, Samsø Golf Course, Besser Made and Ballen moved up from phase 2 to phase one is a shift of personnel costs between the phases. In addition, a shift in resources to financial assistance is necessary as the initial cost estimation was insufficient.
- Travel and subsistence costs (Form F2): € 9.050 . Budget is shifted to phase 2 due to a large part of the stakeholder involvement is moved to phase 2.
- External assistance costs (form F3): € 49.170 . The Analyses of Tranebjerg, Samsø Golf Course, Besser Made and Ballen was a deliverable which required a large part of external assistance and as it was moved from phase 2 to phase 1 it was necessary to move the budget as well.

Deliverables:

Action	Deliverables
C19	**Phase 1:** Technical background reports on site analyses and hydrologic modelling Report of conceptual design for the area around Samsø Golf Course and Besser Made . Documented stakeholder network methodology Report of conceptual designs for SUDS at Tranebjerg

DS

	Phase 2: Technical background reports on site analyses and hydrologic modelling Stakeholder involvement material and stakeholder input Report of conceptual design for rainwater retention and coupled events at Ballen Tender documents General for Phase 1 and 2: Project video accessible at the C2C CC portaland at Samsø Municpality's homepage (with LIFE logo). Documented press coverage in minimum 20 articles. **Phase 3:** Hydraulic modelling incl. zero-alternative, coupled events and climate scenarios will be initiated in the fall of 2020 and concluded within phase 3. Documented press coverage in minimum 20 articles will be delivered by the project end Conceptual Designs will be finalized Whether tender documents will be done for all the current project areas will depend on the ability to attract the necessary funds to realize the projects.

Milestones:

Action	Quantifiable milestones	Date by end of
C19	**Phase 1:**	
	Preliminary investigation and initial involvement of possible stakeholders done.	31/06/2017
	Technical background report for modelling finalized.	31/06/2017
	Hydraulic modelling incl. zero-alternative, coupled events and climate scenarios done.	31/12/2018
	Conceptual Design for Samsø Golf Course and Besser Made finalized	30/06/2019
	Phase 2:	
	Preliminary investigations and initial stakeholder involvement done	30/06/2019
	Technical background report for modelling finalized	30/06/2020
	Hydraulic modelling for Ballen incl. zero-alternative, coupled events and climate scenarios done.	31/12/2020
	Conceptual Design for Ballen finalized.	31/12/2020
	Tender material finalized.	
	Phase 3:	
	The process of preliminary investigations, initial stakeholder involvement and technical background report for modelling in Ballen will commence.	01.01.2021
	Report of conceptual design for the area around Samsø Golf Course and design for rainwater retention and coupled events at Ballen is completed	31.12.2021



C20: AquaGlobe

The vision of AquaGlobe is to create a development and knowledge transfer centre, which will form the physical setting for a value-creating network between the business community, universities, Danish administrative regions, municipalities and water companies using tests, demonstrations and a showroom, and which is also a recreational and inspiring area for citizens, institutions and tourists. By focusing on transferring an understanding of the water cycle, climate proofing, the countryside in the area and water as a resource, visitors will gain a better understanding of the climate in the future. This action primarily links to innovation within all parts of the hydrological cycle apart from sea & fjords.

To develop and establish AquaGlobe, several stakeholders are to be involved.

Main responsible beneficiary: Skanderborg Utility A/S Budget: 275.223€

Number of days estimated spent on action in phase 1: 605 Days

Beneficiary responsible for implementation: Skanderborg Utility a/s (SFV)

Role of SFV:

- is project manager
- cooperates with primary and secondary stakeholders
- AquaGlobe supplements Action C21 Climatorium, which both deals with co-creation, quatror helix and awareness rising. AquaGlobe is focused on freshwater, C21 is focused on saltwater. All C2C CC action can use C20 and C21 for presentation of their results

Other stakeholders:
Local plans/Permits/SEA and EIA authority/activity Water School: Skanderborg Municipality
The stakeholders of the action are not fully clarified but work is being carried out to bring the stakeholders under 'what' the project:

Relation to CCA plans
This action relates to innovation and the need for developing new technology within CCA, and awareness raising among citizens mentioned in the CCA plans.

Relation to cross-cutting capacity building actions (C1-C7) and innovative actions (C20-C24)
Activity C20 AquaGlobe will gain from actions under action C2 sharing knowledge on CCA and rivers developed under different actions. Modelling, interpretations, analysis and data sampling are similar in the different catchments and C20 will benefit from this knowledge to improve the national and global knowledge transfer. Scientific aspects currently the highly debated within EU, e.g. on the synergies and trade-offs between CCA and water ecology, the need for warning systems related to

flooding of rivers and local contingency planning, and the synergies between farming and wetland restoration will also be shared and discussed for the benefit of activities under action C20.
Under action C3, in selected areas a detailed local model is set up focusing on groundwater, surface and/or seawater. Models are based on the present data and collections of new data sets e.g geophysical data and C20 will benefit from the outputs of his model and its implementation under differenty actions.
Under Action C4 Rainwater, C20 will gain from the identification and experience of different setup models and testing of SUDS within CDR. Action C7 creates a number of innovative fora to unite important stakeholders within water businesses and to show case climate change and water technologies. Secondly, C7 will aim at gathering useful information and best practices from cross-cutting demonstration activities. C20 will benefit directly from these actions. Last but not least,. AquaGlobe will benefit from a close collaboration with Action C21 Climatorium, which both deals with co-creation, quatro-helix and awareness rising

Linked to Complementary Actions
Supplementary funding for AquaGlobe will be sought by SFV. Supplementary funding may include elements for the activities of Hot-Spots and the Water School to add local value. The facility itself will be financed by SFV.
Description (What, how, where, and when)

What:
The vision of AquaGlobe is:

"We want to create a development and knowledge transfer centre, which will form the physical setting for a value-creating network between the business community, universities, Danish administrative regions, municipalities and water companies using tests, demonstrations and a showroom, and which is also a recreational and inspiring area for citizens, institutions and tourists."

SFV is to expand their facilities and in that regard they wish to add societal value by create an innovation hub and awareness rising centre. The aim of AQUAGlobe is to create an inspiring and motivating environment and physical settings for transferring knowledge and developing solutions where the main focus is on water and climate.

AquaGlobe has the following success criteria:

- AQUAGlobe will be a living location
- AQUAGlobe will create more value for the wider society
- AQUAGlobe will be attractive to the business community, so much so that businesses will use and/or contribute to the development of the facilities.
- AQUAGlobe will be attractive to people of all ages (by transferring knowledge through experiences and experiments that are executed in a motivating and inspiring way).
- AQUAGlobe and the surrounding areas will attractive to visitors (outdoor areas and a recreational area will be self-contained features).

AQUAGlobe will be responsible for communicating with ordinary citizens of all ages, tourists, families, kindergartens, schools, upper secondary schools and associations.

Through knowledge and inspiration, the new centre and area will motivate visitors and citizens from the municipality, CDR and the whole of Denmark, by providing a greater understanding of their own water consumption and how they can deal with the challenges that Denmark faces with regard to climate change. By focusing on transferring an understanding of the water cycle, climate proofing, the countryside in the area and water as a resource, visitors will gain a better understanding of the climate in the future.

The fundamental foundation of the project is made up of concrete business collaborations between commercial players, educational institutions, water utilities and authorities cf. Figure 44. Collaborating on high-quality development projects, which also have major societal value, will attract other stakeholders, such as associations and stakeholder organisations – and lead them to the foundation's core- and sub-activities: Test Area, Demonstration, Networking, Play and Learning, Education and Recruitment, and Sales and Exports cf. Figure 45.

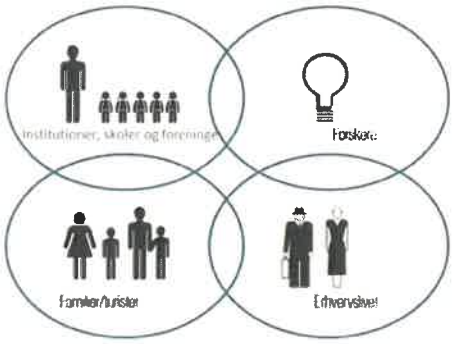


Figure 44: AquaGlobe is an innovation house for insitutions/Schools, researchers, families and tourists, and businesses.

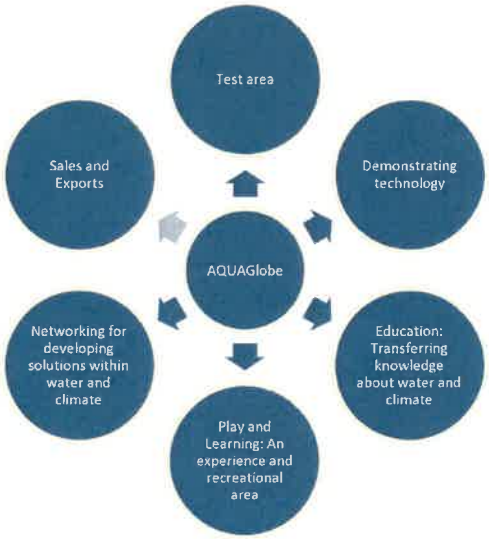


Figure45: The activities of AguaGlobe

To establish AquaGlobe, several stakeholders are to be involved, the following stakeholder catagories have the potential to offer various values and contributions to AquaGlobe. The stakeholders of the action are to date not fully clarified but work is being carried out to bring the following stakeholders into the project cf. Table 6.

Table 1: Potential values and contributions of stakeholders

Stakeholder	Potential values and contributions	Potential stakeholders
Commercial and private players	Part of an innovative network Facilities for customer visits Development of solutions in collaboration with partners	Grundfos A/S Aarsleff A/S Kamstrup A/S AVK Danmark A/S EnviDan A/S Degremont

NGOs	Meeting venue for stakeholders and professionals with competencies in water and climate	
Education and research	Potential for providing students and researchers the setting for real life studies. Opportunity for connecting researchers/students and companies. Opportunity for promoting the teaching of natural sciences in motivating and inspiring environment.	VIA University College Aalborg University Aarhus University Danish Technological Institute
Associations	Opportunity to influence and participate in the development of the immediate environment	VisitSkanderborg (tourist organisation) State of Green (public-private partnership) Lemvig Vand & Spildevand ("Climatorium" – action C21) AQUA Ferskvandscentret (FwC) ErhvervSkanderborg (business enterprise centre)
Public authorities	Skanderborg and Central Denmark Region will become more attractive for both existing citizens, businesses and tourists. The creation of an attractive recreational area.	Skanderborg Municipality Central Denmark Region The authorities of C2C CC
Opinion formers	Offer to participate in creating something that is important for society and the environment.	

How:

Action C20 AquaGlobe initiates the following activities:

1. **Hot Spots - Water as a guide**
   The overall transfer of knowledge concept, is to transfer knowledge through experiences and play, where all of the senses are involved – sight, hearing, taste, smell and touch. The basic approach will involve a wide range of intuitive forms of transferring knowledge, from playful digital installations to physical hands-on experiences and presentations using models.
   Hot spots are linked with watercourses as a communication means, the visitors will follow the watercourse as a guided path. It is used in transferring knowledge e.g. by emphasising the ground's terrain it is illustrated the slowdown of water flow, collection of water, pumping of water up, and pumping of water onto the next stage of the watercourse. Most of the transfer of knowledge will take place outside, however, the activity includes the design of a dedicated knowledge transfer centre in the form of a smaller building with low-energy solutions and which to a high degree will be self-sufficient with renewable energy.

   Concrete activities:
   Project management related to:
   - Concept development for 6 hot-spots
   - Organisation and training of personnel for communication/visitor guiding.

2. **Water School**
   Collaboration with schools focusing on establishing a teaching course and a Master Class (e.g. in Climate Innovation). Children and young adults will gain an insight into the water cycle, work with managing water and wastewater and its impact on our society and the

environment (e.g. climate change). Interactive learning material will be prepared, which will be integrated with the institutions' learning goals.

Concrete activities:

Project management related to:

- Development of online/offline teaching material.
- Organisation and training of personnel.
- Collaboration with teachers/municipality.

3. **Innovation Camp**

Collaboration with universities and private players with regard to holding an annual Innovation Camp, where new and innovative solutions are sought for the water and climate field.

Concrete activities:

Project management related to:

- Development of concept between stakeholders/collaborative agreements.
- Organisation and facilities.
- Coordination of existing initiatives (like AQUA in Silkeborg and State Of Green).
- Development of standards for planning, execution and follow-up.
- System support.

4. **Water Visits**

Offer to stakeholders on meetings/seminars for potential and existing customers, and to present products at the operational level. The utility will provide rooms and the plant for use, and resources for presenting, speakers and hospitality if required. There will be the opportunity for stakeholders to use their own personnel and any marketing material for branding with regard to the visit.

Concrete activities:

Project management related to:

- Development of concept between stakeholders/collaborative agreements.
- Coordination of existing initiatives (like AQUA in Silkeborg and State Of Green).
- Development of standards for planning, execution and follow-up.

5. **Demonstration system**

The stakeholders will be offered to bid on relevant demonstration systems in collaboration with the utility. The demonstration system can be installed in direct connection to AQUAGlobe at Døjsøvej in Skanderborg, or at other locations in the utility area (Skanderborg Municipality). The idea is that the demonstration system will be fully operational at the same time as visitors and presentations are scheduled. For instance, this could be project solutions such as 'the intelligent water city' in Stilling, the new waterworks at Fredensborg or energy production via the purification plant.

Concrete activities:

Project management in relation to

- Identification of relevant demonstration system (project/room) with stakeholders.
- Develop the concept and project, incl. architecture.

- Identify other relevant stakeholders (with multi-solution if required).
- Clarify roles with the use of the system (presenting, maintenance, etc.)

6. **Test and Prototyping**

   The stakeholders at AQUAGlobe can use the utility and infrastructure in the utility area as a large laboratory and for developing and testing new solutions. Whether it is testing full-scale prototypes, correlating data against experience from the utility's project "The Intelligent Water City", big data and/or the Internet of Things, together we can tailor make solutions that meet the stakeholders development needs. The utility will make competencies available for use at rates in relation to a charge rate sheet and the stakeholders pay for the installation, and any establishment of data interfaces, operation, maintenance and dismantling.

   Concrete activities:

   Project management related to:

   - Identification and development of relevant test projects with external partners
   - Identification of relevant partners (with multi-solution if required).
   - Clarification of roles with the use of the system (presenting, maintenance, etc.)

Where:

In connection with Skanderborg Utility a/s' facilities at Døjsøvej, AQUAGlobe will be located on a 35,500 m² site on the outskirts of Skanderborg town. The site is surrounded by forest and is next to Sorte Lake, an area that will also see activity in the project. The actual terrain is uneven, with a series of different plateaus connected to small slopes and embankments. Sorte Lake also share an interesting history – in particular the innovative environmental effort to clean up Sorte Lake. A history that is well worth sharing with the wider public and the business and research communities. The location is a short drive from both Skanderborg centre and the E45 East Jutland motorway, and geographically it is located in Central Denmark and professionally centrally located in relation to competencies and other networks in water and climate technology.



Figure 46: Map over the area of Skanderborg Waste Water Utility with the surrounding forest and the lake Sorte Sø. The surroundings will be part of the activities of AquaGlobe.

When:

Phase 1: January 2017 – December 2018
Activities related to 1 to 6 are initiated and established, and the AquaGlobe is officially opened and activities started. C2C CC action results on freshwater are disseminated through AquaGlobe.

Phase 2 and beyond:
AquaGlobe' activities continues.

Reasons why this action is necessary:
AQUAGlobe links research, education, tourism and business together, both physically and mentally in relation to rethinking solutions to climate challenges. The novelty of this action is its holistic-oriented approach for a centre for children/adults, companies/educational institutions, locally/nationally/internationally as a communication and innovation hub. The holistic concept is necessary to generate knowledge and solutions of the future with regard to climate challenges. In line with C2C CC's aim, AQUAGlobe has been created with the aim of developing partnerships across municipal borders and professions. Via innovative partnerships, AQUAGlobe is a centre for knowledge sharing and innovative solution proposals with the opportunity to test solutions.

Constraints and assumptions:
The main constraint is the commitment to AQUAGlobe: The stakeholders difference is a strength, but different stakeholders can also pose a threat to the commitment to AQUAGlobe. The stakeholders differ in size, focus, financial means and individual aims, creating a need for very strong stakeholder management. The action is a co-creation project, which requires steering and that everyone pulls in the same direction. This action thus puts great emphasis on stakeholder involvement and management, a clear vision, emphasis of results, and contracts covering several years. Furthermore, knowledge sharing is made with Action C 21 Climatorium on co-creation, stakeholder involvement and management, tourism and presentation.

Expected results:
Phase 1: Establishment and opening of AquaGlobe.Hot spots park is established and open for visitors incl. the 'water school'. Knowledge sharing, networking and innovative initiatives between business and research stakeholders. Phase 2 and beyond: Workplaces: Via innovative projects, create at least 50 new jobs over a six-year period from 2017-2022. Visitors : That AQUAGlobe will generate 1,000 visitors a year from a regional, national and international perspective. New solutions for exports: Via innovative projects, create at least five new products/solutions over a six-year period from 2017-2022. Schools: AQUAGlobe , in collaboration with schools, provide an optional subject in innovation and entrepreneurship with focus on water solutions and climate solutions and/or other themes. Innovation Camp: From 2018, an Innovation camp will be held yearly with participation from higher educational establishments and private players.

Cost estimation:
Because the project will be strongly supported by co-creation and partnerships between the utility, private players, educational and research institutions, associations, citizens and public authorities, it

DS

must be expected that significant resources will be spent on concept development, workshops, preparation of concepts, drawings and things of that nature.

Innovation Camp involves total costs for planning, production of materials, PR and marketing and execution of the Innovation Camp and the awarding of prizes to participants may be expected to amount to at least DKK 500,000, since a professional process is desired, which will strike a chord inside and outside the sector. Associated stakeholders and any foundations will contribute with financing of the scale + DKK 50,000 and man-hours for planning and execution, and for advising participants. Sponsorships will be provided for the Innovation Camp. Sponsors will contribute with financing, consulting, or non-financial prizes to participants.

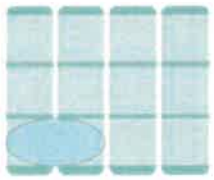
In relation to the estimation of costs, it is estimated that there will be an average hourly cost of DKK 500 per man-hour for project management, administrative work, etc.

Deliverables:

Action	Deliverables:
C.20	Partner agreements A concept for a Master Class Funding applications Description of innovation camp concept Visitor concept description Water Academy concept descriptiondescription Water School concept descriptiondescription Evaluation report of amount of visitors and business collaboration Online and offline teaching material

Milestones:

Action	Quantifiable milestones	Date by end of
C.20	Application submitted for financing from relevant foundations	31/03/2017
	Stakeholder agreements established with central actors	31/03/2017
	Description of innovation camp concept done	31/08/2017
	Innovation Camp partnerships agreements closed	31/12/2017
	Optional subject in Innovation/Entrepreneurship provided	31/12/2017
	Water Visits established	31/12/2017
	AQUAGlobe physically built	31/12/2018
	Innovation Camp is launched	31/12/2018



C21: Climatorium

An innovative showroom for climate development and climate tourism

The Climatorium is pivotal in the establishment of a CCA Cluster on coastal environment in the region. The purpose of the Climatorium is to gather knowledge, business and tourism on CCA aspects within an innovation house. The objective is to increase innovation through day-to-day interaction and planned in house seminars. A list of local climate change measures and landscape characteristics will be part of a showroom. This action is primarily linked to innovation within sea & fjords and rivers.

Main responsible beneficiary: Lemvig Utility A/S Budget: 376.107€

Number of days estimated spent on action in phase 1: 340 Days

Number of days estimated spent on action in phase 2: 113 Days

Beneficiary responsible for implementation: Lemvig Vand og Spildevand A/S (LVS) is responsible beneficiary with Lars Holmegaard as project manager.

Role of LVS:

- Is the project manager
- Cooperates with partners: LK, AU and secondary stakeholders: Geopark West Jutland, The Danish Coastal Authority as well as the companies Plastix og TripleNine (potential stakeholders).

Relation to CCA plans

LK CCA plan pp. 13-15 and 25-27

Relation to cross-cutting capacity building actions (C1-C7) and innovative actions (C20-C24)

Action C21 Climatorium will gain from actions under C1 relating to desk analysis and identification of knowledge gaps and reviews of in the risk maps and planned actions. Experience will be exchanged between demonstration projects C8, C9, C10, C11, C14, C16, C17 and C18 dealing with the coastal cities of Thyborøn, Horsens, Randers, Grenaa and Juelsminde. A common understanding between stakeholders of sustainable solutions (economically, environmentally, socially and long term) with a focus on land use, cost-effective measures, planning, implementation, maintenance and operation will be shared and developed across actions C8, C9, C11, C10, C14, C17, C18 and facilitated by CDR. Under C1 a workshop will be held to assess synergies and possibilities of integrated solutions for the sea and fjords at the East and West Coast. Under action C2 knowledge on CCA and rivers developed under different actions will be shared. Modelling, interpretations, analysis and data sampling are similar in the different catchments and C21 may benefit from this knowledge sharing in relation to the different catchment areas in the east and the west. Scientific aspects currently the highly debated within EU, e.g. on the synergies and trade-offs between CCA and water ecology, the need for warning systems related to flooding of rivers and local

DS

contingency planning, and the synergies between farming and wetland restoration will also be shared and discussed for the benefit of action C21. Action C7 creates a number of innovative fora to unite important stakeholders within water businesses and to show case climate change and water technologies. Secondly, C7 will aim at gathering useful information and best practices from cross-cutting demonstration activities. Action C21 will benefit directly from these activities. Last but not least, Climatorium will benefit from a close collaboration with Action C20 AquaGlobe, which both deals with co-creation, quatro-helix and awareness rising.

Linked to Complementary Actions
"Geopark West Jutland": A UNESCO Global Geopark with focus on the geology, groundwater and landscape of the area. [Funded by LK, STK, HbK, LAG Lemvig and Ringkøbing-Skjern, LAG Holstebro-Skjern, CDR].

Description (What, how, where, and when)

What:
The Climatorium is pivotal in the establishment of a CCA Cluster on coastal environment in the region. Other C2C CC actions, dealing with the coastal environment (C8, C9, C11, C14, C17, C18, C 24) can use the Climatorium for communication and innovation. The Climatorium and AquaGlobe (C20) benefit each other by their different locations in the region and their focus on saltwater and freshwater, respectively. The two actions thus collaborates on ideas, exchange of data, research, tourism, exhibitions etc. The two different locations secures geographical dispersion and attraction of tourists across the region.

The purpose of the Climatorium is to gather knowledge, business and tourism on CCA aspects within an innovation house. This house will have shared office spaces for companies and research institutions (for researchers as well as master and ph.d. students). The objective is to increase innovation through day-to-day interaction and planned in house seminars. In the core of the house a dynamic climate exhibition will inform about climate change and illustrate selected solutions for the visitors of the house as well as tourists. The results of the coastal C2C CC actions (C8, C9, C11, C14, C17, C18, C24) will be exhibited in the Climatorium. Exhibitions are coordinated with AquaGlobe (C20). The Climatorium showroom will be expanded continuously with the best practice from C2C CC and with new CCA knowledge in general.





PJ



Figure 47: Besides the innovation house of the Climatorium, the Climatorium will also offer climate tours in the area. Pictures of geosites and examples of Danish coast lines.

The Climatorium will create a showroom based on companies, innovation, entrepreneurs, researchers, authorities, organizations and tourist actors within water and climate change. The house will be open for holiday- and corporate tourists with exhibitions on the ground floor, special climate tours in the area, presentations of CCA technologies and research, as well as innovation seminars with the companies and organisations in-house. There are 8.3 mill. coastal tourists from all over Europe per year in the Central Denmark Region, mainly related to the west coast (Dansk Erhverv, 2013), and besides the coast itself Jesperhus Blomsterpark (250,000 turists per year), Klitmøller surf area, and Nationalpark Thy (Natura 2000 area) are well known tourist attractions, which target group the Climatorium supports.

It will be established on the harbor front in the city of Lemvig, a central location in the region in regard to saltwater and coastal challenges, and the location supports and benefits from other climate activities in the area, e.g. Geopark West Jutland (in consideration at UNESCO Global Geopark), which focuses on the geology, groundwater, historical landscape changes and sustainability of the area. Climate change impacts this area physically, which already attracts 'climate' tourists in bad weather. The local weather and climate conditions set demands for the solutions developed, see Figure 9 (Lemvig Le Mur during the Bodil storm). The location itself and the innovative solutions will be of inspiration for others.

The following local climate change measures and landscape characteristics will be part of the showroom:

"Showroom"	Description
"Le Mur"	Flooding and flood risk in Lemvig solved with an architectual designed flood wall called (see Figure 9)
Disembarking in Thyborøn	Disembarking in Thyborøn and the issues of rising groundwater level and saltwater intrusion, which impacts underground infrastructure such as shorter lifetime of sewer pipes. Research and innovation processes between research institutionens, private actors and local governments
Geosites	The sea eats of the coastline and exposes the geological layers from the two recent ice ages. 135,000 years of climate history is visualized. Geopark West Jutland involves different geosites and examples of most Danish coast types (cf. figure 47)
Coastal protection solutions	Climate change and natural hazards lead to local flooding, erosion and silting of fairways – New solutions are implemented incl. dikes, coastal protection, sand removal, and new coastal planning. The Danish Coastal Authority in Lemvig and Lemvig Municipality are collaborating on these measures.

DS

Co-creation	Climate change impacts agriculture by larger leaching of nutrients to freshwater and coastal environments, furthermore is the farmland challenged by an increase in days with waterlogged soils and flooding. The solutions demand collaboration between agricultural businesses, water utilities, companies and authorities that results in a more sustainable environment and a business model for farming. Lemvig has 30 years of experience with co-creation on biogas. Lemvig Water and Wastewater A/S delivers ferrous sludge for phosphor extraction, the yield is 100 % (compared to 40 % by existing technology), and with less CO_2 emissions.
Stormwater basins to prevent phosphor discharge	Lemvig Water and Wastewater A/S and Lemvig Municipality collaborates on implementing stormwater bassins in natural areas to prevent flooding and to prevent phosphor leaching into streams and fjords. Lab tests are carried out and sludge is removed if containing hazardous substances to secure ecology and biodiversity.

How:

Phase 1:

Analysis of the potential of a CCA business network and tourism.

1. Analysis of company types in the region and visualization of the synergies between business areas and products.
2. Interviews with entrepreneurs on their needs and interests in an innovation house
3. Interviews with companies on their needs and interests in an innovation house
4. Feasibility study on the potential of tourism incl. spin off from other tourist attractions in the area.

Planning and conceptual design.

5. Preparation of design criteria of the innovation house incl. tenants commitments, knowledge sharing measures and climate features.
6. Preparation of zoning plan.
7. Preparation of conceptual design incl. climate features, design and construction costs.

Phase 2 and beyond:

Afterwards, and without LIFE funding, the Climatorium will be constructed and taken into use.

When:

Phase 1

Activities related to bullet 1 to 4

Phase 2

Activities related to bullet 5 to 7

Where: The Climatorium will be situated in Lemvig, however, act as a regional hub together with AquaGlobe (C20)

Reasons why this action is necessary:

The Climatorium will initiate and push for innovation and business development within CCA solutions, and act as a centre for presenting CCA for corporate tourists as well as holiday tourists. CDR is well known for its corporate tourism within wind energy, though, the region has a large potential in increasing corporate tourism within CCA and water technologies, this potential is not yet

fully developed. The Climatorium will together with AquaGlobe (C20) create innovative environments for the water businesses that also act as physical centres for showing showcases within CCA solutions and technologies, not at least the C2C CC results. The Climatorium is expected to host a number of private companies, who will benefit from being part of the innovative environment preseneted by the Climatorium set-up. All so-called tenants will be asked to give a product presentation, organise a social/technical event or a series of knowledge sharing activities for Climate tourists, offical or private company delegations. To develop a paradigm for the organisational and financial setup for the Climatorium, we need a consultant.

Constraints and assumptions:
The largest challenge is the final financing for constructing the building. The financing model is based on the tenants of the house, and initial pre-requests indicate an interest among businesses. The activities in Phase 1 have the purpose to investigate the potential of the Climatorium, and the house will be financed through tenants. The tenants will furthermore commit to make products available for exhibitions, contribute to events and seminars on CCA, and be available for meetings and conversations with the visitors and tourists of the house.

Expected results:
The Climatorium expects to facilitate a minimum of 10 companies and organizations situated in the house. The the activities of the house and the companies businesses will create 50 new jobs. All companies and organisations have a product, event or a process to present and exhibit for awareness raising and attraction of corporate tourism. That at least 3 new CCA products or methods are produced by the companies in the Climatorium by December 2020. At least 6 new CCA products or methods are produced by December 2022. The Climatorium attracts 10.000 climate tourists per year.

Cost estimation:
Expenses are mainly personnel, and estimation of person days for project managers, project administrators and delivery officers is based salaries and pensions.
Travel costs are based on prior experience and average costs for transportation. External assistance is need for the outline proposals for the Climatorium, which includes costs for architectural programming, the project design and the design of the proposal, including technical solutions and budget planning. The estimation of these costs are based on prior experience and preliminary surveying of the market prices. These costs are to be shared between LVS and LK.Expenses for external assistance is based on prior experience. Subsistence costs are also based on prior experience and can be further subdivided into Hotel costs, Daily allowances/Payment for meals and local transportation categories, as shown below for this action's subsistence costs items:

Travels	**HOFOR Visit**		**Inspirational trip to Amsterdam (NL)**	
Partners: / *Cost categories:*	**LVS**	**LK**	**LVS**	**LK**
Hotel cost:	120	120	900	300

Daily allowances/Payment for meals cost:	80	80	600	200
Local transportation costs:	0	0	0	0
Total subsistence cost:	200	200	1500	500

Deliverables:

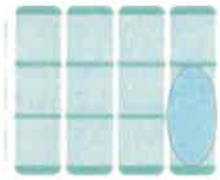
Action	Deliverables
C21	A list of potential companies and knowledge institutions. A concluding report with feedback from interviewees on their interest in the Climatorium and a list of potential entrepreneurs who have expressed interest as tenants. A concluding report with feedback from interviewees on their interest in the Climatorium and a list of potential companies which have expressed interest as tenants. A feasibility study of tourism documented in a report. Design criteria for the purpose of the house documented in a report. A zoning plan (digital and pdf.) Conceptual design documented in a report.

Milestones:

Action	Quantifiable milestones	Date by end of
C.21	Analysis of company types is finalized	31/06/2017
	Interviews with entrepreneurs and companies are finalized	31/09/2017
	The feasibility study of tourism is finalized	31/12/2017
	Design criteria for the innovation house is finalized and the preparation of zoning plan and the political process is initiated.	31/03/2018
	The conceptual design is finalized.	31/08/2018

DS

C22: Infiltration of surface water through permeable coating



The majority of drainage infrastructure in Denmark consists of joint sewage. This solution has shown that it is not geared to the current amount of drainage volumes; where large, densely populated towns and cities are especially challenged. SUDS are increasingly applied, however, can be difficult to apply in dense urban environments. Another challenging problem with SUDS solutions, including permeable surfacing, is how potential contamination is managed and how to ensure that the systems is operational now and in the future. In an attempt to solve these challenges this action will carry out a number of trials on permeable coating called the climate road. This action is primarily linked to tools and innovation within rainwater.

Main responsible beneficiary: Hedensted Municipality Budget: 359.547€

Number of days estimated spent on action in phase 1: 164 Days
Number of days estimated spent on action in phase 2: 285 Days
Number of days estimated spent on action in phase 3: 54 Days

Beneficiary responsible for implementation: VIA University College (VIA) and Hedensted Municipality (HEDKOM) are project managers. The action is relevant for all C2C CC partners who will attend knowledge sharing activities in action C4 and C5.

Role of HEDKOM: is responsible for providing advice, authorities processing and contact to the stakeholders.

Role of VIA: VIA is responsible for the progress in the project, the construction phase, monitoring, data processing and reporting about the project.

Relation to CCA plans
The action is a consequence of several of the C2C CC partners' CCA plans, which aim to prevent the consequences of climate change by using increased infiltration in permeable coatings (e.g. p. 6 in the CCA plan for HEDKOM, p. 7 in the CCA p. for Horsens, p. 25 in the CCA plan for SSK-KOM and p. 17 in the CCA plan for SDK)

Relation to cross-cutting capacity building actions (C1-C7) and innovative actions (C20-C24)
Activity C22 Infiltration of surface water through permeable coating will gain from action C3; C4, C6, C7 and C23. In selected areas a detailed local model is set up focusing on groundwater, surface and/or seawater. Models are based on the present data and collections of new data sets e. g. geophysical data from C3 and further modelled under action C23 will improve understanding of the

infiltration potential in urban development areas. Under Action C4 Rainwater, C22 will gain from the identification and experience of different setup models and testing of SUDS within CDR.

Under action C6, the groundwater-surface water model and screening tool are developed and tested, which may benefit C22 directly. Action C7 will aim at gathering useful information and best practices from cross-cutting demonstration activities and urban development stakeholder processes. C22 will benefit directly from these actions.

Linked to Complementary Actions

VIA expects to design and realize complementary projects, where there will be focus on studying how climate roads can be integrated with other SUDS solutions, so that the most integrated and robust climate change adaptation can be found. MUDP and EUDP are potential sources of financing. The amount of financing that is sought is DKK 2-4 million. Potential co-applicants may be Danish and foreign knowledge institutions (e.g. Danish Technological Institute), consultants and manufacturers.

Description (What, how, where, and when)

What:

Rapid urban development, climate changes with increased and more frequent rainfall and increasing environmental consciousness have created intensive focus on the management of wastewater and surface water in Danish towns and cities. The majority of drainage infrastructure in Denmark consists of joint sewage. This solution has shown that it is not geared to the current amount of drainage volumes; where large, densely populated towns and cities are especially challenged. Financially it is also unsuitable that the utilities shall clean mixed rainwater/wastewater, because the costs of cleaning for this is increasing markedly.

Steadily increasing urban populations produce more wastewater and together with the large volumes of surface water from extreme rainfall, this creates flooding in many low-lying urban areas. The flooding typically results in damage to businesses, people's homes and infrastructure. It is therefore necessary to carry out preventative efforts, which make the towns and cities safe from this problem. Flooding as a consequence of overloaded drainage systems is particular bad, as the water is a mix of rainwater and wastewater.

The previously used solutions to the challenges are either to renovate the existing sewer systems, establish a parallel rainwater pipe, or partially or wholly disconnect the surface water from the sewer system. SUDS are increasingly applied, however, can be difficult to apply in dense urban environments. Another challenging problem with SUDS solutions, including permeable surfacing, is how potential contamination is managed and how to ensure that the systems is operational now and in the future

In an attempt to solve these challenges VIA in collaboration with HEDKOM, will carry out a number of trials on a permeable coating testing system which we call the climate road, see example in figure 48.

DS



Figure 48: Example of permeable surfacing on Agerlandsvej in Odense (www.fyens.dk)



Figure 49: Example of permeable concrete (http://www.equipmentworld.com/)

The action is carried out through the following activities:

1. Establishment of a climate road (pilot project)
2. Involvement of politicians and other stakeholders

Throughout the two actions, the related researchers will attend both national and international conferences. This is done in order to gain newest knowledge within the field is applied in the action and to present the results of C22. This is also done in order to facilitate the realization of complementary projects.

C22.1 *Establishment of a climate road (pilot project)*

What:
For the purpose of mapping the seepage potential of permeable coating, VIA will establish a climate road, which will function as a test installation with which a number of trials will clarify the following: A) The seepage potential in different types of permeable coating (Figure 49), B) The clean-up potential of pollution components, and C) Clarify the options for incorporating green solutions in the form of geothermal heating/cooling in the climate road.

How:

1. Two workshops: Before the establishment of the climate road, two workshops will be held with stakeholders such as municipal employees, citizens, companies and knowledge institutions, e.g. the Danish Technological Institute. At the workshops, design, types of surfacing that shall be used in the climate road, monitoring strategies and success criteria will be discussed and established. This will ensure that the latest knowledge is included in the project and stakeholders ownership for the project. Next, the climate road will be constructed and a baseline will be established for the climate road before the trials begin.
2. Construction of climate road: The climate road will be built using permeable asphalt, whereas side roads, if these are possible to construct in the project, will be constructed using alternating surfacing.

DS

3. Infiltration tests: During the first four years and on an ongoing basis, many infiltration tests of the permeable asphalt will be carried out, to assess time-related and seasonal seepage potential.
4. Purification tests: During the construction of the climate road, different structural constructions of the road will be made in interplay with different types of filter and absorption media to clarify which influence different types of filter and absorption media and their structural design may have on the road's ability to purify the surface water with regard to xenobiotic substances. To clarify the cleaning effect of the road, a drain will be established in and under the climate road, where discharge concentrations can be monitored on an ongoing basis. To ensure the groundwater is not contaminated, an impermeable membrane will be established in a section under the climate road. This also ensures that the water balance is known. During the project period, samples will be taken on an ongoing basis to determine the filter and sorption media's physical and chemical soil properties and porosity, hydraulic capability, organic content and concentration of heavy metals and salt. In order to address this, a PhD project have been established within the context of the C2C -CC project. The PhD project is partly sponsored by the C2C-CC project. One of the research areas of the PhD project is to investigate the purification capacities of the climate road as well as to investigate the optimal construction of the roadbed in order to achieve the best possible purification. The results from the PhD project will be presented among the C2C-CC partner at workshops and future meetings. Furthermore, the PhD project and its deliverables is used in the complimentary EUDP project "Termoroad" with is a new version of the Climate Road.

5. Geothermal/cooling potential: The degree to which the permeable surfacing can be integrated with geothermal heating/cooling will be examined. Previous studies at VIA have successfully shown that geothermal heat tubing can be incorporated in among other things, asphalt in the underlying road. In the future, climate roads can integrate several environmentally-friendly and sustainable solutions in the same system, which will be a great benefit to society in Denmark and in the EU.

In addition, VIA wants students to be very much included in the work. In collaboration with companies/consultants, the students will work to develop new products and put forward proposals for the design of the subsoil for surfacing and the design of types of surfacing.

Phase 1
Activities related to the above mentioned bullet points 1-4.

Phase 2
Activities related to the above mentioned bullet points 4-5.

Phase 3
Activities related to the above mentioned bullet points 4-5

Where: The project area will be located at a site in HEDKOM that is close to VIA, so that students have the opportunity to easily carry out trials on the installation

PS

When: Phase 1 - 3

C22.2 *Involvement of politicians and other stakeholders*

What:
The climate road itself is a large and innovative infrastructure, that together with the results of C22.1 serve as a great means of presenting climate change, SUDS and environmental concerns to involve politicians, citizens, companies, students and other stakeholders. This is done in the following way:

How:

1. Political discussions of the results and survey of the challenges: Field trip to the climate road and discussion of the challenges and opportunities. Choice of important elements, which shall be clarified and discussed with citizens and stakeholders. The intention is that this will be executed in collaboration with existing innovation networks e.g. "Vand i Byer" (Water in in urban areas) – now in a new constellation called DNNK.
2. . Stakeholder process (landowners, citizens, municipal employees and knowledge institutions).
3. Review of the results from the current project and how they can be used in the future.
4. Execution of two workshops using stakeholder process, where we discuss the advantages, disadvantages, possibilities and consequences of the results.
5. Recommendations to the authorities: in the form of guidelines or handbooks about future working processes for the purpose of establishing climate roads and making permeable coating ready for the market as novel water technology (cf. action C7).
6. Conference: The results are presented to other municipalities and stakeholders facing similar challenges. In this way, it is ensured that experiences from the project are passed on and widely integrated. The intention is that the conference will be held under the auspices of EnviNa or in connection with pipe centre days at the Danish Technological Institute.
7. Other communication: articles will be prepared so that the experiences we have gained through the project can be passed on to the EU.
8. Complementary projects: Preparation of complementary projects based on the results. The intention is that this will be done in collaboration with other EU companies and/or knowledge institutions. Initiation of complementary projects with external co-financing.

Phase 2
Activities related to bullet point 5 and 6.
When: 2021-2022

Phase 3
Activities related to bullet point 1 to 8

Reasons why this action is necessary:
Municipalities acquire a number of tools that will enable them to determine how surface water can be managed with regard to permeable surfacing in urban areas, and thus create a climate resilient cities and with regard to the environment. The climate road itself will also inspire Danish and foreign authorities, knowledge institutions and companies and push for innovation and business

development. The project's results and guidelines are to be used by the C2C CC partners and to contribute to innovative complementary projects, which can be replicated in Denmark and in the EU.

Constraints and assumptions:
One of the constraints are related to stakeholder involvement and whether we will succeed in engaging them in the action. Therefore, experts from the C2C CC Advisory Committee are included in the process and workshops and knowledge sharing in C4 and C5 no on stakeholder involvement will benefit C22.

Another constrain could be that it is logistical challenging to establish the climate road in the urban area. However, as the climate road is planned as a test road connected to an already planned regular road, the climate road will be established at the same time as the rest of the road, which will diminish the constraint. The EIA process of the climate road is included in EIA of this road.

Expected results:
C22.1: The workshops ensures that BAT is used for the establishment of the climate road. The climate road is constructed and in function. Infiltration test and purification tests provide detailed knowledge on the effectiveness of the road as a SUDS. Possibilities for geothermal/cooling potential is investigated.

C22.2 results in awareness raising among politicians on climate change and CCA solutions in dense urban areas, recommendations for authorities and broader communication. This is coordinated with the C2C CC PM unit. The results will also benefit with applications for complementary projects.

Cost estimation:
C22.1 will have expenses for external expert consultation in connection with the establishment of the climate road. Expenses for the construction work are expected to be DKK 800,000 based on inquiries. HEDKOM and VIA will contribute by providing advice, holding workshops and if required, help with C2C CC actions related to C4, consulting and guidance in connection with the construction phase, monitoring, data processing and the interpretation of data. HEDKOM will contribute 150 hours and VIA with 3,300 hours in phase 3. Person hours are calculated on the basis of actual payroll + pensions, etc. Regarding C22.2, it is expected that Hedensted Municipality and VIA University College will contribute by providing information, reporting and meeting activity in collaboration with politicians and stakeholders. VIA University College will contribute by providing information, preparation of complementary projects, reporting, planning of workshops and the final conference.

Deliverables:

Action	Deliverables
General	**Phase 1** (2017-2018): An online portal with LIFE logo and link to C2C CC main portal : Accessible on www.c2ccc.eu Workshop results: PPT presentations published on the portal. Accessible on www.c2ccc.eu
C.22.1	**Phase 1** (2017-2018): Test installation **Phase 2** (2019-2022): Ongoing reporting on the individual permeable surfacing's time-related infiltration capabilities

DJ

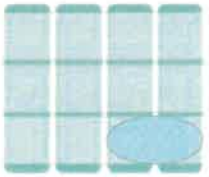
	Ongoing reporting on the individual permeable surfacing's time-related infiltration capabilities under the influence of typical icy road conditions in Denmark, as well as salt and sand spreading Sub-report on examination of which filter media the road is best built with to provide the most optimal removal of road-related xenobiotic substances Sub-report on examination of the degree to which permeable surfacing can be integrated with geothermal heating/cooling. Reporting of results: Reports, workshops, articles and conferences. **Phase 3:** Final reporting on the individual permeable surfacing's time-related infiltration capabilities and the roads performance as a climate adaption solution Purification tests: In order to address this, a PhD project have been established within the context of the C2C - CC project. One of the research areas of the PhD project is to investigate the purification capacities of the climate road as well as to investigate the optimal construction of the roadbed in order to achieve the best possible purification. Geothermal/cooling potential: Based on the obtained results from the geothermal system integrated into the road an article will be conducted describing the results and perspectives of the climate road.
C.22.2.	**Phase 2** (2019-2022): Recommendations: Reports and simple handbooks, which are published on the project portal. The results will be presented to conferences in Denmark and aboard. The intention is that this will be executed in collaboration with existing innovation networks, like "Vand i Byer"."(Water in urban areas). Finishing conference: Knowledge sharing across municipalities and stakeholders. PPT presentations published on the online portal. Complementary projects: complementary project proposals, which is sent for example to EUPD or MUDP. **Phase 3** (2021 -2022): Reporting on recommendations:, GGuidelines and recommendations are prepared in connection with the establishment of the climate road and is expected to be finished in 2021. The report is conducted in collaboration between VIA, Danish Technological Institute and multiple Danish companies. Conference attendance e.g. ECCA where project results will be presented.

Milestones:

Action	Quantifiable milestones	Date by end of
C22.1	**Phase 1:**	
	One pilot climate road established	31/12/2017
	Baseline established for monitoring programme	31/12/2017
	First season measurements are evaluated	31/12/2018
	Report on recommendations prepared in connection with the establishment of the climate road.	31/12/2019
	Phase 2:	
	Third season monitoring results are evaluated and reported.	31/12/2020
	Guidelines and recommendations are finalized - moved to phase 3. No need to stop monitoring before it is necessary	31/12/2020
	Results presented on two workshops and one conference	31/12/2020
	Report on recommendations prepared in connection with the establishment of the climate road	31/12/2020

	Phase 3:	
	Fifth season monitoring results are evaluated and reported	31/12/2021
	Article about the climate road is made	31/12/2022
	Guidelines and recommendations are finalized	31/12/2022
C22.2	**Phase 2:** :	
	Recommendations to the municipalities and stakeholders prepared in report	31/12/2020
	Phase 3:	
	Planning of meetings with politicians and stakeholders done	31/08/2021
	Field trip done	31/12/2021
	Stakeholder integration done	31/12/2021
	Workshops held and working groups meet.	31/12/2021
	Finishing conference done	31/08/2022
	Pilot project descriptions prepared.	31/08/2022
	At least one complementary project description ready for execution.	31/12/2022

C23: Potentials for increased infiltration in new urban areas



This action deals with sustainable CCA through a holistic sustainable concept with a specific focus on increased infiltration in urban areas, in particular new urban development areas. Due to the lack of basic knowledge, it is difficult for the municipalities to give firm advise to the developers on where and how to manage surface water by infiltration. For the purpose of mapping the infiltration potential in urban development areas, areas will be mapped with high-precision geophysics, which may show in detail the upper 5 to10 meters of the ground surface. Relevant stakeholders will be involved in in an integrated stakeholder process, where technical results will be transformed and disseminated through field trips, workshops and subsequent development of description of best practices and guidance for stakeholders on how to best make use on infiltration of surface water in future urban development projects. In the end the stakeholders will define coming complementary projects. This action is primarily linked to innovation within groundwater and rainwater.

Main responsible beneficiary: Horsens Municipality Budget: 175.388€
Number of days estimated spent on action in phase 1: 242 Days
Number of days estimated spent on action in phase 2: 155 Days
Number of days estimated spent on action in phase 3: 37 Days

Beneficiary responsible for implementation:
Horsens Municipality (Horsens) and VIA University College (VIA) are project managers.
Role of Horsens:

- is responsible for progress in C23, providing advice and contact with the stakeholders.

Role of VIA:

- is responsible for executing the infiltration measurements, drillings, geophysical mapping and the production of a detailed infiltration potential map for urban areas.

Relation to CCA plans
The action is a consequence of Horsens CCA plan, aiming at preventing consequences of climate change by using increased infiltration in future urban areas with specific reference to page 7 in the municipality´s CCA plan.

Relation to cross-cutting capacity building actions (C1-C7)
Activity C23 Potentials for increased infiltration will gain from action C3. In selected areas a detailed local model is set up focusing on groundwater, surface and/or seawater. Models are based on the present data and collections of new data sets e. g. geophysical data and C23 will benefit from the outputs of his model and its implementation under different actions, thereby improving mapping of the infiltration potential in urban development areas.

Under Action C4 Rainwater, C23 will gain from the identification and experience of different setup models and testing of SUDS within CDR. Action C7 will aim at gathering useful information and best practices from cross-cutting demonstration activities and stakeholder processes. C23 will benefit directly from these actions.

Linked to Complementary Actions
Horsens and VIA expect subsequently to design and realize complementary projects, with a focus on examining how water delaying measures can be integrated with SUDS solutions. Danish Eco-Innovation Programme (MUDP) and similar national funds are potential sources of financing. The amount of financing sought is DKK 1-2 million.

Description (What, how, where, and when)
The outset of this action is sustainable CCA through a holistic sustainable concept, with a specific focus on increased infiltration in urban areas, in particular new urban development areas. As with other towns and cities in Denmark, Horsens faces future climate challenges in the form of more frequent and intensive precipitation. Towns and cities are vulnerable to climate changes, and preventative efforts are required to protect urban areas from intense rainfall events, which may lead to flooding and subsequent damage to buildings and infrastructure. Subsequently, expenses for handling surface water are increasing significantly in most municipalities. It is therefore in the interests of the municipalities as far as possible to manage infiltration locally, thereby disconnecting surface water completely or partially from the sewer system.

However, with regard to the establishment of new urban development areas, at present it is difficult for the municipality to give firm advice to developers on where and how to management surface water by infiltration. This is partly due to the lack of basic knowledge of the soil's infiltration capacity. Thus, infiltration solutions are presently established only in areas without a risk to the groundwater and domestic water resource, and the surrounding recipients. This limits the use of infiltration in many towns and cities.

Action C23 involves three sub-actions:

- C23.1: Mapping of the infiltration potential in urban development areas
- C23.2: Integrated stakeholder process
- C23.3: Definition of complementary projects

C.23.1 *Mapping of the infiltration potential in urban development areas*

What:
The Horsens city and its suburbs is the project area for this action, covering the possibilities of infiltration of surface water in urban development areas throughout the municipality's urban development areas.
For the purpose of mapping the infiltration potential in urban development areas, areas will be mapped with high-precision geophysics, which may show in detail the upper 5 to10 meters of the ground surface, see Figure 50 and Figure 51. In connection with the geophysical mapping, supplementary manual drillings up to 1 to 5 meters depth will be carried out, describing lithology and grain size analyses in detail.

DS

As an extension of the geophysical mapping, infiltration tests cf. Figure 52 are made with different clay types found in urban development areas. The aim is to carry out field studies to a sufficient degree, making it possible to perform a quantitative (statistical) clarification of the individual soils's infiltration capabilities. The results of the executed infiltration tests form the basis for examining to what extent there exists a quantitative correlation between the geological descriptions and the soils' infiltration capabilities.

Similarly, the resistivity measurements from the geophysical mapping will be compared with the results from the infiltration tests, to ascertain whether a quantitative correlation exists between the deposits' electric resistivity and the infiltration capabilities. Based on the soil types' different infiltration capabilities, it will be possible to produce a detailed infiltration potential map for urban development areas.



Figure 50: Example of geophysical mapping using DualEM.

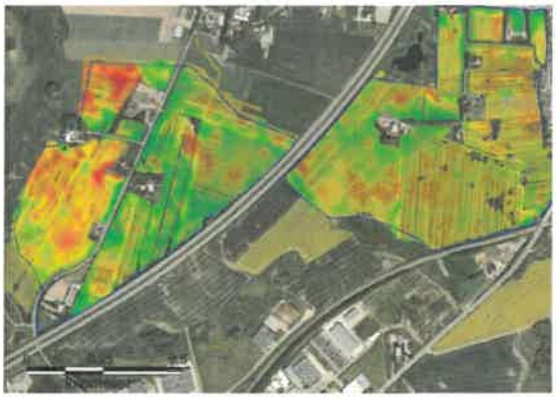


Figure 51: Example of geophysical mapping. Red areas are sandy areas and green areas are clay-dominated areas.



Figure 52: Example of a double ring infiltration test gauge. (www.turf-tec.com)

How:

Action C23.1 includes:

1. Quantitative (statistical) clarification of the individual soil's infiltration capabilities. By finding a quantitative correlation between the individual soil type and their infiltration capabilities, results can be immediately transferred to similar areas, for example, with the use of a soil type map.

DS

2. Quantitative correlation between the geological descriptions from the drillings and the soils' infiltration capabilities. By finding a quantitative correlation between the geological descriptions from drillings and the soils' infiltration capabilities, stakeholders and municipalities have the opportunity in the future to be able to express whether the area's infiltration capabilities are valid based on new and existing descriptions from drillings.

3. Quantitative correlation between the soils' electrical resistivity and infiltration capabilities. By finding a quantitative correlation between the soils' electrical resistance and their infiltration capabilities, stakeholders and municipalities are in the future able to carry out geophysical mapping and thus gain an overview of the area's infiltration potential.

4. Production of a detailed infiltration potential map for urban development areas. In connection with the preparation of a infiltration potential map, a number of guidelines will be written, which describe how the map is made and which data are necessary.

5. The creation of a professional knowledge base for the municipalities' formulation of best practices and guidelines for local management of precipitation in urban development areas. Reports on best practices and guidelines that describe how data shall be used and interpreted. The results will be reported to other municipalities and stakeholders with similar challenges on an ongoing basis, so that experience from the project can be passed on and widely dispersed.

Where: Horsens city and suburbs is project area. However, the methodology developed is relevant for all C2C CC partners. The project area covers approx. half of a total of 490 ha, where Horsens has designated development areas for new homes. See Figure 53.



Figure 53: Overview of the possible areas for mapping (marked in red).

When:
Phase 1
Activities related to the above mentioned bullet points 1 – 5

Phase 2
Activities related to the above mentioned bullet points 1 – 5

C.23.2 *Integrated stakeholder process*

What
Relevant stakeholders from public sector (municipal staff and utility company) and private sector (developers, citizens and consultants) will be involved in in an integrated stakeholder process, where technical results will be transformed and disseminated through field trips, workshops and subsequent development of description of best practices and guidance for stakeholders on how to best make use on infiltration of surface water in future urban development projects.

How
C23.2 is carried out in collaboration with local stakeholders, landowners, citizens, developers, municipal and utility company employees and knowledge institutions with an interest in, knowledge of and experience on developing new urban areas, sewer and surface water systems

C23.2 will be carried out through:

1. Stakeholder process (landowners, citizens, municipal and utility company employees and knowledge institutions).
2. Review of the results from the current project and how they can be used in the future.
3. Execution of a workshop, where we discuss the advantages, disadvantages, possibilities and consequences of the results from action C23.1.
4. Preparation of recommendations for best practices and guidance for stakeholders related to future working processes for the purpose of mapping the infiltration potential in urban areas.

Where: In specific areas designated for urban development throughout the municipality.

When:
Phase 2
Activities related to the above mentioned bullet points 1 – 4.

C.23.3 *Definition of complementary projects*

What :
Stakeholders involved throughout C23.1 and C23.2 will be invited to share experience, ideas and knowledge on how to use the new techniques for identifying and developing new urban areas using infiltration as primary means of managing surface water. Subsequently, new knowledge and ideas will be combined with other complimentary projects to form the basis of applications for new projects with external co-funding for the Eco-Innovation Fund and similar funds.

DS

How:

1. Final stakeholder conference, where the results are presented to other municipalities and stakeholders facing similar challenges. In this way, it is ensured that experiences from the project are passed on and widely integrated. The intention is to hold the conference under the auspices of the Danish EnviNa organization or in similar international fora.
2. Prepare complementary projects based on the results.
3. Initiate complementary projects with external co-financing.

Where: In Horsens and at VIA, Horsens.

When:

Phase 2

Activities related to the above mentioned bullet points 1 – 3

Phase 3

Activities related to the above mentioned bullet points 2 – 3

Reasons why this action is necessary:

The project is necessary for the municipalities and stakeholders, as they will acquire a number of tools that may determine accurately, where surface water may be managed locally in future urban development areas. Results will create added value and business development for municipalities and stakeholders, since they will be able to prioritize efforts for managing surface water and thus achieve more sustainable CCA solutions. In addition, the municipalities and stakeholders will acquire concrete knowledge on how a new local area may be screened quickly, efficiently and cheaply for the potential of infiltrating surface water. The project makes it possible to form a solid knowledge base, enabling a choice of more sustainable and holistic CCA for the benefit of society, citizens and the area's biodiversity, as more green solutions may be implemented.

The project's results and guidance will be assessed, partly to be able to be used by other sub-projects under the auspices of C2C CC and to support networking and knowledge sharing across municipalities, utilities and other climate players, and partly to contribute to innovative complementary projects, benefiting a broader group of stakeholders in Denmark and in the EU.

Constraints and assumptions:

C23.1 may be constrained by lack of involvement by local stakeholders. This is dealt with by explicitly presenting problems resulting from climate changes to the local stakeholders, and by showing the knowledge base the project may give to the stakeholders, the timeframe and potential financial advantages that the project offers clear to the stakeholders e.g. by avoiding costs for sewage piping. As far as possible, we will utilize experts from the C2C CC knowledge committee.

C23.2: assumption that stakeholders support the results of C23.1. This is dealt with by ensuring the results and associated consequences are broadly disseminated and clear for everyone.

C23.3 may be constrained by limited funding for a complementary project. We will early in the process engage with relevant representatives from public and private funds, who may find an interest in funding subsequent follow-up activities.

Through a participatory stakeholder process, field trips and workshops, C23 will ensure a timely and integrated local participation in the areas, where urban development and surface water management

DS

using infiltration will take place. The work will be broad in relation to new techniques and new approaches (giving added value). Together with experts C23 will produce relevant maps and reports on how and where to infiltrate and give advice on how to manage the processes towards a better management of surface water and infiltration.

Expected results:
C23.1: Defined methodology on the correlation between soil type and infiltration potential to be replicated in Denmark. App. 320 infiltrations tests. App. 250 hectares geophysical mapping. App. 100 hand drillings and soil samples descriptions. Full overview of infiltration potentials in Horsens municipality. Integrated municipal plan in Horsens on how to use infiltration for future urban development.
C23.2: Stakeholders actively involved, and knowledgeable about best practices. New guidelines used for planning water management in at least 5 new urban development areas.
C23.3: Funding assured for at least one new project of min 5 million DKK.

Cost estimation:
C23.1 will have expenses for external expert consultation in connection with geophysical mapping. It is expected that approx. 18 ha/day can be mapped, which gives a total of 14 days in the field. In addition, it is expected that 320 infiltration tests will be carried out. Expenses for external expert consultation are expected to be DKK 400,000, based on inquiries. In connection with C23.1 it is expected that HORKOM and VIA will contribute by providing advice, execution of drillings, data processing and the interpretation of data. HORKOM will contribute with 100 hours and VIA 1704 hours. In connection with project C23.2. it is expected that HORKOM and VIA will contribute by providing information, reporting and meeting activity in collaboration with stakeholders.
In connection with project C23.3, it is expected that Horsens Municipality and VIA University College will contribute by providing information, reporting, planning of workshops and the final conference. For HEDKOM the total number of person-days per year is based on the basis of the total working hours/days according to national legislation, collective agreements, employment contracts, etc. – budgeted at 214 days per year.

Subsistence costs are based on prior experience and can be further subdivided into Hotel costs, Daily allowances/Payment for meals and local transportation categories, as shown below for this action's subsistence costs items:

Travels	**Trip no. 1 for project officer**	**Trip no. 2 for project officer**
Partners / *Cost categories:*	**Horsens**	**Horsens**
Hotel cost:	0	0
Daily allowances/Payment for meals cost:	60	60

Local transportation costs:	40	40
Total subsistence cost:	100	100

Deliverables:

Action	Outputs
C23.1	1 report on Quantitative (statistical) clarification of the individual soil's infiltration capabilities by soil type mapping. 1 report on Quantitative correlation between the geological descriptions from the drillings and the soils' infiltration capabilities. 1 report on quantitative correlation between the soils' electrical resistivity and infiltration capabilities. 1 report on detailed infiltration potential map for urban development areas of Horsens. 1 guideline with process description of how the infiltration potential map can be prepared. Final report on C23.1
C23.2	Reports on best practices and guidelines for local management of precipitation in urban development areas. Stakeholders workshop. Report, which is published on the C2C CC website. Articles for international periodicals Results will be presented at conferences in Denmark and abroad. Presentations will be published on the C2C CC website and in Midtrum.
C23.3	Knowledge sharing across municipalities and stakeholders. PPT. Presentations published on the C2C CC website and a summary of the meeting results will 'be published on the C2C CC website and in Midtrum. Complementary project description.

Milestones:

Action	Quantifiable milestones	Date by end of
C23.1	**Phase 2**	
	Report on quantitative clarification of the individual deposit's infiltration capabilities finalized.	31/12/2019
	Report on quantitative correlation between the geological descriptions from the drillings and the deposits' infiltration capabilities finalized	31/12/2019
	Report on quantitative correlation between the deposits' electrical resistivity and infiltration capabilities done.	31/12/2019
	Infiltration potential map for the urban development areas done.	31/12/2020
	Full overview of infiltration potentials in Horsens municipality finalized.	31/12/2020
	Integrated municipal plan in Horsens on how to use infiltration for future urban development drafted	31/12/2020
	Phase 3 Quantitative correlations: All data for the statistical evaluation has been collected from multiple municipalities in the Central Denmark Region. The result from these actions (C23.1,1 to 3) will be presented in an article submitted in August 2020 and thus most likely be available in 2021	01/07/2021

	AI data is collected for the reports and guidelines, but due to Covid-19 this deliverable is postponed to phase 3	01/01/2022
C23.2	**Phase 2** Meetings with 200 stakeholders done One field trip to selected sites done Stakeholder integration of 200 stakeholders done Workshops held and working groups met. Recommendations prepared for stakeholders **Phase 3** Workshop, where we discuss the advantages, disadvantages, possibilities and consequences of the results from action C23.1 Recommendations prepared for stakeholders	 31/08/2020 31/08/2020 31/08/2020 31/12/2020 31/12/2020 01/06/2022 01/01/2022
C23.3	**Phase 2** Final stakeholder conference. 200 participants At least one pilot projects prepared. At least one project description ready for execution. Final review of the project done **Phase 3** Final stakeholder conference Funding for complimentary project. The complimentary project "Internet of Climate" were applied for in 2019 but not approved. It has been resubmitted in 2020 to MUDP.	31/08/2021 31/08/2021 31/12/2021 31/12/2021 01/06/2022 01/01/2021

C24: Climate history | culture history



Adding value to CCA coping strategies through coupled natural and cultural heritage

The aim of this project is to provide a historically informed and evidence-based dissemination platform for C2C Climate Challenge that facilitates citizen-near adaptation and long-term behavioural change. The project couples existing environmental and cultural historical datasets together in order to provide evidence-based snapshots of past environmental conditions and human responses. In order to create the necessary societal resilience, different coping strategies of past populations may give us concrete ideas for coping with CCA in a modern society. "Old-fashioned" coping strategies may entail a lot of knowledge and wisdom more or less directly applicable today, including such strategies where we adapt to natural conditions rather than fight them by constructing e.g. dykes and concrete barriers.

With a focus on hydrological changes in inland (river, lake) and coastal contexts, C24 connects directly with other C2C CC projects (e.g. C8) and makes use of existing dissemination platforms (e.g. Moesgaard Museum as well as C20, C21) in order to showcase the overall project nationally. At the same time, this project reaches out to a wider international network through workshops and participation in international conferences. Finally, the project will add value to C2C CC overall by translating climate history into components useable also in sustainable growth via tourism.

This project will support a broad understanding of our natural and cultural given conditions and help us to identify sustainable solutions. This action covers all aspects of C2C CC.

Main responsible beneficiary: Aarhus University Budget: 136.288€

Number of days estimated spent on action in phase 1: 120 Days
Number of days estimated spent on action in phase 2: 101 Days
Number of days estimated spent on action in phase 3: 71 Days

Beneficiary responsible for implementation: Aarhus University (AU)

Role of AU

- Is the project manager

Reports to C2C CC project-leader and cooperates with other C2C CC partners

Relation to cross-cutting capacity building actions (C1-C7)

Activity C24 Climate history | culture history will gain from actions under C1 relating to desk analysis and identification of knowledge gaps and reviews of in the risk maps. Experience will be exchanged on historical flood events between demonstration projects dealing with the coastal cities of Thyborøn, Horsens, Randers and Juelsminde. A common understanding between stakeholders of sustainable solutions (economically, environmentally, socially and long term) with a focus on land use, cost-effective measures, planning, implementation, maintenance and operation will be shared and developed across actions and facilitated by CDR. Under C1 a workshop will be held to assess synergies and possibilities of integrated solutions for the fjords at the East Coast and the cities at the West Coast.

Under action C2 knowledge on CCA and rivers developed under different actions will be shared. Modelling, interpretations, analysis and data sampling are similar in the different catchments and C24 will benefit in general from this knowledge sharing. Under action C3, in selected areas a detailed local model is set up focusing on groundwater, surface and/or seawater. Models are based on the present data and collections of new data sets e. g. geophysical data and C24 may also benefit from this model.

Under Action C4 Rainwater, C24 may gain from the identification and experience and testing of SUDS within CDR.

Under action C5 specific training courses, workshops and masterclasses, with point of departure in the challenges experienced by the partners will be implemented for the benefit of action C24. Action C7 will aim at gathering useful information and best practices from cross-cutting demonstration activities, also potentially benefitting C24. C24 will connect directly with C8 during C2C CC

Description (what, how, where and when):
Humans have lived in interaction with nature in the current Region of Central Jutland for over 13,000 years. Over this vast span of time, climatic and environmental conditions have changed dramatically – and people and societies have handled these changes in manifold demographic and technological ways. Environmental proxies (e.g. pollen, isotopes and sediments) from dated layers facilitate the reconstruction of the full spectrum of and baselines fro local and regional landscape changes, while archaeological and historical sources document how people have adapted, or failed to do so, to these changes. Under the umbrella terms *environmental history* and *climate change archaeology* can be used for sketching a roadmap for possible future adaptations. This is particularly relevant as these inherently local and regional scenarios can supplement global models for future climate change; and local/regional narratives generate grass-roots citizen adaptation.

How societies have reacted to past climate-driven changes in the hydrological cycle provides a canvass for reflection on how present-day societies may adapt to similar changes predicted to occur under conditions of future climate change. The human presence in Europe has a long shared history and heritage, which is well-documented in often unique archaeological and historical cases. Thinking natural and cultural heritage together can create ecological as well as economic added value measurable through, for instance, the number of visitors to exhibitions and sales and readership statistics of publications generated by the present project. This project design and outreach strategy could subsequently be exported to and copied by other relevant actors in Europe and elsewhere through knowledge sharing.

C24.1 *Landscape use and settlement patterns in the early Holocene in Central Jutland*

What
This sub-project focuses on how the earliest inhabitants of the Region of Central Jutland have handled changes in the hydrological cycle. For this period (10,000-6200 BCE) an enormous tsunami generated by a submarine landslide off the coast of Norway as well as marked changes in sea-levels and ground water levels are well-documented (figure 1). These environmental changes and their human impacts are well-researched elsewhere in Denmark (Fruergaard et al. 2015) and northern Europe (Bondevik et al. 1997; Smith et al. 2004), but only poorly known from Central Denmark. This sub-project therefore aims review and evaluate how people have reacted to these hydrological factors. Whilst these past changes are no direct analogues for future climate changes and adaptions, the reactions effected by these past inhabitants of Central Jutland could nonetheless function as a canvas for designing, debating and disseminating future solutions. Key focus areas will be the

Region's fjords, islands and rivers, here especially the large inland lakes in the Silkeborg region, which are part of the Gudenå system

How
C24.1 collates environmental and archaeological data from borings, and excavations performed outside this project excavation, and from the existing Danish sites and monuments register for precise reconstructions of past environments and land-use, especially in the vicinity of water-near archaeological sites (e.g. in the Silkeborg and Herning regions, but also along the coasts). These data will offer temporally deep and local contexts for past and future climate and environmental changes, all with focus on groundwater and sea-level changes, storm surges and tsunami events.

Where:
The work will be conducted at Aarhus University in collaboration with the regionally responsible museums, which following the Danish legal heritage framework are charged with overseeing heritage research in their municipalities.

When
2017-2019: Data review period.
2019-2021: Dissemination period – results of the data review published in technical reports and for public dissemination. International and national conference presentations.
2021-2023: Outreach period – synthesis publication is being produced. This publication presents both the results of the present action as well as the results of other C2C CC actions, all with an eye towards the future.

C24.2 *Storm surges and tsunamis along the Central Jutland coasts in historical, landscape- and geo-archaeological perspective*

What
This sub-project takes its starting point in the present and works backward in time. Drawing on meteorological, geological, archaeological and historical records, human settlement along the coasts as well as further inland will be systematically reviewed and translated into elements useable in C2C Climate Challenge outreach and climate tourism (figure 54).

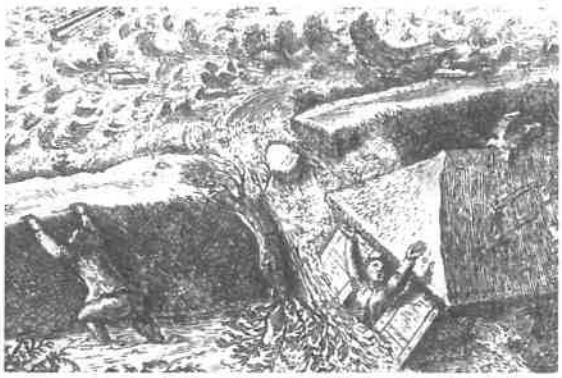


Figure 54: Dyke rupture at the River Elbe in northern Germany during the storm surge in 1661. Engraving by H.M. Winterstein.

Historical records about storm surges and corresponding flood pillars are well-known and well-documented in, for example, South Jutland, the Netherlands and Germany. In contrast, these same

source data are much less systematically recorded and analysed in the Region of Central Jutland, but recent archaeological investigations of, for instance, the Nørre Vosborg manor hint at the impacts of storm surges on landscapes and people (Kock 2015).

How:
C24.2 involves the systematic collation of existing material regarding storm surges in the Region of Central Jutland. Historical maps primarily held at the University Library in Aarhus and the Royal Library in Copenhagen will be digitised and subsequently archived at Aarhus University Library/State Library, where they will be publically accessible. This will be the first time, historical and archaeological as well as cartographic material will be presented and analysed together for this region and with a view towards using these data in contemporary discussions about sustainable coastal development. Comprehensive information on existing flood pillars that commemorate storm surge events will be collected (photographically and geo-referenced). Together with written reports and maps these will reflect the coupled natural and cultural heritage of past violent weather events. Dissemination will be through established digital channels for historical and cartographic materials, mainly www.danmarkshistorien.dk and http://historiskatlas.dk. These are resource used extensively be high school students and teachers in particular. In addition, this sub-project will provide background information for a coast-to-coast climate tourism cycling/kayaking route aimed at climate-interested and environmentally conscious tourists visiting the Region.

Where: AU

When
2017-2019: Review period – systematic review and digitization of information.
2019-2021: Publication period – results of the review are published in technical reports and for public dissemination. International and national conference presentations
2021-2023: Outreach period – synthesis publication is being produced. This publication presents both the results of the present action as well as the results of other C2C CC actions, all with an eye towards the future.

C24.3 *Citizen-near story telling and marketing of coupled culture and climate history*

What:
C24.3 focuses on innovative communication of the coupling between climate history and culture history via established cultural institutions, as well as the marketing of CC2 CC with an eye towards climate tourism. In particular, project C8 will function as a pilot where citizen-driven climate adaption will include an environmental and cultural-historical dimension. The results of the C24 sub-projects as well as other selected projects under the wider aegis of CC2 CC will be presented through exhibitions at Moesgård Museum's Exhibition Laboratory and the Region of Central Jutland's many relevant museums as well as CC2 CC's specific show cases – the Geopark Lemvig, the Climatorium and the AquaGlobe (C20, C21). Culture historical museums rarely focus on climate-related issues, past, present or future. Climate adaptation, however, is in part a cultural issue and this sub-project moves climate questions into cultural institutions, which have well-established interfaces with the local public at the local, regional, national and international levels as well as tourists. The aim of this sub-project is therefore to create democratic debate and long-term behavioural changes through communication and knowledge sharing, for instance, in relation to where we place settlements and

how we relate to climate-related actions. The sub-project's focus on climate tourism will also strengthen local economies.

How
In line with recent initiatives at various museums internationally to tackle issue of climate change (e.g. Cameron et al. 2013), this project will create exhibitions and presentation materials that can be used to inform and involve citizens and tourists in climate issues in general and specifically in relation to the climate-related challenges and proposed solutions in the Region of Central Jutland. The sub-project will be executed in collaboration with the Masters degree programme in Sustainable Heritage Management at Aarhus University and will be scaffolded by a series of stakeholder workshops with focus on the coupling between climate history and culture history. Coupled elements of cultural and natural heritage can serve as a source of specific climate-related identify-building and a platform for increasing climate literacy (see http://cpo.noaa.gov/OutreachandEducation/ClimateLiteracy.aspx), which in turn strengthens local resilience vis-à-vis future climate challenges. The exhibitions and presentation material will relate specifically to a coast-to-coast climate tourism cycling/kayaking route through the Region.

Where:
AU's Exhibition Laboratory at Moesgård Museum, Geopark Lemvig, Climatorium and AquaGlobe.

When:
2017-2019: Status workshop 1. Status workshop 1. Mapping the possibilities for a coast-to coast climate tourism cycling/kayaking route.
2019-2021: Status workshop 2. Concept development of an exhibition and attendant teaching resources. Production of a tourist brochure.
2021-2023: Status workshop 3. Exhibition and implementation of cycling/kayaking route.

Reasons why this action is necessary:
Danish landscapes are fundamentally cultural landscapes. Ecosystems in the Region of Central Jutland have been under the influence of people for a very long time indeed; they are both natural and cultural at the same time, and they can thus only adequately be understood using both natural science and human science methodologies. Geo-archaeology and environment history contribute to a more precise and temporally dynamic picture of these ecosystems. They thus also contribute to more robust baseline for these ecosystems and to how they may change under conditions of future climate change. It has been suggested that extreme hydrological and meteorological events in particular will occur more often and will become more extreme still in the future (Schiermeier 2011; 2012). But precisely these kinds of extreme events have hitherto been so rare that only a more long-term perspective can reveal how they have impacted the coupled cultural and natural histories in the Region. Previous research has shown that narratives of the local and thereby intimate relationships between climate, environment and culture stimulate similarly local changes in attitude and behaviour (Carter & van Eck 2014).

Cultural heritage is a known source of local, regional and national identity-building, not least in relation to climate and climate change (see Harvey & Perry 2015). Identity and a sense of history thus play a role in local and regional climate adaptation matters. This is illustrated by several case studies throughout Europe, some specifically relating to hydrological issues (Stelljes & Martinez 2013

– see especially the Timmendorf case study). The implementation of the action's teaching materials will contribute to the C2C CC's overall aim of long-term and citizen-borne climate adaptation.

Constraints and assumptions
We are facing a number of constrains regarding our plans for Phase 2.

Firstly, we have not been able to establish a cooperation with historiskatlas.dk, as we had hoped. This means that a bigger part of Our public outreach will shift to danmarkshistorien.dk.

Secondly, the order of our actions within C24 has been altered, At the time of writing, we are further along with the exhibition and dissemination than we had planned: The first deliverable (via danmarkshistorien.dk) is published and the exhibition in the AquaGlobe (C20) is scheduled to open in late 2018 or early 2019. There has been less focus on climate tourism in Phase I.

Note also that exhibition planning at the Klimatorium (C21) is incipient as this is not scheduled to open before 2020. Additionally, we may experience a potential workload bottleneck when the currently employed C24 staff contract ends in the summer of 2019. In such an event C24 senior staff would have to increase project contribution or deliverables downscaled according to the resource situation at hand, or additional funds may need to be found within the C2C CC project.

Expected results:
The coupling of natural and cultural heritage provides a platform for disseminating and discussing the challenges, knowledge and solution options, all in fora close to the citizens concerned (i.e. local museums, libraries, schools). In this way, coupled natural and cultural heritage adds value to any adaptation initiative, especially when seen in a longer-term perspective where education and knowledge sharing play decisive roles. Research shows that there is a clear relation between local/regional identities and historical and archaeological narratives. This relationship can be employed in achieving long-term behavioural changes via small changes in thought and action (the so-called nudging principle: http://blog.nature.org/science/2014/04/26/environmental-sustainability-nudges-economics-paul-ferraro/) at the same time as dissemination activities via museum strengthen the synergy between cultural and natural heritage in the Region.

Minimum number of visitors to the exhibition: 10% of the participating museum's visitors to the C2C CC climate exhibitions (see http://www.dst.dk/da/Statistik/emner/museer-og-kulturarv/museer).

Cost estimation
The primary expenses in this action are work hours (see the detailed budget) for data review, dissemination/outreach work and Archaeological IT consulting (http://www.arkaeologi.dk/it/).
Workshops 1-3.
Production costs for dissemination material (calculated from www.onlineprinters.dk).
Miscellaneous transport and travel costs, calculated after current rules and regulations for public servants (see http://hr.modst.dk/Service%20Menu/Love%20regler%20og%20aftaler/Circular/2016/001-16%20-%20Satsregulering.aspx).
Materials for exhibitions (best estimate).

Deliverables:

Action	Deliverables
C24.1 and C24.2	**Phase 2**: Two reports distributed across Sub-projects 1 and 2 (30/10/2019): I) Storm surges and human impacts on the west coast of Denmark as seen through historical maps and records, in Environment & History; II) A record of past storm activity in the eastern North Sea, in Climate of the Past. Three outreach reports distributed across Sub-projects 1 and 2 (30/10/2019): I) Miljøets rolle i Danmarkshistorien, i www.danmarkshistorien.dk; II) Vejrudsigten anno 1258, in Skalk; IV) Past storm activity as seen through historical maps, in www.sciencenordic.com. Note that the specific titles or venues of these deliverables may be subject to change. We aim to publish our deliverables In the aforementioned venues but this is subject to editorial decisions and hence cannot be guaranteed. In the event og rejection, we will aim to publish in similar alternative outlets.
C24.3.	**Phase 2**: One report and one exhibition pamphlet for Sub-project 3 (30/10/2020: Klimahistorie|kulturhistorie – merværdi gennem koblingen mellem natur- og kulturarv, in Nordisk Museologi. Exhibition pamphlet: Yesterday – today – tomorrow: Facing the climate challenges of the future. Data on storm flood pillars archived at http://historiskatlas.dk and at the Aarhus University Library/State Library (31/12/2019). **Phase 3** Teaching materials regarding climate and environmental history for high school level (31/10/2021). Climate tourism brochure for the Region (31/10/2021). Exhibition about climate history and culture history in the Region of Central Jutland (31/10/2022). A synthetic popular science book on climate and culture history in the Region of Central Jutland, which portrays the efforts and results of selected actions under the umbrella of C2C CC (31/10/2023).

Milestones:

Action	Quantifiable milestones	Date by end of
C24.1	**Phase 1**	
	Milestone 1.I – Nomination of staff responsible for Sub-project 1	31/3/2017
	Milestone 1.II – data review complete	30/6/2019
	Phase 2	
	Milestone 2.I – target publications complete	31/10/2020
	Milestone 2.II – conference presentation delivered	31/10/2020
	Phase 3	
	Milestone 3.I – the synthesis over the Region's coupled natural and cultural heritage and the C2C CC contributions published	31/12/2022
C24.2	**Phase 1**	
	Milestone 1.I – Nomination of staff responsible for Sub-project 2	31/3/2017
	Milestone 1.II – digitisation of historical maps and records complete	31/12/2018
	Phase 2	
	Milestone 2.II – conference presentation delivered	31/10/2020
	Phase 3	
	Milestone 2.I – target publications complete	31/10/2021

	Milestone 3.I – the synthesis over the Region's coupled natural and cultural heritage and the C2C CC contributions published	31/12/2022
C24.3	**Phase 1** Milestone 1.I – Nomination of staff responsible for Sub-project 3 **Phase 2** Milestone 1.II – Workshop 1 & 2: Coupling of cultural and natural history in the Region & Museums and climate adaptation Milestone 2.I – Workshop 3: Museums and climate adaptation Milestone 2.II – Exhibition opens **Phase 3** Milestone 2.I – Workshop 2: The role of cultural heritage in climate adaptation Milestone 3 – Climate history brochure for the Region complete	31/03/2017 01/06/2019 31/10/2020 31/10/2020 01/06/2021 01/10/2021

D. Monitoring of the impact of the project actions (obligatory)

Monitoring of the impact of the project actions (obligatory)

Action D1: Monitoring the project's contribution to the implementation of the CCA plans

Budget: 77.329€

Number of days estimated spent on action in phase 1: 80 Days
Number of days estimated spent on action in phase 2: 89 Days
Number of days estimated spent on action in phase 3: 99 Days

Beneficiary responsible for implementation: Central Denmark Region

Role:

- Follow the implementation of the CCA plans
- Coordinate with beneficiaries responsible for C8-C24 on monitoring
- Prepare reporting and evaluate results

Action D1.1. Monitoring of the implementation of the CCA plans

Description (What, how, where and when):

What:
The C-actions have the purpose to aid the implementation of the municipal CCA plans, the C8-C19 deal directly with the actions mentioned in CCA plans (and the risk management plans), and C1-C8 and C20-C24 have the purpose to provide knowledge and tools to improve the implementation of the CCA plans.

This action will monitor:

- That C8-C19 are implemented accordingly to the CCA plans
- That C1-C7 and C20-C24 result in improved implementation

Table 1: Monitoring indicators and protocol for action D1.1

Who/what	Monitoring indicators	Monitoring protocol and verification
Project management unit/ Action C8-C19	Qualitative indicators: How, results, deliverables in the IP Comparison between C8-C19 and actions mentioned in the CCA plans/risk management plans.	Monitoring protocol: IP application, municipal CCA plans and risk management plans Sources of verification: The project management unit follow the implementation of C8-C19
Project management unit/ Action C1-C7 and C20-C24	Qualitative indicators: Indicators of added value	Monitoring protocol: IP application, municipal CCA plans and risk management plans

	No. of actions of the CCA plans implemented No. of additional CCA activities	Sources of verification: The project management unit follow the implementation of the CCA plans

How:
Phase 1:

- Description of actions (how, results, deliverables, milestones) in the IP application compared to the actions mentioned in the CCA plans/risk management plans.

- Monitoring improved implementation is carried out by defining indicators for added value to assess the impact of C1-C7 and C20-C24 on the actions C8-C19 and also on additional CCA activities in the project period e.g. following municipal actions based on the tools in C6.

Phase 2:
- Description of actions (how, results, deliverables, milestones) in the IP application.
- Monitoring of the impact of C1-C7 and C20-C24 on C8-C19 is carried out with questionnaires.

Phase 3:
- Description of actions (how, results, deliverables, milestones) in the IP application compared to the actions mentioned in the CCA plans/risk management plans.

- Monitoring improved implementation is carried out by defining indicators for added value to assess the impact of C1-C7 and C20-C24 on the actions C8-C19 and also on additional CCA activities in the project period e.g. following municipal actions based on the tools in C6.

- Monitoring of the impact of C1-C7 and C20-C24 on C8-C19 is carried out with questionnaires.

When:
In relation to EU LIFE IP reporting three months before phase 1, 2 and 3, and following the end of the IP.

Where:
CDR

Action D1.2: Monitoring of pilot projects

Beneficiary responsible for implementation: Herning Municipality (HK) and VIA University College (VIA)

Role of HK:
- To monitor the impacts and results of action C13
- To report to C2C CC project management. Project management reports to LIFE.

Role of VIA:
- To monitor the impacts and results of action C22
- To report to C2C CC project management. Project management reports to LIFE.

PS

Description (What, how, where and when):

What:
To monitor and report the impact of two pilot projects, action C13 and C22, to demonstrate the effect and novelty of the actions. The monitoring indicators are for this reason technical. The associated beneficiaries of C13 and C22 are responsible of the implementation and monitoring of the actions, and will report to C2C CC project management which will include the results in the reporting for LIFE.

Table 2: Monitoring indicators and protocol for action D1.2

Who/what	**Monitoring indicators**	**Monitoring protocol and verification**
Herning Municipality/ Action C13	M^3 retained water Biodiversity Cultivation Nutrients and river ecology	Monitoring protocol: IP application, municipal CCA plans and risk management plans Sources of verification: Test and monitoring results
VIA University College/ Action C22	Discharge concentrations Water balance Physical and chemical soil properties and porosity Hydraulic capability Organic content Concentration of heavy metals and salt	Monitoring protocol: IP application Sources of verification: Test and monitoring results

How:
Phase 2 and 3:

C13:

1. Mapping of drainage and drainage conditions, soil conditions, potential dissolved-iron areas, flooding, §3, amphibian, habitats and invasive species. This is done by in-house biologists and external consultants
2. Registration of cultivation/area use.
3. Studies in biodiversity and infrastructure, choice of crops, distribution of land, conditions concerning ocher and nutrients, drainage techniques, by agricultural advisers together with knowledge institutions.

C22:

1. Infiltration tests: During the first four years and on an ongoing basis, many infiltration tests of the permeable asphalt will be carried out, to assess time-related and seasonal seepage potential.

2. Purification tests: During the construction of the climate road, different structural constructions of the road will be made in interplay with different types of filter and absorption media to clarify which influence different types of filter and absorption media and their structural design may have on the road's ability to purify the surface water with regard to xenobiotic substances. To clarify the cleaning effect of the road, a drain will be established in and under the climate road, where discharge concentrations can be monitored on an ongoing basis. To ensure the groundwater is not contaminated, an impermeable membrane will be established in a section under the climate road. This also ensures that the water balance is known. During the project period, samples will be taken on an ongoing basis to determine the filter and sorption media's physical and chemical soil properties and porosity, hydraulic capability, organic content and concentration of heavy metals and salt.

When:
C13: 2019-2022
C22: Ongoing throughout the IP 2017-2022

Where:
C13: River Storaa
C22: Hedensted

Action D1.3: Monitoring of capacity building

Beneficiary responsible for implementation: C2C project management

Role:
- Gathering of data related to A, C1-C7 and E actions
- Prepare reporting and evaluate results
- Coordinate with beneficiaries responsible for actions C8-C24 dealing with stakeholder capacity building.

Description (What, how, where and when):

What:
Capacity building is a large topic, and in order to simplify it, it has been divided into the following sub-sections:

- Administrative capacity building
- Dissemination capacity building
- Technical (project-related) capacity building
- Partner and stakeholder capacity building

In order to monitor capacity building, indicators are needed to quantify and qualify the actions. The indicators relevant to capacity building are listed below as well as the monitoring protocol, monitoring indicators and sources of verification for each.

Administrative capacity building

Who/what	Monitoring indicators	Monitoring protocol and verification
Project management unit	Number of hired staff; number of staff trained; skills upgraded and/or learned	Monitoring protocol: LIFE IP application Sources of verification: project auditor
Partner staff	Number of involved people in the project (app. 218 persons); number of staff trained; skills upgraded and/or learned	Monitoring protocol: descriptions of demonstration projects and crosscutting themes drafted by partners Sources of verification: project auditor

Dissemination capacity building

Who/what	Monitoring indicators	Monitoring protocol and verification
Website	How many visitors; which sections are mostly used; amount of downloaded material;	Monitoring protocol: Communication and outreach plan
Newspapers and magazines	Number of newspapers or magazines, that mention the project; number, which publish press releases and articles;	Monitoring protocol: Communication and outreach plan Sources of verification: copies of the articles, press releases, etc., to be gathered and stored
C20 AquaGlobe, C21 Climatorium and C24 Climate History	Number of visitors; satisfaction with the visit and displays;	Monitoring protocol: Communication and outreach plan; IP application descriptions of the C20, C21 and C24 Sources of verification: printout of overview from the ticketing systems
Awareness raising in the general public	Number of citizens, who know C2C CC;	Monitoring protocol: Communication and outreach plan Sources of verification: overview of the survey results and copies of all filled in questionnaires
Networking activities (e.g. participation in conferences and events)	Number of people heard about C2C CC; number of presentations given at external conferences; number of nationalities outreached;	Monitoring protocol: Communication and outreach plan Sources of verification: confirmation emails for registration at events
C2C CC conferences	number of participants;	Monitoring protocol: Communication and outreach plan Sources of verification: registration sheet, which all participants have to sign when arriving at the event
Workshops within the 7 cross-cutting themes (e.g. rain water and tools)	number of participants;	Monitoring protocol: Communication and outreach plan Sources of verification: registration sheet, which all participants have to sign when arriving at the workshops

Technical (project-related) capacity building

Who/what	Monitoring indicators	Monitoring protocol and verification

Tools and models (at least C6, C23)	How many projects use x tool and y model;	Monitoring protocol: IP application description for C6 and C23 Sources of verification: C2C project management follow the use of the tools and models.

Partner and stakeholder capacity building

Who/what	**Monitoring indicators**	**Monitoring protocol and verification**
Municipalities (people not directly involved in C2C CC)	number of persons trained: upgrading of skills and knowledge;	Monitoring protocol: IP application Sources of verification: Participants lists
Water utility companies (people not directly involved in C2C CC)	number of persons trained: upgrading of skills and knowledge;	Monitoring protocol: IP application Sources of verification: Participants lists
NGO's involved (people not directly involved in C2C CC)	who; how many; sectors represented;	Monitoring protocol: IP application Sources of verification: Participants lists
Citizens	Number of citizens involved	Monitoring protocol: IP application Sources of verification: Participants lists, manual counting

This action feeds into all C, E and F actions

How:
Phase 1:

- Create standardised questionnaires to hand out after every conference and workshop (including both quantitative and qualitative features)

Phase 2:

- Create standardised questionnaires to hand out to visitors at AquaGlobe (C20) and Klimatorium (C21) (including both quantitative and qualitative features)
- Create a survey to be used for researching citizens' awareness of climate change
- Create a qualitative evaluation of how the tools and models contribute to the demonstration projects

Phase 3:

- Gather and analyse all questionnaires and surveys, and transfer these to statistical models, which are to be included in the interim and final reports to the European Commission and stakeholders.
- Create standardised questionnaires to hand out to visitors at AquaGlobe (C20) and Klimatorium (C21) (including both quantitative and qualitative features)
- Create a survey to be used for researching citizens' awareness of climate change
- Create a qualitative evaluation of how the tools and models contribute to the demonstration projects

Where:

DS

Throughout the Central Denmark Region

When:
This action takes place throughout C2C CC's lifetime.

Reasons why this action is necessary:
Monitoring of capacity building is an essential part of the project. It is crucial to monitor the amount of trainings held, the amount of people reached with communication and dissemination activities, the amount of stakeholders involved, the amount of people who participate in the conferences, etc.

Constraints and assumptions:
Constraints related to this action may refer to the delivery of data from the beneficiaries on stakeholder involvement. The project management accommodate this by encouraging carrying out participant lists.

Expected results
This action contributes to the IP objectives to demonstrate and document effective and well-coordinated implementation of an action plan. The expected results of the sub-actions are stated below. Action D1.1 and D1.3 contributes to document the effect of the IP's impact on catalysing the process towards full implementation of the CCA plans.
The PM unit will follow the implementation of C2C CC actions and the implementation of the municipal CCA plans. The monitoring actions of D1.2 will verify the novelty and replication potential of the pilot projects C13 and C22. In relation to the C2C CC conferences it is expected that at least 25 % of the participants will hand in a questionnaire, and for the C2C CC workshops that 50 % of the participants will hand in a questionnaire. It is further expected that the monitoring of the developed tools C6 and C22 will be used by at least 50% of the municipalities.

Cost estimation:
Personal costs covered by senior (347 Euroes per day) and junior employees (259 Euroes per day) Other costs based on earlier experiences.

Estimation of the costs for the total project management staff is based upon prior experience from other similar projects. The previously mentioned CDR staff assigned the action will correspond to the budget categories of academic senior and academic junior, where their more specific tasks described above further subdivides them into additional costs categories. The days assigned to each the academic senior and academic junior category types in the budget are considered to cover the staff assigned for the actions mentioned above and the actual costs will be defined in the employment phase.

Deliverables:

Action	Deliverables
D1	Monitoring protocols Baseline report Monitoring reports (delivered every second prior to phase 2, 3 and the end of the IP)

Milestones:

Action	Quantifiable milestones	Date by end of

D1.1	Indicators for added value defined Baseline for CCA plans established Phase 1 monitoring completed	01/01/2021 01/01/2021 01/01/2021
D1.2	Data from beneficiaries received (Phase 2)	31/06/2021
D1.3	Evaluation questionnaires developed Phase 1 monitoring completed Reports on results from questionnaires and surveys Survey to be used for researching citizens awareness of climate change Qualitative evaluation of how the tools and models contribute to the demonstration projects Statistical models and analyses on questionnaires and surveys to be included in the interim and final reports	31/03/2017 10/10/2018 01/06/2021 01/03/2021 01/06/2021 01/03/2022

DS

D2: Monitoring of the project's impact on climate objectives

Budget: 28.053€

Number of days estimated spent on action in phase 1: 40 Days
Number of days estimated spent on action in phase 2: 23 Days
Number of days estimated spent on action in phase 3: 29 Days

Beneficiary responsible for implementation: C2C CC project management

Role:

- To follow the development of produced flood and risk maps
- To evaluate the impact of the IP on the reduced flood risk
- To conduct carbon footprint of Central Denmark Region

Description (What, how, where and when):

D2.1: Monitoring of flood risk

What:
Monitoring the IP's impact on reduced flood risk is essential for monitoring increased resilience. For this reason the development of flood and risk maps and severe flood events (above a so-called 20 year event) are monitored.

Table 9: Monitoring indicators and protocol for action D2.1

Who/what	Monitoring indicators	Monitoring protocol and verification
Project management unit	Square kilometers (via flood maps) Square kilometers (via risk maps) Number of actual flooding events in	Monitoring protocol: Municipal CCA plans and risk management plans Data from The Danish Storm Council on severe events. Local information from communities and municipalities Sources of verification:

How:
Phase 1:

1. Monitor development in flood maps. Baseline is the current maps of the CCA plans (available at municipal homepages and CCA plans) and risk management plans according to the Floods Directive
2. Monitor development in risk maps. Baseline is the current maps of the CCA plans (available at municipal homepages and CCA plans) and risk management plans according to the Floods Directive

Phase 2:

3. Action C6.1 will serve to show a common baseline as well as the development in the groundwater level in the region.

Phase 3:

DJ

4. Monitor development of severe flood events in selected areas,, based on local information and data from the The Danish Storm Council
5. Monitor development in flood maps. Baseline is the current maps of the CCA plans (available at municipal homepages and CCA plans) and risk management plans according to the Floods Directive
6. Monitor development in risk maps. Baseline is the current maps of the CCA plans (available at municipal homepages and CCA plans) and risk management plans according to the Floods Directive

Table 10: Links to flood and risk maps used as baseline for the risk management plans

Type of map/ risk area	*Link to baseline*
Flood map	
Randers Fjord	http://miljoegis.mim.dk/spatialmap?selectorgroups=themecontainer%20randers-a1-2&mapext=545921.8%206253656.5%20595073.8%206278923.7&layers=theme-gst-dtkskaerm_daempet%20theme-randers_oversvommelse_100m_100mt2012&mapheight=988&mapwidth=1925&profile=oversvoem2-randersfjord&ignorefavorite=true
Holstebro	http://miljoegis.mim.dk/spatialmap?selectorgroups=themecontainer%20holstebro-a1-2%20holstebro-c2&mapext=470069%206242943.1%20482357%206249259.9&layers=theme-gst-dtkskaerm_daempet%20theme-holstebro_oversvommelse_100m_100mt2012&mapheight=988&mapwidth=1925&profile=oversvoem2-holstebro&ignorefavorite=true
Juelsminde	http://miljoegis.mim.dk/spatialmap?selectorgroups=themecontainer%20juelsminde-a1-2%20juelsminde-c2&mapext=557019%206170632.6%20569307%206176949.4&layers=theme-gst-dtkskaerm_daempet%20theme-juelsminde_oversvommelse_100m_100mt2012&mapheight=988&mapwidth=1925&profile=oversvoem2-juelsminde&ignorefavorite=true
Risk map	
Randers Fjord	http://miljoegis.mim.dk/spatialmap?selectorgroups=themecontainer%20randers-a1-2%20randers-c2&mapext=545921.8%206253656.5%20595073.8%206278923.7&layers=theme-gst-dtkskaerm_daempet%20theme-randers_risikomiddelstorsandsynlighed_100m_100mt2012&mapheight=988&mapwidth=1925&profile=oversvoem2-randersfjord&ignorefavorite=true
Holstebro	http://miljoegis.mim.dk/spatialmap?selectorgroups=themecontainer%20holstebro-c2&mapext=470069%206242943.1%20482357%206249259.9&layers=theme-gst-dtkskaerm_daempet%20theme-holstebro_risikomiddelstorsandsynlighed_100m_100mt2012&mapheight=988&mapwidth=1925&profile=oversvoem2-holstebro&ignorefavorite=true
Juelsminde	http://miljoegis.mim.dk/spatialmap?selectorgroups=themecontainer%20juelsminde-c2&mapext=557019%206170632.6%20569307%206176949.4&layers=theme-gst-dtkskaerm_daempet%20theme-juelsminde_risikomiddelstorsandsynlighed_100m_100mt2012&mapheight=988&mapwidth=1925&profile=oversvoem2-juelsminde&ignorefavorite=true

When:
In relation to EU LIFE IP reporting phase shifts and following the end of the IP.

Where:
CDR

DS

Action D2.2: Monitoring of carbon emissions

Beneficiary responsible for implementation: Central Denmark Region

Description (What, how, where and when):

What:
CDR has for every two years calculated the carbon footprint of the region in regard to CO_2 emissions per capita to monitor the development of various measures. This monitoring will continue and it is expected that the major common efforts in C2C CC will contribute positively to reduce carbon emissions. In the beginning of the IP (primo 2017) the result of the CO_2 monitoring for 2015 is available. 2015 will function as baseline for the IP.

Table 11: Monitoring indicators and protocol for action D2.2

Who/what	Monitoring indicators	Monitoring protocol and verification
Project management unit	Carbon emission in tons CO_2	Monitoring protocol: CDR has described the measurement of CO_2 in CDR, 2013. *Energy accounts.* CDR (In Danish: *Energiregnskab 2013, Region Midtjylland)* Sources of verification: CDR measures the municipalities' CO_2 level every two years and publishes this on its website

How:

1. Calculating the carbon footprint of the Central Denmark Region. Baseline is the carbon footprint for 2015.
2. Where feasible, we will estimate the carbon footprint of CCA activities in the project, e.g. related to land use change or water and energy saving activities, by using broadly accepted and standardized tools and approaches such as ECOINVENT and ILUC.

When:
Every second year during the IP prior to the reporting for phase 1, 2 and 3, and following after the end of the IP.

Where:
CDR

Constraints and assumptions:
According to D2.1 constraints are related to changing regulation, latest the implementation of an amendment on flood and erosion risks to the Danish Planning Act and also changes in the use of climate scenarios, which result in non-applicable baseline. Instead of using the CCA plans of 2016 as baseline, the tool developed in Action C6.1 and the progress of C8-C24 are used as baselines.

Expected results:
The monitoring of D2 will results in documentation of reduced flood risk and carbon emissions by the end of the IP.

DS

Cost estimation:
Personal costs covered by senior (347 Euroes per day) and junior employees (259 Euroes per day).

Estimation of the costs for the total project management staff is based upon prior experience from other similar projects. The previously mentioned CDR staff assigned the action will correspond to the budget categories of academic senior and academic junior, where their more specific tasks described above further subdivides them into additional costs categories. The days assigned to each the academic senior and academic junior category types in the budget are considered to cover the staff assigned for the actions mentioned above and the actual costs will be defined in the employment phase.

Deliverables:

Action	Deliverables
D2	• Monitoring protocols • Baseline report • Monitoring reports (delivered every second year prior to phase 2, 3 and the end of the IP)

Milestones:

Action	Quantifiable milestones	Date by end of
D2.1	Baseline for flood maps, risk maps and severe flood events (>20 year event) done Final monitoring report Baseline for flood maps, risk maps and severe flood events (>20 year event) done	31/12/2018 10/10/2022 01/10/2021
D2.2	Monitoring report for phase 1 done. Monitoring report on carbon emissions in the Central Denmark Region	10/10/2018 01/03/2022

DS

Action D3: Monitoring of the project's socio-economic impact (incl. ecosystem functions)

Budget: 16.679€

Number of days estimated spent on action in phase 1: 20 Days
Number of days estimated spent on action in phase 2: 18 Days
Number of days estimated spent on action in phase 3: 19 Days

Beneficiary responsible for implementation: Central Denmark Region

Role:

- Gather data from existing databases
- Coordinate with beneficiaries responsible from action C20 and C21 on gathering of data
- Coordinate with beneficiaries responsible for C8-C19 on assessment of ecosystem service functions
- Develop ecosystem service assessment methodology in accordance with Mapping and Assessing Ecosystems and their Services (MAES)
- Prepare reporting

Description (What, how, where and when):

What:
The project management will coordinate activity and reporting to describe the contribution of combined C2C CC actions in terms of:

1. Direct and indirect employment growth related to the water sector within the region
2. Growth in ecotourism and corporate tourism, respectively, within the region.
3. The IP's impact on ecosystem services in relation to action C8-C19.
4. Dissemination and replication of C2C CC

Table 32: Monitoring indicators and protocol for action D3

Who/what	Monitoring indicators	Monitoring protocol and verification
Direct and indirect employment growth related to the water sector	Growth in number of jobs within the water sector in the region	Sources of verification: Denmark's statistical database: http://www.danmarksstatistik.dk/en
Ecotourism and corporate tourism related to water	Number of tourists related to C20 and C21 Number of coastal and corporate tourists in the region	Monitoring protocol: The publication "Facts about Danish coastal tourism" [in Danish: "Fakta om dansk kystturisme"] published by VisitDenmark and Dansk Erhverv. Sources of verification: VisitDenmark, Dansk Erhverv.
Ecosystem functions	Monetary value	Monitoring protocol: IP application/ C-actions
Participation in C2C CC events	Number and kind of participants Number of add media and articles on webpages, newspapers, radio and	Different media – potentially using a professional media bureau

	television	

How:

1. The project management gather knowledge on ecosystem service evaluation systems and methods to be applied in Phase 3.
2. Ecosystem service assessment methods are discussed with the C2C CC partnership and Climate Alliance
3. Ecosystem service assessments are compared with the method developed by Rivers Trust during study trip in 2019.
4. The project management will gather data on employment growth and growth within the tourism sector from existing and acknowledge statistical databases. Baseline is 2017. Reporting will take place by the end of the IP (2022) and after the IP.
5. The project management will be in dialogue with the beneficiaries of C8-C19 during phase 2 and 3 of the IP in terms of the actions impact of the ecosystem functions. It is expected that the IP will benefit positively to the functions of ecosystems services on restoring natural areas such as rivers and wetlands. An ecosystem assessment method is not existing and a method will be developed by the project management with point of departure in MAES and in dialogue with the associated beneficiaries and the advisory committee. Reporting will take place by the end of the IP. Baseline is the existing CCA plans, which will be compared with the results of the actions.
6. The project management will monitor add media activities and participation levels in the events that have come about as a result of the Life IP project

When:
Phase 1: Activities related to 1 and 2
Phase 2: Activities related to 1-3
Phase 3: Activities related to 1-6
After LIFE: Activities related to 6

Where:
CDR

Constraints and assumptions:
There are no expected constraints related to this action.

Expected results:
The results of D3 documents about growth in per cent in the water sector, and growth in per cent in ecotourism and corporate tourism of CDR. Furthermore, it will indicate in monetary value the IPs impact on ecosystem services in relation to action C8-C19.

Cost estimation:
Personal costs covered by senior (347 Euro's per day) and junior employees (259 Euros per day).

Estimation of the costs for the total project management staff is based upon prior experience from other similar projects. The previously mentioned CDR staff assigned the action will correspond to the budget categories of academic senior and academic junior, where their more specific tasks described above further subdivides them into additional costs categories. The days assigned to each the academic senior and academic junior category types in the budget are considered to

cover the staff assigned for the actions mentioned above and the actual costs will be defined in the employment phase.

Deliverables:

Action	Deliverables
D3	• Monitoring protocols • Ecosystem services assessment methodology • Monitoring reports (delivered every second year prior to phase 2, 3 and the end of the IP) • Reports on add media activities and participation levels for C2C CC activities

Milestones:

Action	Quantifiable milestones	Date by end of
D3	Ecosystem service assessment methodology developed in accordance with Mapping and Assessing Ecosystems and their Services (MAES)	31/3/2018
	Data from existing databases related to employment and tourism gathered	10/10/2018
	Data on media and participation levels gathered	10/10/2018
	Coordination with beneficiaries responsible from action C20 and C21 on gathering of data done	07/07/2018
	Coordination with beneficiaries responsible for C8-C19 on assessment of ecosystem service functions done	07/07/2020

Action D4. Environmental monitoring

Budget: 16.679€

Number of days estimated spent on action in phase 1: 20 Days
Number of days estimated spent on action in phase 2: 18 Days
Number of days estimated spent on action in phase 3: 21 days

Beneficiary responsible for implementation: Central Denmark Region

Role:
- To gather data from the Danish Nature Agency
- To report on the environmental state of waters in the region

Description (What, how, where and when):
The environmental reporting relates to the C-actions. Several of the C-actions deal with modelling and analyses, whereas the implementations of physical projects begin after the end of the IP. It is therefore expected that the full benefit of the IP is shown after the end of the IP.

What:
In Denmark monitoring related to water takes place through the monitoring programme NOVANA operated by The Danish Nature Agency. NOVANA is targeted to provide necessary information and knowledgebase to support EU legislation (Water Framework Directive, Habitats Directive, the Marine Strategy Framework Directive, Shellfish Water Directive and the Nitrates Directive). NOVANA operates primarily with two kinds of surveys; surveillance- and operational monitoring, respectively. Surveillance monitoring involves the measurement of the general conditions and the development. Operational monitoring involves areas, where targets are not expected to be met, or areas where considerable effort towards a better water environment has been done. The Danish Nature Agency is responsible of NOVANA data collection and primary data processing, while DCE (Danish Center for the Environment) is responsible for reporting.

Table 43: Monitoring indicators and protocol for action D4

Who/what	**Monitoring indicators**	**Monitoring protocol and verification**
Project management unit/ Lakes and rivers	Ecological quality, water chemistry, nutrient transport, hazardous substances.	Monitoring protocol: NOVANA Sources of verification: The Danish Nature Agency
Sea and Fjords	Eutrophication, protected habitats and species, hazardous substances and their biological effects.	Monitoring protocol: NOVANA Sources of verification: The Danish Nature Agency
Groundwater	Qualitative status (chemical status) and quantitative status (amount).	Monitoring protocol: NOVANA and Jupiter Sources of verification: The Danish Nature Agency and GEUS

How:

Lakes and Rivers
There are multiple stations around DK, where monitoring takes place. These are collected by The Danish Nature Agency and made publicly available through the online portal "Miljøportalen"[1] on yearly basis. C2C CC project management monitor the data via this online portal for the WFD 2010-2015[2] and 2016-2021[3].

Sea and fjords:
The marine areas are for monitoring purposes divided into 164 VRD-water areas, 85 habitat areas that consist of one or more natural habitats designated acc. Habitats Directive and 13 interest acc. Shellfish Water Directive. These are collected by The Danish Nature Agency and made publicly available through the online portal "Miljøportalen" on yearly basis. C2C CC project management monitor the data via this online portal for the WFD 2010-2015[4] and 2016-2021[5].

Groundwater:
The program includes monitoring of groundwater qualitative status (chemical status) as well as monitoring of groundwater quantitative status (amount). All groundwater monitoring data from NOVANA (quality and quantity) is collected and quality assured by The Danish Nature Agency. Goundwater quality is monitored through action plans. Monitoring of groundwater quantitative status is collected from 116 national stations 1 time annually. C2C project management monitor the data via Geological Survey of Denmark and Greenland (GEUS) online portal[6] (also accessible from "Miljøportalen").

When:
After the end of the IP, when the implementation phase of C8-C24 actions begin.

Where:
CDR

Constraints and assumptions:
There are no expected constraints related to this action.

Expected results:
The environmental monitoring will verify that the IP contributed to improved environmental state of water environments after the end of the IP.

Cost estimation:
Personal costs covered by senior (347 Euroes per day) and junior employees (259 Euroes per day)

---

[1] Miljøportalen, national digital platform for environmental data: http://arealinformation.miljoeportal.dk/distribution/
[2] WFD 2010-2015: http://miljoegis.mim.dk/cbkort?&profile=vandrammedirektiv1-2014
[3] WFD 2016-2021: http://miljoegis.mim.dk/spatialmap?&profile=vandrammedirektiv2basis2013
[4] WFD 2010-2015: http://miljoegis.mim.dk/cbkort?&profile=vandrammedirektiv1-2014
[5] WFD 2016-2021: http://miljoegis.mim.dk/spatialmap?&profile=vandrammedirektiv2basis2013
[6] Jupiter is GEUS ' national database of groundwater , drinking water , raw materials , environmental and geotechnical data. The database is the common public database of the area and is part of Denmark's Environment Portal. The database is publicly available at: http://geuskort.geus.dk/googleearth / http://data.geus.dk/geusmap/?mapname=jupiter#zoom=7.795455765656261&lat=6212143.9398531&lon=525769.80308993&visiblelayers=Topographic&filter=&layers=&mapname=jupiter&filter=&epsg=25832&mode=map&map_imagetype=png&wkt=

Estimation of the costs for the total project management staff is based upon prior experience from other similar projects. The previously mentioned CDR staff assigned the action will correspond to the budget categories of academic senior and academic junior, where their more specific tasks described above further subdivides them into additional costs categories. The days assigned to each the academic senior and academic junior category types in the budget are considered to cover the staff assigned for the actions mentioned above and the actual costs will be defined in the employment phase.

Deliverables:

Action	Deliverables
D4	Monitoring report (delivered beyond the IP)

Milestones:

Action	Quantifiable milestones	Date by end of
D4	Data gathered from existing databases	10/10/2022

E1 Communications and outreach plan

Budget: 12.130€

Number of days estimated spent on action in phase 1: 40 Days
Number of days estimated spent on action in phase 2: 75 Days

Beneficiary responsible for implementation: Central Denmark Region

What:

This action takes place in phase 1.

The communication and outreach plan will outline the general communication activities and the coordination of the concrete implementation actions' (C1-C24) communication activities, and ensure that all communication activities are in accordance with the LIFE requirements. C2C CC involves 31 associated beneficiaries and 16 primary stakeholders (Letters of Support), it is thus necessary with a clear communication and outreach plan.

The communications and outreach plan will include a dissemination strategy for the crosscutting capacity building activities (C1-C7) and the demonstration projects (C8-C24). To ensure that the results of the 24 projects (involving 31 beneficiaries) are disseminated successfully and to all relevant stakeholders.

Media work is an important element of the communication and outreach plan. This includes sending out press releases, holding press conferences, inviting journalists and stakeholders to visit the demonstration projects, preparing articles for the press, etc. The plan gives the overall guidelines on how to deal with media, how frequently the Communication Officer in the PM unit will be in contact with media, etc. (cf. E4). The LIFE logo will be visible on all publicity material.

In order to target audience outside C2C CC (i.e. in other Danish regions, EU Member States and globally), outreach will be part of the communication and outreach plan. Outreach will, besides information about C2C CC, also raise awareness of the societal challenges of climate change. This is linked to action E3.2, where local information meetings are mentioned as an outreach activity.

How:

1. Prepare communication and outreach plan incl. dissemination strategy
2. Determine public outreach objectives and timeline, and identify appropriate outreach methods
3. Develop clear and consistent story telling messages that are aligned with the C2C CC objectives
4. Evaluate and incorporate feedback from outreach activities in order to ensure a consistent high quality plan
5. Prepare media contacts for ongoing communication activities
6. Prepare After LIFE communication activities.

Where:

At the premises of the C2C CC PM unit in Viborg

When:

01.01.2017-31.12.2022 (and beyond). This action will commence immediately after the project commences and continue throughout the project period and afterwards to ensure a continuous updating of the plan.

Reasons why this action is necessary:
A clear communication and outreach plan is necessary to ensure coordination of communication activities and effective dissemination and outreach in a large consortium. This includes all types of communication and dissemination and will be reviewed on a regular basis.

Constraints and assumptions
It is necessary to draft and finalise the communications and outreach plan in order to ensure that all activities are in line with the overall strategy. Therefore, it is assumed that this work can be conducted in the first three months of the project's lifetime.

Expected results:
This action results in effective and coordinated communication activities across the C2C CC consortium. The feedback from the various dissemination events are analyzed which provides an understanding of what works well and what has not been as successful as anticipated, and thus make it possible to adjust accordingly. It will further result in well-established communication contacts for effective and rapid media coverage and continues communication of the C2C CC actions after LIFE and during the physical implementations.

Cost estimation:
Personal costs covered by senior (347 Euroes per day) and junior employees (259 Euroes per day)

Estimation of the costs for the total project management staff is based upon prior experience from other similar projects. The previously mentioned CDR staff assigned the action will correspond to the budget categories of academic senior and academic junior, where their more specific tasks described above further subdivides them into additional costs categories. The days assigned to each the academic senior and academic junior category types in the budget are considered to cover the staff assigned for the actions mentioned above and the actual costs will be defined in the employment phase.

Deliverables:

Action	*Deliverables*
E1.1 - E1.3	Communication and outreach plan
E1.4	Compilation of feedback in quantitative statistics
E1.5	List of media contacts
E1.6	Included in the After LIFE plan (F1.1)

Milestones:

Action	*Quantifiable milestones*	*Date by end of*
E1.3	The first draft of the communications and outreach plan is finished	31/3/2017
E1.4	The feedback from all the dissemination events are analysed and ready to use for planning of events after C2C CC is finished	31/12/2022
E1.5	Media contact list is prepared	31/02/2017
E1.6	Communication activities for After LIFE is prepared	31/09/2022

E2 Tangible communication products

E2 deals with the tangible means of communication.

An initial mean deserves a brief introduction, it is the C2C CC logo. The IP name was decided by the C2C CC partners during the initial IP Concept Note workshop in August 2015. The partners came with different suggestions, and the name was decided by a vote. The name symbolises CCA actions within the region between the three coastlines towards the North Sea, Limfjord and Kattegat. This logo will appear together with the LIFE logo.

C2C Coast to Coast Climate Challenge

Beneficiary responsible for implementation: Central Denmark Region

Budget: 80.046€

Number of days estimated spent on action in phase 1: 70 Days
Number of days estimated spent on action in phase 2: 41 Days
Number of days estimated spent on action in phase 3: 72 Days

E2.1 Website and online platform (obligatory)

What:

This action takes place in phase 1.

At the beginning of the project, a website will be created to inform about and document the actions and demonstration projects of C2C CC. The following items will be available:

- a summary of the project,
- a list of partners and stakeholders,
- a full description of all actions within the project, demonstration projects and complementary projects,
- the objectives of the project, demonstration projects and complementary projects,
- progress of the project, demonstration projects and complementary projects,
- results of the project, demonstration projects and complementary projects, and
- links to the individual websites of the actions (these will be "located" on the various official websites of the municipalities)
- Information about different activities in the project
- Invitation to take part in various activities
- LIFE material incl. LIFE progress reports.

The website will have the following URL: www.c2ccc.eu. It will be updated regularly throughout the project, and it will furthermore be maintained at least 5 years after the IP by CDR's IT-department. The LIFE IP has a duration of 6 years, however, it is expected, that the framework, which the European Commission helps fund the beginning of, will continue for many years after the end of C2C CC. The C2C CC website is the main means of online dissemination; however, some of the demonstration actions (C8-C24) will also have locally embedded websites. These have the purpose to anchor the actions locally towards politicians and citizens, and also to reach more stakeholders in their local environments, it is therefore agreed within the C2C CC consortium, that C8-C24 can budget with small amounts for this activity. All websites will link to the main C2C CC website.

The website is used for external purposes as it acts as a dissemination tool to keep all interested parties up-to-date with the project. For internal use a section of the website will be limited to C2C CC partners to stay updated on the concrete implementation actions, progress, workshops, seminars etc. The webpage and underlying file sharing system will be a comprehensive online platform used for communication, outreach and file sharing. Due to the complexity of C2C CC, the stakeholder teams, advisory board, task forces, etc. need quick access to project results as well as various aspects of the process such as activities, project leaders of concrete implementation actions, planned meetings, etc.
Another element of the online platform, is a logbook created as a process related tool to ensure that all partners have a forum to explain the progress, or lack of, and their reflections on the concrete implementation actions. This logbook is introduced to the partners during the kick-off seminar (cf. F2.1).

The actions feed into the communication workshop, which will be held in February 2017 where the aim is to gather local communication officers working with communications and PR at the partner organisations to ensure coordination of and effective C2C CC communication.

The LIFE logo will be visible on all publicity material.

The target audience for the website is the general public and all stakeholders of C2C CC. The target audience for the online platform is the partners.

How:

1. Create the website and online platform in cooperation with the communication departments of the cities and municipalities involved in the project. The overall responsibility is placed with the PM unit (CDR).

Where:

This action mainly takes place at the premises of the PM unit in Viborg.

When:

The website and online platform will be established in a draft version for the kick-off seminar, so they can be introduced to the consortium. The web page will be updated throughout the whole project period.

DS

E2.2 Notice boards (obligatory)

What:

This action takes place in phase 1.

Notice boards will be displayed at strategic locations to raise awareness about the LIFE IP and to indicate which areas are included in the project. For example, for the concrete implementation actions in the Western Limfjord, large-scale notice boards will be placed at public and tourist places to inform about C2C CC and C9, C17 and C21 locally. Small-scale notice boards will be made to be placed in locations such as city halls and CDR's official entrance to raise awareness about the project. All demonstrations projects (C8-C24) will have notice boards in various sizes in order to locate them in several locations. Two large notice boards and 5 smaller notice boards will be made per concrete implementation action.

The LIFE logo will be visible on all publicity material.

Target audience:

The target audience for the notice boards is the general public.

How

1. Create the local notice boards in cooperation with the local partners and place them in their respective locations

Where:

This action mainly takes place at the premises of the PM unit in Viborg.

When:

The first notice boards will be ready in April 2017, and the rest will follow hereafter.

E2.3 Newsletters

What:

The C2C CC PM unit will send out newsletters once every six months during the 6 years (in total 12 newsletters) to communicate about and disseminate on the project's results.

The LIFE logo will be visible on all publicity material.

Target audience: All stakeholders

How:

1. Research and draft articles and "progress reports" on the demonstration projects. Tie C2C CC into potential relevant political happenings, developments, etc.

Where:

This action mainly takes place at the premises of the PM unit in Viborg.

When:

Every six month during 2017-2022.

E2.4 Publication of report for the general public (a layman's report) (obligatory)

What:

This action takes place in phase 3.

This report will be produced in both paper and electronic format in two language versions: English and Danish. The report will be concise (5-10 pages) and will present C2C CC, its objectives, its actions and its results. This is a final report used for dissemination purposes to the general public. The report contributes to C2C CC by providing all stakeholders with information about CCA issues and concretely what C2C CC has achieved and expects to achieve after the project's lifetime. It contributes to the objective of the project by involving citizens, NGOs, public authorities, the private sector, etc. as well as providing all partners with concrete dissemination material for them to showcase in their respective environments (work wise and geographically).

This report will be disseminated at the final conference in 400 colour copies, matching the amount of participants expected to attend (cf. E3.4).

The LIFE logo will be visible on all publicity material.

Target audience

C2C CC stakeholders – both those attending the final conference, but also wider, as the report will be made available on the C2C CC website. We will focus on passing on knowledge to Climatorium, AquaGlobe, Water Valley and DNNK in order to provide the best possible conditions for use of the project's experiences.

How:

1. Gather information on all demonstration projects and how the overall C2C CC objective was achieved. Present the information in a comprehensive way along with pictures, graphs, statistics, etc.

Where:

This action mainly takes place at the premises of the PM unit in Viborg.

When:

The work is ongoing through a large part of the project; however, from 01/07/2022 it will be a priority to work on the layman's report.

DS

Reasons why this action is necessary:
Notice boards are necessary to render visible at the C2C CC's demonstration projects to the public to ensure that the local community is aware of what is happening in their environment.
The website will make it possible for all interested parties to gather information and this will in turn entail that the results and experiences will be used in a wider context. It is a priority to make the information as engaging and attractive as possible to make all stakeholders interested in getting involved in the process.

Constraints and assumptions:
No constraints are expected.

Expected results:
E2 mainly result in tangible communication products are published, made available and set up to allow all stakeholders to gather information about C2C CC, this involves the C2C CC website and online platform, at least 24 notice boards, at least 12 newsletters and 1 layman's report distributed in at least 400 copies.

Cost estimation:
Personal costs covered by senior (347 Euroes per day) and junior employees (259 Euroes per day)
Other costs based on earlier experiences.

Estimation of the costs for the total project management staff is based upon prior experience from other similar projects. The previously mentioned CDR staff assigned the action will correspond to the budget categories of academic senior and academic junior, where their more specific tasks described above further subdivides them into additional costs categories. The days assigned to each the academic senior and academic junior category types in the budget are considered to cover the staff assigned for the actions mentioned above and the actual costs will be defined in the employment phase.

Deliverables:

Action	*Deliverables*
E2.1.	1 C2C CC website and 1 online platform
E2.2.	24 notice boards (1 large and 5 smaller notice boards for 4 projects). After the first batch has been made, the remaining 78 will follow.
E2.3.	12 newsletters incl. articles, progress reports, etc.
E2.4	1 layman's report in 400 colour copies and online download

Milestones:

Action	*Quantifiable milestones*	*Date by end of*
E2.1	Draft version of website and online platform ready	26/01/2017
	Final version of website and online platform ready	31/03/2017
E2.2	Notice boards for 4 demonstration projects are ready	30/04/2017
	Notice boards for the remaining projects are ready	30/11/2017
E2.3	Newsletter 1 is published	30/06/2017
	Newsletter 2 is published	15/12/2017
	Newsletter 3 is published	30/06/2018
	Newsletter 4 is published	15/12/2018
	Newsletter 5 is published	30/06/2019
	Newsletter 6 is published	15/12/2019

DS

	Newsletter 7 is published Newsletter 8 is published Newsletter 9 is published Newsletter 10 is published Newsletter 11 is published Newsletter 12 is published	30/06/2020 15/12/2020 30/06/2021 15/12/2021 30/06/2022 15/12/2022
E2.4	Layman's report is finalised	10/11/2022

E3 Seminars and conferences

Beneficiary responsible for implementation: Central Denmark Region

Budget: 137.353€

Number of days estimated spent on action in phase 1: 60 Days
Number of days estimated spent on action in phase 2: 70 Days
Number of days estimated spent on action in phase 3: 72 Days

E3.1 Seminar to communicate about the findings in preparatory action A1

What:

This action takes place in phase 1.

Actions A1.1-A1.5 are vital to ensure that the partners have access to the current knowledge within the fields of CCA integrations and mainstreaming as well as a good understanding of the legal barriers imposing this area. All the data and information gathered in the mentioned preparatory actions need to be communicated to the consortium and other relevant stakeholders, and this will be done at a seminar in May 2018. The seminar is held for the project consortium in addition to being open for external interested parties including the complementary projects. This is to ensure that the general level of knowledge among Danish stakeholders meets best practice, and furthermore, it is an opportunity to disseminate about the C2C CC project. It will be the Communications Officer's overall responsibility to plan the seminar.

The PM unit will present their findings of the legal barriers and additional external experts will be invited to present experience and legal frameworks. Furthermore, senior consultants from the relevant ministries and agencies as well as the Minister of the Environment and the minister of Danish Ministry of Energy, Utilities and Climate are invited to disseminate legal CCA barriers.

This action feeds into actions C1-C24 as the information is necessary to have as a general knowledge of CCA barriers.

The workshop will last half a day (4 hours).

For this event, the PM unit will prepare a memo to be handed out at the seminar. PowerPoints and presentation materials will be available at the C2C CC website.

The LIFE logo will be visible on all publicity material.

Target audience:

The target audience for the seminar is the partners, complementary projects and other relevant stakeholders, who are interested in learning (more) about the barriers of CCA. Furthermore, EU officials from the European Commission (DG CLIMA) will be invited to participate in the conference. All partners and primary stakeholders are expected to attend this workshop. The total number of participants expected to attend this seminar is 60 people.

How:

1. Prepare seminar, invite all stakeholders, confirm venue and speakers.
2. Evaluate seminar and publish seminar material at C2C CC website.

Where:

Ferskvandscentret in Silkeborg (www.fvc.dk)

When:
May 2018

E3.2 Conference "Coast to Coast Climate Challenge – the first year!"

What:

This action takes place in phase 1.

One year into the project, the first large conference will be held for partners and external stakeholders e.g. politicians, NGOs and media. This is to communicate about the project itself, the objectives and the progress after the first year. The various stakeholders will have been well informed throughout this first year by means of notice boards, the website and local information meetings (outreach activity cf. E2).

An important aspect to note in this regard is local government elections on the 21st of November 2017, and the elected politicians will hereafter take office on 1st of January 2018. As there might be a (large) number of newly elected politicians in the municipalities and the regional council, it is essential that these are introduced to C2C CC, the ambitious goals, the many demonstration projects, and the stakeholders involved to ensure the necessary backing from the political level.

Keynote speakers:

- Connie Hedegaard, previous European Commissioner for DG Climate Action and currently chairperson of the green think-tank Concito, will give the opening speech.
- Ida Auken, former Minster of Environment, the politician behind the municipal CCA plans.

The PM unit will be presented and their business cards will be handed out to facilitate contact afterwards for all interested parties. The Communication Officer will encourage all stakeholders to stay up-to-date on the project's progress by visiting and actively using the project's website.

During this conference, all project leaders of C1-C24 are invited to give a presentation to promote and create awareness about the local actions in phase 1 and how it will progress in phase 2 and beyond. A centrally placed booth area with posters, display pictures and information about the actions. One-page project sheets will be available for each action. The one-page project sheets will be printed in 200 colour copies.

Aalborg University, Aarhus University, VIA, Teknologisk Institut, etc. have a timeslot allocated to

present their work and progress on the crosscutting themes e.g. capacity building.

This will be a full one-day conference.

The Regional Council chairman will in his outro introduce the mid-term and final conferences including their dates, and inform about the future focus areas of C2C CC.

The LIFE logo will be visible on all publicity material.

Target audience:

The target audience for "Coast to Coast Climate Challenge – the first year!" is partners, politicians, municipal officials, citizens, NGOs and media. 200 people are expected to participate in the event. All partners will attend this conference. Furthermore, EU officials from the European Commission (DG CLIMA) will be invited to participate in the conference.

How:

1. Invite all stakeholders and speakers well in advance to ensure the availability
2. Prepare conference material and event management
3. Evaluate conference and publish conference material at C2C CC webpage

Where: Eastern part of the region, e.g. Værket in Randers (www.vaerket.dk)

When: 10.01.2018

E3.3 Conference "Coast 2 Coast Climate Challenge – half way there"!

What:

This action takes place in phase 2.

Three years after the project has commenced, the midterm conference will be held for partners and external stakeholders e.g. politicians, citizens, NGOs and media. A midterm evaluation will be presented at this time to indicate how far along the project is and how many of its goals it has achieved at this point in time. As this conference is in phase 2, it is not yet possible to describe its contents further. It will, however, very much be structured in the same way as the first conference (cf. E3.2).

At the end of the conference, the final conference will be introduced (including the date for this).

This will be a full one-day conference.

One-page project sheets are foreseen to be made for each demonstration project – similar to the first conference – and they will be printed in 200 colour copies.

The LIFE logo will be visible on all publicity material.

DS

Target audience:

The target audience for "Coast to Coast Climate Challenge – half way there!" is partners, politicians, municipal officials, citizens, NGOs and media. 200 people are expected to participate in the event. Furthermore, EU officials from the European Commission (DG CLIMA) will be invited to participate in the conference.

How:

1. Invite all stakeholders and speakers well in advance to ensure the availability
2. Prepare conference material and event management
3. Evaluate conference and publish conference material at C2C CC webpage

Where:
Western part of the region, e.g. Musikteatret in Holstebro (www. musikteatret.dk)

When:
09.01.2020

E3.4 Conference "Coast to Coast Climate Challenge – Done! What comes next?"

What:

This action takes place in phase 3.

The final conference for all C2C CC stakeholders (project consortium and external parties) is foreseen to take place in October 2022. Focus is on the evaluation, progress and achievements of C2C CC. Each concrete implementation action will be presented. A special attention is given on the After LIFE activities i.e. in what setting will the project continue, are all partners still on board, and does the overall objective or sub-objectives need to be revised? We plan to combine the event with the COST network's meeting in Denmark.

The layman's report (cf. E2.3) will be handed out during this conference.

This will be a conference over two days.

The LIFE logo will be visible on all publicity material.

Target audience:

The target audience for "Coast to Coast Climate Challenge – Done! What comes next?" is partners, politicians, municipal officials, citizens, NGOs and media. In the previous two conference, 250 people were expected to participate; however, this number increases for the final conference to 300 people. Furthermore, EU officials from the European Commission (DG CLIMA) will be invited to participate in the conference.

How:

1. Invite all stakeholders and speakers well in advance to ensure the availability

2. Prepare conference material and event management
3. Evaluate conference and publish conference material at C2C CC webpage

Where:

In the central part of the region, e.g. Herning Kongrescenter (www.mch.dk)

When:

October 2022

E3.5 Large international conference: ENCORE Conference on "Environmental issues and Climate Change"

What:

This action takes place in phase 1.

CDR is part of ENCORE[1], which is a European regional cooperation forum on environmental issues such as energy, bio economy, climate change, climate change adaptation, biodiversity and green transition. By participating in ENCORE, regions give officials/civil servants and politicians the possibility to establish relations with other regions and to exchange good practices and develop projects e.g. in the framework of EU-applications. From autumn 2016 CDR takes over the presidency of ENCORE. With the presidency follows the responsibility of arranging a political conference. The conference in 2018 is foreseen to also act as an opportunity for display for companies and products from the Central Denmark Region.

The ENCORE conferences are held every two and a half years and they have between 150-800 participants. CDR has participated on both the political and administrative level since 2008.

The budget for this conference is approximately 133.000 € (990.000 DKK), and this will be paid by CDR outside of the C2C CC. Moreover, it is estimated that the manpower to coordinate the conference is equivalent to a full year's work spread out over the next four years. This will be financed by CDR though its Regional Development department.

The benefit of having this conference in the region during the project lifespan of C2C CC is, that valuable lessons can be brought out and best practices and be disseminated to other European regions in advance, during and after the event. Therefore, this conference is of utmost importance in relation to dissemination and replication of C2C CC.

The LIFE logo will be visible on all publicity material.

Target audience:

The target audience for the ENCORE Conference is regional European politicians and professionals working with environment issues and/or policies.

Furthermore, EU officials from the European Commission (DG CLIMA and DG ENV) will be invited to participate in the conference.

How:

1. Aid ENCORE organisers with preparation of the conference
2. Prepare C2C CC communication and dissemination material and platform presentations.
3. Participate in the conference and network with relevant professionals and CCA projects
4. Evaluate conference participation and publish C2C CC conference material on C2C CC webpage.

Where:
Central Denmark Region

When:
2018 (the date of the conference is not agreed upon yet)

E3.6 Participate in International Water Association Conference in Copenhagen

What:

This action takes place in phase 3.

The conference is named "IWA World Water Congress & Exhibition". I is due to Corona Pandemic postponed from October 2020 to 9 – 14 May 2021.

Participating in other conferences is important to ensure dissemination and updated knowledge on the field of CCA. This conference provides an opportunity to learn about best practice in a European and/or global setting.

Officers from the secretariat attend the conference to present C2C CC along with representatives from the partnership and the steering comity to disseminate learning's from C2C CC and in order to establish contacts for replication. In collaboration with AquaGlobe and Climatorium a one day technical tour is arranged.

Similary, participation in ECCA 2019 is planned and the secretariat is aware of any other relevant conferences, exhibitions, etc. where it is estimated that our needs and obligations can be met.

The LIFE logo will be visible on all publicity material.

How:

1. Submit conference abstracts for platform presentation and sign up for the conference
2. Prepare conference material (StoryMap, flyers, etc.)
3. Evaluate conference and publish C2C CC conference material on C2C CC website

DS

Where:
ECCA 2019 is in Lisbon
IWA 2021 is in Copenhagen

When:
13-14 July 2019
9 – 14 May 2021

E3.7 Networking or thematic event upon request of the Contracting authority

What:
A platform meeting presenting results from C2C CC project. The event will include group tours to see sites included in the project or other LIFE projects in the near by.

How:
The monitoring team and EASME would be involved in the organization of the event, identifying projects to invite, sending out invitations, attending the event and assisting there, etc. The details will be agreed based on need at the time. The participants would of pay for their own accommodation and travel.

Where:
Central Denmark Region, location to be decided.

When:
2020

Cost: Additional cost of EUR 10.000 is claimed on request.

Reasons why this action is necessary
Conferences are effective in reaching many stakeholders and establishing contacts regarding cross-border knowledge sharing. Six large conferences are foreseen in the six years of C2C CC, and of these, 2 are hosted externally (e.g. not under the auspices of C2C CC). The conferences are foreseen to have between 250-400 participants.

Constraints and assumptions
The main constraint is lack of participants signing up and attending the conference. The size of the C2C CC consortium, the novelty of the actions and the pressing need for local experiences on CCA make a burning platform of the conferences. The communication and outreach plan aid in ensuring broad communication of the conferences.

Expected results:
The actions of E3 results in C2C CC is disseminated to a large number of stakeholders during the project's lifetime. The 3 C2C CC conferences and ENCORE will result in dissemination to at least 1150 Danish and European professionals.

Cost estimation:
Personal costs covered by senior (347 Euroes per day) and junior employees (259 Euroes per day)
Other costs based on earlier experiences.

JBS

Estimation of the costs for the total project management staff is based upon prior experience from other similar projects. The previously mentioned CDR staff assigned the action will correspond to the budget categories of academic senior and academic junior, where their more specific tasks described above further subdivides them into additional costs categories. The days assigned to each the academic senior and academic junior category types in the budget are considered to cover the staff assigned for the actions mentioned above and the actual costs will be defined in the employment phase.

Deliverables:

Action	*Deliverables*
E3.1.	Agenda for the seminar Presentation on review of legal barriers (cf. E3.1)
E3.2 – E3.4	Conference material for the three conferences One pagers for use in the three conferences Booth material (demonstration projects) for use for the three conferences
E3.5	Presentation to use at ENCORE
E3.6	Presentation to use at IWA World Water Congress & Exhibition
E3.7	Presentations to use at the platform meeting

Milestones:

Action	*Quantifiable milestones*	*Date by end of*
E3.1	Seminar on legal barriers + other research in preparatory action A1 is held	31/05/2018
E3.2	The first C2C CC conference "The first year" is held	10/01/2018
E3.3	The second C2C CC conference "Half way there" is held	09/01/2020
E3.4	The final C2C CC conference "Done! What comes next?" is held	15/11/2022
E3.5	The presentation for the ENCORE conference is ready	31/12/2018
E3.6.1	Presentation and all relevant material is ready to bring to the IWA conference	01/05/2021
E3.6.2	Presentation and all relevant material is ready to bring to the ECCA conference	01/06/2019
E3.7	Presentation and all relevant material is ready to bring to the platform meeting	Date is not yet set

DS

E4. Media works

Beneficiary responsible for implementation: Central Denmark Region

Budget: 14.942€

Number of days estimated spent on action in phase 1: 15 Days
Number of days estimated spent on action in phase 2: 12 Days
Number of days estimated spent on action in phase 3: 17 Days

What

This action takes place in phases 1-3.

The overall strategy for dealing with the media is set out in the communication and outreach plan (cf. E1). The press will be informed about the progress of C2C CC by means of press releases. They will also be invited to join various events and conferences. Press conferences are in particular foreseen in phases 2 and 3, when concrete implementation actions reach a significant goal and/or are completed.

Media contacts may include: journalists from large and local newspapers, "green" magazines, Dialog (CDR's magazine about regional development, which is published four times a year), Zoom (the equivalent magazine in the Northern Danish Region), Danske Kommuner (Local Government Denmark's weekly magazine), Danske Regioners nyhedsbrev, CDEU's news, local newspapers. The PM unit is in charge of all contact with the media, and create contact between media and local project leaders of C8-C24.

The LIFE logo will be visible on all publicity material.

The target audience is the media.

How:

1. Start dialogue with key journalists, e. g. from Berlingske, Danske Kommuner, Natur & Miljø (Danmarks Naturfredningsforening).
2. Write 4 press releases per year on C2C CC.
3. Arrange minimum 1 interview per concrete implementation action for the media.

Where:

This action primarily takes place at the premises of the PM unit in Viborg.

When:

Throughout the C2C CC's duration 01.01.2017-31.12.2022

Reasons why this action is necessary:
Keeping the media informed is vital to ensure overall dissemination.

PS

Constraints and assumptions:
It is assumed that there is a wide interest to include the press releases in the various media, and that all 12 press releases will be published in both general media (e.g. national newspapers) and in more sector specific media (e.g. magazines on climate issues and green transition).

Some medias require payment, which the secretariat is not ready to offer.

Expected results:
Effective and professional communication through a good line of communication with the media and production of press material, this involves at least 24 press releases over the course of the six years and "study trips" to the demonstration projects as showcases of CCA, C2C CC and LIFE IP.

Cost estimation:
Personal costs covered by senior (347 Euroes per day) and junior employees (259 Euroes per day) Other costs based on earlier experiences.

Estimation of the costs for the total project management staff is based upon prior experience from other similar projects. The previously mentioned CDR staff assigned the action will correspond to the budget categories of academic senior and academic junior, where their more specific tasks described above further subdivides them into additional costs categories. The days assigned to each the academic senior and academic junior category types in the budget are considered to cover the staff assigned for the actions mentioned above and the actual costs will be defined in the employment phase.

Deliverables:

Action	*Deliverables*
E4	12 press releases over the course of the six years 17 agendas for the "study trips" to the demonstration projects 24 signature stories on C2C CC

Milestones:

Action	*Quantifiable milestones*	*Date by end of*
E4	Press release 1-4 are finished	31/12/2017
	Press release 5-8 are finished	31/12/2018
	Press release 9-12 are finished	31/12/2019
	Press release 13-16 are finished	31/12/2020
	Press release 17-20 are finished	31/12/2021
	Press release 21-24 are finished	31/12/2022
	17 study trips have been planned and executed	31/10/2022
	24 signature stories are finished	31/12/2022

DS

E5. Networking with other projects (obligatory)

Beneficiary responsible for implementation: Central Denmark EU Office

Budget: 36.188€

Number of days estimated spent on action in phase 1: 34 Days
Number of days estimated spent on action in phase 2: 18 Days
Number of days estimated spent on action in phase 3: 17 Days

What
This action takes place in phases 1-3.

Networking with other projects (LIFE projects as well as non-LIFE projects) and sharing experiences and good practices are important elements of achieving a successful LIFE IP. This action is a continuous action, which takes place throughout the project period.
Projects having received LIFE funds are important due to their innovative and European added value on either nature or climate, which is highly relevant to C2C CC. One of the objectives of LIFE projects is to achieve a European added value and to share best practices and cases with other EU Member States, and networking with other projects is a vital aspect of this. Central Denmark EU Office (CDEU) will participate in other projects' workshops and dissemination activities to establish contact with the project managers and potentially other relevant people. If relevant, these can be invited to participate in the three conferences planned to take place in year 1, year 3 and year 6 of C2C CC (cf. E3.2-E3.4). CDEU can, due to the office's location in Brussels, ensure that C2C CC is presented and disseminated at various workshops and conferences hosted by the EU, regional offices, NGOs, etc., and thus establish contact with relevant projects.
The LIFE logo will be visible on all publicity material.

The target audience for this action is projects having received LIFE or other EU funds, primarily dealing with nature, environment, CCA and capacity building.

How

1. Establishing contact with previous Danish projects having received LIFE funds (these can be found in the LIFE database; establishing contact with other Danish non-LIFE funded projects of relevance to C2C CC (cf. above where the reasoning for why both CCA and non-CCA projects are relevant)
2. Participate in a minimum of 4 networking activities per year (small and large scale seminars, conferences and meetings). These will take place in and around the Brussels region.

Where Denmark and EU Member States

When In general, for the communication tasks: these will commence immediately after the project commences and continue throughout the project period and afterwards.

Reasons why this action is necessary:
To stay up to date with European best practice. This action is necessary to ensure that best practices are used and further developed and it will help ensure a continuous high quality of C2C CC.

DS

Constraints and assumptions
No significant constraints are expected for this action.

Expected results:
Networking with other projects result in dissemination of C2C to the Brussels' environment and bringing in European best practice to C2C CC.

Cost estimation:
Personal costs covered by senior (347 Euroes per day) and junior employees (259 Euroes per day)
Other costs based on earlier experiences

Estimation of the costs for the total project management staff is based upon prior experience from other similar projects. The previously mentioned CDR staff assigned the action will correspond to the budget categories of academic senior and academic junior, where their more specific tasks described above further subdivides them into additional costs categories. The days assigned to each the academic senior and academic junior category types in the budget are considered to cover the staff assigned for the actions mentioned above and the actual costs will be defined in the employment phase.

Deliverables:

Action	*Deliverables*
E5	1 overview of all Danish projects having received LIFE funding and other Danish projects having received other EU funding, but which is still relevant in relation to C2C CC 24 confirmation letters/emails of attendance to events

Milestones:

Action	*Quantifiable milestones*	*Date by end of*
E5	The overview showing Danish projects (LIFE and other EU funds) is finished	30/04/2018
	Participation in 4 events on CCA and/or CCM(year 1)	31/12/2017
	Participation in 4 events on CCA and/or CCM(year 2)	31/12/2018
	Participation in 4 events on CCA and/or CCM(year 3)	31/12/2019
	Participation in 4 events on CCA and/or CCM(year 4)	31/12/2020
	Participation in 4 events on CCA and/or CCM(year 5)	31/12/2021
	Participation in 4 events on CCA and/or CCM(year 6)	31/12/2022

DS

E6 International dissemination

Beneficiary responsible for implementation: Central Denmark EU Office

Budget: 41.235€

Number of days estimated spent on action in phase 1: 37 Days
Number of days estimated spent on action in phase 2: 18 Days
Number of days estimated spent on action in phase 3: 18 Days

What

CDEU will travel 2 times per year to the Central Danish Region to produce short films of C1-C24. Statements from the project leaders will be included as well as short statements from other relevant stakeholders, e.g. NGO's working on the project. The films will be disseminated on the C2C CC website as well as on the locally embedded websites of the actions.

The LIFE logo will be visible on all publicity material.

Target audience

EU officials, project officers, policy officers, energy and climate representatives from the permanent representations, etc.

How

Action 1: Video various parts of the projects and interview key people working on it

Action 2: Edit the short films into approximately 2 minutes for each project

Action 3: Upload the short films to the C2C CC website when they are done and write a short story/article for each of them

Where

Central Denmark Region

When

This is a continuous activity taking place between 01/01/2017 – 31/12/2022

Reasons why this action is necessary:
To promote international dissemination and replication. Providing this project – and its many crosscutting capacity building activities and demonstration projects - as a best practice example, that other regions in and outside of Europe can replicate to their local environments, is a key goal for C2C CC.

Constraints and assumptions

DS

No significant constraints are expected for this action.

Expected results:
Each crosscutting capacity building activity and demonstration project is disseminated to a wide public international audience, at least 24 short films (one for concrete implementation action) are made and disseminated on the C2C CC website.

Cost estimation:
Personal costs covered by senior (347 Euroes per day) and junior employees (259 Euroes per day)
Other costs based on earlier experiences

Estimation of the costs for the total project management staff is based upon prior experience from other similar projects. The previously mentioned CDR staff assigned the action will correspond to the budget categories of academic senior and academic junior, where their more specific tasks described above further subdivides them into additional costs categories. The days assigned to each the academic senior and academic junior category types in the budget are considered to cover the staff assigned for the actions mentioned above and the actual costs will be defined in the employment phase. Subsistence costs are also based on prior experience and can be further subdivided into Hotel costs, Daily allowances/Payment for meals and local transportation categories, as shown below for this action's subsistence costs items:

Travels	**Trip to Denmark. Production of dissemination materials**
Partners / *Cost categories:*	**CDEU**
Hotel cost:	554
Daily allowances/Payment for meals cost:	238
Local transportation costs:	0
Total subsistence cost:	792

Deliverables:

Action	*Deliverables*
E6	24 short films (one for each demonstration project and crosscutting capacity building activity) are made and disseminated on the C2C CC website

Milestones:

Action	*Quantifiable milestones*	*Date by end of*
E5	24 short film are finished	31/10/2022

F. Project Management and monitoring of project progress (obligatory)

Beneficiary responsible for implementation: Central Denmark Region

This action and its sub-actions will take place in phase 1 and ongoing.

Description:
Project Management (PM) will as the coordinating beneficiary assume the overall responsibility for ensuring the project meets its objectives and outcomes. Further PM will make sure that the project runs within the time setup in the milestone plans, meets the demanded reporting and financial requirements. PM will be the single point contact for EC and manage the project.

The PM unit is the daily administration of the full IP. This includes coordination of the work related to full implementation of D, E and F actions The PM unit will be responsible for keeping the project on track and ensure that the tasks are worked on and delivered on time. Progress and financial reports will be made for the EU-LIFE administrators and evaluators every two years. Furthermore, the PM unit is the central unit established to facilitate, coordinate and built up capacity for the local entities in the project and is responsible for communicating project results to the media and running the implementation of the communication plan setup in the project. Subsequently, PM is the unit working on inputs to the steering committee

ACTION F.1: **Establishment of organizational structure**

Budget: 1.013.927€

Number of days estimated spent on action in phase 1: 1072 Days
Number of days estimated spent on action in phase 2: 1001 Days
Number of days estimated spent on action in phase 3: 782 Days

What:

In the preparation of the concept note and full proposal, all relevant organizations has been consulted to develop the proper organization of C2C CC. The organizational structure will support interdisciplinary and very different challenges, while the flexibility is still kept.

Figure 55 shows the overall organizational structure (organigram) of the project management and its relations to the other inteties in the project organisation. It also gives a overview of the different tasks for the different organisational entities in the overall organisational structure.

DS

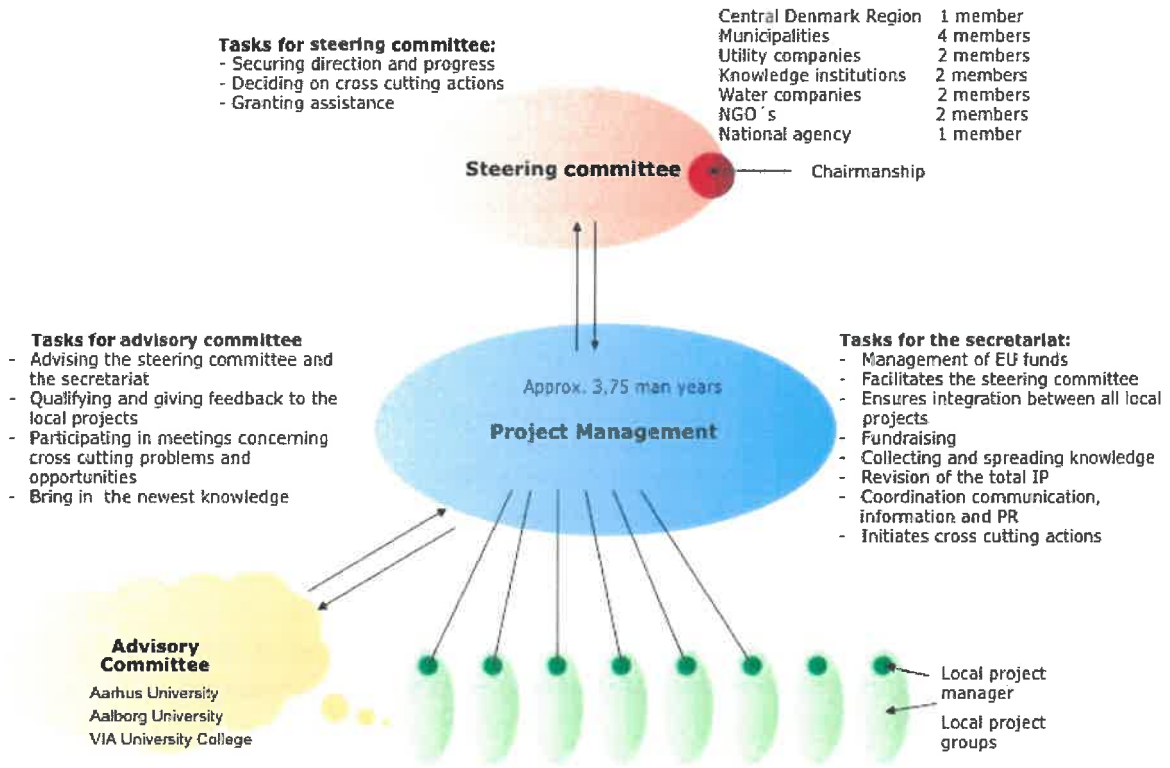


Figure 1: Organisation structure of C2C CC IP LIFE

How:

The long and detailed preparation phase up to the IP CN and subsequent Full Proposal has established C2C CC as a project with great attention. Therefore, there will be great interest in participating in the different units such as steering committee.

Where: The unit is based the premises of CDR in Viborg.

When: Starting second half of 2016 running through whole project period.

F1.1 Establish a project management unit

What:
Central Region Denmark will establish the overall project management unit.

This action feeds into C1-C24

How:
Both permanent and temporary staff will implement the management actions including the cross-disciplinary themes (C1-C7), coordination of activities in the demonstration projects, and the complementary projects. Project management unit will further include super vision, quality checking outputs, human resource management, overall representation of the project, financial management,

DS

LIFE Activity reporting and recruitment.

The recruitment process will take 4 months (i.e. posting the vacancy, reviewing incoming applications and interviewing candidates). The first two weeks after the IP starts, the unit will be given a thorough introduction by the project manager and project financial officer, covering: how C2C CC was developed, partners and other stakeholders, the objectives, the actions, and the complementary projects, etc. Furthermore, the unit will be introduced to the Central Denmark EU Office (CDEU), who will actively aid with fundraising and applying for complementary projects.

The total project management staff will consist of:

- Project Manager
- Project Officer
- Communication officer
- Experts in the Water Cycle
- Project Secretary
- IP Finance Officer

CDR has managers with extensive experience with project management of large national and international consortia's regarding water management and innovation as shown below where the relevant experience of the PM is listed:

- Lead partner in CLIWAT: InterReg IVB NSR project about climate change and groundwater. Ended 2012
- Lead partner in WaterCAP: InterReg IVB NSR Cluster project working in the field of water cycle and climate change and bringing results to the EU level. Ended 2013
- Lead partner in WaterCAP Taskforce: InterReg IVB NSR project about dissemenating the results of InterReg projects about water and climate change. Ended 2015
- Lead partner in TopSoil: InterReg VB NSR project about finding new ways of managing the soils to improve the climate change resilience. Start 2015 end 2019
- Project partner in Burval: InterReg IIIB NSR project conserning groundwater and groundwater protection in buried valleys. Ended 2006.
- Participating in regional projects about climate change adaptation.
- Furthermore, the appointed manager is board member of a large innovation network (Water in Cities) in CDR about climate change and water.

The finance officer appointed to the project has extensive experience from the following projects:

- Coordinating beneficiary in North Pest Clean: LIFE 09 ENV project. Ended 2014.
- Coordinating beneficiary in ScanComp: InterReg IV A project with 37 partners and a budget of 12 million €. Ended 2014.
- Coordinating beneficiary in WaterCAP Taskforce: InterReg IVB NSR project. Ended 2015
- Coordinating beneficiary in TopSoil: InterReg VB NSR project. Start 2015 end 2019
- Coordinating beneficiary in KOBRA: InterReg VB ØKS project. Start 2015 end 2019

DS

- Financial management of transportation system for Siemens and 25 centers in Germany - volume 50 million €. Ended 2000.

The project manager will appoint and recruit the rest of the project management team as one of the first tasks.

Where: The unit will be based in the premises of Central Denmark Region in Viborg.

When: The preparations, such as recruiting and allocating an office, will start September 2016. As the project starts 1st of January 2017, the PM needs to be established before this date, so it is full-fledged and prepared to start working from the first day of the project.

F1.2 Project coordination, monitoring and reporting

What:

The PM has the responsibility for IP project coordination, monitoring and reporting. The primary tasks of the PM are:

- Quality control and risk management incl. contingency planning
- Develop draft partnership agreement
- Process preparatory actions (A actions), concrete actions (C1-C7), monitoring actions (D-actions) and E-actions.
- Coordinate between concrete actions (C8-C24) and complementary projects
- Coordinate and support public C2C CC tenders and affect them in a green and sustainable direction, as a minimum through CDR's green procurement standards
- The C2C CC project manager is the link between the steering group and C2C CC. The manager will also provide a link with the advisory committee
- Reporting to LIFE administration incl. general LIFE reporting, finance reporting, audit, next phase preparation and 'after LIFE' plan.
- Prepare the next phase in coordination with C1-C24
- Coordinate the implementation of D and E actions

How:

1. Project coordination

The PM is a central unit established to facilitate, coordinate and built up capacity for the local entities in the project, steering group and advisory Committee, which involves coordination among the actions, not only in relation to LIFE reporting, but also for the purpose of ensuring integrative planning. The C2C CC partnership is also expected to result in a number of common tenders and public procurements targeting the similar challenges of the municipalities (C1-C7). The PM will support the local process and run some of the procurements on a regional basis to ensure cross cut learning and take advantages of economies of scale. The project team will meet monthly to track progress, resolve issues and identify risks. The frequency can regularly increase to a weekly basis depending on the tasks ahead. Facilities like telephone and video conferences will be used when appropriate. For enhancing planning, coordination, reporting, communication and general management purposes between PM and associated beneficiaries, a dedicated management software solution will be purchased.

DS

At the end of every phase the PM will compile and gather the phase 2 reports from C1-C7 and prepare a proposal for adjustment and planning of the next phase. The proposal will be discussed with the steering group, advisory board and the beneficiaries in the project dealing with C8-C24.

2. *LIFE reporting*

The PM unit will monitor milestones from project activities and collect deliverables from beneficiaries' action (C8-C24) for assembling into required LIFE progress reports. The PM unit will be responsible for reporting on the progress indicators and to maintain an up to date record of project progress against indicators. The IP Finance Officer will prepare documentation for audit incl. maintaining record of costs incurred. The Communication Officer will be responsible for producing a communication and dissemination plan, maintaining the C2C CC online portal, and coordinate communication across C1-C24 and ensure all materials meet the LIFE requirements. To track project progress and share documents between partners the C2C CC online portal is established and will include an electronic logbook.

3. *Finance reporting*

The Finance Officer assist the Project Manager with financial statement related to submission of LIFE progress reports and will arrange and prepare for the external audit. In advance the Finance Officer will gather and compile the reports from the beneficiaries.

4. *Audit*

An external auditor is used to verify that the IP has been delivered according to time and budget. The External Audit will be included with the Final Report and request for payment at the end of the project.

5. *Next phase preparation and "after LIFE plan"*

Prior to each of the three phases, the PM prepares for the next phase to be included in the progress reporting for the previous phase. This is done in close corporation with the work done in C1-C24. Further it will include coordination of technical and financial elements and dialogue with C2C CC steering group and the beneficiaries. After LIFE plan is planned at the end of Phase 3, and will incorporate continuation of C2C CC actions after the end of the IP.

Where:

The unit will be based in the premises of Central Denmark Region in Viborg.

When:

Throughout all phases

F1.3 Launch of steering group and project groups

What:

The daily management of the project is lead by the PM. In addition the overall decision making is dealt with by the steering group represented by partners in the consortia.

This action feeds into C1-C24

How:

The steering group includes municipal representatives appointed by the Regional Association of

DS

Local Government of DK (LGDK), high-level representatives from the CDR as well as representatives from CDR, water companies, knowledge institutions, companies, and government agencies. The organisations involved are already known, but the relevant individuals need to be identified. The project management group thus needs to contact the stakeholders to appoint the primary and secondary responsible person, who will be included in the Steering Group on the basis of knowledge and interest in CCA.

The tasks of the steering group are:

- Securing direction and progress
- Deciding on witch cross-cutting actions to initiate
- Granting assistance from the Advisory Committee to the local projects

The project groups consist of the relevant beneficiaries and their respective stakeholders involved in each of the actions C8-C24. Depending on the character of the actions, it is possible that more stakeholders could be involved, e.g. in relation to business development. Project groups last during all phases and in some cases afterwards.

Where:
Central Denmark Region

When:
27/01/2017 the launch of the steering group and project groups will be part at the kick off seminar.

F1.4 Establishment of Advisory Committee

What:
The C2C CC understanding of capacity-building relates to the project's definition of resilience, described in Form B, section 2. The main objective of C2C CC has its core in strengthening resilience, including vulnerability and adaptive capacity. Within adaptive capacity lies also an understanding of resilience as a process, where capacity to cope with change can be developed and strengthened, and where change can be used as a possibility to innovate. Capacity building is included in C2C CC through extensive and thematic focused capacity building activites in C1-C7 and by establishing an Advisory Committee, which has the function of a capacity building task force.

The organisation of C2C CC, was decided by the consortium at preparatory workshops and the members have acknowledged their role in the Advisory Committee. Therefore, once the IP starts, the Advisory Committee will be formally established. There are three members – all of which are universities: Aarhus University (AU), Aalborg University (AAU) and VIA University College (VIA). These beneficiaries are included in the IP budget. In addition, other knowledge institutions have expressed a wish to take part in the Advisory Committee on a voluntary basis; this will be accepted in regard to relevant enhancement of specific expertise. The PM supports the Advisory Committee in relation to coordination between capacity building activities and organisation of specific events.

The tasks of the Advisory Committee are:

- Challenges on how CCA may support sustainable transition of existing systems and practices

JS

- How to create added value across different sectors including environment, biodiversity, livability, health and job-creation
- How to realize in practice inter-sectorial and inter-disciplinary collaborations in integrative planning processes involving network governance
- How to engage and mobilize private actors including citizen involvement and to create new forms of co-creation and co-operations
- Create synergies between the 17 demonstration projects and 7 cross-cutting capacity building actions
- In general, answer questions from the beneficiaries on technical issues related to the specific actions

As C2C CC includes many issues, e.g. flooding, water environment and marine ecology, it is possible to create themed sub-groups in the Advisory Committee, when relevant.

The first meeting in the Advisory Committee takes place in January 2017 and the overall aim is to define the areas of competences within the three members' organisations and to match expectations and define synergies.

Business PhD's: A total of DKK 2,4 million is allocated to the Advisory Committee for e.g. PhD projects or other research studies. PhD students will be employed for a period of 3 years each.

It is agreed in the consortium that he Advisory Committee members contribute with 20 % co-financing instead of the usual 40 %. The remaining part is contributed by CDR. The allocated man hours to be spent in phase 1 are: approximately 399 hours for AAU and VIA, each where 375 is spent on advising again for each and approximately 350 hours for AU in phase 1 where 326 is spent on advising.

This action feeds into C1-C24.

How:

1. To advise on crosscutting capacity building actions and demonstration projects incl. to engage actively in the concrete actions C1-C24 to qualify the projects and to ensure best practice and state of the art knowledge (375 hours of advising per AC member for AAU and VIA and 350 hours of advising for AU's AC member in phase 1 alone)
2. To collect and compile knowledge from the demonstration and crosscutting capacity building actions, and use their results to create synergies
3. To aid drafting on guidelines on how to deal with specific challenges and opportunities
4. To disseminate knowledge to the relevant project owners and partners (give presentations at C1-C7 workshops) as well as externally (publish 3 articles per year on specific topics in newspapers, magazines and sector-specific publications)
5. To support further capacity building activities
6. To meet four times per year (a total of 24 meetings) to ensure consensus and to discuss issues/challenges/opportunities

Where:
The Advisory Committee will meet at the premises of one of the members or meet at the premises of the PM unit (to be confirmed when the project starts).

When:
The Advisory Committee will meet 4 times per year, and the potential themed sub-groups will meet as often as is required and will be agreed upon individually in the groups.

Expected results:
F1 will result in professional project management of C2C CC LIFE IP with a competent, structured and highly engaged PM unit. F1 will further result in clear division of responsibility in the C2C CC consortium and the Advisory Committee will result in high quality of capacity building to secure best practice, mobilize complementary projects and promote innovation. The kick off seminar in F2 will result in dissemination of formal requirements, practical information and further mobilize engagement among partners and the communication workshop will result in dissemination and coordination of correct LIFE IP communication to local communication officers.

Cost estimation:
The cost estimations on the PhD engagement is based on 200 € per day.
The costs relates to time across permanent and temporary staff and some travel costs. External costs has been estimated based on prior experience from other projects.

Estimation of the costs for the total project management staff is based upon prior experience from other similar projects. The previously mentioned CDR staff assigned the action will correspond to the budget categories of academic senior and academic junior, where their more specific tasks described above further subdivides them into additional costs categories. The 200 days assigned to each the academic senior and academic junior category types in the budget are considered to cover the staff assigned for the actions mentioned above and the actual costs will be defined in the employment phase. Subsistence costs are also based on prior experience and can be further subdivided into Hotel costs, Daily allowances/Payment for meals and local transportation categories, as shown below for this action's subsistence costs items:

Travels	**Trip to DK. Thorough introduction of C2C CC to Project management Unit**
Partners / *Cost categories:*	**CDEU**
Hotel cost:	147
Daily allowances/Payment for meals cost:	63
Local transportation costs:	0
Total subsistence cost:	210

DS

ACTION F2 **Internal seminars and workshops**

Beneficiary responsible for implementation: Central Region Denmark

Budget: 25.695€

Number of days estimated spent on action in phase 1: 60 Days

F2.1 Kick-off seminar for the project consortia

What:

The purpose of the kick-off seminar is to ensure, that all C2C CC partners are ready to start the IP; involving the concrete actions, that everybody understands their tasks, know the C2C CC objectives, etc. And also to re-gain the C2C CC spirit developed through the initial workshops during 2015 and 2016 where the C2C CC was developed.

The Communication Officer in the PM unit has the overall responsibility for planning the kick-off seminar; however, the remaining 2,75 officers in the PM will attend the kick-off seminar. This seminar will also be an introduction of the PM by the project developers from CDR and Central Denmark EU Office (CDEU) for the C2C CC partners.

Target audience: The target audience for the kick-off seminar is the C2C CC partners.

The content of the kick-off seminar, will besides introducing the frame of C2C CC also include:

- Covenant of Mayors Climate and Energy: All municipalities that signed Letters of Intent for the Concept Note will be introduced to Covenant of Mayors Climate and Energy at the kick-off seminar and the PM will ensure that all involved municipalities in C2C CC are well informed and on their way to connect the CCA plans to this agreement.
- Mayors Adapt: To ensure that all municipalities that signed Letters of Intent for the Concept Note (where they agreed to start preparing for Mayors Adapt), has signed up for this initiative. In that regard, Mayors Adapt will be introduced at the kick-off seminar and the PM will ensure that all involved municipalities in C2C CC are well on their way to signing.
- Electronic Logbook: To introduce an electronic logbook for the partners. This logbook has the purpose to keep track of the progress and the partners' experiences – both positive and negative – as well as the work being done and the stakeholders involved (cf. E2.1). This logbook is presented as a way to deal with process related issues, e.g. expectations for the project, who participated, what came out of it, what was learned, replication possibilities (can the method, process and/or example be replicated?). Other partners will have the opportunity to comment on and assist on any problems or challenges as well as staying up-to-date with the progress. The output of this logbook can be used as material in research projects by AU or AAU in relation to governance and network governance.

How:

1. To invite all partners well in advance to ensure that all partners are represented at the kick-

off seminar.

2. To confirm venue large enough for this seminar and which has the capacity of both one large room and several smaller group rooms, as it is foreseen that the participants are divided into teams.
3. To confirm speakers and set the agenda. Speakers can be people either involved in C2C CC and/or external people, who will speak about important aspects such as replication or innovation in the water sector.
4. To prepare an overview of the municipalities, which have already signed Mayors Adapt and those who are working on it.
5. To prepare a presentation on the C2C CC logbook for all partners to use. This is a part of the online platform, which is the internal section of the C2C CC website limited to partners.

Where:
Ferskvandscenteret in Silkeborg

When:
This action takes place in phase 1 on 26/01/2017. The kick-off seminar should be held in late January 2017 in order to ensure that the PM has been fully introduced to C2C CC partners, that the online communication platform is up and running and that the IP gets "of the ground".

F2.2 Communications workshop

What:
This workshop has the purpose to ensure that all people working with communication in the municipalities and other partners are aware of the importance of communication for C2C CC and to create an opportunity to brainstorm on how to best communicate and disseminate information about the project and its many actions.

The Communications Officer in the PM will present the actions linked to communication and dissemination mentioned in the IP application. The workshop will build capacity among local communication officers related to C8-C24 on communication of C2C CC as a LIFE IP project.

The workshop will be held after the launch of the C2C CC website. This action feeds into the action E´s Communications and Outreach Plan.

The workshop will last 4 hours/half a day.

Target audience: The target audience is local communication officers. One or two officers will attend from each beneficiary.

How:

1. Prepare workshop
2. Invite all beneficiaries
3. Confirm venue

Where:
Venue to be decided.

When:
This action takes place in phase 1 on 28.02.2017. It is important that this workshop is held within the first few months of the project. The workshop is thus planned to take place at the end of February, as this gives the PM sufficient time to get the C2C CC website up and running and plan this workshop.

Reasons why this action is necessary:
Action F1.1. and F1.2 are obligatory and absolutely essential in running C2C CC, and F1.3 is necessary to ensure clear division of responsibility. F1.4. is necessary to ensure that the quality of the capacity building as a minimum secures best practice, mobilize complementary projects and promote innovation.

F.2.1 will create a good official starting point of the C2C CC where formal requirements can be disseminated to all partners, and the great spirit of the initial IP application phase can be reestablished in an official beginning of integrated CCA planning. F2.2 is necessary for coordinating and mainstreaming the communication of C2C CC, when the consortium consist of a large numbers of partners, who all have great engagement in communicating and anchoring C2C CC locally towards politicians, citizens and stakeholders. This is in particular important to ensure the implementation of actions after the end of the C2C CC.

Constraints and assumptions:
There are no expected significant constraints related to F1.1, F1.2 and F1.3. The overall PM of the IP has great experiences in running large EU funded projects incl. InterReg and has management experience with employee responsibility and recruiting. In addition, this person is one of the main drivers behind CDR's many years of experience in organising and facilitating large stakeholder processes incl. network and knowledge sharing, and capacity building events within CCA. The foundations of the steering group and project groups are established during the initial IP application process.

One possible constraint related to the Advisory Committee (F1.4) is insufficient practise of the committee, whereas the capacity building potential is not fully used. The research institutions (VIA, AU and AAU) are all known for their applied science and active engagement with practice, the collaboration will thus not suffer from lack of bridging between science and practice. However, there may be a challenge in 'remembering' to bring in the Advisory Committee into the concrete actions (C8-C23). The PM will therefore support the Advisory Committee and C8-C23 in actively bringing the committee into the challenges of the concrete actions. This is done by the Electronic Logbook,and the ongoing dialogue.

There are no significant constraints related to action F2.1 and F2.2.

Expected results:
Dissemination of formal requirements, practical information and further mobilize engagement among partners (F2.1). Dissemination and coordination of correct LIFE IP communication to local communication officers (F2.2)

DS

Cost estimation:
Estimation of the costs for the total project management staff is based upon prior experience from other similar projects. The previously mentioned CDR staff assigned the action will correspond to the budget categories of academic senior and academic junior, where their more specific tasks described above further subdivides them into additional costs categories. The days assigned to each the academic senior and academic junior category types in the budget are considered to cover the staff assigned for the actions mentioned above and the actual costs will be defined in the employment phase.

Deliverables:

Action no	Deliverables
F1	Phase 1 progress report incl. a strategy for coordinating with other funding bodies and MOU's Phase 2 proposal Phase 2 progress report Phase 3 proposal Mid-term reporting Phase 3 progress report Final report Electronic Log book
F2	Kick-off press release

Milestones:

Action no.	Quantifiable milestones	Date by end of
F1	Strategy for coordinating with other funding bodies	01/06/2017
	PMU stablished incl. new recruitments	31/11/2016
	Steering group launched	26/01/2017
	Phase 1 progress report done	31/09/2018
	Mid-term report done	31/08/2019
	Phase 2 progress report done	31/09/2020
	Phase 3 progress report done	31/09/2022
	Final report done	31/06/2023
	After LIFE plan drafted	31/06/2023
F2	Kick-off seminar prepared	26/01/2017
	Communication work shop prepared	28/02/2017

DELIVERABLE, MILESTONES AND REPORTING SCHEDULE

MAIN DELIVERABLE PRODUCTS OF THE PROJECT

Name of the Deliverable	Code of the associated action	Deadline
A memo sent to the beneficiaries PowerPoint presentation	A1	31/5/2017
Report on best practices in relation to CCA mainstreaming (desk study) Report on strategy on how to work with cross-sectoral cooperation A PowerPoint presentation	A2	31/12/2017 31/05/2018
A report and database on information from previous data analyses and reports A report showing both quantitative and qualitative answers	A3	31/03/2017
A script used for conducting the interviews A report showing both quantitative and qualitative answers A PowerPoint presentation used to disseminate the information	A4	15/04/2017 31/05/2018
Minutes of meeting. Initial contact is made with LGDK and relevant national ministries and agencies, and the first meeting is set up	A5	31/03/2017
One note on replication of the findings in the project Note on the continuation of a CCA and coastal challenges network after the IP incl. recommendations on purpose, organisation and financing. Report on the establishment of a permanent Danish integrated river-coastline network.	C1	31/12/2022 31/12/2022 01/06/2022
An interactive 3D decision support tool on the water flow in catchment areas across municipal borders (same as C6.2). 1 forecast system based on models and meteorological forecasts available for the public 1 Note on new concept for utilities to pay farmers to retain water upstream cities, and thus save costly investments in the cities. 1 report on different business models to ensure win win solutions between the agriculture and urban areas. Action Report on the synergies between agriculture, CCA and wetlands 1 report on 'Impacts of CCA on freshwater ecology'. Follow-up-rapport with recommendations about Experiences with modeling large catchments Rapport, describing the possibilities in delaying climate water in low laying areas (peatland)	C2	31/12/2018 31/12/2020 31/12/2020 31/12/2020 31/12/2020 31/12/2022 31/12/2022

DS

Report with maps showing groundwater flood prone areas. Training material in the form of maps and descriptions. Report on the available tools on groundwater mapping including relevant test and demonstrations Workshop report on the results discovered. General report on the potential needs for local models in groundwater flood prone areas based on the results from the local and regional modelling. Guideline on local scale and regional scale modeling. Report - Identifying conflicts built in the present tax system on energy and water consumption. Guideline in how to use the C2C CC tool in combination with the governmental developed tools HIP and KAMP Catalogue of measures for reducing flood risk from rising terrain near	C3	31/12/2020 31/12/2018 31/12/2020 31/12/2020 31/12/2020 31/12/2020 31/12/2022 31/12/2022
Evaluation report on the capacity of SUDS and the limitations set by the local hydrology, geology and other framing conditions. A report on SUDS used in C2C CC and possible SUDS systems to be introduced as means to prevent flooding from heavy rain events. A report on consultation with relevant producers of SUDS. Report on the learnings within stakeholder involvement in relation to sewage separations and SUDS. Training and inspirational material for the authorities and utilities to inspire the citizens on the possible solutions.	C4	 31/12/2018 31/12/2020 31/12/2020 31/12/2018 31/12/2020
Newsletter on the activities of the Advisory Committees available at www.c2ccc.eu Small videos on the experiences, benefits and recommendations of the C2C CC actions available at www.c2ccc.eu Reports on expert consultations Peer reviewed journal article on the experiences of network governance in C2C CC. 1 guideline for network governance based on the experience in C2C CC 1 common regional strategy on CCA with the outset in integrative planning and network governance.	C5	 ongoing ongoing 31/12/2022 31/12/2022 31/12/2022 31/12/2022
A High resolution groundwater-surface water model User guideline for the model An interactive 3D decision support tool on the water flow in catchment areas across municipal borders User guideline for the tool. Report on the test and demonstration of warning systems	C6	31/12/2018 31/12/2018 31/12/2018 31/12/2018 31/12/2022
Information material on best practice cases Information material on EU support and funding possibilities Report describing potentials for Danish Water Hub in CDR and recommendations for After LIFE	C7	31/12/2022 31/12/2017 31/12/2022
3 descriptive scenarios and 1-3 prescriptive scenarios for the Håb til Håb area's development A report on the pilot project At least one project description ready for execution	C8	 31/12/ 2018 31/07/ 2022 31/12/2022
Two surveys of major stakeholders An analysis of the optimal, permanent protection A cross-border emergency preparedness plan	C9	31/12/ 2017 30/06/ 2019 31/12/2021
Calibrated hydraulic model for the Grenaa Catchment Strategic plan for the area and its climate adaptation	C10	31/12 2018 31/12/ 2022

Report on mapping, modelling and analysis of the Randers Fjord A feasibility study into a possible subsequent EIA for a dam project Modelling Tools and two municipal strategies for land use in and around Randers Fjord	C11	31/12/ 2018 31/12/2022 31/12/2022
Report and catchment tool and River Gudenaa Catchment area Catalogue of solutions, costs, etc. Material from workshop, travels etc. with stakeholders Develop a financing models for compensatory actions	C12	31/12/ 2018 31/12/2018 31/12/2022 31/12/2022
Report on designation of test areas and mapping of drainage factors; Description of solutions for testing. Monitoring reports.	C13	31/12 2018 31/12/ 2020 31/12/ 2022
A model that can calculate scenarios for the total flooding from the sea, watercourses and sewage systems Technical background reports of model methodology and results, designated local sites and solutions, filling times for reservoirs and dimensioning of pumps and sluices, solutions for water flow and for the catchment area that promote biodiversity as much as possible, improve water quality and provide recreational options for local residents. Design material of dikes, sluices and pumps that inspire to provide recreational urban spaces.	C14	31/06/2017 31/12 2019 31/12/2020
An added value catalog for Hedensted town a citizen involvement tool The stakeholders' (Citizens) local climate proofing plan(s) for Hedensted and Tørring. 1 leaflet with recommendations (bullet 5 and 6) Technical report on drainage systems and scenario results for one area.	C15	31/12 2018 31/07/2021 31/07/2021 31/07/2022
Report on the identification of the Climate Ribbon's exact size as well as geographical, biological circumstances (e.g. groundwater layers, soil, contamination etc) Publication of program for an international professionel competition on the Climate Ribbon Reports, investigations and masterplan for elements of the Climate Ribbon, incl. expected concrete planning for parts and publication of accumulating reports with best practice from methods of dissemination, incl. with the showroom/workroom.	C16	01/10/2017 01/01/2018 31/12/2022
A detailed investigation program for monitoring groundwater levels, pollution and land subsidence in Thyborøn and Harboøre Tange. A dynamic adaptation model describing the interaction between e.g. rainwater, groundwater, seawater, and pollution on the basis of a hydrogeological model. A number of conceptual designs developed, that can solve the climate challenges in Thyborøn and Harboøre Tange	C17	31/03 2018 31/12 2019 30/06/2022
Hydrological model of the risk of rising groundwater (saltwater) after high tides + Recommendations Booklet about rising groundwater in coastal areas Two articles for international periodicals, e.g. Journal of Hydrology Process description for the establishment of a new dike association. Model for local organisation for climate change adaptation and development in Juelsminde.	C18	31/12/2019 31/12 2019 31/12 2019 31/12 2018 31/12/2019
Documented stakeholder network methodology Report of conceptual designs for SUDS at Tranebjerg, Ballen and Samsø Golf Course and Besser Made	C19	31/12/2918 31/12/2018; 31/12/2021

JS

Project video accessible at the C2C CC portal, at the Energy Academy's homepage (with LIFE logo) and at SAK homepage (with LIFE logo). Hydraulic modelling incl. zero-alternative, coupled events and climate scenarios		31/12/2022 31/12/2022
Evaluation report of amount of visitors and business collaboration	C20	31/12/2020
A concluding report with feedback from interviewees on their interest in the Climatorium and a list of potential companies having expressed interest as tenants. A feasibility study of tourism documented in a report.	C21	31/12/2018 31/12/2018
Report on the test of installation of a permeable coating (climate road) Sub-report on examination of which filter media the road is best built with to provide the most optimal removal of road-related xenobiotic substances Sub-report on examination of the degree to which permeable surfacing can be integrated with geothermal heating/cooling. Final reporting on the individual permeable surfacing's time-related infiltration capabilities and the roads performance as a climate adaption solution	C22	31/12 2018 31/12/2022 31/12/2022 31/12/2022
4 reports of the test results of the infiltration potential methodlogy 1 guideline with process description of how the infiltration potential map can be prepared. Complementary project description.	C23	31/12/2017 31/12/2018 31/12/2018
4 Open Access scientific papers distributed across Sub-projects 1 and 2: I) 4 popular science/outreach articles Climate tourism brochure for the Region Data on storm flood pillars archived at http://historiskatlas.dk and on CD-ROM Climate tourism brochure for the Region A synthetic popular science book on climate and culture history in CDR	C24	30/10/2019 30/10/2019 31/10/2021 31/12/2019 31/10/2021 31/10/2023
Monitoring protocols Baseline report Monitoring report for phase 1	D1	31/03/2017 31/07/2017 10/10/2018
Baseline report on flood and risk maps Final monitoring report Monitoring report, Phase 1 Monitoring report, Phase 2 Monitoring report, Phase 3	D2	31/07/2017 10/10/2021 10/10/2018 31/03/2021 31/03/2023
Monitoring protocols Report on Ecosystem services assessment methodology Monitoring report, Phase 1 Monitoring report, Phase 2 Monitoring report, Phase 3	D3	31/03/2017 31/03/2018 10/10/2018 31/03/2021 31/03/2023
Monitoring report	D4	31/03/2023
Communication and outreach plan Report on feedback on quantitative statistics List of media contacts Communication plan for After LIFE activities (F1.1)	E1	31/12/2020 31/12/2022 31/02/2017 31/09/2022
1 C2C CC website and 1 online platform 24 notice boards (1 large and 5 smaller notice boards for 4 projects).	E2	31/03/2017 30/11/2017

12 newsletters incl. articles, progress reports, etc. 1 layman's report in 400 colour copies and online download		15/12/2022 10/11/2022
Agenda for the seminar and presentation on review of legal barriers (cf. E3.1) Conference material and one pagers for three C2C CC conferences Booth material (demonstration projects) for use for the three conferences Presentation to use at ENCORE Presentation to use at IWA World Water Congress & Exhibition Presentation and booth material for rence "Coast to Coast Climate Challenge – Done! What comes next?"	E3	31/05/2018 10/01/2018 09/01/2020 15/11/2018 30/04/2021 30/09/2022
24 press releases over the course of the six years 17 agendas for the "study trips" to the demonstration projects	E4	31/12/2022 31/12/2022
1 overview of all Danish projects having received LIFE funding and other Danish projects having received other EU funding and relevant in relation to C2C CC 24 confirmation letters/emails of attendance to events	E5	30/04/2018 31/12/2022
24 short films disseminated on the C2C CC website	E6	31/10/2022
Phase 1 progress report Phase 2 proposal Phase 2 progress report Phase 3 proposal Mid-term report Phase 3 progress report Final report Electronic Log book After LIFE Plan	F1	31/09/2018 31/08/2019 31/03/2021 31/09/2020 31/07/2020 31/09/2022 31/06/2023 Ongoing 31/06/2023
Report on Kick-off seminar Report on Communication workshop	F2	26/01/2017 28/02/2017

MAIN MILESTONES OF THE PROJECT

Name of the Milestone	Code of the associated action	Deadline
Desk research and interviews are conducted	A1	31/05/2017
Draft strategy on cross-sectoral cooperation and presentation at the seminar (cf E3.1)	A2	31/05/2018
Desk research and interviews are conducted	A3	31/03/2017
Interviews are conducted and presentation at the seminar (cf E3.1)	A4	31/05/2018
Initial contact is made with LGDK and the first meetings are set up	A5	31/03/2017
Common tender material to be used in the partnership Workshop on sustainable approaches to coastal protections Workshop on new governance and involvement models Workshop on results ans experiences	C1	01/02/2018 01/06/2019 01/06/2020 01/12/2021
Compiling experience of warning system	C2	31/12/2018

RS

Investigating the possibilities of areas that can be flooded and possible funding of the investment Development of forecasting Test and demonstration		01/06/2018 31/12/2020 31/12/2022
Outline of groundwater flood prone areas on a regional basis including workshop Identification of built in conflicts with existing tax system and legislation including workshop Catalogue of measures finalized on reducing flood risk from rising levels of the terrain near groundwater.	C3	31/12/2019 31/12/2020 31/12/2021
Training and inspirational material for authorities and utilities on how to involve local land owners in implementing SUDS. Workshops and presentation material on SUDS experience in C2C CC Evaluation on the SUDS experiences within C2C CC.	C4	31/12/2020 01/06/2021 31/12/2021
Interviews with Danish ministries, networks and universities Study tour to Germany and The Netherlands to study organizational and practical solutions on CCA and coastal challenges Training course in integrative planning processes and network governance 6 catchment based workshops with C2C CC partners to define cross-cutting issues and activities and to decide on a common framework for integrative planning (all six workshops) Development and formulation of a common regional strategy on CCA with the outset in integrative planning and network governance. At least one of the 6 C2C CC thematic partner seminars (stormøde) has adopted integrative planning as a common theme. Call service established, where the partners can call the Advisory Committee 1-2 international publications in review	C5	01/07/2017 31/10/2017 31/12/2019 31/12/2019 30/09/2022 01/01/2022 01/07/2017 31/12/2022
Groundwater-surface water model constructed (C6.1) Observation data collected and groundwater-surface water model calibrated All CDR municipalities have applied the tool and use the results in decision making and spatial planning 3D decision support tool is constructed (C6.2) Testing completed All CDR municipalities have applied the tool and use the results in decision making and spatial planning Exploring and testing warning systems (C6.3) DEMA and 2 municipalities have applied an extended warning system module for flood prediction	C6	01/07/2018 31/12/2018 31/12/2022 01/07/2018 31/12/2018 31/12/2022 31/12/2022 31/12/2022
Evaluation on 6 workshops on best practice and/or topical issues; Annually from 31.12.17 to 31.12.22 Advising 10 companies Development of training material on ESS is finalised. Training workshop on ESS assessments has been held before this date	C7	31/12/2022 21/12/2020 31/12/2021 31/12/2022
Project ideas selected and deselected Pilot project prepared Project selected and deselected	C8	31/12/2021 31/07/2022 31/06/2022

DS

Kickoff Meeting with the entire project team. The establishment of the project team with the participation of emergency management units North and South of the Western Limfjord. Analysis of the optimal level of protection available. A cross-border emergency management for handling of storm surge events established. A number of proposals for funding are available.	C9	31/02/2017 30/06/2018 30/06/2019 31/06/2021 31/12/2021
Collection of data for the model and other assessments Elaboration of model and calibrating Screening and qualifying options incl. risk assessment Impact assessment of chosen scenarios and prioritization	C10	31/12/2018 31/12/2022 31/12/2022 31/12/2022
Data collection for the 'Fjord model'; the preparation of this model Analysis of different scenarios for future climate adaptation Strategy for future land use around Randers Fjord to climate adapt area where there is a collection of knowledge and assessments of activity 1,2, and meetings among stakeholders Report assessing the possibility of a sluice solution finalized Strategy developed for future land use around Randers Fjord to climate adapt area	C11	31/12/2018 31/12/2018 31/12/2018 30/06/2022 31/12/2022
Collection of data for the model Establishment of model and calibration Scenario Driving Measures in the municipal climate adaptation plans implemented Cross-municipal political agreement on the selection of projects	C12	31/12/2018 31/12/2018 31/12/2018 31/12/2022 31/12/2022
Registration of cultivation/area use. Agreements with farmers. Transfer knowledge of/present the project's progress and results on the internet, themed meetings and field tours with land associations, and to a wider, national audience. Monitoring of the transfer of knowledge of/presentation of possible solutions and results. Monitoring of the effect of the solutions on water retention, yields, biodiversity, leaching of nutrients. Report on monitoring of the transfer of knowledge of/presentation of possible solutions and results. Report on monitoring of the effect of the solutions on water retention, yields, biodiversity, leaching of nutrients.	C13	31/12/2018 31/12/2020 31/12/2020 31/12/2020 31/12/2020 31/12/2022 31/12/2022
Collection of data A model calculating scenarios for the total flooding from the sea, watercourses and sewage systems Clarification of the possibilities for retaining water in the catchment area, including the open countryside and from the urban areas. Solution proposal for water retention, dikes, pumps and if required, barriers in the fjord Citizens and politicians involved in the development of the solutions Final political approval of the described solutions done. Detailed designs are completed for the construction work on road dike, high-water gates and pumps. The C2C project concludes with a brief summary report on measures and planning for future protection against flooding in the city of Horsens.	C14	31/12/2017 31/06/2018 31/12/2018 31/12/2018 31/06/2019 30/06/2021 31/12/2021 30/06/2022

DS

Technical report for one area on elevated land Leaflet about elevated land Added value barometer finalized At least one project description ready for execution A process description on how climate proofing and the setting of goals has occurred through local organising.	C15	31/07/2021 31/07/2022 31/12/2019 31/12/2021 31/12/2022
Defining the area of the Climate Ribbon as well as analyzes and studies of geographical and biological conditions Prequalification of 4-6 teams and launching competitive process Announcement of the winner of the international "Climate Ribbon Competition" Opening the show room / workroom and holding of regular, annual events, dissemination seminar and development of methods for the use of digital communication forms Preparation of accumulating reports and studies and preparation of a master plan / master plan for Klimabåndets elements - presumably with concrete plans for its parts An initial budget for the Climate Ribbon full and light versions finalized A strategy for staged development on the Climate Ribbon An evaluation of C2CCC C16 The Climate Ribbon with strategy for the continuous development of CCA within the city of Randers	C16	01/10/2017 01/03/2018 01/04/2019 31/122022 31/12/2022 31/12/2022 31/12/2022
Kick-off meeting with project group 1st large citizens meeting Contract with private company and counselor on development of innovative, flexible pipes A number of conceptual designs that can solve the climate challenges in Thyborøn and Harboøre Tange and contribute added value Conclusion of Advisor agreement (architects and consulting engineering) for assistance with preparation of CCA solution including involving citizens and stakeholders. A number of conceptual designs developed, that can solve the climate challenges in Thyborøn and Harboøre Tange and contribute with added value	C17	28/02/2017 31/02/2018 30/04/2018 31/12/2021 31/03/2021 30/06/2022
Data loggers established and data logging started. Continued monitoring and verification of hydrological model for C18.1 Dike association created New organisation of climate change adaptation and development in Juelsminde is completed. The project is finished with model/tool for general use.	C18	31/07/2017 31/07/2019 31/12/2019 31/07/2020 31/12/2022
Preliminary investigation and initial involvement of possible stakeholders. Conceptual Design Tender material Preliminary investigations and initial stakeholder involvement, phase 2 Technical background report for modelling Hydraulic modelling incl. zero-alternative, coupled events and climate scenarios. Conceptual Design	C19	31/06/2017 31/06/2018 31/12/2018 31/12/2019 31/12/2019 31/12/2020 31/12/2020

DS

The process of preliminary investigations, initial stakeholder involvement and technical background report for modelling in Ballen will commence. Report of conceptual design for the area around Samsø Golf Course and design for rainwater retention and coupled events at Ballen is completed		01/01/2021 31/12/2021
Application for financing from relevant foundations Stakeholder agreements established with central actors Innovation Camp partnerships agreements closed Optional subject in Innovation/Entrepreneurship provided Water Visits established Innovation Camp is launched	C20	31/03/2017 31/03/2017 31/12/2017 31/12/2017 31/12/2017 31/12/2018
The analysis of company types is finalized Interviews with entrepreneurs and companies are finalized The feasibility study of tourism is finalized Design criteria for the innovation house is finalized and the preparation of zoning plan and the political process is initiated. The conceptual design is finalized.	C21	31/06/2017 31/09/2017 31/12/2017 31/032018 31/12/2018
Establishment of a baseline and the preparation of a monitoring programme First season measurements are evaluated with regard to the sub-projects and any necessary adjustments are made. Third season measurements are evaluated with regard to sub-project goals. Preparation of guidelines, recommendations and reports so that experiences gained from the current project are integrated into wider society. Fifth season monitoring results are evaluated and reported Article about the climate road is made Guidelines and recommendations are finalized Pilot project descriptions prepared. At least one complementary project description ready for execution.	C22	31/12/2017 31/12/2018 31/12/2020 31/12/2020 31/12/2021 31/12/2022 31/12/2022 31/08/2022 31/12/2022
The statistical clarifications and correlations are finalized Production of a detailed infiltration potential map for the urban development areas. Preparation of recommendations for stakeholders about future working processes for the purpose of mapping the infiltration potential in urban areas. Quantitative correlations: All data for the statistical evaluation has been collected from multiple municipalities Recommendations prepared for stakeholders Final stakeholder conference	C23	31/12/2017 31/12/2018 31/12/2019 01/07/2021 01/01/2022 01/06/2022
Milestone 1.I – Nomination of staff Milestone 1.II – archaeological and geological field-investigations complete Milestone 3.I – the synthesis over the Region's coupled natural and cultural heritage and the C2C CC contributions published Milestone 3 – Climate history brochure for the Region complete Milestone 2.II – Exhibition opens	C24	31/03/2017 31/12/2018 31/12/2022 31/10/2021 31/10/2022
Indicators for added value defined and evaluation questionnaires developed Baseline for CCA plans established Phase 1 monitoring completed Qualitative evaluation of how the tools and models contribute to the demonstration projects	D1	01/01/2021 01/01/2021 01/01/2021 01/06/2021

DS

Baseline for flood maps and risk maps established Monitoring in relation to final reporting Monitoring for phase 1. Baseline for flood maps, risk maps and severe flood events (>20 year event) done Monitoring report on carbon emissions in the Central Denmark Region	D2	31/07/2018 10/10/2021 10/10/2018 01/10/2021 01/03/2022
Ecosystem service assessment methodology developed Data from existing databases related to employment and tourism gathered Coordination with beneficiaries responsible from actions C8-C21 succeeded	D3	31/03/2018 10/10/2018 07/07/2020
Data from existing databases related to employment and tourism gathered	D4	10/10/2022
The first draft of the communications and outreach plan is finished The feedback from all the dissemination events are analysed and ready to use for planning of events after C2C CC is finished The media contact list is prepared Communication activities for After LIFE is prepared	E1	31/03/2017 31/12/2022 31/02/2017 31/09/2022
Draft version of website and online platform Final version of website and online platform Notice boards for 4 demonstration projects are ready Notice boards for the remaining projects are ready Newsletter 1 is published Newsletter 2 is published Newsletter 3 is published Newsletter 4 is published Newsletter 5 is published Newsletter 6 is published Newsletter 7 is published Newsletter 8 is published Newsletter 9 is published Newsletter 10 is published Newsletter 11 is published Newsletter 12 is published Layman's report is finalized	E2	26/01/2017 31/03/2017 30/04/2017 30/11/2017 30/06/2017 15/12/2017 30/06/2018 15/12/2018 30/06/2019 15/12/2019 30/06/2020 15/12/2020 30/06/2021 15/12/2021 30/06/2022 15/12/2022 10/11/2022
Seminar on legal barriers + other research is held The first C2C CC conference "The first year" is held The second C2C CC conference "Half way there" is held The final C2C CC conference "Done! What comes next?" is held A presentation at the ENCORE conference A presentation at the IWA conference Presentation and all relevant material is ready to bring to the platform meeting	E3	31/05/2018 10/01/2018 09/01/2020 15/11/2022 31/12/2018 01/05/2021 Date not yet set
Press release 1-4 are finished Press release 5-8 are finished Press release 9-12 are finished Press release 13-16 are finished Press release 17-20 are finished Press release 21-24 are finished 17 study trips have been planned and executed	E4	31/12/2017 31/12/2018 31/12/2019 31/12/2020 31/12/2021 31/12/2022 31/10/2022
The overview showing Danish projects (LIFE and other EU funds) is finished Participation in 4 events on CCA and/or CCM(year 1) Participation in 4 events on CCA and/or CCM(year 2) Participation in 4 events on CCA and/or CCM(year 3)	E5	30/04/2018 31/12/2017 31/12/2018 31/12/2019

DS

Participation in 4 events on CCA and/or CCM(year 4) Participation in 4 events on CCA and/or CCM(year 5) Participation in 4 events on CCA and/or CCM(year 6)		31/12/2020 31/12/2021 31/12/2022
24 short film are finished	E6	31/10/2022
New recruitments and establishment of project management unit Launch of steering group Phase 1 progress report "Clearing House" established Mid-term report Phase 2 progress report Phase 3 progress report Final report After LIFE plan	F1	01/11/2016 06/01/2017 31/09/2018 31/12/2018 31/08/2019 31/09/2020 31/09/2022 31/06/2023 31/06/2023
Kick-off seminar prepared Communication work shop prepared	F2	26/01/2017 28/02/2017

ACTION	Phase 1								Phase 2								Phase 3								Beyond
	2017				2018				2019				2020				2021				2022				
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	
A. Preparatory actions, elaboration of management plans and/or action plans																									
A.1 Legal barriers to integrated CCA, current CCA integration and policy recommendations	X	X																							
A2: Analyse state-of-the-art of current mainstreaming of CCA into local planning and possibilities for cross-sector cooperation	X	X	X	X	X	X																			
A3: Collect existing data analyses and reports about the region as basis for integrative CCA planning and combine data in a common database	X	X																							
A4: Interview municipal and utility officials	X	X	X	X	X	X																			
A5: Start dialogue with Local Government Denmark (LGDK) and relevant ministries and agencies	X	X	X	X	X	X	X	X																	
C. Concrete implementation actions																									
C1: Sea and Fjords																									
C1.1: The CCA challenges of the coastlines	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
C1.2: Interaction between watercourses and coastline	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
C2: Rivers and lakes																									
C.2.1: Experiences with modelling large catchments	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
C2.2: Warning system									X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
C2.3: The role of land use management and wetland restoration in CCA	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
C2.4: Impacts of CCA on freshwater ecology	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
C3: Groundwater																									
C3.1: Interaction between rainwater and rising groundwater level	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
C3.2: Advanced local adapted investigations and hydrogeological models	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
C3.3 Reuse of excess groundwater	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
C.4: Rainwater																									
C4.1: Urban Hydrology and quantity	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
C4.2: Knowledge on SUDS' effectiveness in water treatment and maintenance	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
C4.3: Citizen involvement	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
C5: Governance																									
C5.1: New paradigm and a common regional strategy integrating municipal CCA plans	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
C5.2: Networking and knowledge-sharing	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
C5.3: Use of the Advisory Committee	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
C5.4: Capacity-building of officials and water professionals on CCA, stakeholder involvement and civil protection	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
C6: Tools																									
C6.1: High resolution groundwater-surface water model for Central Region Denmark	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
C6.2: Regional assessment tool of flood risk from rivers and the sea	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
C6.3: Warning Systems									X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
C7: Innovation																									
C7.1: Networking and knowledge-sharing as a backbone for innovation	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
C7.2: Counselling of innovative industries on applying for EU funding	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
C7.3: Train relevant stakeholders on innovation within ecosystem services	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
C7.4: Dissemination of Danish water solutions	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
C8: Håb til Håb																									
C8.1: Developing of scenarios – descriptive as well as prescriptive	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
C8.2: Citizens' engagement	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	

C8.3: Political discussion and decision-making	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
C9: The Thyborøn Channel and the Western Limfjord																									
C9.1: Mapping of (secondary effects of) the project area	X	X	X	X	X	X	X	X	X	X	X	X													
C9.2: New forms of cooperation with emergency management	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
C9.3: Financial planning									X	X	X	X	X	X	X	X	X	X	X	X	X	X			
C9.4. Requirement specification for conceptual designs									X	X	X	X	X	X	X	X	X	X	X	X	X	X			
C10: The River Grenaa Catchment																									
C10.1: The set-up of a hydrological model	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
C10.2: Public awareness raising: website and citizens meetings, etc.	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
C10.3: Laying the basis for decision-making	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
C11: Randers Fjord – Loss of Territory to the Water: Benefit or Loss?																									
C11.1: Development of a 'fjord model' and cost-benefit analyses	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
C11.2: Assessment of the consequences of establishing a sluice	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
C.11.3: A strategy for decision-making									X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
C12: The River Gudenå																									
C.12.1: Models for the scenario descriptions	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
C.12.2: Stakeholder involvement, choice of projects and the development of vision and goals, etc	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
C13: The River Storaa – Demonstration Project Illustrating the Effects of Water Retention at Field Level																									
C13.1: Dialogue with stakeholders, identification of suitable land	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
C13.2: Data collection and analyses	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
C13.3: Carrying out the pilot and monitoring									X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
C14: Flood-proofing Horsens Town Centre																									
C14.1: Preparation of tender material and tender phase for external expert assistance for activity 2 to 5	X	X	X	X	X	X	X	X																	
C14.2: Provision of knowledge in the form of status, data collection and model set-up	X	X	X	X	X	X	X	X	X																
C14.3: Scenario calculations and initial stakeholder involvement									X	X	X	X	X	X	X	X									
C14.4: Preparation of proposals and stakeholder involvement									X	X	X	X	X	X	X	X	X	X							
C14.5: Preparation of project design and invitation to tender material for contractors									X	X	X	X	X	X	X	X									
C14.6: Flooding risks Store Hansted Å catchment area																	X	X	X	X	X	X	X	X	
C15: CCA in Hedensted and Tørring with focus on growth, added value, sustainability and innovation																									
C15.1: CCA of Hedensted town	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
C15.2: CCA in the hinterland and in regard to agriculture	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
C15.3: Local organizing of CCA in Tørring town									X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
C.16: Randers Climate Ribbon – CCA as a Driver for Urban innovation																									
C16.1: Inspiration from EU projects, international projects, as well as C2C CC partners	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
C16.2: Launch of international competition	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
C16.3: Establishing of a showroom and workroom	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
C.16.4: Development of financial plans									X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
C17: Thyborøn City and Harbour as well as the Harbøre Tange																									
C.17.1: Providing sound data of the project area and building a dynamic model	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X									
C.17.2: Dialogue with citizens and other stakeholders	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X									
C.17.3: Development of innovative pipelines									X	X	X	X	X	X	X	X	X								
C.17.4: Providing the basis for decision-making									X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
C18: Citizen-driven CCA in Juelsminde																									

C.18.1: Interaction between saltwater and groundwater	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
C18.2: Organizing stakeholders	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
C19: Sustainable Urban Drainage Systems (SUDS) as recreational elements																									
C19: Sustainable Urban Drainage Systems (SUDS) as recreational elements	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X					
C20: AquaGlobe																									
C20.1: Hot Spots - Water as a guide	X	X	X	X	X	X	X	X																	
C20.2: Water School	X	X	X	X	X	X	X	X																	
C20.3: Innovation Camp	X	X	X	X	X	X	X	X																	
C20.4: Water Visits	X	X	X	X	X	X	X	X																	
C20.5: Demonstration system																									
C20.6: Test and Prototyping	X	X	X	X	X	X	X	X																	
C21: Climatorium																									
C20.1: Analysis of the potential of a CCA business network and tourism.	X	X	X	X	X	X	X	X																	
C20.2: Planning and conceptual design.									X	X	X	X	X	X	X	X									
C22: Infiltration of surface water through permeable coating																									
C22.1: Establishment of a climate road (pilot project)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
C22.2: Involvement of politicians and other stakeholders									X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
C23: Potentials for increased infiltration in new urban areas																									
C.23.1: Mapping of the infiltration potential in urban development areas	X	X	X	X	X	X	X	X																	
C.23.2: Integrated stakeholder process									X	X	X	X	X	X	X	X									
C.23.3: Definition of complementary projects									X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
C24: Climate History | Culture History																									
C24.1: Landscape use and settlement patterns in the early Holocene in Central Jutland	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
C24.2: Storm surges and tsunamis along the Central Jutland coasts in historical, landscape- and geo-archaeological perspective	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
C24.3: Citizen-near dissemination and marketing of coupled culture and climate history	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X						
D. Monitoring of the impact of the project actions																									
D1: Monitoring the project's contribution to the implementation of the CCA plans																									
D1.1: Monitoring of the implementation of the CCA plans	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X									
D1.2: Monitoring of pilot projects									X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	(X)
D1.3: Monitoring of capacity building	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	(X)
D2: Monitoring of the project's impact on climate objectives																									
D2.1: Monitoring of flood risk	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	(X)
D2.2: Monitoring of carbon emissions					X	X	X	X					X	X	X	X					X	X	X	X	
D3: Monitoring of the project's socio-economic impact																									
D3.1: Monitoring of the project's socio-economic impact	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
D4: Environmental monitoring																									
D4.1: Environmental monitoring	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
E. Public awareness and dissemination of results																									
E1: Communications and outreach plan																									
E1.1: Communication and outreach plan	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
E2: Tangible communication products																									
E2.1: Website and online platform (obligatory)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
E2.2: Notice boards (obligatory)	X	X	X	X	X	X	X	X																	
E2.3: Newsletters	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
E2.4: Publication of report for the general public																				X	X	X	X	X	
E3: Seminars and conferences																									
E3.1: Seminar to communicate about the findings in actions A1 (review of legal barriers)						X																			
E3.2: Conference "Coast 2 Coast Climate Challenge – the first year!"	X																								

E3.3: Conference "Coast 2 Coast Climate Challenge – half way there!"											X														
E3.4: Conference "Coast 2 Coast Climate Challenge – Done! What comes next?"																							X		
E3.5: Large international conference: ENCORE Conference on "Environmental issues and Climate Change"					X	X	X	X																	
E3.6: IWA2020 in Copenhagen and ECCA2019 in Lisabon											X							X							
E3.7: Networking or thematic event upon request of the Contracting autority																		X							
E4: Media works																									
E4.1: Media Works	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	(X)
E5: Networking with other projects																									
E5.1: Networking with other projects	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
E6: International dissemination																									
E6.1: International Dissemination	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
F. Project management and monitoring of project progress																									
F.1: Establishment of organizational structure																									
F1.1: Establish a project management unit	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
F1.2: Project coordination, monitoring and reportin	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
F1.3: Launch of steering group, project groups and stakeholder teams	X																								
F1.4: Establishment of Advisory Committee	X																								
F2: Internal seminars and workshops																									
F2.1: Kick-off seminar for the project consortia	X																								
F2.2: Communications workshop	X																								