(Integrated Projects funded under the LIFE 2014 – LIFE 2020 Calls must use this format)

LIFE Project Number

LIFE15 IPC/DK/000006-C2C CC

Interim / Final Report

Covering the project activities from 01/11/2016[1] to 31/12/2020

corresponding to Phase 2 (2019-2020)

Reporting Date[1]

31/03/2021

LIFE PROJECT NAME or Acronym

Coast to Coast Climate Challenge

Project Data

Project location:	Central Denmark Region in Denmark
Project start date:	01/11/2016
Project end date:	31/12/2022 **Extension date:** <dd/mm/yyyy >
Total budget:	11.684.393 €
EU contribution:	7,009,893 €
(%) of eligible costs:	60 %

Data Beneficiary

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[1] Include the reporting date as foreseen in part C2 of Annex II of the Grant Agreement

Package completeness and correctness check

This table comprises an essential part of the report and should be filled in before submission. The evaluation of your report may only commence if the package complies with all the elements in this receivability check. The evaluation will be stopped if any obligatory elements are missing.

Obligatory elements	**✓ or N/A**
Technical report	
The correct latest template for the type of project (i.e. integrated project) has been followed and all sections have been filled in, in English. *In electronic version only*	✓
Index of deliverables with short description annexed, in English. *In electronic version only*	✓
Interim report: Covers the phase concluded; Deliverables due in the phase being reported on (or due in previous phase(s) and not yet submitted) annexed. Final report: Covers the entire project duration (see instructions on exceptions to this in next page); Deliverables not already submitted with the Interim reports annexed including the Layman's report and after-LIFE plan. Deliverables in language(s) other than English include a summary in English. *In electronic version only*	✓
Financial report	
The reporting period in the financial and technical reports is the same; the period corresponds to the duration of the phase being reported on. For the Final report, an additional consolidated financial statement covering the entire project duration is included showing all costs and income incurred, requesting a budget shift if needed (up to 20% of budget) and demonstrating compliance with 2% rule. In the case of corrections / changes to costs submitted in a previous period: • An updated financial statement for the previous period is provided with the changes highlighted in a different colour; • The difference (+ or -) per cost category is included in the financial statement of the new period in the related cost category at the bottom in one single line 'changes to financial statement 01/01/2019 – 31/12/2020; • The auditor has validated the changes (if needed); • Explanations on the changes are provided in section 9 of the technical report.	✓
Consolidated Financial Statement(s) with all 5 forms duly filled in and signed and dated. *On paper (signed and dated originals*) and in electronic version (pdfs of signed sheets + full Excel file)* *NB In case a Qualified Electronic Signature may be used the electronic version is sufficient.*	✓
Financial Statement(s) of the Coordinating Beneficiary, of each Associated Beneficiary and of each affiliate (if involved), with all forms duly filled in. The Financial Statement(s) of Beneficiaries with affiliate(s) include the total cost of each affiliate in 1 line per cost category. *The overall summary forms of each beneficiary on paper (signed and dated originals*) and the entire statements in electronic version (pdfs of signed sheets + full Excel files)* *NB In case a Qualified Electronic Signature may be used the electronic version is sufficient.*	✓
Names and other data (e.g. bank account) are correct and consistent with the Grant Agreement / across the different forms, and amounts are consistent across the different forms (e.g. figures from the individual statements are the same as those reported in the consolidated statement).	✓
Beneficiary's certificate included for beneficiaries claiming 100% cost for durable goods. *On paper (signed and dated originals*) and in electronic version (pdfs of signed sheets)* *NB In case a Qualified Electronic Signature may be used the electronic version is sufficient.*	✓
Certificate on financial statements (if required, i.e. for beneficiaries with EU contribution ≥750,000 €) once the cumulative amount of payment requests reaches 325,000 €). *On paper (signed original*) and in electronic version (pdf)* *NB In case a Qualified Electronic Signature may be used the electronic version is sufficient.*	✓
Other checks	
Clarifications and supporting documents requested in previous Executive Agency letters. *In electronic version only*	✓
This table, page 2 of the Interim / Final report, is completed - each tick box is filled in. *In electronic version only*	✓

**original signature by a legal or statutory representative of the beneficiary / affiliate concerned*

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List of keywords and abbreviations

3D	Three dimension
3Di	A model/tool developed in the Netherlands
AAU	Aalborg University
AU	Aarhus University
C2C CC	Coast to Coast Climate Challenge
CCA	Climate Change Adaptation
CDEU	Central Denmark EU Office
CDR	Central Denmark Region
COM	Covernant of Mayors
CPMR	Conference of Peripheral Marine Regions
Danish MIKE Models	Software models related to water
DANVA	An organisation for Danish Water Companies
DNNK	The National Network for Climate Change Adaption
DTU	Danish Technical University
ECCA	European Climate Change Adaptation
EPC	European Policy Center
ERRIN	European Return and Reintegration Network
F	Socialistisk Folkeparti (Socialistic Party in parliament)
FK	Favrskov Municipality
FRDK	" Foreningen for Reduceret jordbearbejdning i DanmarK", Conservation Agriculture
GUDP	"Grønt Udviklings- og Demonstrationsprogram", Green Development and Demonstration Programme
GWL	Ground Water Level
HbK	Holstebro Municipality
HEDKOM	Hedensted Municipality
HIP	Hydrologisk Informations og Prognosesystem / Hydrological Information and Forecasting System
HK	Herning Municipality
HORKOM	Horsens Municipality

INNO MT	Innovation network for environmental technology
KAMP	Klimatilpasning- og Arealanvendelsesværktøj til Miljø- og Planmedarbejdere / Climate Adaptation and Land Use Tool for Environment and Planning Employees
KTC	The Organisation for municipal technical leaders
LGDK	Local Government Denmark, *Kommunernes Landsforening*
LK	Lemvig Municipality
LVS	Lemvig Utility
MF	Morsø Utility
MGA	Mutual Gains Approach
MidtRum	File management system for storing documentation
MK	Morsø Municipality
NBS	Nature-Based Solutions
MP	Member of Parliament
NDK	Norddjurs Municipality
PM	Project Manager
Ppt-presentation	Power Point Presentation
RK	Randers Municipality
SAK	Samsø Municipality
SDFE	" Styrelsen for Dataforsyning og effektivisering", The Danish Agency for Data Supply and Efficiency
SDG	Sustainable Development Goals
SDK	Syddjurs Municipality
SFV	Skanderborg Utility
SIK	Silkeborg Municipality
SKK	Skive Municipality
SK-KOM	Skanderborg Municipality
SKV	Skive Utility
STF	Struer Utility
STK	Struer Municipality
SUDS	Sustainable Drainage System
TK	Thisted Municipality

TV	Thisted Utility
VESTF	Vest Utility
VHK	Vesthimmerland Municipality
VIA	VIA University College
VK	Viborg Municipality
VUDP	Danish Water Sectors Development and Demonstration Program
VV	Vesthimmerland Utility

1. Executive Summary

All 31 project partners are still involved in C2C CC and are working determinedly with the planned activities, with an overall high activity level in all sub-projects. Similar to phase 1, some of the planned activities in phase 2 have been rescheduled to meet occurring societal needs and new opportunities. In addition to this, COVID-19 has led to activity changes and modifications, where tasks have been solved differently that initially planned, while other activities have been postponed to phase 3.

In preparation for the current interim report, the PM unit carefully reviewed all project deliverables and milestones. The review revealed that many activities remain unresolved. This might lead to a need to postpone project completion for 6-12 months. Moreover, the very important complementary project DK2020, initiated in autumn 2020, provides a unique opportunity to link the work of developing a joint CCA strategy in C2C CC, with a national plan covering climate adaptation, as well as mitigation. To ensure full synergies between C2C CC and DK2020 also advocates for a project extension. At the opposite end, some sub-project partners have expressed their unfamiliarity with long project periods and that their organisations expect C2C CC to be completed in 2022 as planned, to enable the organisations to free up resources for other internal tasks.

The PM unit has not yet decided whether to apply for an extension. If decided to do so, it will most likely only be for some of the 24 c-actions.

The progress of some actions are much further in the process than expected prior to project implementation. Particularly sub-project C6 – Tools has progressed well and it is evident that there has been a need for tools enabling practitioners to;

- create an overview of connected water systems
- work in scenarios within own organisations with colleagues and partners, instead of paying external consultants
- provide a uniform basis that can lead to better and more informed decision-making.

The terrain near groundwater tool developed in C6 fulfil all three bullets, and are now implemented and used in all municipalities and utilities in the project area. The tool 3Di was presented to the project partnership during a study trip to the Netherlands in spring 2018. 3Di is now applied in multiple municipalities and utilities in C2C CC. The development of a contingency planning tool was completed at the end of phase 2 and are now implemented along the River Gudenå, where experiences and learnings are transferred to other water systems. Last, just before the end of phase 2, C2C CC signed an agreement with an external consultancy in regard to develop a web-based tool that considers socio-economic consequences of cloudburst protection. The tool will help municipalities comply with the new law on climate adaptation, which now requires a socio-economic assessment.

All tools developed in C2C CC can potentially be up-scaled nationally and internationally. Moreover, the tools developed enable the CDR and the municipalities in the region to be better equipped to ensure holistic and long-term CCA, than the rest of the Danish regions.

Machine learning was, for the first time in Denmark, applied as a method to map the location of terrain near ground water in the terrain near groundwater tool. Subsequently. SDFE adopted this method, in close collaboration with the CDR, in the development of a similar tool (called HIP) that gathers all water course and groundwater related data in one platform. HIP has been launched to all Danish municipalities and utilities. Data from HIP are also used in the tool KAMP developed by the

Danish Environmental Portal, where CDR was part of the steering group contributing with knowledge accumulated from the development of tools in C2C CC.

The activity level in the governance track (C5) has also been high. The work will merely intensify in phase 3 where a new joint CCA strategy will be developed and subsequently implemented in the municipalities and utilities in the project area. The implementation of a joint strategy will serve as inspiration for other relevant Danish actors. As part of the governance track, Aalborg University runs a master class about CCA focusing on creating added value. Aalborg University challenges project municipal officials in their way of working and aim their attention at working holistically and using co-creation in big partnerships. The master class is an important upscaling of qualifications that are crucial for the implementation of a joint CCA strategy.

What makes C2C CC stand out, is that the CDR is lead partner, despite that the region has no formal role in CCA. There is a consensus among the project partners that it makes sense to have the CDR facilitating big partnerships in CCA, as well as other cross-sectoral fields such as strategic energy planning and circular economy. In order to give the regions a more formal role in CCA, practical experience from C2C CC are communicated and disseminated in all conceivable contexts and via multiple channels.

The up-coming revision of the Danish Spatial Planning Act offers a unique opportunity for the regions to accentuate the important work the regions do for creating long-term and holistic CCA solutions. Moreover, the national government plans to prepare a national CCA plan. In connection to this, four pilot project areas have been appointed by the government to demonstrate holistic and cross-municipal CCA. C2C CC and with the municipalities along River Gudenå contribute with the sub-project C12 – the River Gudenå, as demonstration of how to plan holistically in one of the four national pilot areas.

The PM unit are actively involved in the CCA debate in media and professional magazines to highlight how important it is the give the regions a more formal role in CCA. C2C CC also work to adequately equip regional politicians to push the agenda on a national level. Additionally, a great part of the resources in the PM unit have been put into creating DNNK, to ensure a common platform for actors across professionalisms and disciplines to meet and discuss CCA across organisational boundaries. Most of the actors involved in DNNK are located in the capital area, where C2C CC are expanding the geographical area of the network making it more national.

The Innovation track (C7) has been challenged by the fact that the regions no longer are allowed to work with business development. As a consequence, the PM unit had to adjust the focus in C7 in 2019 in the beginning of phase 2. The work in C7 are progressing, but has not yet led to any big results. COVID-19 has further delayed the progress of innovation activities. However, municipalities, consultancies and manufactures have shown a great interest in joint meetings and in initiating a dialogue about which innovations are needed in the field of CCA. The PM unit expects that the progress of C7 will accelerate in phase 3.

After project end, the PM unit expects to have created a better understanding of how to work holistically and with added value in CCA, and thereby also contributed to accelerate the green transition in the central Denmark region. The main result will be the joint CCA strategy underpinned by C2C CC experiences, impacts and results. A set of recommendations will be published that can serve as inspiration and which national and international actors can benefit from. Moreover, a number of follow-up project ideas can be used for EU funding applications.

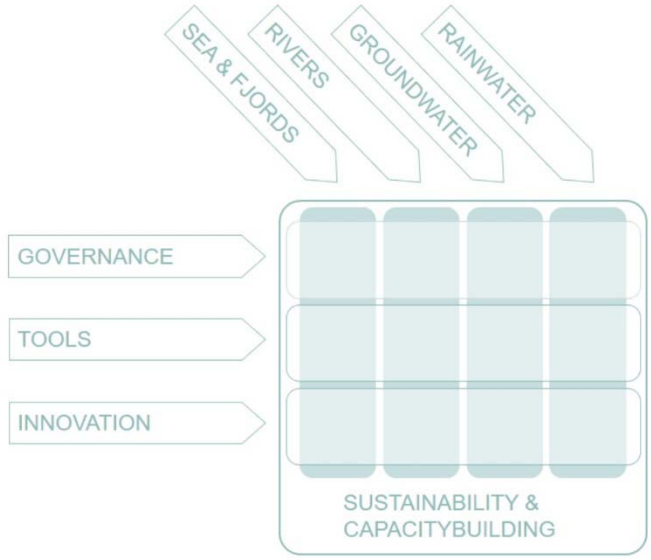
Feedback to EC policy units

Already in phase 1, C2C CC drew EU's attention to the contradictions between the Flood Directive and the Habitat Directive. However, C2C CC has not been able to get an answer on which directive overrules. In phase 2, C2C CC has provided inputs to EU's climate adaptation strategy, in which the need to work holistically and in big partnerships were emphasised. Concretely, water challenges must be solved in the entire catchment areas, which creates the challenges in the first place. Often, municipalities are too small to lift the task alone and there are no authority or legislation in place to secure municipal trans-border collaborations in Denmark. Thus, Danish regions can play a vital role in filling out this void, similar to the regions in other EU member states.

C2C CC is excited to see which role the new eco-schemes of the CAP will have in regard to CCA, as the current agricultural subsidies have been a barrier in the countryside, when landowners have to give up conventional land for nature or CCA.

The set-up of monitoring a LIFE IP CCA fits poorly with a project like C2C CC, as most of it is brainwork without direct environmental, social and economically impacts and results. These impacts are most likely to be seen in the future with the implementation of the projects and ideas generated during the C2C CC period.

2. Project relation to the Plan



The C2C CC matric

The C2C CC matric is a drawing of the project. The seven subjects are represented in the actions C1-C7. These are crosscutting capacity building actions. All the other actions C8-C24 is demonstration actions, and they are covering smaller or bigger parts of the matric. The whole matric is covered by sub actions. The same area is covered several times by subprojects. This represents areas with potentials for synergies between the actions.

The following table shows how the project actions contribute to different climate adaption related EU policies.

Climate adaption related EU policies	**Contributing directly**	**Contribution on strategic level**
The 'Life Regulation'[5] and an EU Strategy on adaptation to climate change[6].	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	The following four demonstration projects supports the implementation of the Floods Directive: C11, C12, C13, C18.	The four actions are subject to the Floods Directive.
The Water Framework Directive	All actions dealing with watercourses are subject to WFD regulation: C9, C10, C11, C12, C13, C16.	The six actions are to comply with the WFD. In addition, synergies between CCA and environmental benefits contributes to increased quality of aquatic environments
The overall objective of the Marine Strategy Framework Directive	The following actions indirectly supports the Marine Strategy Framework Directive: C1, C8, C9, C11, C12, C13, C14 and C16.	Focus on synergies between CCA and environmental benefits contributes to increased quality of aquatic environments inland,

		however, as rivers outlet into the Baltic Sea and C11 also into the North Sea, the actions contribute to reduction of eutrophication of marine environments.
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	
European Green Deal incl. the new EU Adaptation Strategy published February 2021	All 24 actions In addition, the areas of Randers Fjord is a pilot project in a European consortium applying for Green Deal call 1.3. in 2021.	All 24 actions supports the implementation of the new EU Adaptation Strategy's aim to increase and accelerate the EU's efforts to protect nature, people and livelihoods against the unavoidable impacts of climate change. The CDR via ERRIN further contributes actively in the bottom up process of the Horizon Mission on regional CCA.

Contributions from the demonstration actions, which covers the CCA-plans

All the CCA-plans and the risk management plans are covered by the demonstration actions C8-C19. Below a table shows how. The C20-C24 actions are innovative actions, which gives added value and inspiration to gain added values.

The Danish CCA plans were mandated to be prepared by law in 2014. There is no requirement to update the plans, why many of them are no longer relevant. Either they are done or time has passed from them with new challenges and new solutions. Today, CCA plans do not exist for all municipalities, as they are incorporated in the municipal plan and / or the sector plans.

Demonstration action	**CCA-plans.** (The numbers refers to a list of CCA plans and risk management plans for the municipal partners in C2C CC in the original application)
C8 – Håb to Håb	No. 2
C9 – The Thyborøn Channel and the Western Limfjord	No. 4, 6, 7, 13, 14, 16, 17, 18 and the risk management plan from Holstebro Municipality
C10 – The River Grenå Catchment	No. 8 and 15
C11 – Randers Fjord	No. 8, 15 and the risk management plan 24 and 25 from Norddjurs and Randers municipalities
C12 – The River Gudenå	No. 1, 2, 5, 9, 11, 12 and 18
C13 – Storåen	No. 3 and 4 and the risk management plan from Holstebro Municipality
C14 – Flood-proofing Horsens' City Centre	No. 5

C15 – Climate Change Adaptation in Hedensted and Tørring	No. 2
C16 – Randers Climate Ribbon	No. No. 8, 15 and the risk management plan 24 and 25 from Norddjurs and Randers municipalities
C17 – Thyborøn City and Harbour	No. 6
C18 – Citizen-driven Climate Change Adaptation in Juelsminde	No. 2 and the risk management plan from Hedensted Municipality
C19 – Sustainable Urban Drainage Systems	No. 10

***Figure 3**: Demonstration actions covers the CCA plans.*

The list of CCA-plans includes also a CCA plan from Ringkøbing-Skjern Municipality. It is a mistake, and should not have been at the list, due to the reason, that Ringkøbing-Skjern Municipality is not a partner in C2C CC. The municipality is a supporting stakeholder, participating in several action activities. It is stated that Odder and Ikast-Brande municipalities are not partners either, but also participate in activities in C2C CC.

3. Administrative part

The project organisation was well prepared before project start. The staff appointed were already employed in the CDR. Recruitment problems mentioned in the first interim report has not been the case in phase 2. This can be seen through the multiple qualified applications that C2C CC receives for open positions. In the commence of phase 2 the composition of the financial staff was adjusted due to a change in the Danish law, which meant that the CDR had to lay off a number of employees. However, a permanent financial staff with expertise in EU projects is now attached to the project.

C2C CC has not experienced any big challenges during phase 2. The overall project management, including the financial function, has worked well despite the challenge of the COVID-19 pandemic. Current circumstances have taught C2C CC and the project partners to work virtually, and due to Denmark's digital advancement quickly adapted to the new ways of working together. C2C CC will embrace the potential and benefits of working virtually post COVID-19.

Some good examples of C2C CC's adaptation to virtual meetings are; the recent partnership meeting held October 29th 2020. It was initially to be held physically for two days but was converted into a one-day virtual meeting. The PM unit organised a TV studio in a rented conference room, from which presentations from the partnership, a C2C CC animation film, and fruitful discussions were managed. However, the initial planned visits to sub-projects had to be cancelled. The event received much praise from the partners. But in the evaluation, it was mentioned that physical contact and network activities were missed. The annual National Climate Summit (see also section 4.2) facilitated by C2C CC and Climatorium was converted into a virtual summit, instead of a three-day physical event. As a result, the number of participants were much higher than expected at a physical event.

The level of activity has generally been very high throughout phase 2, as needs and wishes for various studies, considerations and activities are continuously identified by the PM unit and project partners. This creativity from the partnership helps keeping C2C CC relevant and current.

The PM unit has spotted a need to remind the project partners to keep focus on project deliverables and it is expected that all deliverables are completed before project end.

In phase 2, the PM unit saw a tendency among project partners to plan and think of their subprojects as isolated projects, and not as a part of the greater context that C2C CC represents. To address this C2C CC has arranged visits to different sub-project sites, study tours, and events on common challenges such as flood proofing or the use of climate data.

The project management process

To optimise the daily management of C2C CC, the overall responsibility of sub-projects has been divided between staff members of the PM unit. This means that the PM unit are close to the daily operation of the sub-projects together with project partners and can help if needed to keep sub-projects on right track. Given the different professional disciplines represented in the secretariat, C2C CC are able to work holistically with CCA across the partnership.

In the summer 2020, C2C CC conducted a survey among the project partners to evaluate on the daily project management and its setup. The analyses of the evaluation are not completely finished, but preliminary results show that the partners overall have been satisfied with the CDR as the PM unit of C2C CC, who especially has been good at handling the communication and administration in relation to EU, administrating the project economy and facilitating useful events and conferences. However,

partners call for closer communication among project partners to increase the knowledge-level of other sub-projects. To address this henceforward, C2C CC will ensure that greater attention on sub-projects is given at future partnership meetings and events. Another outcome from the evaluation shows that project partners feel that the distance between the PM unit and project partners is too big. This can be very difficult to change during COVID-19, but one way is to ensure that each sub-project manager knows exactly who to contact in the PM unit, ensure continuous dialogues with project partners and focus on networking activities once the partnership is able to meet again physically. Moreover, project partners wish for more different professional disciplines to be represented in the PM unit. During 2020 two new employees has been hired expanding the professional skillset in the secretariat, meaning that the PM unit now represents seven different professional disciplines in total. Additionally, the PM unit uses external advisors when needed to ensure that the adequate expertise is available for the project partnership.

The PM unit has linked the Knowledge Committee closer to the sub-projects as a way to guide and challenge the sub-projects. As a result, the PM unit has initiated a series of Short Scientific Missions with the aim of bringing new knowledge into the sub-projects, and to strengthen interaction between the partners and the knowledge institutions - and the students / graduates.

Despite extra meetings in the Steering Committee, there is less contact between the Steering Committee and the project partners. This can largely be explained by the lack of physical meetings due to COVID-19. As a result, the Steering Committee has faced difficulties getting closer to the sub-projects. This is expected to improve post COVID-19.

The network of C2C CC has been strengthened nationally via the involvement in DNNK (see also section XX). DNNK represents a strong and diverse network of actors and stakeholders working with CCA. The collaboration between C2C CC and DNNK has strengthened communication and dissemination of C2C CC and inspired to work with CCA across regional boundaries and help set high ambitions.

Another fruitful partnership that has been developed during phase 2 is a partnership between the five Danish regions, the interest organisation Danish Regions, and DNNK. This cross-regional partnership was formed on the basis of a talk of the current status of CCA in the five regional administrations. The regional partnership is currently conducting a national survey, together with an external consultant, mapping the Danish population and companies' knowledge-level and concerns in relation to climate change and CCA. The national survey also feeds into sub-project D1. The cross-regional collaboration has resulted in a comprehensive survey that is more likely to reach high-level political attention and impact decision-making, if only conducted by the CDR.

Communication with the executive agency and the monitoring team

The PM unit has experienced good cooperation between EU monitors and C2C CC. Monitors have provided useful guidance and constructive feedback when needed. The ongoing contact with the monitors has ensured that any questions the PM unit might have, were answered quickly.

However, the PM unit has been surprised that EASME sometimes has sent out follow-ups in relation to monitor meetings and that guidelines/templates are not ready when needed. E.g the template for the current interim report came 2.5 months before report submission. At that time, the PM unit had already been working on the phase 2 interim report for several months creating time-consuming double-work.

C2C CC was designated for second level control conducted by PKF LittleJohn. The second level control took place during national COVID-19 shutdown, creating an unfamiliar situation for C2C CC as well as for the controller. The process of the second level control was somewhat surprising and very time consuming as the controller apparently had no prior knowledge of the project. The main outcome of control focused on the way C2C CC handled securing value for money, a topic that has been discussed on several occasions with the monitors. Prior to the control the PM unit felt on safe ground, which now had been questioned unnecessary.

4. Project impact and analysis of contribution to implementation of the Plan

Phase 2 is now completed and the project has in general progressed as planned. Project activities are mostly organised according to societal needs creating a very high activity level. This also means that project partners have moved around the planned timetable of deliverables. This has not caused any problems and are mostly of a formal matter. This can also be seen as a result of how difficult task it is to anticipate today's needs in the development of such a large project as C2C CC is.

Since a great part of C2C CC is to facilitate capacity building across the project partnership, project impact, as to date, are difficult to measure. However, as C2C CC takes a holistic approach to CCA, many events focus on creating and emphasising synergies between socio-economic needs, biodiversity and CCA. Thus, it is expected that project impact will go well-beyond CCA after the implementation of the sub-projects.

4.1. Environmental benefits

4.1.1 Direct / quantitative environmental benefits

A large part of C2C CC is brainwork, hence direct environmental benefits will be seen in the future after implementation of C2C CC sub-projects and complimentary projects.

C2C CC is primarily concerned with CCA. However, the project also contributes to climate mitigation in some of the sub-projects, such as the Climate Road (C22) that are expected to reduce CO-emissions. Moreover, a Ph.D. student is currently monitoring the Climate Road (C22) to evaluate the environmental impact of micro-plastic stemming from water infiltration. The results are not yet available.

C2C CC's carbon footprint is monitored in action D2, where the latest results (2018) show an overall decrease in CO2-emissions according to the baseline. An update of the carbon footprint in CDR is expected in 2022.

Moreover, based in Climatorium, a local company has developed a method to produce pipes out of abandoned fishing nets. By collecting and re-using so-called ghost nets (fishing nets that has been lost at sea) leads to multiple positive environmental outcomes, as it reduces the entangling and killing of marine life and minimize plastic waste in the oceans, while also feeding into a more circular economy, minimizing resource exploitation.

4.1.2 Qualitative environmental benefits

The overall focus of C2C CC is capacity building. Through the project the professional skill level in the project partnership has been increased significantly. Environmental benefits are expected as a positive long-term outcome and are foreseen to be boosted as a result of C2C CC. This is due to the holistic approach C2C CC takes on CCA. This includes focusing on CCA solutions that creates added value to society. As a part of this, C2C CC has facilitated capacity building seminars and webinars about the use of NBS in CCA, and how to integrate biodiversity and CCA in a way that benefits both. These events have gained substantial attention with participants from all the Danish regions. This rise

in capacity will encourage more holistic CCA initiatives that will lead to an increased level of environmental benefits after project end.

Moreover, C2C CC has inspired sub-projects as well as complimentary projects to work more holistically across sectors, disciplines and municipal and regional borders through sustainable partnerships.

The large focus on holistic solutions and interdisciplinary cooperation in C2C CC, should increase the environmental benefits of the solutions created in the project, but also created in the water industry after the completion of C2C CC. Examples of sub-projects working holistically with CCA in a way that benefits the environment are sub-projects C12 – The River Gudenå, and C13 – The River Storå. Both sub-projects work holistically with entire river catchments, meaning that when deciding on CCA solutions, environmental impacts and benefits are taken into account and incorporated into the chosen solutions.

Additionally, C2C CC hopes to influence, with its many good examples of holistic CCA, the future planning, practice and governance in a way that takes environmental impact and benefits into account when implementing CCA solutions.

4.2. Economic and social benefits

Economic benefits

Reducing flood-related damages

C2C CC covers an area with considerable risk of flooding today and in the future. Flooding from the sea, during rainfall, along rivers and/or shallow groundwater. Most of the subprojects (C9-C18) involve developing CCA solutions to reduce the risk of flooding and will be constructed in future complimentary projects. This will reduce the risk of flood-related damages of building, infrastructure etc. Many of the sub-projects includes larger cities in the CDR, such as Randers, Horsens, Holstebro and Silkeborg where the cost of flood damages is high. Five sub-projects (C11-C13, C16 and C18) are located in areas included in the EU Flood Directive, Directive 2007/60/EC, meaning that many socio-economic values will be lost in case of a flooding-event. E.g., in Juelsminde (C18) most of the city is today protected against flooding from Kattegat and a storm surge with a rise in sea level to +1,6 meters above daily water levels. In C18, the sub-project is operating with a protection level for storm surges to +2,5 meters above daily water levels. The construction of the solution developed in sub-project C18 will reduce the risk of flooding for around 2.500 building and 27 km road in Juelsminde.

A total estimation of the potential reduction of flood-related costs as a result of the implementation of sub-projects would not make sense, as a majority of these are brainwork. And a total estimation of the reduction of potential flood-related costs as a result of the implementation of complimentary projects is outside the framework and time-period of C2C CC.

Smart investments

C2C CC has resulted in an increased attentiveness towards the necessity to invest in reducing the risk of flooding in the region. Without the awareness of the potential high costs of doing nothing, future high damage costs will be expected throughout the region. This awareness among professionals, decision-makers and the general public is important to ensure optimal socio-economic investments in future flood-reduction and to secure synergies across other societal needs. Moreover, the project

has contributed to boost the green transition in the region bringing the region in a favourable position related to innovation and business development of new methods and technologies related to the green transition. The multidisciplinary and added value approach to flood-reducing investments, are expected to generate additional positive economic outcomes. By creating synergies between flood-reducing investments with other projects addressing other societal needs, will lower the cost for the same level of flood protection. Moreover, this will also reduce the risk of unsuccessful investments.

New business opportunities

Methods and technologies developed in Phase 2 have resulted in new business opportunities. In sub-project C17- Thyborøn City and Harbour, new radar reflectors have been developed in cooperation with Climatorium (C21) and local companies. The radar reflectors are used to continuously capture satellite data on local ground motions to predict future uplifting or subsiding ground elevation. The radar reflectors have been patented and 29 radar reflectors have been produced and placed outside the project area in Thyborøn. The radar reflectors have been installed in four other locations in Denmark; Stenlille (7 radar reflectors), Ll. Torup (8 radar reflectors), Hvornum (4 radar reflectors) and Lemvig (1 radar reflector). Contracts have been signed for installation of radar reflectors at 2 additionally locations in Denmark.

The Climate Road has generated multiple business opportunities inside and outside of Denmark, as the technology behind has been replicated multiple places such as in the parking lot of Climatorium, on several spots in Hedensted Muncipality. In additional, the Thermo Road constructed by the NCC, greatly illustrates how the Climate Road inspires to the development of new business opportunities. The Climate Road is due to be replicated in New Zealand as well.

Jobs

The radar reflectors described above is an outcome of C2C CC, and is estimated to have created 5 full time equivalent jobs in 2020. This number is expected to considerably increase in the future. C2C CC has contributed to 4 full time equivalent jobs in the CDR related to the PM unit. The regional development in respect to water and climate adaptation has also contributed to the development of consulting companies. Within the area of climate adaptation, it is expected that C2C CC has contributed to 1-3 full time equivalent jobs for each of the 6 major consultancy companies in the area based on the experience of NIRAS.

C2C CC has been a game-changer for the way the municipalities and utilities in the region work with climate adaptation and integrated water management. Different professional capabilities have been involved in the project. Additionally, C2C CC has illuminated the importance of working across disciplines, drawing on skillsets from both science and social science approaches, leading the way for more humanists to work within the field of CCA.

Social benefits

Added-value

The expansion of CCA focusing on added value such as increased biodiversity, more green/blue infrastructure, recreational areas etc., are expected to be a positive outcome of C2C CC. A good examples of this is seen in C9 where the seven Municipalities and seven utilities in the Western Limfjord are creating a new installation at Thyborøn Channel that will not only reduce storm surges from the Western Limfjord but also act as an important part of the local history. The new installations and designs of Thyborøn Channel, Thyborøn Tange and Agger Tange are a key element in the narrative about this unique location and are expected to include recreational activities and serve as a location for climate tourists and as a must-visit by Thyborøn's locals. When the outcomes of the C2C CC sub-projects are implemented in the future, they are generally expected to contribute to increased physical and mental health in the project areas, respectively, by combining CCA with the creation of new green-blue spaces in the areas. The project areas can be used for recreational activities, locally small-scaled nature experiences and meeting points. Mental health is expected to increase due to a reduction of fear and stress related to flooding of the areas where people live and by increasing access to green environments.

Citizen-involvement

CCA with a high degree of citizen involvement as seen in sub-projects C8, C10, and C18, benefits society as they help local communities to establish an increased sense of community-spirit with common understanding of conservation and shared challenges, which also enable people to meet and discuss future wishes for the development of local areas. Moreover, citizen driven CCA are vital for creating local ownership of the sub-projects ensuring long-term local support.

Public awareness

The many public events facilitated by C2C CC and the project partners have contributed to raise the general knowledge-level and engage civil society in CCA. In phase 2, an increased focus on the importance of engaging and activating young students is shown in the many events targeting a young audience. In August 2020, Climatorium held a three-day event incl. the National Climate Summit, the opening of Climatorium, and the Climate Meeting for Children. More than 1400 professionals participated virtually at the National Climate Summit that was facilitated together with C2C CC with the purpose of gathering a number of recommendations that are used and discussed further at other Danish climate events. At the opening of Climatorium the public was invited to hear about the visions of Climatorium and how to get involved in the many activities that happens there. The Climate Meeting for Children had nearly 4000 Danish pupils age 10-13 participating virtually from 71 schools. By using famous personalities known from Danish Television, Climatorium helped make climate topics interesting for the children.

Other C2C CC public awareness activities have focused on civil society. In C24, Moesgaard Museum, located in Aarhus, designed a display of the C2C CC sub-projects to be exhibited in AquaGlobe and arranged Climate Talks for the citizens in Hedensted Municipality focusing on climate history. Talking about climate change in an historical context helps develop a joint narrative that contributes to an increased overall social resilience.

Professional collaborations:

C2C CC was a part of developing the professional network DNNK. A network that aims to gather and share knowledge nationally and to develop innovative sustainable climate solutions. The social benefits of DNNK, are that the network help ease barriers across regions and sectors within CCA, and serve as an inspiration for new innovative CCA solutions.

Collaboration in C2C CC is anchored in the Quadruple Helix approach combining the public sector, private companies, knowledge institutions and the civil society. Appling the Quadruple Helix approach helps accelerate and transfer knowledge across sectors. The Climate Road in C22 is a great example of this. The idea to the Climate Road started among a group of students at VIA University and as of today, the sub-project is used by students at VIA University to gain practical experience in CCA solutions. Moreover, additional sub-projects have included students in the projects e.g. as interns. By working with real problems, students experience that they are important in solving the future climate challenges and get valuable experiences they can use throughout their study and in their future work life, while C2C CC and the project partners are able to gain insight into their perspectives and add their voices to the CCA discourse.

4.3. Innovation, demonstration, replicability, transferability, cooperation and transboundary effects

This section includes six sub-sections; innovation, demonstration, best practice, replicability and transferability, cooperation and transboundary effects. These sub-sections include recurring themes within *collaboration and approaches*, and *tools*, *technologies and methods*.

Innovation

C2C CC contributes to innovation related to CCA on multiple levels; Innovation related to collaboration and approaches and innovation related to technologies and methods.

4.1.3 Innovative collaboration and approaches

C2C CC aims to work with CCA via innovative collaborative approaches between experts, fields, organizational departments, together with users and experts. Traditionally, the work with CCA has mainly been carried out in silos in the municipalities or utilities. As an example, prior to C2C CC, very little communication between the seven municipalities along the River Gudenå took place. This meant that joint solutions to flooding of the river were rarely discussed among the riparian municipalities. The sub-project C12 has refracted borders between the municipalities and resulted in greater cooperation between the municipalities leading to a holistic CCA plan for the entire river catchment area. The work in C12 has inspired the municipality partners to work together on other cases with an increased degree of cooperation and involvement of different departments.

Innovative tools, technologies and methods

The Climate Road is a new innovation product developed in C22. The Climate Road combines climate mitigation with adaptation. Mitigation as the road provides renewable energy to the nearby kindergarten and adaptation because the road infiltrates rainwater through a permeable asphalt layer. The results of the Climate Road have inspired to similar constructions, such as the Thermo Road build by the private contractor NCC.

The two innovation beams AquaGlobe (C20) and Climatorium (C21) function as innovation hubs. In phase 2 the two beams have proven that these focused venues support capacity building in CCA and amplify knowledge-sharing across relevant actors and stakeholders. Moreover, the two beams have generated multiple innovative technologies used to optimize CCA.

In AquaGlobe, a new treatment technology removing phosphorus from wastewater faster than usual methods has been developed. The technology can be used in wastewater treatment plants and by overflows from the sewer system. In order to solve a wastewater issue occurring every year at the annual music festival in Skanderborg Municipality, where the number of citizens increases 3 times, AquaGlobe has developed a new method to ensure optimal treatment of wastewater based on intelligent administration of the wastewater treatment plant, optimized bacteria in the wastewater treatment, while analyzing wastewater fluctuation volumes during the time of the festival. Moreover, a new type of water meters has been developed that makes it easier to discover leakages in the water distribution network.

In Climatorium at least three innovative CCA technologies and methods has been developed by the member companies. (1) An innovative radar reflectors technology has been developed in cooperation with the partners in C17 (see also previous section under development of business opportunities). Originally the technology was used to obtain more accurate results of vertical local ground motion and to predict future uplifting and subsiding ground elevations. Tests have shown that the technology also can be used to obtain accurate measurements of, and change in, sea levels. The radar reflectors are planned to be installed in other Danish harbours in the near future. (2) A new innovative method on how to update hydraulic models of sewer systems and water distribution networks using the information from satellites regarding vertical local ground motion generated by the abovementioned radar reflectors. This has eased the prediction of pipe burst enabling utilities to targeting their efforts and thereby reduce maintenance cost of sewer systems and water distribution networks. This method can be applied in other contexts too. (3) Based in Climatorium, a local company has developed a method to produce pipes out of abandoned fishing nets. By collecting and re-use fishing nets lost at sea, sustainable pipes, used among others in sewage systems by Lemvig Utility, are produced (see also previous section under environmental impact).

In C14 – Horsens city centre, an innovative socio-economic screening tool has been developed. The tool will enable practitioners and decision-makers to identify the most cost-effective areas for implemented CCA solutions.

As a brainwork generating new knowledge it is expected that C2C CC will continue to lead to multiple innovative solutions in the future based on the results and learnings from the project. Thus, the highest degree of innovation is expected after project end, where the results of C2C CC will be implemented in concrete CCA projects and in other complimentary projects.

Demonstration

The demonstration value of C2C CC can be seen in several activities in collaboration and approaches and in tools and technologies.

Demonstration of collaboration and approaches

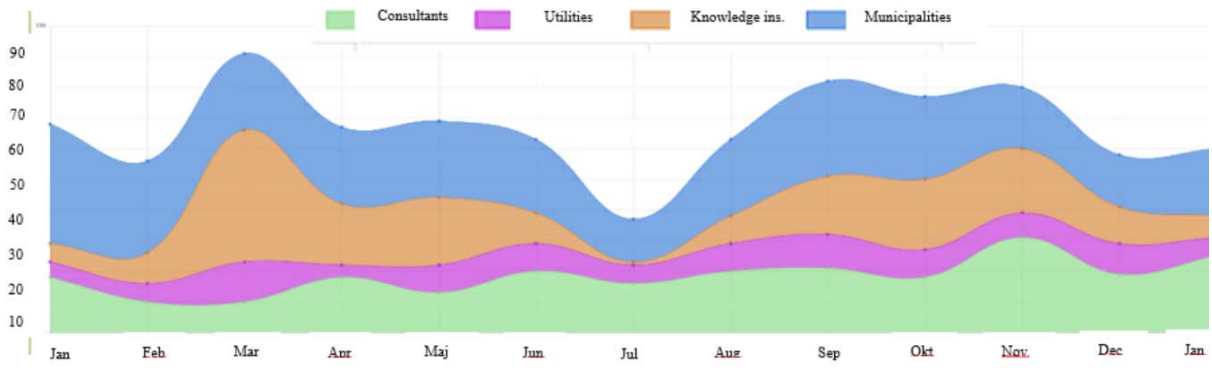
Largely brainwork, the demonstration value of C2C CC are primarily seen in activities related to capacity-building and knowledge-sharing. Learnings, results and impacts from similar projects have been incorporated into C2C CC and the project partnership via partnership meetings, workshops and joint events and conferences. This is expected to lead to the demonstration of CCA solutions across the 24 sub-projects.

The knowledge and results from C24 - Climate history | Culture history have been demonstrated in other sub-projects of C2C CC (C8, C15, C18). Using the anthropological setting as point of departure for citizen involvement and by mapping potential cultural heritage supports a holistic, multi-disciplined and citizen-driven CCA.

The overall demonstration value of C2C CC is the regional living lab of CCA solutions that the project will create. Via the 24 sub-projects, the CDR will turn into an area demonstrating a number of different CCA solutions that can inspire national and international visitors. Moreover, the regional living lab will seek to inspire to use the climate challenge as an opportunity to accelerate the green transition.

Demonstration of tools, and technologies

The groundwater tool developed in phase 1 (C6), has been of great success. A majority of the project partners are now using the tool when working with CCA plans and thereby demonstrating the tool in other sub-projects. The figure below illustrates the number of users accessing the tool monthly. The effect of choosing a well-known user-friendly interface is that the tool is being used widely among the different project partners.



Statistics showing how many have used the tool on a monthly basis.

The exhibition of Climatorium includes different demonstration projects; The parking lot outside of Climatorium demonstrates the technology from the Climate Road (C22). The parking lot also functions as a living lab, where students can sample the infiltrated rainwater and test the solution's ability to treat the rainwater. The exhibition at Climatorium includes demonstration of hands-on activities e.g. The RAIN ROOM, dike building and a water playground for children.

The socio-economic screening tool developed in C14 (see also the section innovation) will be demonstrated to the rest of the project partnership. By disseminating and demonstrating methods, technologies and approaches developed in one sub-project to the other project partners ensures value for money.

Best practice

There has been a great focus on best practice of approaches and technologies in C2C CC. In sub-projects C1-C7, knowledge of best practices within collaboration approaches and technologies have been disseminated via workshop-activities and seminars.

Communication and dissemination of best practices inside and outside the project partnership has been one of the main tasks of the PM unit. Numerous seminars, webinars, workshops and conferences focusing on different aspects of CCA have all contributed to include best practice in the sub-projects, respectively.

Best practice of collaboration and approaches

In September 2020, C2C CC organised a three-day workshop for the project partnership and other relevant actors in Connective Negotiation. A negotiation method based on MGA developed at Harvard University. Connective Negotiation, developed by the company P2, focuses on enhancing the outcome of a negotiation and creating sustainable relations and has previous been used in CCA in the Netherlands. C2C CC's first encounter with Connective Negotiation was on the study trip to the Netherlands in 2018, where the negotiation method has been used to ensure consensus among stakeholders and to enlarge the outcome creating solutions with multiple added values. The concept is now actively used in several sub-projects in C2C CC e.g. in C13.

C2C CC has in corporation with Aalborg University facilitated a number of master classes, focusing on strengthening the concrete and strategic work with value-creating co-design in CCA and on navigating in a landscape with various stakeholders and interests. This method has been demonstrated in C12 – the River Gudenåen, where a visual stakeholder map has been generated via a qualitative approach.

A visual stakeholder map based on learnings from master class and applied in C12

The work of Quadruple Helix is not new, and is thus a best practice example in C2C CC. Quadruple Helix is a part of Climatorium's DNA, where CCA solutions are developed in the intersection between the public sector, private companies, and knowledge institutions together with civil society.

4.1.4 Best practice of technologies

The use of best practice of technologies in C2C CC is seen in e.g. C4 and C12. In C4 – Rainwater, existing knowledge on urban SUDS, rainwater basins along roads and on demand SUDS maintenance has been gathered and demonstrated in the sub-project. In C12 – the River Gudenå, a comprehensive 2D model of the river system has been built in the programme, MIKE by DHI environment, which is considered a best practice in the field. Moreover, experiences with an early warning system from the English Environmental Agency from the study trip to England in 2019 has been applied demonstrating best practice.

With very few construction projects in C2C CC, the full impact of best practice within the field of technology is expected to be seen after project end.

Replicability and transferability

A number of approaches, developed in C2C CC, including models, tools, and manuals have been replicated outside of the project setting. Networking activities, facilitated by C2C CC with other EU-funded projects and other relevant stakeholders, have enabled a wider uptake of project impact and results. By presenting at conferences, seminars, and workshops, C2C CC ensures a wider application of project approaches, tools and technologies. Knowledge sharing and capacity building based on the C2C CC matrix optimizes the potential of replicability and transferability inside and outside of the project partnership.

Visitors from abroad have visited C2C CC in Denmark and heard about the project's accomplishments. That includes visitors from Holland, Hungarian, and France, visiting the sub-projects C4 (Rainwater), C10 (The River Grenå Catchment), C12 (Gudenåen), C16 (Climate Ribbon) and C20 (AquaGlobe).

Replication and transferability of approaches

The overall project concept, working in close collaboration in big partnerships across disciplines, sectors and municipal borders, has been transferred to other projects, such as LIFE IP Natureman, LIFE IP Beyond Waste (currently invited to submit full proposal March 2021), and has served as inspiration for the Capital Region, who are working on a project application for a Concept Note for a LIFE IP. Additionally, C2C CC has been contacted by other EU member states such as France and Hungary seeking inspiration for application of other EU-funded projects. Working in close collaboration in big partnerships has also been transferred by the C2C CC municipal partners to other departments and sectors and to other contexts outside of CCA, focusing on creating synergies and added-value, something that was new to the municipalities prior to C2C CC.

C2C CC has together with other partners organized several conferences and webinars. In October 2019 C2C CC organized the first National Conference on Climate Adaptation together with other Danish partners. The two-day conference was a huge success. The conference was fully booked and

more than 300 climate experts from all over Denmark participated. A set of recommendations written by the participating climate experts resulted in a 28-page document that was communicated to politicians and relevant stakeholders in Denmark and EU.

The partners in subprojects C8, C9, C15, C18 and C21 have participated actively in the H2020 RiConfigure project. RiConfigure is an international project working on including the civil society in innovation projects. The work of RiConfigure is based on the Quadruple Helix, where complex challenges are solved with innovative solutions that includes the public sector, private companies, knowledge institutions and civil society. The experiences gathered in C2C CC, on including the civil society and working with Quadruple Helix projects related to climate adaptation, has through the RiConfigure project been transferred to other sectors and EU member states.

A copy of the building and the concept of Climatorium (C21) will be replicated in New Zealand. The Climatorium in New Zealand will be an international climate institution like Climatorium, working with innovation and knowledge related to climate adaptation, green transition and water in Quadruple Helix partnerships.

Replication and transferability of tools and technologies

The Climate Road (C22) is a technology that has high potential for being replicated to other locations nationally and internationally. The Danish contractor NCC involved in the construction of the Climate Road, has already transferred the technology to their own construction, the Thermo Road. NCC has the necessary resources to sell the solution to other locations in Denmark and in Scandinavia, where the company operates.

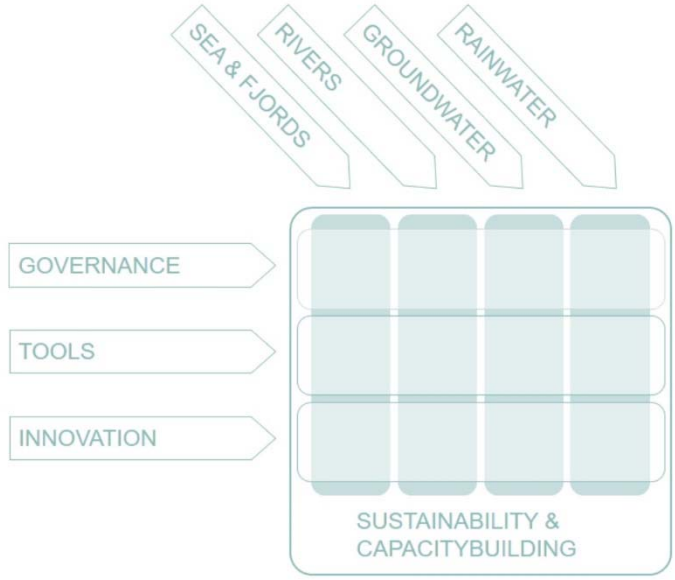
The socio-economic screening tool identifying the most cost-effective CCA-solutions has been replicated in the CDR and has been up-taken by the consultant company NIRAS, who has used the screening tool in other CCA contexts outside of C2C CC.

The 29 radar reflectors (see also sections 4.2) are expected to be installed at several regional, national and internal locations in the future, as the technology can be transferred to other contexts and with other purposes.

Radar Reflector to measure seawater level at a Danish Harbour

Replication and transferability of collaboration

Cross-sectoral collaboration is the DNA of C2C CC as illustrated in the matrix below. The collaboration between the C2C CC project partnership is embedded in professional themes related to governance, tools and innovation.



The C2C CC matrix.

Around 200 persons are directly involved in C2C CC. The PM unit has ensured a high degree of cooperation across the different stakeholders in the partnership and across municipal borders and sectors. Cooperation and knowledge-sharing are amplified in the many events facilitated by C2C CC, where especially the study-trips have contributed to more informal collaboration across sub-projects and partners.

In an evaluation conducted in summer 2020 by C2C CC, project partners expressed that a positive outcome of C2C CC has been that the network of the project partners have expanded significantly. Meaning that project partners now have a much wider portfolio of skillsets, disciplines and capabilities to draw on if needed. Moreover, the project partners have begun to collaborate on other projects outside the C2C CC context. This tendency is expected to continue in the future.

To ensure the wider application of methods and approaches outside of the project setting, a wide range of seminars, workshops and conferences including parties from outside the project partnership has been facilitated. The events have been carried out by the PM unit but also by third parties in collaboration with C2C CC. Moreover, C2C CC has been able to initiate partnerships outside the project partnership. An example is that the five regions, DNNK and the interest organisation Danish Regions, have joint forces to conduct a national survey of citizens' and companies' concerns and knowledge level on CCA. The National Conference on Climate Adaptation was a result of joint efforts and close cross-regional cooperation with KLIKOVAND, Vand i Byer, TopSoil, CALL Copenhagen and Capital Region Denmark.

C2C CC is working closely with DK2020 to transfer knowledge and project results. DK2020 is a project that seeks to expedite efforts to meet the Paris Agreement at municipality level, and to support dialogue and cooperation between Danish municipalities, to ensure synergies between climate mitigation and adaptation.

C2C CC and project partners has worked closely with knowledge institutions, including Technological Institute who have joint forces with C2C CC and now offers a course on sustainable NBS inspired SUDS.

C2C CC is planning to facilitate meetings between pipe manufactures, municipalities and utilities in order to create a forum for innovation of pipe solutions related to the need of the municipalities and utilities.

C2C CC has also been active in international collaboration e.g. with Rivers Trusts and the UK Environmental Agency, whom C2C CC visited and exchanged knowledge and experiences with in 2019 as part of the study trip to the UK.

In phase 2 AquaGlobe and Climatorium have succesfully initiated strong collaborations with a range of partners inside and outside the project partnership including private companies and knowledge institutions. Innovation projects have been carried out in a collaboration between AquaGlobe and companies like Kamstrup, Sanova, Suez, Stjernholm A/S together with Aalborg University. In Climatorium new collaborations have been established among its 11 members from both public and private sectors working together on a local, national and international scale. Climatorium collaborates closely with the civil society, which up until now only has been included to a certain degree.

<u>Transboundary outcomes and impacts</u>

Throughout the project period there has been a focus on extensive transboundary knowledge-sharing. In phase 2 the following transboundary activities has been conducted.

In 2019, C2C CC arranged a study trip for the project partnership to the UK. Local CCA projects were visited and best practices within SUDS, NBS, working with natural capital, flood warning systems, and coastal protection were transferred to C2C CC. The C2C CC project partners transferred experience from among others climate-driven city development (C16) and citizen-driven CCA (C18) to the UK host. After the study-trip a detailed evaluation was made by the PM unit, to ensure that the many learnings can be used in the project forwardly. C2C CC has hosted international visitors from other EU projects that have been interested to learn more about project results and impacts. In May 2019 a Hungarian delegation visited AquaGlobe (C20) and the River Gudenå (C12) where C2C CC presented the main learnings from these two projects; how to collaborate in great partnerships and how to break down municipal barriers in CCA. In June 2019, a Bretagne delegation visited C2C CC, where project managers from C10 and C16 presented main outcomes from the sub-projects respectively. The PM unit shared knowledge and experience of the governance aspect of C2C CC (C5). In February 2020, the PM unit visited the Swedish EU-project LIFE Coast Adapt. The purpose of the trip was to exchange valuable knowledge and project outcomes, as many of the climate challenges addressed in the two projects are similar in relation to flooding and erosion along coasts and river banks.

Additionally, C2C CC have disseminated project impact, outcomes and results at several international conferences and workshops such as ECCA in May 2019 and Baltic Sea Cooperation for Climate Resilience in Helsinki October 2019. Additionally, C2C CC was invited to present the project in Brussel by the EPC in April 2019.

In October 2020, the CDR together with C2C CC took part in EU Green Week, where a board game on multifunctional land consolidation focusing on, among other things, CCA were played by the students at the Asmildkloster Agricultural Academy. The board game is developed in the CDR together with C2C CC. This event shows how knowledge are transferred across discipline boundaries.

Climatorium has helped expanding transboundary project outcomes and impacts. The concept of Climatorium will be established in New Zealand. In the future the two Climatoriums in Denmark and New Zealand, respectively, are planning an exchange programme for students and academics.

4.4. Policy implications and feedback

A large effort was put into pinpointing regulatory inconsistencies in phase 1 of the project. This part included challenges not foreseen in form B3 in the Grant Agreement. The conclusions from that work will not be repeated in the present interim report for phase 2. In phase 1 as part of preparatory actions, C2C CC mapped project partners' knowledge on existing legal barriers to CCA. The study showed multiple barriers between CCA and EU directives in CCA. DG Environment in the European Commission have showed great interests in these findings.

C2C CC has focused on interaction with politicians and national authorities in Phase 2. The project has been showcased for interested politicians, as an example Signe Munk (F)(MP), who is the climate spokesman for her party, visited the project. She has later together with C2C CC and other partners, given a speech at the Climate Hackathon facilitated by Climatorium together with Lemvig Gymnasium.

The contact to EU has been positive and constructive. The European Policy Center has invited the C2C CC project to a meeting in Brussels in 2019 to gather inspiration from the project. The project

has also participated with a hearing response in regard to the EU climate adaption plans, and are participating in the platform meetings. The CDR has furthermore sent a letter of interest in becoming one of the 100 deep demonstrators of 200 pilot regions/communities in The Horizon Europe Mission area on Adaptation to Climate Change, to the ERRIN Secretariat. At the moment C2C CC is actively working on getting one of the pilot areas from the ERRIN project located within a C2C CC project area.

In regard to fully explore the potential of this project, it has been a barrier that there has been little interest in adopting the result on a national basis in Denmark. Legislation wise it is unclear where the responsibility to propel the CCA lies. Hence very little happens. There has been no attempt of contact from the Danish government to the C2C CC project. C2C CC has on the other hand tried to be an active player whenever a chance for commenting on CCA legislation or planning has occurred. As an example, C2C CC has sent several hearings responds to different relevant legislations in regard to the national CCA plans, and on EU level. The main points have been to highlight the important role the regions play in holistic CCA and as a facilitator for cross-municipal cooperation. Moreover, the national hearing responds are also a mean to call on the Danish government to take action on this matter.

The project is also working on influencing the legislation around projects that spans over several municipalities. This is typical projects regarding rivers or coastlines. There has been organized meetings with the Danish Minister of Environment Lea Wermelin trying to raise awareness of potential conflicts related to cross-municipal projects. The results of these meetings have mostly been a letter back, thanking C2C CC for the engagement and nothing more than that. As a method to raise awareness, experience from the sub-projects in C2C CC are used e.g. C12 – The River Gudenåen where the seven riparian municipalities are working together to solve the climate challenges in the river catchment area.

The cooperation with the municipalities has overall been good. Cooperation with officials has been fruitful, whereas cooperation with LGDK has been more challenging. It seems as if there might be a fear of losing tasks and responsibilities to each other. It has also shown to be a challenge that the local politicians are being elected every four years. With new local politicians the focus can change making long term planning difficult. Communication with Danish Officials such as the Coastal Directorate, the Nature Agency, the Environmental Agency and the Agriculture Agency has worked well.

4.1.5 Political barriers between the LGDK and the Regions

Overall political barriers, an in particular the barrier between the LGDK and the regions, in regard to distribution of roles and responsibility still exists and continues to hamper holistic and cross-municipal CCA. The power struggle between the Danish umbrella organisations at the local (municipalities) and the regional (first the counties and now the regions) levels have existed for many years. In 2007, the municipal structural reforms meant that 13 counties were replaced by 5 regions. Many of the counties' tasks were transferred to the now much larger municipalities enabling the municipalities to act to a greater extent without the influence of the regions.

This has challenged solutions of cross-municipal tasks as there is a void between municipalities and the state. Thus, the regions have informally taken up the task to identify areas where cross-cutting coordination clearly has been missing and have offered themselves as mediator. The regions have

offered data expanding the existing data base and has facilitated cross-cutting collaborations, which C2C CC is an example of.

The value of this are especially visible at the practitioners' level, where the interaction between municipal and regional employees have been beneficial. Municipal practitioners are calling for more collaboration, capacity building and knowledge sharing facilitated by the regions, as the municipalities can see how the expanded network and tools benefits their daily work with CCA in a more holistic and sustainable direction.

The conflict between municipalities and the regions are mostly tense at higher management level.

It is the experience of C2C CC, that LGDK is vigilant in regard to regional offers. LGDK has often hindered the projects cross-sectoral activities i.e:

- LGDK has refused to participate in meetings, when regional employees have been present.
- LGDK declined to take part of the National Survey mapping citizens' and companies' knowledge of CCA. This was due to that LGDK did not saw a need to collaborate with regions on this matter.
- Municipal representatives in the C2C CC steering committee has explained that they have been told by the LGDK, that it will harm their relationship with LGDK if the collaborate with the regions.

This issue is often very explicit, also publicly, and does not only circumscribe to the field of CCA, but is seen in other sectors such as in the implementation of the COVID-19 vaccine-programme as well.

The question of why the government cease to intervene in this conflict remains unanswered. However, to overcome this conflict, C2C CC have taken an actively engaging approach and will continue to invite LGDK to collaborate with the CDR. Additionally, DK2020 has shown to be a fruitful entry to initiate a closer collaboration between LGDK and the regions, at least at a practitioner level.

No formal role of regions in CCA

Currently, the Danish regions have no formal role in CCA effort. The CDR sees the regions as a natural place to anchor the CCA since a number of mitigation and adaptation efforts have to cross municipal borders. Thus, regions would be a logical level to place the facilitation of CCA. Despite the regions role in CCA continues to be a topic of discussion in the interest organisation Danish Regions, it remains of challenge to influence the Danish government to give the regions a larger role in CCA. In order to influence decision-making, a set of recommendations was produced by the 300 experts participating in the National Conference of Climate Adaptation. The recommendation has been given to national rapporteurs and will, together with the results from the national survey conducted by CDR, together with the 4 other regions and DNNK, will help amplify project policy impact. In the phase 1 Interim report it was reported that a complementary CCA project was at risk, not being implemented. In phase 2 a complementary CCA project to C10, C11 and C12 with added value between protected nature, SUDS and coastal protection is at risk of not being implemented due to a recent decision of appeal stated by the Danish Board of Environment and Food Complaints. The appeal states that the SUDS can be implemented to a higher cost elsewhere. However, this will influence on integrated solution between rainwater, coastal protection and the habitats. Furthermore, it influences the financial synergies and leaves the area without coastal protection. The appeal can impact the implementation of future CCA projects seeking to gain synergies with other societal needs.

C2C CC has contributed to accelerate CCA projects in a large number of partner municipalities. Had it not been for the cooperation and commitment in C2C CC the time frame for the implementation of the sub-projects in C2C CC would undoubtedly have been considerably longer.

C2C CC works continuously on developing a regional joint CCA strategy across the partner municipalities. The CCA plans from 2014 is today replaced by a new way of planning and integrated in the spatial- and sectoral plans. Sub-projects C8-C19 are directly related to CCA in the municipalities' spatial- and sectoral plans. Therefore, all work, outcomes, and results conducted in the sub-projects respectively, contributes to the implementation of the CCA plans. In summer 2020, the project municipalities were asked to provide inputs to the CCA joint strategy. The outcome of the evaluation are currently still be analysed and will be ready ultimo 2021. The results of the evaluation will help target C2C CC's efforts of capacity-building and identifying knowledge-gaps which will ease implementation of CCA in the municipalities.

The overall outcome and project impact of C2C CC will contribute to a joint CCA strategy enabling climate challenges to be solved in and across municipal and regional borders. The work on a CCA joint strategy will after project end continue in DK2020.

The work toward establishing a common narrative, incl. image of reality, challenges and language used, when working with CCA is now at a point where the potential of creating shared solutions has been optimized.

Moreover, the government has announced that a national CCA strategy will be released in spring 2022. The collaboration in DK2020 will contribute to this plan.

4.5. Capacity building, sustainability and other comments on impacts, barriers, challenges and lessons learned

Capacity building

Capacity building is the essential part and main product of C2C CC. In phase 2 the PM unit has facilitated 13 events with the prime goal to disseminate knowledge and build capacity in among the project partnership. Additionally, C2C CC has participated in 20 other events facilitated by other stakeholders in the water industry where knowledge has been disseminated and capacity has been built (see annex 3). Most of these events have been held in 2019 with less activity in 2020 due to COVID-19.

The team spirit in the project partnership in phase 1 and 2 is now enhancing the work across organizations which also ensures optimal knowledge sharing and capacity building in the individual organisations.

C2C CC has also promoted capacity building in the water industry in general by working together with universities and knowledge institutions. Project outcomes and results has been disseminated to students via Climate Hackathon, Climate Meeting for Children and by incorporating students in the daily monitoring of the Climate Road. Moreover, two Ph.D students are currently attached to C2C CC. One is researching the environmental impacts of the Climate Road, together with VIA University College and Aalborg University, and the other is examining CCA-related stakeholder conflicts using C12 as case together with a private consultant company, Skanderborg Utility and Aalborg University

Public raising awareness activities have been conducted via radio and TV appearances. In phase 2 the project has appeared in national radio and tv six times, respectively. C2C CC has, together with the

Viborg Municipality and Technological Institute, produced the animation film “The story about the Wells family” https://dreambroker.com/channel/5ws8uxg5/e3bxebeg. The film is about how private landowners can adapt to the heavy precipitation using local solutions that secure, retain and infiltrate rainwater.

Sustainability

To ensure the sustainability of the capacity-building after project end, C2C CC has focused on building capacity within the project partnership. This will ensure that is it not only consulting companies who gain knowledge, but also the partners themselves.

To ensure the sustainability of the developed tools there has been focus on implementing them in user-friendly interfaces, so that they are easy to use after the project has ended. The groundwater tool developed in C3 is implemented in SCALGO. SCALGO is a Danish tool used widely in the water industry in Denmark and in the rest of Scandinavia. The tool being a part of SCALGO will ensure continued access to the tool after C2C CC is completed.

When the project has ended a new set-up is created that will ensure knowledge sharing, innovation and action related to climate adaptation and climate mitigation in the future. The collaboration related to climate adaptation and climate mitigation between the project partners will be carried on as a part of the concept and collaboration Water Valley. AquaGlobe (C20) and Climatorium (C21) will be important drivers in the further development of the Water Valley cooperation. Moreover, learnings and results are also passed on to DK2020 where it will be used.

Barriers, challenges and lessons learned

A capacity building barrier is seen every time an employee in the project partnership is replaced. New employees entering the partnership lack the in-depth knowledge of C2C CC's history. This was highly visible during the evaluation in summer 2020, where new employees found it hard to answer how the sub-projects was handled before their employment. This is an important learning, and in phase 3 the PM unit will make extra effort to preserve and secure the common narrative of the project via different events and more documentation and evaluation.

COVID-19 has challenged the execution of C2C CC in 2020, as most of the project partnership incl. the PM unit have worked from home offices. COVID-19 has hindered planned physical events and workshops, which as a way to adapt to the new circumstances have been converted to virtual events. There are both pros and cons to virtual events. Some of the events had significantly more participants than usual from all over Denmark. Additionally, virtual events enable participants to only take part in some parts of the event. To embrace the new opportunities virtual meetings create, the PM unit has started to organize small webinars for the project partners in order to ensure joint knowledge, joint understanding and joint movement and direction of the projects during the corona pandemic.

5. Implementation of the complementary actions

5.1. Coordination mechanism(s) established with other funds

C2C CC has from the beginning focused on the interaction between project and complimentary projects, as they help support the activities in C2C CC, and in some cases reflecting, continuing and integrating prior commitment of the region to water-related issues, and in other cases expanding on activities within future phases of C2C CC. The complementary actions thus support the objectives of C2C CC.

C2C CC complementary projects help accumulate knowledge and raise awareness and includes EU-projects and non-EU projects. Many complimentary projects will continue after C2C CC ends. Most of the complementary projects are construction work financed by local authorities, utilities and private funds, other are research or inter-regional based projects. However, most complimentary projects are based on the outcome of cross-cutting collaboration across sectors, disciplines and administrative? borders in C2C CC, which has served as inspiration to initiate new partnerships for the development of future projects.

The collaboration with complementary projects takes place in very different ways; whereas some complimentary projects are closely linked to the daily operation of C2C CC, others are not. TopSoil is an example of a closely linked complimentary project, where a direct transfer of knowledge between TopSoil and C2C CC takes place. In 2019, C2C CC and TopSoil joint forces and facilitated the National Conference on Climate Adaptation together (see also section 4). The close cooperation between C2C CC and TopSoil has led to mutual inspiration, knowledge accumulation and competency development, and it has created multiple synergies between the two projects, respectively. Geophysics in Filters, a project funded by the VUDP, is an example of another kind of complimentary project based on Quadruple Helix collaboration, focusing on creating new cost-effective technologies that benefits the climate while also reducing the water bills for citizens.

Different project applications applied under EU Horizon and LIFE and the Social Fund originate from C2C CC, and serve as complimentary projects if and when accepted and granted funding. A close cooperation between C2C CC and Aalborg University has resulted in multiple EU Horizon2020 applications. Unfortunately, none of them have yet led to funding.

Under the traditional LIFE Biodiversity program, the CDR has invited partners partly from the C2C CC project but also from relevant governmental agencies and interest organizations to participate in a partnership aiming to restore vital ecosystems and their services using multifunctional land consolidation as a mean to work holistically with agriculture, biodiversity and climate adaptation. The concept note for this was approved and a full proposal was submitted February 2021.

Together with the Capital Region of Denmark and the Danish Environmental Protection Agency and other actors, C2C CC has contributed to the development of a circular economy project focusing on a society beyond waste. The partnership has currently been invited to submit a full proposal under EU LIFE IP in March 2021. Although this is not a CCA related project, the impact and experience on big partnerships and cross-sectoral work from C2C CC has served as direct inspiration for the development of this project.

C2C CC's network to sewer contractors in C4 and C7, led to an application to the Social Fund on how to upgrade the qualifications of sewer contractors and landscape architects etc. The project was named the Green Water Worker. C2C CC saw the need for more holistic CCA solutions in everyday

life. Experience have showed that there is a vital need to improve the qualifications of the sewer industry's management and practitioners, as the majority still apply traditional grey solutions. Unfortunately, the application did not go through.

Moreover, a number of construction projects based on the findings of C2C CC sub-projects will serve as future complimentary projects such as the construction of a bypass east of Horsens city centre (C14) and the Climate Ribbon at Randers Fjord (C16).

The majority of construction projects in the sub-projects will be realized after the completion of C2C CC. However, the table below illustrates which type of complementary projects are important indicators of how C2C CC leads to real action and impact beyond brainwork. important indicators of how C2C CC leads to real action and impact beyond brainwork.

5.2. Summary status of the complementary actions

Action / Measure / Pillar	**Source of funding**	**Amount foreseen in the application**	**Amount committed (C), mobilised (M) and/or spent (S) by X-Interim / Final Report**	**How did the IP work with the complementary action or fund (e.g. regular phone calls, joint project or conference, common paper, etc.)? Which IP action(s) is(are) linked? Please provide references, web links to reports available, dates and other relevant details. Highlight how the IP facilitated the implementation of the complementary action or fund.**
C21, C22	LVS, NCC, Aalborg Universitet, VIA University College, C2C CC	€267,000	€267,000(M)	**In situ purification of road water in climate roads** The PhD project concerns In situ purification of road water in climate roads and the project is initially based on learnings from sub project C22 thourgh which the Climate road is developed. A cross-collaboration has emerged with C21 Climatorium who facilitates an experimental road where you can physically experiment with different road constructions. The project on purification in the climate road complements initiatives in the C21 sub project on Climate Change, where, among other things, there is a focus on strengthening quadruple helix collaborations (cross-cutting collaborations between business, educational institutions, the public and civil society). The PhD collaboration is an example of a quadruple helix collaboration that creates a climate solution that can be produced and used in real life with the help of Climatorium. Duration: march 2019 – august 2022 Link: None yet
C21	MUDP (national programme). Triple Nine, Teknologisk Institut, Lemvig Vand A/S, InsaTech, Bio Aqua	€700,000	€ 5,867,000(M)	**INNOFLOT** The Innoflot project complements initiatives in the C21 project on Climate Change, where, among other things, there is a focus on strengthening quadruple helix collaborations (cross-cutting collaborations between the business community, educational institutions, the public and civil society). The project is an example of a quadruple helix collaboration between a private company, knowledge institutions and the public water supply, which creates new environmentally friendly solutions. In addition, C21 Klimatorium functions as a dissemination platform for the Innoflot project.

				Duration: 2019 - 2022 Link: https://www.teknologisk.dk/projekter/ny-miljoeteknologi-skal-give-vand-og-energibesparelser-i-millionklassen/41551
C21	Lemvig Vand	€200,000	€200,000(M)	**Management of climate water at the roads Tannebækvej and Fjodlystvej** The projects are projects where Lemvig Vand in collaboration with C21 Climatorium develop new approaches to handling climate projects. Climate management projects must provide added value to civil society. Knowledge institutions are linked to projects, to renew our methods, as well as to get the latest knowledge about climate management. In addition, C21 Climatorium functions as a dissemination platform for Lemvig Vand's climate adaptation projects. The project provides a noticeable assurance of values and provides new knowledge about the handling and execution of climate adaptation projects. Civil society benefits from the project, as knowledge from the project is disseminated and published. Duration: 2020-2021 Link: no link
C14	Horsens Municipality	€160,000	€160,000(S)	**Skybrudsløsning Torvet** - Construction project Climate adaptation of the main shopping street to reduce flood risk (from cloud bursts) and damages due to flood in low laying parts of the city. Surface water at extreme rain events is diverted and redirected onto a shorter path to the fjord. The shopping street is a part of the C14 project area which means that knowledge, the dynamic model and scenarios from C14 have been used as a basis for planning and design of this adaptation solution. Duration: 2019-2020 Link: https://horsens.dk/OmHorsensKommune/Presse/Pressemeddelelser/Ekstremregn_fra_Torvet_i_Horsens_skal_p_sigt_ledes_mere_direkte_mod_fjorden

C14	Horsens Municipality & Samn Forsyning	€4,400,000	€4,400,000(M)	**Schüttesvej dæmning og slues** - Construction project Dam construction and sluice to retain water in Bygholm Lake in order to reduce the flood risk at Horsens city center. The new automated sluice will control the water level in the lake. This project is directly related to the C2CCC sub project, C14 as flooding from both Bygholm lake and Bygholm river can cause comprehensive damages in Horsens city center. Bygholm Lake is furthermore a part of the C14 project area which means that knowledge, dynamic model and scenarios from C14 have been used to form the basis for decisions on implementation and as a direct input to design and dimensioning. Duration: 2018-2021 Link: https://horsensvokser.dk/Trafik/Trafik/Schuttesvej https://www.youtube.com/watch?v=zcHCg6Ma9gw&feature=youtu.be
C21	LK, LVS	€200,000	€200,000(S)	**Climate adaptation of the East Harbor in Lemvig** The flood wall and the coastal protection in front of Climatorium have been established as part of the physical building of C21 Climatorium and will be a part of the showroom on climate adaptation solutions. They are thus directly related to C21 Climatorium. The wall has inspired many to work with multifunctional solutions - it now permeates the C2C CC project. Duration: 2018-2020 Link: https://klimatorium.dk/
C13	VESTF	€6,000,000	€6,000,000(M)	**"Slut med vandkaos"** This project is well linked to C13 as it contributes to the overall objective of the sub project of detaining water in the catchment area to prevent flooding in urban areas. The project is focusing on approaches and installations to catch large amounts of water (up to 4.5 mio m^3 water) upstream, in the river valley. This large-scale solution can meet the requirement of having a solution with a short time period of establishment. The complementary project contains the same issues with the impact on vulnerable nature (flora) as a result of water retention. Both projects must therefore work with compensatory measures and the nature of compensation.

				The project contributes to the overall objective of C13. Projects at field level such as C13 will not themselves be able to solve the flood problem in Holstebro. The project results in Herning show that the water retention potential in the two project areas is very modest. Holstebro Municipality's starting point for inclusion in C13 is that water retention at field level can be the long-term method of counteracting the increasing extreme runoff, which is a consequence of the continued climate change. Duration: 2018-2022 Link: https://www.holstebro.dk/slutmedvandkaos
C2, C4, C7	VESTF	€ 2,100,000	€ 2,100,000(M)	**Separation of waste water and rainwater in the villages of Holstebro Municipality** VESTF started in 2020 a process in a village in Holstebro Municipality with the purpose to develop an alternative method for the future separation-projects in the Municipality. We wish to handle the rainwater on the surface, create blue and green areas with fine conditions for biodiversity and to make a secure solution to face the future climate changes. The inspiration came from C2C CC. Duration 2019-2021 Links: https://www.vestforsyning.dk/spildevand/kloakseparering/kloakseparering-i-hvam-mejeriby/
C8, C9, C12, C18	Interreg – European Regional Development Fund	€1,925,150	€1,925,150(M)	**Cluster for Cloud to Coast Climate Change Adaptation (C5A)** Creating a "Cloud-to-Coast" (C2C) approach to improve management of flood risk by building on seven ongoing Interreg North Sea Region (NSR) projects. The approach intends to adapt a "whole-of-system" approach, whereby four constituent systems (catchments, coasts, cities, infrastructural networks) will be integrated. This will allow development of multifunctional and adaptable solutions. The C5a project is concerned with holistic climate change adaptation and cooperation across borders and professions which is also the case in several of the sub projects in C2C CC (see action/measure list).

				All partners in the C5a project found the C2C CC matrix very interesting and wish to use it in the project. In this way, C2C CC contributes to the C5a project and the experience is disseminated in the Intereg North Sea area. Duration: January 2019 – December 2021 Links: https://northsearegion.eu/c5a/
C1–C24	The Danish Agency for Institutions and Educational Grants RealDania, Insurance & Pension The Capital Region of Denmark And members (regions, municipalities, companies and utilities)	€500,000	€4,420,800(S)	**Water in Urban Areas (Vand i Byer)** Water in urban areas was a Danish innovation network with focus on creation of climate resilient and sustainable cities through value-adding water management. Water in urban areas was originally established in 2010 as a strategic partnership. However, from the end of 2014it was transformed to an innovative network. The governmental funding has now stopped in 2020, and the innovation network has consolidated with KLIKOVAND, Call Copenhagen and INUNDO in the National Climate Change Network, which C2C CC also joins. Many of the goals and activities in Water in Urban Areas are similar to the ones in C2C CC. Both projects have also worked together on e.g. developing and facilitating a national conference on climate change adaptation. Several projects in Water in Urban Areas link to the cross-cutting capacity building actions in C2C CC. E.g., the Water in Urban Areas project about opportunities and challenges in relation to operation of green-blue infrastructure / LAR which relates to C4 about rainwater. The partnership behind Water in Urban Areas is now included in DNNK Duration: January 2010 – December 2020 Links: www.vandibyer.dk
C1, C18	Norddjurs Municipality Aqua The Government Local citizens	€1,750,000	€1,750,000(S)	**Coastal protection on Anholt** Securing the coast of the island of Anholt is complementary to the C action 1 about sea and fjords, as well as C18 about citizen driven CCA in Juelsminde.

				As C1 aims at improving the climate change resilience of coastal areas, the project complements this action by adding to the regions resilience with physical coastal securing measures on the island of Anholt. Further the project adds to the practice of and knowledge about citizens involvement in CCA actions, which complements C18, that aims to realise citizen-driven CCA in Juelsminde. Duration: 2018 – 2019 Aquaclew Link: https://www.norddjurs.dk/nyheder/pressemeddelelser/2019/jun/kysten-er-klar-paa-anholt
C1, C2, C3, C4, C5 and C6	JPI (Joint Programming Initiative "Connecting Climate Knowledge for Europe") and the partners: Swedish Methodological Institute (lead) Dortmund University University of Innsbruck, Unit of Hydraulic Engineering, University of Natural Resources and Life Sciences Geological Survey of Denmark and Greenland University of Cordoba University of Granada National Research Institute of Science and Technology for Environment and Agriculture	€2,000,000	€2,000,000(S)	**AQUACLEW** As AQUACLEW as a research project theorises and applies tools regarding climate adaptation in the face of flood- and drought challenges in general, and at the same time includes a local climate case study in CDR, the project complements several C-actions at the same time. Most notably C1 regarding sea and fjords, C2 regarding rivers and lakes, C3 regarding groundwater and C4 regarding rainwater. This is because all four actions concern different kinds of flood risks and water related challenges, which are the subject in the AQUACLEW project (besides also concerning droughts). Finally, the project also complements knowledge and practices of the actions C5 about governance and C6 about tools, as AQUACLEWs aims at formulating policy proposals that support climate plans and their adaptation, as well as the development of climate risks analysis tools. Duration: 2017 – 2020 Links: https://aquaclew.eu/agricultural-production-in-central-denmark/ http://www.jpi-climate.eu/nl/25223436-AQUACLEW.html
C3 and C6	Interreg VB NSR	€840,000	€8.453.013(M)	**Topsoil** TOPSOIL is closely related to the C2C CC sub project C3 groundwater, as the project studies the pilot areas' soil with regards to their groundwater quality and climate hazards that can and do affect the groundwater.

				Further TOPSOIL is providing new tools, thus it is complementary to C6 regarding tools to understand water challenges. The Topsoil project is also lead from the CDR which provides an opportunity for knowledge exchange between the two projects. C2C CC and Topsoil also hosted the National conference on climate change adaptation together in October 2019. Duration: 12/2015 – 12/2021 https://northsearegion.eu/topsoil/
C3, C4, C7	GUDP Økologisk Landsforening FRDK Dal-Bo A/S Agro-Intelligence Aarhus University Copenhagen University 4 farmers	€1,000,000	€1,300,000(M)	**CarbonFarm (Pløjefrit Danmark)** The project includes tests in both ecological and conventional farming, and seeks to lead to more sustainable and climate-friendly farming in both, while reducing the need of pesticides in conventional farming. The projects sees potential in 1) reducing costs of farming by >100€/ha farmland, 2) reducing the loss of nitrogen and phosphor, 3) a climate saving effect of 0,5 million tons CO_2 and 4) a reduced need for pesticides. The CarbonFarm project is complementary in nature to several C actions. Most notably C3 on groundwater, C4 on rainwater and C7 on innovation. This is because CarbonFarm seeks to develop cultivation cycles that are more gentle towards groundwater reserves (C3), and less dependent on moderate and reliably timed rainwater influx (C4). Also CarbonFarm will increase the knowledge on the interaction between ground- & rainwater on one side and cultivation cycles on the other. Finally, Carbonfarm is an instance of innovation (C7) in a very important area close to CCA, as agriculture is. Duration: 2017 - 2021 http://okologi.dk/landbrug/projekter/planteavl/carbon-farm http://mst.dk/erhverv/groen-virksomhed/groent-udviklings-og-demonstrationsprogram-gudp/gudp-projekter/2017-projekter/carbonfarm-baeredygtige-dyrkningssystemer-i-landbruget/

C2, C12	EU Land District Danish National Nature Agency Hedensted Municipality	€72.940	€72.940(S)	**Carbon Low Areas (Vig lavbundsprojekt)** The overall purpose of the project is to reduce the emission of greenhouse gasses from low laying areas with a high content of carbon. This will be achieved by stopping farming in the project area and cut of drains and ditches. The project will also support and improve the conditions of §3-areas in and around the project area. This project links to C2 and C12 that deals with flood management. Huge surrounding areas to Gudenaaen is used for agriculture and some of the ideas to reduce flooding from the river is to use some of the farming areas for water retention which will both reduce risk of flooding and enhance biodiversity. Duration: 2016 – 2018 Link: http://naturstyrelsen.dk/naturbeskyttelse/naturprojekter/as-vig-lavbundsprojekt/
C4, C15, C22	Municipality of Hedensted Pipeline owners e.g. Hedensted sewage company	€2,100,000	€2,100,000(S)	**Climate road as "water road Horsensvej" in Hedensted City** The water road is a new version of the original climate road (C22) and has as the original version a main purpose of reducing flooding by rain water management (C4). This initiative also contributes to CCA in Hedensted city (C15) as it increases the resilience of the area to heavy rain falls. Duration: 2019 Link: https://www.klimatilpasning.dk/aktuelt/nyheder/2019/september/hedensted-udvikler-endnu-en-klimavej/
C3, C4, C5, D3	Lemvig Municipality	€241,164	€241,164(S)	**Lemvig Sødal** The Sødal wetlands project is a newly established wetland in Lemvig Sødal. The wetland combines the retention of nutrients with climate protection of the area near Lemvig Sø. A network of path connections will be established in Sødalen, which allows for recreational nature experiences.

				The Sødal wetlands are an example of a solution that makes water-masses more predictable and less harmful for local infrastructure and residents. At the same time, the final solution is of use to local residents and serves as both a regulating and cultural ecosystems service. The project has taken inspiration from C34, C4 and C5 and contributes to D3 by implementing the use of ESS. Duration: 2019 https://www.lemvig.dk/Miljoe-og-Trafik/Natur-i-vand/Projekter-for-vandmiljoeet.aspx https://www.lemvig.dk/nyhedsarkiv/indvielse-af-vaadomraade-i-lemvig-soedal?Action=1&M=NewsV2&PID=6209
C14	Horsens Municipality	€73,333	€73,333(S)	**Boller Landskaber** - Development plan A new ring road is planned to improve infrastructure in Horsens and at the same time reduce flood risk from storm surge. To accommodate the recreational opportunities in the area in terms of nature and also experience and understand technical installations as gate barriers and pumps a development plan for the area is prepared. The development plan incorporates the climate adaptation measures recommended in C14 phase 1. Duration: 2019 Link: https://horsensvokser.dk/Natur/Natur/BollerLandskaber
C1, C4	Randers Municipality Vandmiljø Randers Miljøstyrelsen (The Danish Environmental Protection Agency)	-	€6,800,000(M)	**Stork Meadow (Storkengen)** A decision made by the appeal board for environmental- and food complaints, meant that the uniqueness of the stork meadow is to be preserved at all costs, and that the original projects actions were considered too disruptive for the meadow. Another way of achieving the climate change adaptation of the northern Vorup sewer system had to be investigated. This have contributed to national awareness of the conflict between legislation for specific nature and the need for climate change adaption. A new version of the project with alternative actions, that affect the meadow to a lesser extent, has been developed. Rainwater will still be treated, but now in two locations. The one and largest treatment basin

				will be located outside the project area. The second and smaller are placed in the stork meadow. The project changes for the technical facilities, resulted in a minor adaptation of the recreational facilities. Permission for these facilities is being processed by the board for environmental- and food complaints. Stork meadow is part of the C16 and the local project "Byen til Vandet", which is also related to C2C CC. The connection with C2C CC has led to obligations for financial contributions from the Danish Environmental Protection Agency (synergy projects). Links: https://www.randers.dk/udvikling-by-og-land/baeredygtig-udvikling/storkeengen/ https://www.klimatilpasning.dk/sektorer/natur/synergiprojekter/randers-kommune-storkeengen/ https://www.licitationen.dk/article/view/735257/nccfirma_vinder_arelang_klimasikring_i_randers https://www.cfmoller.com/p/-da/Storkeengen-i3327.html
C21	Lemvig Gymnasium, Climatorium, VIA University College, AU, CDR	-	€ 187,000 (M)	**Climate Gymnasium** The collaboration with Lemvig Gymnasium as a climate high school compliments initiatives in the C21 project on Climate Change, where, among other things, there is a focus on strengthening quadruple helix collaborations (cross-cutting collaborations between business, educational institutions, the public and civil society). The collaboration between the partners must contribute to awareness about the climate in the upper secondary school and in Lemvig Municipality, and provides opportunities for international collaborations, and is therefore related to the concept of C21 Climatorium. During climate hackathons it gives C2C CC possibility to disseminate general knowledge about climate adaptation. Often it is about mitigation, when the talk is about climate challenges. Duration: 2020 - 2023

				Link: https://www.lemvig-gym.dk/wp-content/uploads/2020/02/Klimastudent-2020-pjece.pdf
C21	Climatorium	-	€ 40,000 (M)	**The children's climate meeting** The conference is held in the Climatorium building, and thus complements the C21 project, where the focus is on being a lighthouse that facilitates knowledge sharing about climate. The children's climate meeting is therefore directly related to C21 Climatorium. The children's climate meeting reaches out to primary schools, primarily in grades 5-6 in Denmark. The purpose is to ensure that children are not intimidated by climate challenges, but instead see the opportunities and become interested in being able to do something about these issues. Help the children to positive information and look at opportunities in education and jobs within the area. At the climate meeting in 2020, we reached approx. 5,000 children in Denmark and a children climate meeting will be held again in 2022 and the work will be implemented in the teaching in the primary school. Duration: 3 times, August 2020, 2021 and 2022 Link: https://klimatorium.dk/boernenes-klimamoede-2021/
C21	Climatorium, CDR, C2C CC, DNNK, National funding	-	€ 1,610,000 (M)	**The National Climate Summit** The conference is held in the Climatorium building, and thus complements the C21 and other C2C CC projects, where the focus is on being a lighthouse that facilitates knowledge sharing about climate. The climate summit is therefore directly related to C21 Climatorium. The climate meeting is an annual climate event. The goal is to create a professional debate and to send messages out to local and national politicians. The climate meeting sends a relay around Denmark to connect experiences from the other climate events in Denmark and ends again in Climatorium in Lemvig. This way, Climatorium ensures that our climate history at present will be documented for future use Duration: August 2019 - 2022 Link: https://klimatorium.dk/en/klimamoedet/konference-om-klima/
C21	Climatorium "Erhvervsfremmebestyrelsen" (national funding)	-	€ 667,000 (M)	**Establishment of stage 2 Climatorium** Climatorium as a business lighthouse for the improvement of business initiatives (Erhvervsfremmestyrelsen)

				The project is planned to start the establishment of stage 2 in C21 Klimatorium. Climatorium will turn over projects into jobs. Among others. C2C CC projects and thereby become the link to the business community in Denmark. Duration: 2021 - 2023. Link: https://klimatorium.dk/
C21	Climatorium, Climatorium, Wakatu Incorporation	-	€ 6,670,000 (M)	**Klimatorium dk/Climatorium NZ** Climatorium in New Zealand is a twin project of C21 Climatorium in Lemvig, Denmark. The project ensures an international partnership that can provide new climate solutions worldwide. New Zealand is building a Climatorium in Nelson, New Land according to the same concept as in Denmark with QH as a tool and projects as a focal point. At present, we have three concrete projects: Climate road, Intelligent wells and school collaboration at upper secondary level. Duration: 2021 - 2025. Link: - not yet.
C21	"Miljøstyrelsens støtte ordning – Grø nordning" (national funding), Climatorium	-	€640,000(S)	**Outdoor – plan and learning about the Climatorium** The outdoor area belongs to the physical Climatorium building, and thus complements the C21 project, where the focus is on being a lighthouse that facilitates knowledge sharing about climate. The main purpose of the outdoor area is learning through play about climate and climate challenges and is therefore directly related to C21 Climatorium. The outdoor areas are built as a Living lab. The tools are publicly available to civil society and contribute to the citizens having the opportunity to be enlightened and get hands-on on play and learning, and thus learn to turn challenges into an advantage. Duration: 2018 - 2019 Link: https://ens.dk/sites/ens.dk/files/Stoette_vedvarende_energi/vejledning_groen_ordning.pdf

C1-C24	Realdania, the 5 Danish Regions, LGDK and 66 out of 98 Danish municipalities. (10 in CDR)	-	€4,000,000(M)	**DK2020-project** 10 minicipalities in CDR are part of the DK2020 project, where hopefully all municipalities will join, and in the period 2019-2021 prepares climate action plans to fulfil the Paris Agreement at municipal level. The project is about both mitigation and adaptation, and C2C CC is very important in giving inspiration to municipalities and regions in all Denmark when it comes to adaptation. This is the possibility we have, to join mitigation and adaptation in Denmark today. Duration: 2020 - 2023 Link: https://realdania.dk/projekter/dk2020
C21	LVS (lead), VUDP, AU, VIA University College, Niras, EU FP7	-	€373,333(S)	**Geophysics in filters** Geophysics in filters is an example project of a quadruple helix collaboration, by creating new technologies for the benefit of the climate, and cheaper water bills for citizens. In doing so, the project complements initiatives in C21 Climatorium, which focus on strengthening quadruple helix collaborations. In addition, C21 Climatorium functions as a dissemination platform for Geophysics in filters. The water sector uses large amounts of clean drinking water to flush filters at waterworks. In Denmark, there is an average water loss of 7% compared to the inflated volumes. 2% of this amount is used for filters. Our project has shown that it is possible to reduce the amount of rinsing water to 1%. In other countries, there is significantly more water loss than in Denmark and even more uncritical use of drinking water for rinsing filters, so the potential is great. The project was presented at IWA 2018 in Tokyo, where the interest was huge. The reason was that in Japan there is natural occurrence of radioactive substance in the soil, therefore there is a great interest in this technique. Duration: 2017-2019 Link: https://www.danva.dk/viden/vudp/projektuddelinger/geofysik-i-filtre/

C6, C17, C21	VUDP, LVS, Rambøll, VIA University College	-	€106,666(M	**SASLO** (Satellite data for strategic pipe network monitoring) The project is directly complementary to the C-action surrounding tools (C6), as it employs satellite data in new piping modelling practices in order to help the piping management and planning. The project shows that relatively simple tools and tweaks can save substantial amounts of resources. As the main motivation for the project was the struggle to maintain pipe lifetime in the Thyborøn area, the project is directly complementary to the C-action regarding Thyborøn City and harbor (C17). SASLO is an example on a project with a quadruple helix collaboration between knowledge institutions, business, the public and civil society, by creating new technologies for the benefit of climate adaptation, as well as creating local jobs and a physical product. In doing so, the project complements initiatives in C21 Climatorium, which focus on strengthening quadruple helix collaborations. In addition, C21 Climatorium functions as a dissemination platform for the SASLO project. Duration: 2018 - 2021 Link: https://www.danva.dk/publikationer/vudp-rapporter/satellitdata-til-stratetegisk-ledningsnet-overvaagning-saslo/ https://www.danva.dk/media/6803/saslo_vudp_slutrapport_satellitdata.pdf
C1-C24	CDR, Climatorium og AquaGlobe	-	€587,000(M)	**Water Valley** Water Valley is the afterlife of C2C CC. In order to continue and accelerate the role the C2C CC project have during the project period, Water Valley is established. The project end with a plan for continuing after the ending of C2C CC – both regarding funding, vision, strategy and action plan. Water Wally reaches out so that interested outside C2C CC can benefit from the knowledge that is created in C2C CC and thereby ensure that C2C CC gets an after LIFE. Here it will be possible to apply for new projects and ensure that the current projects are linked to new projects. Duration: 2019 – 2022

				Link: https://www.c2ccc.eu/sogning/#?cludoquery=water%20valley&cludopage=1&cludorefurl=https%3A%2F%2Fwww.c2ccc.eu%2F&cludorefpt=Coast%20to%20Coast%20Climate%20Challenge&cludorefact=water&cludorefaci=1
C14	Horsens Municipality	-	€266,666(M)	**Åen tilbage til Byen** - Development plan A recreation of a historical course of the river Bygholm is desired by the city council along with urban transformation in the area. An ambitious development plan for the area is prepared. Climate adaptation is one of four main themes in the development plan. Knowledge and climate scenarios from C14 set the prerequisites for climate adaptation measures in the area. Duration: 2020-2021 Link: https://horsensvokser.dk/Byudvikling/Byudvikling/Aaen
C12	Hedensted, Horsens, Skanderborg, Silkeborg, Favrskov, Viborg and Randers Municipality	-	€133,000(M)	**Masterplan climate adaption, The River Gudenå** The project collaborates closely with C12 within joint workshops, online conferences and meetings in the river Gudenå committee to establish at broad dialog and perspective in working with the problems regarding the flooding in the River Gudenå. The project contributes within gathering new knowledge about the river Gudenå system to the task to identifying possible actions and ways to react to the flooding problems I the river Gudenå, now and in the future. The project uses the Gudenå model, which is developed in the C12 project as a fundament. All the knowledge created in the project will be available to the C12 project for further use. Duration: 4/2020 – 6/2021 Link: Under construction
C24	MRCA-IF		€207,312(M)	**CHICC** C24 has worked closely with the CHICC ER (Sarah Kerr) in preparing the application. A joint paper has been submitted to the Journal of Applied History, which is part of the C2C CC (C24) deliverables but co-authored with Dr. Kerr. There is a strong link between CHICC's main objective, which is to study and discuss cultural, historical and archaeological

				heritages assets under climate change, with C24 "Climate history/Culture history" which also has the purpose of examining the role of cultural landscapes in CDR s part of climate change adaptation. Duration: February 2021 – January 23 Link: not ready
C5 and C7	The Danish Industry, research institutions, public authorities and utilities in Greater Copenhagen	-	€1,315,436(M)	**CALL Copenhagen** Since February 2020, the project has been included in DNNK, with which C2C CC collaborates closely with knowledge exchange and competence building nationally. Currently joint webinars and conferences, among others the National Conference in October 2019. The project makes relevant contributions to C2C CC for the innovation angle in particular. Especially in the cities, inspiration is drawn. Similarly, we give CALL Copenhagen inspirations for a more holistic approach. We continue to interact with ongoing webinars and another national conference in August 2021 focusing on climate adaptation and competence building. As Call Copenhagen is based in Copenhagen and C2C CC in CDR, the collaboration contributes to the IP becoming nationally comprehensive. Duration: 10/2016 - 9/2021 Links: www.dnnk.dk and https://www.callcopenhagen.dk/en/
C1 – C7	Regional and local funding in Copenhagen	-	€535,744(S)	**KLIKOVAND Taskforce** KLIKOVAND was a network constitute by municipalities and utilities. The goal of this network was to support and develop joint solutions that prevent the consequences from heavy showers and create a fundament for a holistic and robust coastal protection. Like Water in urban areas, many of the projects and activities in KLIKOVAND relates directly to subprojects in C2C CC. E.g. the project dealing with hydraulic data from the Værebro-å catchment area where KLIKOVAND collected and gathered data to provide an overview of water flows for later modelling. This relates to C6, Tools. The partnership behind KLIKOVAND is now included in DNNK Duration: January 2018 – December 2019

				Links: www.klikovand.dk
C1, C2, C9, C10, C11 and D3	EU Life CAB Skåne (regional body)	-	€4,538,674(M)	**Life Coast Adapt** The Life Coast Adapt project demonstrates ecosystem-based measures against coastal erosion and floods that also strengthen coastal biodiversity and ecosystem services and is thus of great interest for C2CCC and sub projects C1, C2, C9, C10, C11 and D3. The Life Coast Adapt project group has however also showed interest in the C2C CC project and the two EU life project have thus met for knowledge exchange and will continue to cooperate and share knowledge. Duration: 06/2018 – 12/2022 https://lifecoastadaptskane.se/
C1	EU Intereg The Netherlands: Rijkswaterstaat ExoShpe Waterschap Noordezijlvest UNESCO-IHE Norway: Norges Vassdrags – go energidirektoratet Germany: Niedersächsischer Landesbetrieb für Wasserwirtschaft, Künsten- und Naturschutz Common Wadden Sea Secretariat Landes betrieb für Küstenschutz, Nationalpark und Meeresschutz des Landes Schleswig-Holstein Sweden: Landdstyrelsen Skane – The county Administrative Board of Skane Belgium: Vlaamse Milieumaatschappij	-	€1,600,000(S)	**Building with Nature** The project ended in 2020. This was supposed to be marked with an end conference in Utrecht in June 2020. Building with Nature involves solutions to increase coastal resilience that are based on natural elements. The project is thus closely related to C1 which involves increasing coastal resilience taking into consideration the environmental state and marine biodiversity. Duration: 2016 – 2020 Link: https://northsearegion.eu/building-with-nature/

	Agentschap voor Maritieme Dienstverlening en Kust Denmark: Kystdirektoratet Scotland: Scottisch Catchment Group			
C1, C18	Realdania The Environment and Food Agency The Danish Coastal Authoraty		€10,266,667(M)	**"Byerne og det stigende havvand"** A partnership between the Ministry of Environment and Food of Denmark, The Danish coastal authority and Realdania to support the development of projects with innovative solutions that combine the need for coastal protection and ensure access to the sea. The project partners will support 8 pilot projects in different municipalities in developing and realising innovative and holistic solutions for sustainable cities that also creates recreational qualities in coastal cities. CDR and C2C CC is involved in the project. In the "Debate project" C2C CC contributed to the preliminary work and participated in creating scenarios for urban development. Later some virtual citizen meetings working with scenarios. Duration: 2018 – 2022 Link: https://realdania.dk/projekter/helhedsloesninger-til-fremtidens-kystbyer
C6, C24	European Union's Ireland-Wales programme (Regional Development Fund) Royal Commission on the ancient and historical monuments of Wales Discovery Programme: Centre for Archaeology and Innovation Ireland Aberystwyth University: Department of Geography and Earth Sciences - Geological Survey, Ireland	-	€5.200.000(M)	**CHERISH: Climate Change and Coastal Heritage EU Funded Project** CHERISH is a cross-disciplinary project aimed at raising awareness and understanding of the past, present and near-future impacts of climate change, storminess and extreme weather events on the rich cultural heritage of our sea and coast. It links land and sea and employ a variety of techniques and methods to study some of the most iconic coastal locations in Ireland and Wales. These range from terrestrial and aerial laser scanning, geophysical survey and seabed mapping, through to palaeo environmental sampling, excavation and shipwreck monitoring.

				The project complements the C2C CC specifically in C action 24 about climate history, and complements the C2C in a broader sense in C6 about tools. The contribution to the C action 24 lies within CHERISH's build-up of know-how in the area of risk assessment of climate change impact on cultural and natural heritages, which directly and indirectly supports the agenda of C24 on finding CCA coping strategies for such heritages. Further CHERISH tests and develops a wide range of tools and methods to determine, investigate and monitor the impact of climate change on cultural heritages. Examples of these are magnetometry to find archaeological features, electrical resistance area surveys to detect and map subsurface archaeological features, ground penetrating radars that send high-frequency pulses through the ground in order to find differences in ground layers, materials and properties. This is complementary to the action C6 on tools for CC assessment and CCA recommendations. Duration: 2017 - 2021 Links: https://rcahmw.gov.uk/coastal-heritage-and-climate-change-project-launched/ http://www.cherishproject.eu/en/resources/publications/newsletter http://www.cherishproject.eu/en/resources/publications/newsletter/51-english/resources/publications/news-letter/232-cherish-news-letter-4
C1, C2, C3, C6	Alexandra Institute Aarhus University DTU Copenhagen University Systematic VISMA consulting Business Minds Danish Business Authority Agency for Digitisation Central Denmark Region The Innovation Fund (Grand Solutions) (National funding)	-	€18,565,000(S)	**DABAI** DABAI stands for Danish Center for Big Data Analytics-driven Innovation, and is an interdisciplinary project that aims at investigating and evaluating the utility of big data analytics in the sectors climate, health, education, food quality and business. Specifically, the project will use public data, food industry data, Integrated machine learning (ML) data and algorithmic tools for efficient production of geodata, in order to a) predict flooding and high stress climate activity, b) predict patient flows in the health sector, c) predict need for individual student learning, d) safeguard and track food quality and e) reduce Danish businesses administrative cost + invoke growth.

				It aims at producing an online visual analytics tool for flood risk assessment, supporting rapid scenario analysis and incorporation of forecast and/or event data. The benefit of such tools is expected to save both lives and resources. The potential of the flood-related DABAI initiatives to predict flooding and thereby reduce loss of life and wealth is huge and thus the project is complementary to a range of C actions. First, the project complements the efforts to understand risks and development in Denmark's marine and fjord areas, hence complements C1. Second, the project has the same utility with regards to C2 about rivers and lakes, as big data driven models and predictions of storm surges etc. addresses the C2C CC worries in that area as well. Third, as groundwater challenges and solutions are closely tied and related to both slow and abrupt sea level changes, the project also complements action C3 on groundwater. Finally, the action C6 about tools is supported by the DABAI project, as the project delivers another useful and relatively cost-effective tool to greatly enhance the national and regional climate change adaptation. Duration: 2016-2020 Links: https://dabai.dk/en/cases/integration-weather-and-ocean-forecastdata-flood-risk-screening-analysis https://dabai.dk/en/cases/flood-risk-screening-based-integrated-terrain-model-and-stream-data https://dabai.dk/en/cases/efficient-semi-automatic-identification-hydrological-corrections
C3, C6, C13	SDFE DMI GEUS Holstebro forsyning Municipality of Holstebro	-	€33,784(S)	**FODS 6.1** FODS 6.1 is the initiative 6.1 of the Common-public digitalisation strategy (FODS). The project 6.1 seeks to lay the groundwork for later national model calculations based on two pilot projects on Odense Å (river) on the island of Fyn in the Southern Danish Region, and on Store Å (river) in the Central Denmark Region. Yearly rain in the region around CDR's Store Å has increased by 26%, the days with rain increased by 64 days a year and with rising average temperatures and greater seasonal swings, the estimation of groundwater near rivers and lakes is a literal rising concern in the region. Availability of valid, reliable and dynamic data is thus in big

				demand, and the project aims at providing just that, and make possible the upscaling of the practice on a national scale. The FODS 6.1. project complements at least two of the C2C CC actions, namely C action 3 about groundwater and C action 6 on tools. Specifically, FODS 6.1 improved CDRs climate change adaptation by increasing nationwide and thus also regional capabilities for risk assessment by more accurate groundwater level models, as well as contributing concretely to the risk assessment of the Store Å (river) by demonstrating the project possibilities in the region. Finally, the project developed a tool and contributed with information on development of such and provided insights into the possible gains and improvements made by a relatively cost-effective investment in improving tools for climate change adaptation. Duration: 2016 – 2018 End report in Danish: http://dk.vandmodel.dk/media/21208/36-2018-geus.pdf
C3,C4, C6	MUDP VIA University College	€181,466	€181,466(S)	**ORMUM** ORMUM stands for optimising of risk- and environmental assessments in urban areas, and is a project aiming at testing several innovative hydrologic modelling concepts in the risk- and environment assessment processes. The project will result in the establishment of so-called LAR-solutions, which stands for local drainage of rainwater solutions. Specifically, the project employs the technique of constructing urban 3D geological voxel models to address the effects of increased infiltration from SUDS on groundwater flow patterns and hence the fate of contaminants. This is important as many urban areas in Denmark – and Europe - are close to or at the sea, and likewise very close to sea levels. Thus urban solutions for rainwater challenges are in demand. The project is complementing the C2C CC by contributing to C3 and C4 - the understanding and management of ground- and rainwater - with the use of better hydrological models. This also complements the C-Action 6 about better tools for coping with water challenges, as the project

				develops and employs new tools that can be employed by municipalities, cities and urban planning actors like utility services. Duration: 01/2018 → 07/2020 https://www.ucviden.dk/portal/da/publications/detailed-geological-modelling-to-support-urban-planning-in-aarhus-denmark(150f4673-ee56-4e03-a486-aaaa9a9efd94).html https://www.ucviden.dk/portal/da/projects/optimering-af-risiko-og-miljoevurderingerne-ved-etablering-af-lar-loesninger-i-det-urbane-miljoe-ormum(d1795a92-4daf-409b-ac83-6b83cf87eb3b).html
C4, C9, C17	Realdania Envionmental Agency DANVA Insuance Organisation KTC LK SKF CDR SDFE DTU Space Rambøl	-	€53,590(S)	**"Regn med Thyborøn" Count on Thyborøn** Located between the North Sea and the fjord Limfjorden as well as experiencing occasional heavy rain, Thyborøn is literally being approached by water from all sides. The Project "Regn med Thyborøn" (Rain with Thyborøn) connects the high danger of flooding, the creation of a rain water basin as a solution and the recreational use of water structures with each other. Specifically, Lemvig Municipality will place the necessary basin strategically in proximity to the after-school centre of the city. This will allow for not only sporadic and ad hoc usefulness of the water basin, besides its help in avoiding flooding of residential areas, but it will also allow for teaching and the raising of awareness among local educational institutions and residents. The project and its budget so far aimed at investigating and estimating the impact and utility of said venture. The project is linked to C2C CC by contributing to and drawing from C2C CC's overall brainwork regarding solutions for various water challenges. As the project is part of a national pilot project with additional 3 locations outside CDR, the share of know-how and solutions is benefitting a wider and national initiative as well. Specifically, the project is connected to C-action C4 on rainwater, as the multifunctional basin is an initiative to cope with rainwater challenges. Further C9 surrounding Thyborøn Channel and Western Limfjord is complemented by the project, as the project – being located in the area

				– contributes to this actions aim at making the area more water-proof. Finally, C17 about Thyborøn City and harbour is complemented, as the project is located in Thyborøn and contributes to the cities climate adaptation. The projects effects on transboundary collaboration across sectorial divisions in the municipality concretely contributed to this. Duration: 01/03/2017 - 31/12/2017 Link: http://www.regnogbyer.dk/projekter/thyboroen https://orbit.dtu.dk/en/projects/regn-med-thybor%C3%B8n
C24	University of St. Andrews Scotland Heritage Lottery Fund Historic Environment Scotland The University of St Andrews The Crown Estate		€722,690(S)	**SCHARP: Scotland's Coastal Heritage at Risk** Scotland's Coastal Heritage at Risk Project (SHARP) is a new project from the SCAPE Trust (Scotland's Coastal Archaeology and the Problem of Erosion), which will work with local communities to update records of Scotland´s eroding coastal heritage. The citizens have provided information about coastal heritage sites around Scotland threatened by erosion. This has helped local communities, researchers and heritage managers to take a more strategic approach to vulnerable coastal heritage sites in Scotland. This project is directly linked to C24. It examines how natural and environmental processes affect cultural heritage sites along the coast to improve management of those sites that are threatened by CCA. In this way the SCHARP project shares several elements with C24. Duration: 2012 - 2016 Link: http://www.scharp.co.uk/
C2, C3, C4	LK LVS the Ministry of Environment European Agricultural Fund for Regional Development	-	€585,880(S)	**Synergy project Ballevad** This multifunctional or synergy project contains of creating a water basin around Ballevad ditch, municipality of Lemvig. The multifunctionality of the project lies in its fourfold effect. 1) Easing the phosphor influx to Hornsø by establishing greater wetlands in the stream direction of Hornsø, for the phosphor to run through. 2) Mitigating the danger of heavy rain flooding residential areas in the proximity of Ballevad ditch.

				3) Promoting natural resources and 4) Expanding the recreational measures around Ballevad ditch. Like the C2C CC, the Ballevad ditch project is applying a holistic approach to tackling several water related challenges at once. And just like the C2C CC, Ballevad ditch seeks to create solutions with added value for the local population, thereby maximizing the overall utility of the given initiative. Duration: 2018-2020 Links: https://www.lemvig.dk/Miljoe-og-Trafik/Natur-i-vand/Projekter-for-vandmiljoeet.aspx https://www.klimatilpasning.dk/sektorer/natur/synergiprojekter/lemvig-kommune-ballevad/
C1, C2, C10, C11 and C14	Realdania LK		€2,949,494(S)	**The Eastern Harbour of Lemvig** Lemvig is at constant risk of experiencing storm floods and has, and has experienced various incidents of floodings in the past. The Eastern Harbor project in Lemvig aims at redesigning the harbour facilities and promenade in order to maximise its performance against storm floods on one hand and the recreational utility of the harbour on the other hand. Additionally, the new harbour will allow for better accessibility from the city center, thereby making Lemvig a better connected city. The project of Lemvig harbour complements the C2C CC in its overall goal of improving the regions climate change resilience, by making cities and landscapes more flood-proof. Especially since this was done in an innovative way in Lemvig. It also gives inspiration to the challenged fjord cities at the east coast especially Grenå, Randers and Horsens. Duration: 2016 – 2018 Link: https://www.lemvig.dk/Nyheder/Ny-Oesthavn-i-Lemvig indvies.aspx?Action=1&currentPage=9&PID=5664
C2, C3, C4,C5, C6, C8,	Environmental Agency SEGES CDR	€536,912	€536,912(S)	**"Vandet fra landet" The Water from rural areal**

C11, C12, C13, C14, C15, C18, C19	Danish Machine Stations and Entrepreneurs			The partnership was based on four streams, creating large floods in urban areas. SEGES, CDR and Danish Machine Stations and Entrepreneurs participate in the partnership. The purpose of the partnership was to develop, document and present climate adaptation technologies that can handle the water from the land and thus relieve urban areas during cloudbursts and in extreme rainfall situations. Finally, the partnership created the idea of creating an open innovation-creating network that can, in the long term, ensure the continued development of climate adaptation solutions for the water from the country. If successful, the network could serve as a model for future public-private cross-sectional partnerships. Inspiration to handling challenges with runoff water in cities and cross boundary collaboration. Duration: 01/2014 – 05/2017 Link: https://www.klimatilpasning.dk/kommuner/partnerskaber-og-netvaerk/vandet-fra-landet
C14	Horsens Municipality	€73,333	€73,333(S)	**Boller Landskaber** - Development plan A new ring road is planned to improve infrastructure in Horsens and at the same time reduce flood risk from storm surge. To accommodate the recreational opportunities in the area in terms of nature and also experience and understand technical installations as gate barriers and pumps a development plan for the area is prepared. The development plan incorporates the climate adaptation measures recommended in C14 phase 1. Duration: 2019 Link: https://horsensvokser.dk/Natur/Natur/BollerLandskaber
C21	Lemvig Gymnasium, Climatorium, VIA University College, AU, CDR	-	€ 187,000 (M)	**Climate Gymnasium** The collaboration with Lemvig Gymnasium as a climate high school compliments initiatives in the C21 project on Climate Change, where, among other things, there is a focus on strengthening quadruple helix

				collaborations (cross-cutting collaborations between business, educational institutions, the public and civil society). The collaboration between the partners must contribute to awareness about the climate in the upper secondary school and in Lemvig Municipality, and provides opportunities for international collaborations, and is therefore related to the concept of C21 Climatorium. During climate hackathons it gives C2C CC possibility to disseminate general knowledge about climate adaptation. Often it is about mitigation, when the talk is about climate challenges. Duration: 2020 - 2023 Link: https://www.lemvig-gym.dk/wp-content/uploads/2020/02/Klimastudent-2020-pjece.pdf
C21	Climatorium	-	€ 40,000 (M)	**The children's climate meeting** The conference is held in the Climatorium building, and thus complements the C21 project, where the focus is on being a lighthouse that facilitates knowledge sharing about climate. The children's climate meeting is therefore directly related to C21 Climatorium. The children's climate meeting reaches out to primary schools, primarily in grades 5-6 in Denmark. The purpose is to ensure that children are not intimidated by climate challenges, but instead see the opportunities and become interested in being able to do something about these issues. Help the children to positive information and look at opportunities in education and jobs within the area. At the climate meeting in 2020, we reached approx. 5,000 children in Denmark and a children climate meeting will be held again in 2022 and the work will be implemented in the teaching in the primary school. Duration: 3 times, August 2020, 2021 and 2022 Link: https://klimatorium.dk/boernenes-klimamoede-2021/
C21	Climatorium, CDR, C2C CC, DNNK, National funding	-	€ 1,610,000 (M)	**The National Climate Summit** The conference is held in the Climatorium building, and thus complements the C21 and other C2C CC projects, where the focus is on being a lighthouse that facilitates knowledge sharing about climate. The climate summit is therefore directly related to C21 Climatorium.

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C21	"Miljøstyrelsens støtte ordning – Grø nordning" (national funding), Climatorium	-	€640,000(S)	**Outdoor – plan and learning about the Climatorium** The outdoor area belongs to the physical Climatorium building, and thus complements the C21 project, where the focus is on being a lighthouse

				that facilitates knowledge sharing about climate. The main purpose of the outdoor area is learning through play about climate and climate challenges and is therefore directly related to C21 Climatorium. The outdoor areas are built as a Living lab. The tools are publicly available to civil society and contribute to the citizens having the opportunity to be enlightened and get hands-on on play and learning, and thus learn to turn challenges into an advantage. Duration: 2018 - 2019 Link: https://ens.dk/sites/ens.dk/files/Stoette_vedvarende_energi/vejledning_groen_ordning.pdf
C1-C24	Realdania, the 5 Danish Regions, LGDK and 66 out of 98 Danish municipalities. (10 in CDR)	-	€4,000,000(M)	**DK2020-project** 10 minicipalities in CDR are part of the DK2020 project, where hopefully all municipalities will join, and in the period 2019-2021 prepares climate action plans to fulfil the Paris Agreement at municipal level. The project is about both mitigation and adaptation, and C2C CC is very important in giving inspiration to municipalities and regions in all Denmark when it comes to adaptation. This is the possibility we have, to join mitigation and adaptation in Denmark today. Duration: 2020 - 2023 Link: https://realdania.dk/projekter/dk2020
C21	LVS (lead), VUDP, AU, VIA University College, Niras, EU FP7	-	€373,333(S)	**Geophysics in filters** Geophysics in filters is an example project of a quadruple helix collaboration, by creating new technologies for the benefit of the climate, and cheaper water bills for citizens. In doing so, the project complements initiatives in C21 Climatorium, which focus on strengthening quadruple helix collaborations. In addition, C21 Climatorium functions as a dissemination platform for Geophysics in filters. The water sector uses large amounts of clean drinking water to flush filters at waterworks. In Denmark, there is an average water loss of 7% compared to the inflated volumes. 2% of this amount is used for filters.

				Our project has shown that it is possible to reduce the amount of rinsing water to 1%. In other countries, there is significantly more water loss than in Denmark and even more uncritical use of drinking water for rinsing filters, so the potential is great. The project was presented at IWA 2018 in Tokyo, where the interest was huge. The reason was that in Japan there is natural occurrence of radioactive substance in the soil, therefore there is a great interest in this technique. Duration: 2017-2019 Link: https://www.danva.dk/viden/vudp/projektuddelinger/geofysik-i-filtre/
C6, C17, C21	VUDP, LVS, Rambøll, VIA University College	-	€106,666(M	**SASLO** (Satellite data for strategic pipe network monitoring) The project is directly complementary to the C-action surrounding tools (C6), as it employs satellite data in new piping modelling practices in order to help the piping management and planning. The project shows that relatively simple tools and tweaks can save substantial amounts of resources. As the main motivation for the project was the struggle to maintain pipe lifetime in the Thyborøn area, the project is directly complementary to the C-action regarding Thyborøn City and harbor (C17). SASLO is an example on a project with a quadruple helix collaboration between knowledge institutions, business, the public and civil society, by creating new technologies for the benefit of climate adaptation, as well as creating local jobs and a physical product. In doing so, the project complements initiatives in C21 Climatorium, which focus on strengthening quadruple helix collaborations. In addition, C21 Climatorium functions as a dissemination platform for the SASLO project. Duration: 2018 - 2021 Link: https://www.danva.dk/publikationer/vudp-rapporter/satellitdata-til-stratetegisk-ledningsnet-overvaagning-saslo/ https://www.danva.dk/media/6803/saslo_vudp_slutrapport_satellitdata.pdf

C1-C24	CDR, Climatorium og AquaGlobe		€587,000(M)	**Water Valley** Water Valley is the afterlife of C2C CC. In order to continue and accelerate the role the C2C CC project have during the project period, Water Valley is established. The project end with a plan for continuing after the ending of C2C CC – both regarding funding, vision, strategy and action plan. Water Wally reaches out so that interested outside C2C CC can benefit from the knowledge that is created in C2C CC and thereby ensure that C2C CC gets an after LIFE. Here it will be possible to apply for new projects and ensure that the current projects are linked to new projects. Duration: 2019 – 2022 Link: https://www.c2ccc.eu/sogning/#?cludoquery=water%20valley&cludopage=1&cludorefurl=https%3A%2F%2Fwww.c2ccc.eu%2F&cludorefpt=Coast%20to%20Coast%20Climate%20Challenge&cludorefact=water&cludorefaci=1
C14	Horsens Municipality		€266,666(M)	**Åen tilbage til Byen** - Development plan A recreation of a historical course of the river Bygholm is desired by the city council along with urban transformation in the area. An ambitious development plan for the area is prepared. Climate adaptation is one of four main themes in the development plan. Knowledge and climate scenarios from C14 set the prerequisites for climate adaptation measures in the area. Duration: 2020-2021 Link: https://horsensvokser.dk/Byudvikling/Byudvikling/Aaen
C12	Hedensted, Horsens, Skanderborg, Silkeborg, Favrskov, Viborg and Randers Municipality	-	€133,000(M)	**Masterplan climate adaption, The River Gudenå** The project collaborates closely with C12 within joint workshops, online conferences and meetings in the river Gudenå committee to establish at broad dialog and perspective in working with the problems regarding the flooding in the River Gudenå. The project contributes within gathering new knowledge about the river Gudenå system to the task to identifying possible actions and ways to react to the flooding problems I the river Gudenå, now and in the future. The project uses

				the Gudenå model, which is developed in the C12 project as a fundament. All the knowledge created in the project will be available to the C12 project for further use. Duration: 4/2020 – 6/2021 Link: Under construction
C24	MRCA-IF		€207,312(M)	**CHICC** C24 has worked closely with the CHICC ER (Sarah Kerr) in preparing the application. A joint paper has been submitted to the Journal of Applied History, which is part of the C2C CC (C24) deliverables but co-authored with Dr. Kerr. There is a strong link between CHICC's main objective, which is to study and discuss cultural, historical and archaeological heritages assets under climate change, with C24 "Climate history/Culture history" which also has the purpose of examining the role of cultural landscapes in CDR s part of climate change adaptation. Duration: February 2021 – January 23 Link: not ready
C5 and C7	The Danish Industry, research institutions, public authorities and utilities in Greater Copenhagen	-	€1,315,436(M)	**CALL Copenhagen** Since February 2020, the project has been included in DNNK, with which C2C CC collaborates closely with knowledge exchange and competence building nationally. Currently joint webinars and conferences, among others the National Conference in October 2019. The project makes relevant contributions to C2C CC for the innovation angle in particular. Especially in the cities, inspiration is drawn. Similarly, we give CALL Copenhagen inspirations for a more holistic approach. We continue to interact with ongoing webinars and another national conference in August 2021 focusing on climate adaptation and competence building. As Call Copenhagen is based in Copenhagen and C2C CC in CDR, the collaboration contributes to the IP becoming nationally comprehensive. Duration: 10/2016 - 9/2021 Links: www.dnnk.dk and https://www.callcopenhagen.dk/en/

C1 – C7	Regional and local funding in Copenhagen	-	€535,744(S)	**KLIKOVAND Taskforce** KLIKOVAND was a network constitute by municipalities and utilities. The goal of this network was to support and develop joint solutions that prevent the consequences from heavy showers and create a fundament for a holistic and robust coastal protection. Like Water in urban areas, many of the projects and activities in KLIKOVAND relates directly to subprojects in C2C CC. E.g. the project dealing with hydraulic data from the Værebro-å catchment area where KLIKOVAND collected and gathered data to provide an overview of water flows for later modelling. This relates to C6, Tools. The partnership behind KLIKOVAND is now included in DNNK Duration: January 2018 – December 2019 Links: www.klikovand.dk
C1, C2, C9, C10, C11 and D3	EU Life CAB Skåne (regional body)	-	€4,538,674(M)	**Life Coast Adapt** The Life Coast Adapt project demonstrates ecosystem-based measures against coastal erosion and floods that also strengthen coastal biodiversity and ecosystem services and is thus of great interest for C2CCC and sub projects C1, C2, C9, C10, C11 and D3. The Life Coast Adapt project group has however also showed interest in the C2C CC project and the two EU life project have thus met for knowledge exchange and will continue to cooperate and share knowledge. Duration: 06/2018 – 12/2022 https://lifecoastadaptskane.se/
C1	EU Intereg The Netherlands: Rijkswaterstaat ExoShpe Waterschap Noordezijlvest UNESCO-IHE Norway: Norges Vassdrags – go energidirektoratet Germany:	-	€1,600,000(S)	**Building with Nature** The project ended in 2020. This was supposed to be marked with an end conference in Utrecht in June 2020. Building with Nature involves solutions to increase coastal resilience that are based on natural elements. The project is thus closely related to C1 which involves increasing coastal resilience taking into consideration the environmental state and marine biodiversity. Duration: 2016 – 2020

	Niedersächsischer Landesbetrieb für Wasserwirtschaft, Künsten- und Naturschutz Common Wadden Sea Secretariat Landes betrieb für Küstenschutz, Nationalpark und Meeresschutz des Landes Schleswig-Holstein Sweden: Landdstyrelsen Skane – The county Administrative Board of Skane Belgium: Vlaamse Milieumaatschappij Agentschap voor Maritieme Dienstverlening en Kust Denmark: Kystdirektoratet Scotland: Scottisch Catchment Group			Link: https://northsearegion.eu/building-with-nature/
C1, C18	Realdania The Environment and Food Agency The Danish Coastal Authoraty		€10,266,667(M)	**"Byerne og det stigende havvand"** A partnership between the Ministry of Environment and Food of Denmark, The Danish coastal authority and Realdania to support the development of projects with innovative solutions that combine the need for coastal protection and ensure access to the sea. The project partners will support 8 pilot projects in different municipalities in developing and realising innovative and holistic solutions for sustainable cities that also creates recreational qualities in coastal cities. CDR and C2C CC is involved in the project. In the "Debate project" C2C CC contributed to the preliminary work and participated in creating scenarios for urban development. Later some virtual citizen meetings working with scenarios. Duration: 2018 – 2022 Link: https://realdania.dk/projekter/helhedsloesninger-til-fremtidens-kystbyer

C6, C24	European Union's Ireland-Wales programme (Regional Development Fund) Royal Commission on the ancient and historical monuments of Wales Discovery Programme: Centre for Archaeology and Innovation Ireland Aberystwyth University: Department of Geography and Earth Sciences - Geological Survey, Ireland	-	€5.200.000(M)	**CHERISH: Climate Change and Coastal Heritage EU Funded Project** CHERISH is a cross-disciplinary project aimed at raising awareness and understanding of the past, present and near-future impacts of climate change, storminess and extreme weather events on the rich cultural heritage of our sea and coast. It links land and sea and employ a variety of techniques and methods to study some of the most iconic coastal locations in Ireland and Wales. These range from terrestrial and aerial laser scanning, geophysical survey and seabed mapping, through to palaeo environmental sampling, excavation and shipwreck monitoring. The project complements the C2C CC specifically in C action 24 about climate history, and complements the C2C in a broader sense in C6 about tools. The contribution to the C action 24 lies within CHERISH's build-up of know-how in the area of risk assessment of climate change impact on cultural and natural heritages, which directly and indirectly supports the agenda of C24 on finding CCA coping strategies for such heritages. Further CHERISH tests and develops a wide range of tools and methods to determine, investigate and monitor the impact of climate change on cultural heritages. Examples of these are magnetometry to find archaeological features, electrical resistance area surveys to detect and map subsurface archaeological features, ground penetrating radars that send high-frequency pulses through the ground in order to find differences in ground layers, materials and properties. This is complementary to the action C6 on tools for CC assessment and CCA recommendations. Duration: 2017 - 2021 Links: https://rcahmw.gov.uk/coastal-heritage-and-climate-change-project-launched/ http://www.cherishproject.eu/en/resources/publications/newsletter http://www.cherishproject.eu/en/resources/publications/newsletter/51-english/resources/publications/news-letter/232-cherish-news-letter-4

C1, C2, C3, C6	Alexandra Institute Aarhus University DTU Copenhagen University Systematic VISMA consulting Business Minds Danish Business Authority Agency for Digitisation Central Denmark Region The Innovation Fund (Grand Solutions) (National funding)	-	€18,565,000(S)	**DABAI** DABAI stands for Danish Center for Big Data Analytics-driven Innovation, and is an interdisciplinary project that aims at investigating and evaluating the utility of big data analytics in the sectors climate, health, education, food quality and business. Specifically, the project will use public data, food industry data, Integrated machine learning (ML) data and algorithmic tools for efficient production of geodata, in order to a) predict flooding and high stress climate activity, b) predict patient flows in the health sector, c) predict need for individual student learning, d) safeguard and track food quality and e) reduce Danish businesses administrative cost + invoke growth. It aims at producing an online visual analytics tool for flood risk assessment, supporting rapid scenario analysis and incorporation of forecast and/or event data. The benefit of such tools is expected to save both lives and resources. The potential of the flood-related DABAI initiatives to predict flooding and thereby reduce loss of life and wealth is huge and thus the project is complementary to a range of C actions. First, the project complements the efforts to understand risks and development in Denmark's marine and fjord areas, hence complements C1. Second, the project has the same utility with regards to C2 about rivers and lakes, as big data driven models and predictions of storm surges etc. addresses the C2C CC worries in that area as well. Third, as groundwater challenges and solutions are closely tied and related to both slow and abrupt sea level changes, the project also complements action C3 on groundwater. Finally, the action C6 about tools is supported by the DABAI project, as the project delivers another useful and relatively cost-effective tool to greatly enhance the national and regional climate change adaptation. Duration: 2016-2020 Links: https://dabai.dk/en/cases/integration-weather-and-ocean-forecastdata-flood-risk-screening-analysis https://dabai.dk/en/cases/flood-risk-screening-based-integrated-terrain-model-and-stream-data

				https://dabai.dk/en/cases/efficient-semi-automatic-identification-hydrological-corrections
C3, C6, C13	SDFE DMI GEUS Holstebro forsyning Municipality of Holstebro	-	€33,784(S)	**FODS 6.1** FODS 6.1 is the initiative 6.1 of the Common-public digitalisation strategy (FODS). The project 6.1 seeks to lay the groundwork for later national model calculations based on two pilot projects on Odense Å (river) on the island of Fyn in the Southern Danish Region, and on Store Å (river) in the Central Denmark Region. Yearly rain in the region around CDR's Store Å has increased by 26%, the days with rain increased by 64 days a year and with rising average temperatures and greater seasonal swings, the estimation of groundwater near rivers and lakes is a literal rising concern in the region. Availability of valid, reliable and dynamic data is thus in big demand, and the project aims at providing just that, and make possible the upscaling of the practice on a national scale. The FODS 6.1. project complements at least two of the C2C CC actions, namely C action 3 about groundwater and C action 6 on tools. Specifically, FODS 6.1 improved CDRs climate change adaptation by increasing nationwide and thus also regional capabilities for risk assessment by more accurate groundwater level models, as well as contributing concretely to the risk assessment of the Store Å (river) by demonstrating the project possibilities in the region. Finally, the project developed a tool and contributed with information on development of such and provided insights into the possible gains and improvements made by a relatively cost-effective investment in improving tools for climate change adaptation. Duration: 2016 – 2018 End report in Danish: http://dk.vandmodel.dk/media/21208/36-2018-geus.pdf
C3,C4, C6	MUDP VIA University College	€181,466	€181,466(S)	**ORMUM** ORMUM stands for optimising of risk- and environmental assessments in urban areas, and is a project aiming at testing several innovative hydrologic modelling concepts in the risk- and environment assessment processes. The project will result in the establishment of so-called LAR-

				solutions, which stands for local drainage of rainwater solutions. Specifically, the project employs the technique of constructing urban 3D geological voxel models to address the effects of increased infiltration from SUDS on groundwater flow patterns and hence the fate of contaminants. This is important as many urban areas in Denmark – and Europe - are close to or at the sea, and likewise very close to sea levels. Thus urban solutions for rainwater challenges are in demand. The project is complementing the C2C CC by contributing to C3 and C4 - the understanding and management of ground- and rainwater - with the use of better hydrological models. This also complements the C-Action 6 about better tools for coping with water challenges, as the project develops and employs new tools that can be employed by municipalities, cities and urban planning actors like utility services. Duration: 01/2018 → 07/2020 https://www.ucviden.dk/portal/da/publications/detailed-geological-modelling-to-support-urban-planning-in-aarhus-denmark(150f4673-ee56-4e03-a486-aaaa9a9efd94).html https://www.ucviden.dk/portal/da/projects/optimering-af-risiko-og-miljoevurderingerne-ved-etablering-af-lar-loesninger-i-det-urbane-miljoe-ormum(d1795a92-4daf-409b-ac83-6b83cf87eb3b).html
C4, C9, C17	Realdania Envionmental Agency DANVA Insuance Organisation KTC LK SKF CDR SDFE DTU Space Rambøl	-	€53,590(S)	**"Regn med Thyborøn" Count on Thyborøn** Located between the North Sea and the fjord Limfjorden as well as experiencing occasional heavy rain, Thyborøn is literally being approached by water from all sides. The Project "Regn med Thyborøn" (Rain with Thyborøn) connects the high danger of flooding, the creation of a rain water basin as a solution and the recreational use of water structures with each other. Specifically, Lemvig Municipality will place the necessary basin strategically in proximity to the after-school centre of the city. This will allow for not only sporadic and ad hoc usefulness of the water basin, besides its help in avoiding flooding of residential areas, but it will also allow for teaching and the raising of awareness among local educational

				institutions and residents. The project and its budget so far aimed at investigating and estimating the impact and utility of said venture. The project is linked to C2C CC by contributing to and drawing from C2C CC's overall brainwork regarding solutions for various water challenges. As the project is part of a national pilot project with additional 3 locations outside CDR, the share of know-how and solutions is benefitting a wider and national initiative as well. Specifically, the project is connected to C-action C4 on rainwater, as the multifunctional basin is an initiative to cope with rainwater challenges. Further C9 surrounding Thyborøn Channel and Western Limfjord is complemented by the project, as the project – being located in the area – contributes to this actions aim at making the area more water-proof. Finally, C17 about Thyborøn City and harbour is complemented, as the project is located in Thyborøn and contributes to the cities climate adaptation. The projects effects on transboundary collaboration across sectorial divisions in the municipality concretely contributed to this. Duration: 01/03/2017 - 31/12/2017 Link: http://www.regnogbyer.dk/projekter/thyboroen https://orbit.dtu.dk/en/projects/regn-med-thybor%C3%B8n
C24	University of St. Andrews Scotland Heritage Lottery Fund Historic Environment Scotland The University of St Andrews The Crown Estate		€722,690(S)	**SCHARP: Scotland's Coastal Heritage at Risk** Scotland's Coastal Heritage at Risk Project (SHARP) is a new project from the SCAPE Trust (Scotland's Coastal Archaeology and the Problem of Erosion), which will work with local communities to update records of Scotland´s eroding coastal heritage. The citizens have provided information about coastal heritage sites around Scotland threatened by erosion. This has helped local communities, researchers and heritage managers to take a more strategic approach to vulnerable coastal heritage sites in Scotland. This project is directly linked to C24. It examines how natural and environmental processes affect cultural heritage sites along the coast to

				improve management of those sites that are threatened by CCA. In this way the SCHARP project shares several elements with C24. Duration: 2012 - 2016 Link: http://www.scharp.co.uk/
C2, C3, C4	LK LVS the Ministry of Environment European Agricultural Fund for Regional Development	-	€585,880(S)	**Synergy project Ballevad** This multifunctional or synergy project contains of creating a water basin around Ballevad ditch, municipality of Lemvig. The multifunctionality of the project lies in its fourfold effect. 5) Easing the phosphor influx to Hornsø by establishing greater wetlands in the stream direction of Hornsø, for the phosphor to run through. 6) Mitigating the danger of heavy rain flooding residential areas in the proximity of Ballevad ditch. 7) Promoting natural resources and 8) Expanding the recreational measures around Ballevad ditch. Like the C2C CC, the Ballevad ditch project is applying a holistic approach to tackling several water related challenges at once. And just like the C2C CC, Ballevad ditch seeks to create solutions with added value for the local population, thereby maximizing the overall utility of the given initiative. Duration: 2018-2020 Links: https://www.lemvig.dk/Miljoe-og-Trafik/Natur-i-vand/Projekter-for-vandmiljoeet.aspx https://www.klimatilpasning.dk/sektorer/natur/synergiprojekter/lemvig-kommune-ballevad/
C1, C2, C10, C11 and C14	Realdania LK		€2,949,494(S)	**The Eastern Harbour of Lemvig** Lemvig is at constant risk of experiencing storm floods and has, and has experienced various incidents of floodings in the past. The Eastern Harbor project in Lemvig aims at redesigning the harbour facilities and promenade in order to maximise its performance against storm floods on one hand and the recreational utility of the harbour on the other hand.

				Additionally, the new harbour will allow for better accessibility from the city center, thereby making Lemvig a better connected city. The project of Lemvig harbour complements the C2C CC in its overall goal of improving the regions climate change resilience, by making cities and landscapes more flood-proof. Especially since this was done in an innovative way in Lemvig. It also gives inspiration to the challenged fjord cities at the east coast especially Grenå, Randers and Horsens. Duration: 2016 – 2018 Link: https://www.lemvig.dk/Nyheder/Ny-Oesthavn-i-Lemvig indvies.aspx?Action=1&currentPage=9&PID=5664
C2, C3, C4,C5, C6, C8, C11, C12, C13, C14, C15, C18, C19	Environmental Agency SEGES CDR Danish Machine Stations and Entrepreneurs	€536,912	€536,912(S)	**"Vandet fra landet" The Water from rural areal** The partnership was based on four streams, creating large floods in urban areas. SEGES, CDR and Danish Machine Stations and Entrepreneurs participate in the partnership. The purpose of the partnership was to develop, document and present climate adaptation technologies that can handle the water from the land and thus relieve urban areas during cloudbursts and in extreme rainfall situations. Finally, the partnership created the idea of creating an open innovation-creating network that can, in the long term, ensure the continued development of climate adaptation solutions for the water from the country. If successful, the network could serve as a model for future public-private cross-sectional partnerships. Inspiration to handling challenges with runoff water in cities and cross boundary collaboration. Duration: 01/2014 – 05/2017 Link: https://www.klimatilpasning.dk/kommuner/partnerskaber-og-netvaerk/vandet-fra-landet

5.3. Discussion on the contribution of complementary actions to the implementation of the targeted Plan

Environmental benefits

The environmental benefits of C2C CC complimentary projects focus on implementing green/blue solutions e.g retaining rainwater up-steams and working with runoff water in a way that also creates green space. Working with green/blue solutions allow multifunctional use of urban space combining CCA with e. g recreational areas. This will also lead to increased urban biodiversity. Many complementary projects combine CCA with other societal needs, thus optimising investments. Some examples are; Lemvig Sødal, where re-meandering of a stream, raising of the terrain and construction of dams will retain water during heavy precipitation. Additionally, the dam ensures that sediment and phosphorus are deposited reducing nutrient discharge. The complimentary project Climate Protection in Holstebro focuses on how to retain water in low land areas in river catchments without negatively impacting nutrients-poor dependent nature types such as rich fen.

Policy implications

Many complementary projects focus on balancing solutions in a way that fit the local political agenda, while simultaneously addressing the citizens wish for more nature. C2C CC have influenced many complimentary projects to work holistically with CCA in a way that increases biodiversity and creates green urban spaces. Finding solutions that addresses both the climate challenge and decline in biodiversity are cost-effective and will more likely find support among local citizens, stakeholders and decision-makers.

It is clear that the network and knowledge generated and accumulated in C2C CC increase the influence on the many political initiatives taking place locally, regionally and nationally. An example of this is the Holistic Plan along the River Gudenå, where the seven mayors from the riparian municipalities, have joint forces to address the climate challenge in the river catchment together. Working across decision-makers, officials, experts and civil society, CCA along the River Gudenå will be inclusive, sustainable and long-lasting.

Capacity building and sustainability

Capacity building is in general high across complementary projects, as many of the partners and stakeholders recur across C2C CC sub-projects and complimentary projects. C2C CC does not have a coordinating role, but are aware of professional needs when it comes to capacity building. Often collaborators working with the complementary projects, are invited to the capacity building events in the project. This ensures a high level of knowledge accumulation and capacity building. As an example, models and tools are shared across the C2C CC project partnership and across complementary project partners. Additionally, dissemination of project result and impact are ensured via articles produced by partners and the universities. Thus, many of the solutions created in the C2C CC partnership have inspired partners and stakeholders to develop new projects focusing on sustainable partnerships and solving societal needs through a holistic approach.

How the mechanisms for attracting additional funding created benefits for stakeholders

As can be seen from the list above, several of the ideas developed in C2C CC have been transferred to construction projects. Here, the work in C2C CC has directly provided that there is a concrete subsequent project to carry out and finance. In phase 3 and afterwards, many more similar examples will appear.

In the Example of the western Limfjord, it is quite clear that the necessary state co-financing would under no circumstances have been possible without C2C CC. It can hopefully when the subproject is completed in C2C CC. However, the good example of working in big partnerships have inspired new partnerships to rise in other contexts transferring from C2C CC the holistic cross-sectorial approach.

It is certain that the thorough preparation that lies in the demonstration actions in C2C CC, prior to the physical implementation of the project core, facilitates the financing of the physical projects. For example, when it comes to the Thyborøn Channel and the Western Limfjord. Significant government co-financing is expected here, which under no circumstances could have been expected without C2C CC.

6. Evaluation of Project Implementation

6.1. Methodology applied

As described in section 3, the project is organized with a secretariat whose task it is to carry out all actions under A, C1-C7, D, E and F. The other projects are carried out by the other partners, but the secretariat has the task of identifying potential synergies and also to support that all sub-projects follow the planned progress. This task consists partly of providing professional counselling, assisting with process guidance and by carrying out joint activities for larger or smaller parts of the partnership in order to promote interdisciplinary collaboration, capacity building, dissemination, replication and ensure progress. This coordinating work has been done using the method described under chapter 3 in this rapport. The method is based on the matrix shown I figure 1, chapter 3, and focuses on ensuring cooperation in the project. That method has been highly successful. Overall, collaboration across organizations, levels and sub-projects has been successful.

In the sub-projects, a wide range of very different methods have been used. It has been up to the project managers of the sub-projects which methods to use. Below are a few overall considerations.

Collaboration between the partners in C2C CC

Collaboration between the partners is very essential in C2C CC. The C2C CC secretariat has thus held a master class with a focus on creating added value in the work with climate adaptation, where new methods have been introduced to the partners. The methods have not yet been fully implemented everywhere, but they provide a basis for in the future, to change away from the sharp division into silos within the administrations and motivate for better cooperation across organizations. The master class has not yet been fully completed and evaluated, but it is clear that by introducing new methods and creating guides and educational material about how to use the new methods, there is a good chance that management practices will be different in the future.

New ways of collaborating have received a great deal of attention, especially in phase 2. Not only cooperation among the project actors, but also negotiation and co-creation. These topics have attracted great interest which became clear at the workshop on Connective Negotiation in September 2020 where 38 stakeholders participated among those 23 partners representing 20 out of the 24 sub projects. The interest was so great that a regional network is now being created to grasp and develop the application of the method, and new workshops about the subject has been in demand.

Figure 1: Attentive participants at the workshop on Connective Negotiation at Climatorium in September 2020

After the workshop the secretariat was contacted by Harvard University. They had been told how we in the C2C CC project had received education on Connective Negotiation and wants to establish a kind of experimentarium with focus on the Mutual Gains Approach. No further decisions on this matter have been made, but we stay in contact with the university.

Collaboration with the surrounding community

CDR is not an independent island! Therefore, it is not only important to collaborate with each other within the project area, but also to work closely with relevant actors outside the partnership. Both locally, nationally and internationally.

In the project, CDR have tried to support this through interaction with complementary projects, relevant organizations and through the creation of DNNK. This network constitutes a comprehensive national knowledge network. It can be used for capacity building, individual counselling, expert opinions and much more. It is expected that the network will be important for promoting holistic and innovative climate adaptation in Denmark. The Dutch have already shown interest in cooperating with the network. It is expected that international collaborations will increase in the future.

In the C2C CC project area, there are two beacon projects AquaGlobe and Climatorium. CDR has allocated a grant to AquaGlobe and Climatorium, to start up activities with focus on continuing the cooperation among the partners in C2C CC after the end of the project. This cooperation is called Water Valley. It is also the intention to strengthen the link with DNNK in the future, to reduce the risk of stopping the prospective progress at the end of the project. In this context, there has been some challenges related to the fact that "Aarhus Vand", Denmark's second largest utility, also wants to create a “Water Valley”. Currently the CDR is working on a solution based on collaboration amongst the two. There should be room for both organizations.

Provide high quality common tools

A key idea of C2C CC has been to provide high quality common tools in order to ensure the best possible basis for decision making and holistic thinking across borders (organizational, geographical, political and professional). A joint interactive map has been developed, where municipalities and utilities immediately can see the derived effects, when working with scenarios, plans and structures, etc.. The tool has been implemented throughout the partnership, and in the rest of the country there is a strong desire to have access to something similar.

The tool carries several benefits:

- It is not necessary to hire an external consultant every time a new solution have to be considered. This saves a lot of money.
- The maps that are formed can be used to illustrate to the citizens what different approaches can lead to. This leads to better transparency.
- It is easy to coordinate and integrate across municipal boundaries and across supply areas. It promotes holistic solutions.

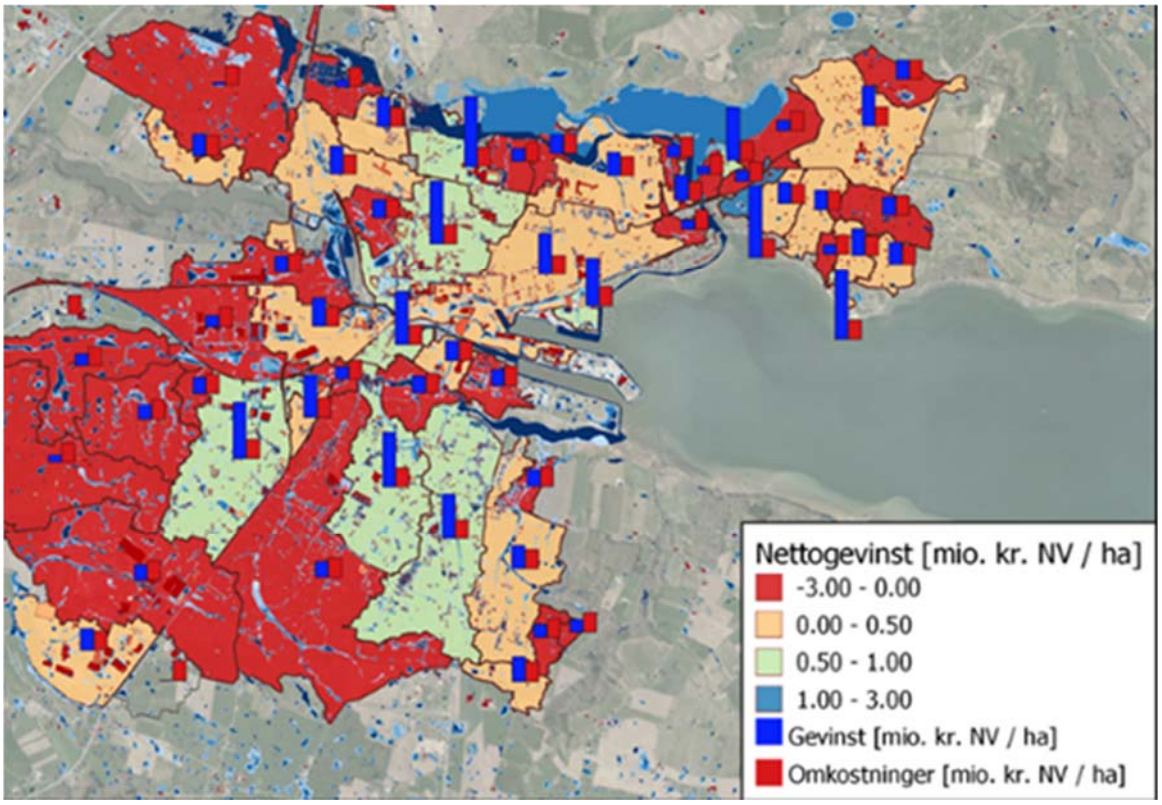


Figure 2: A map showing net gain by making climate adaptation in Horsens

During the development of the tool, it was decided to make use of machine learning, which, at that time, was a completely new approach for developing this kind of tool. It was a success and the method is now widely used for tools which are now being developed at national level.

New legislation was adopted at the end of Phase 2. This has created a new common need for a decision support tool. It is therefore planned that the project will once again embark on developing a common set of tools that can save the individual player a lot of money and time, as they do not have to develop ideas and hire consultants for calculations, but can use the common product.

Capacity building in the partnership

Working from home during the pandemic has been a challenge in regard to capacity building. As a result of this challenge the partnership has organized a number of smaller webinars, where common issues was discussed, new tasks was introduced and newly hired employees was introduced to use of MidtRum. These small webinars has given a sense of community during a difficult time, and has resulted in more informal communication among partners.

Otherwise, in the project, the partners have benefited from partnership meetings and workshops for capacity building. At the partnership meetings, it has been important to visit each other's projects and provide an opportunity to discuss big and small issues. The partnership meetings has also been used to share instructions for finances and administrative procedures. Several of the meetings are held over two days, so there has been plenty of time for networking and getting to know each other.

The less academic topics are addressed in workshops, where the entire partnership and other relevant stakeholders usually are invited. In June 2019 the partnership also went on a study trip to England to get inspiration and exchange knowledge with the British Environmental Agency. The trip went very well, and the partnership gained some very useful information about e.g., early warning systems, local climate adaptation networks and protection against fluvial flooding.

During the trip connections with new people from the Environmental Agency was established. They have afterwards been invited to Denmark, to visit some of the C2C CC sub-projects. However due to Corona this has been delayed.

The more academically specific topics are addressed in workshops, where it is usually not the entire partnership that participates, but only the academically most relevant participants. The secretariat has numerus highly skilled professionals, whom has participated. Where the skills have not been located in house external very competent presenters has been brought in to inspire and train the partners

There has been a generally very positive feedback on the events held.

Collaboration with the Knowledge Committee and the Steering Committee

The steering committee, which is composed of representatives of all relevant stakeholders within the climate adaptation area - both those who are partners in C2C CC and those who for various reasons are not partners, are working very well. The mandate of the steering committee, which is still unchanged, is clear. The committee must guide and challenge the project management, bring knowledge and inspiration to the project partners and act as ambassadors for the project in order to promote collaborations during and after the project. The members of the committee participate diligently in project events and study trips, and are happy to be presenters at joint events. They have also offered to provide guidance in a project where there was a bit of a challenge.

Steering committee Meetings are held about twice a year. Covid-19 has of course been a challenge, as project visits have not been possible and the dialogue just works better when attending the meeting in the same room.

Figure 3: The Steering Committee at the West Coast to hear about coastal protection and the C9 project Thyborøn Channel and the Western Limfjord

The Knowledge Committee, which is composed of appointed representatives from the three knowledge institutions that are part of the partnership: VIA University College, Aarhus and Aalborg Universities, also works well. However, the representative from Aarhus University has been replaced due to serious illness.

The members of the knowledge committee are also diligent participants in joint events and ready to give presentations at joint events.

Today, VIA University College is active in several projects and has started several complementary projects. They are part of a collaboration with C2C CC, Climatorium and a private company on a business PhD related to the Climate Road (C22).

Aalborg University runs a master class in climate adaptation with added value, and are involved in another business PhD in collaboration with AquaGlobe and another private company. They also develop complementary projects and are very active in DNNK.

The new member from Aarhus University contributed as a key partner in C2C CC workshops at ECCA 2019 in Lisbon and at several events in the partnership. E.g., the National Climate Summit 2020. Initiatives are underway to ensure that relevant competencies from Aarhus University also contribute to C2C CC and the partners. The focus will initially be on Small Scientific Missions (see section 3).

<u>Cost-effectiveness</u>

Cross-cutting cooperation on climate adaptation is very important and valuable. The partnership believes that by working holistically rather than solving the immediate challenge, money that would otherwise have been used to clean up after unintended side effects are saved.

Another important point is that by focusing on creating added value, we save future costs and avoid later challenges that risk would have arisen.

A very specific example is that we have received estimated prices for what it will cost to develop a model for screening socio-economic costs by not doing anything about the water challenges, including handling data. By developing the model and managing data for the entire project area, we get a total cost of less than 100,000 EUR. Doing the corresponding work for each municipality would cost 30,000 EUR per municipality. For the entire project area, this corresponds to EUR 600,000 instead of EUR 100,000.

6.2. Dissemination

Let's start with the just highlighted example with the socioeconomic cost screening tool. The tool has been developed in relation to C14 - Horsens By and in phase 3 the concept will be used throughout the project area. It was developed due to changes in the law with requirements for a socio-economic screening in projects similar to that in C14, making the future use of the tool a replication.

In the first interim report, the challenge about how the individual sub-projects tended to forget the overall project and only tell their own history to their own citizens and politicians, where mentioned. This has changed today. The effect of AquaGlobe communicating updates and results from C2C CC projects and the fact that Climatorium is now finished and open and soon will communicate about C2C CC projects too is very beneficial for the regional dissemination. Both written publications and TV are positive and supporting in regard to share inform about C2C CC.

It can be difficult with projects of this type, as there is nothing to show. There are not many good press photos in brainwork. In addition, the individual mayor has a greater interest in highlighting his or her own benefits rather than celebrating a partnership.

The C2C CC secretariat do a lot to disseminate, and uses all available sources: Press releases, LinkedIn, the Web page of the project, articles, giving interviews to radio, TV and writing journalists etc. As is clear from this list, both the secretariat and the sub-projects have been very productive.

It has become clear that there were initially too few funds in the dissemination/communication budget. The project tried to use a communication advisor, but that was an expensive solution. CDR has however contributed with extra funds, so now things are going better. Also, the sub-projects are now paying more attention to mentioning the overall project in their communication, which the secretariat is very pleased with.

The situation is a little different when it comes to dissemination to professionals. Before Corona, the dissemination took place mainly by giving speeches and arranging workshops at conferences, network meetings, etc. During Corona, the dissemination has completely shifted to virtual meetings. That form of dissemination has come to stay. However, it will not replace physical meetings, but in the future both methods will be used and often in combination as a hybrid solution.

Figure 4: Theis Raaschou Andersen, VIA at the ECCA2019 conference in Lisbon

Collaboration on dissemination between partners and the secretariat, for example at IWA in Tokyo and the ECCA conferences in Glasgow and Lisbon, provides a good mutual understanding of the project, sub-projects and other shared fields of work . This could form the basis for future cooperation. It has definitely been rewarding to participate in these major events together.

Participation in these major events has provided relations to international players who have inspired C2C CC and provided opportunities to disseminate the knowledge from the project to an even wider range of professionals. The project has been invited to dialogues with a number of actors in Denmark and in Europe. Many of the collaborations with complementary projects is related to mutual dissemination.

Today C2C CC is known among everyone who works with climate adaptation in Denmark. The brand is so well known ,that it is currently being considered, to replace the name Water Valley (the name of the collaboration between Climatorium and AquaGlobe on After LIFE) with “Coast to Coast Climate Challenge”.

Action C1: Sea and Fjords

Beneficiary responsible for implementation: *Central Denmark Region*

Foreseen start date: 01/01/2017	***Actual start date:*** 01/01/2017
Foreseen end date: 31/12/2022	***Actual (or anticipated) end date:*** 31/12/2022

Expected results:
C1.1: 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.

C1.2: 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. Report on the desk analysis of knowledge gaps.

Achieved results:
Through phase two we have continued working for an increased coastal resilience while also taking into consideration the environmental state and marine biodiversity to enhance urban resilience. This has been conducted through a number of actions.

We have throughout phase two held a number of workshops, conferences and theme days.

In October 2019 C2C CC hosted together with the Interreg project, Topsoil, the CCA networks Water in cities, CALL Copenhagen and KLIKOVAND, The Capitol Region and The Central Denmark Region a national conference on CCA.
The conference was among others arranged to mark that we were half way with the C2C CC project.
However, the overall objective with the conference was to evaluate on how far we are with CCA in Denmark, what we are capable of, promote knowledge exchange and to start planning for CCA and a new planning hierarchy in the future.
Over 300 stakeholders within the CCA area participated in the conference that lasted to two days with a full program including presentations, group discussions, a "market place" where companies could show off their CCA projects and solutions and finally a panel debate where the most important questions and themes from the conference were debated.
The most important output, messages and conclusions from the conference have been gathered and formulated into a report that can be accessed here:
https://www.c2ccc.eu/siteassets/c2ccc/english/activities/endelig-opsamling---english---10.03.20.pdf

In December 2020 C2C CC held a theme day together with The National Network for CCA (DNNK) and CDR on coastal management and CCA along the Danish coasts. Around 80 stakeholders working with coastal management or CCA along the coasts in Denmark participated.
During the day we evaluated on the delegation of the costal management authority to the municipalities and we discussed different projects and solutions for sustainable coastal management and protection and CCA along the coasts.
The theme day was recorded on video and the recordings plus other material from the event can be found here: https://www.c2ccc.eu/aktiviteter/tidligere-aktiviteter/temadag-om-kystforvaltning-og-klimatilpasning-langs-de-danske-kyster/

Finally, we also hosted a workshop on models and data in April 2019 for the C2C CC partnership and other relevant stakeholders where 46 persons participated. Here some of the partners showed how they work with warning systems, different models (e.g. 3Di) in relation to CCA and physical planning and finally experts from the Danish Meteorological Institute (DMI) and the Geological Survey of Denmark and Greenland presented us for different climate scenarios.
Presentations and other material from the workshop can be found here:
https://www.c2ccc.eu/aktiviteter/tidligere-aktiviteter/temadag-om-modeller-og-data/program-prasentationer-og-billeder/

In relation to C1.2 we have among others conducted a desk analysis on knowledge gaps in relation to the municipal climate change adaptation (CCA) plans and risk management plans. This analysis has been divided into two different deliverables.
The first deliverable/part of the analysis has been conducted as a comparison of the municipal CCA plans and risk management plans focusing on their similarities and differences. E.g. which maps has been included in the plans and how many geographical areas does the municipalities focus on in the CCA plans?

A report on this analysis has been formulated – see annex C1.1.
This report provides us with an overview of how CCA is being handled in the municipalities, how many resources the municipalities use and plan to use on CCA and will be very valuable when monitoring future revisions of the CCA and risk management plans.

Part two of the desk analysis has been assigned under sub project C5 Governance, as the content of this analysis comply better with the objective of this sub project.
In this part we put our focus on the municipalities and among other examine their experiences related to developing and working with the CCA plans, coastal management authority and risk management plans.
The objective with this analysis is to identify areas where the municipalities need help and guidance and where we in the Central Denmark Region (CDR) can provide assistance.
The analysis was conducted as an interview survey where the respondents were contacted by phone.
We have on the basis of the analysis formulated a preliminary report where the most pronounced and important messages are outlined. Click on the link to see the report:
https://www.c2ccc.eu/siteassets/c2ccc/falles-materiale/danske-foldere/endelig_analyse.pdf
A more detailed report with an analysis on the remarks from the respondents will follow in 2021 when all the interviews have been transcribed. When they are finished the Danish Coastal Authority (DCA) and C2C CC will corporate on a more thorough analysis of the interviews.

In the Autumn 2019 two of the C2C CC sub projects C16 and C18 were appointed to participate in the Realdania project, Cities and the rising sea together with 6 other projects from Denmark. They all have in common that they contain innovative solutions and work cross sectoral to adapt coastal areas to climate change. In Spring 2021 new projects will be appointed and the network will grow even further. This will be the foundation of a new national coastal partnership where C2C CC will join in and use for further development.

Status of deliveries 31/12/2020

Main deliverables:

One note on replication of the findings in the project	Will be submitted with the Final Report
Note on the continuation of a CCA and coastal challenges network after the IP incl. recommendations on purpose, organisation and financing.	Will be submitted with the Final Report
Note on the establishment of a permanent Danish integrated river-coastline network.	Will be submitted with the Final Report

Other deliverables:

Report on the desk analysis of knowledge gaps	Submitted in the Annex C1.1
Report on municipal risk management plans	Submitted in the Annex C1.2

Minutes and presentations of meetings and workshops accessible on www.c2ccc.eu	Submitted in the Annex C1.3.1a – C1.3.1j, C1.3.2a – C1.3.2f, C.1.3.3a – C1.3.3f, C1.3.4a – C1.3.4C, C1.3.5, C1.5
Specifications on the tender materials	Submitted in the Annex C1.5
Study tour dissemination material to be used before and after the study tour	Submitted in the Annex C1.6
Common tender material to be used in the partnership	Submitted in the Annex C1.5
Presentations on sustainable approaches to coastal protections. Accessible on www.c2ccc.eu	Submitted in the Annex C1.7
Presentations on new governance and involvement models. Accessible on www.c2ccc.eu	Submitted in the Annex C1.8a – C1.8b
Minutes and presentations of meetings, training courses and workshops accessible on MidtRum	Submitted in the Annex C1.3.1a – C1.3.1j, C1.3.2a – C1.3.2f, C.1.3.3a – C1.3.3f, C1.3.4a – C1.3.4C, C1.3.5, C1.5
Evaluation of the meetings (digital form). Accessible in MidtRum	Submitted in the Annex C1.4.1, C1.4.2, C1.4.3, C1.4.4a – C1.4.4b
Minutes of meetings accessible on www.c2ccc.eu	Submitted in the Annex C1.3.1a – C1.3.1j, C1.3.2a – C1.3.2f, C.1.3.3a – C1.3.3f, C1.3.4a – C1.3.4C, C1.3.5, C1.5
One note on synergies based on workshop	Will be submitted with the Final Report
Minutes of meetings accessible on MidtRum	No meetings yet in C1.2
Evaluation of the meetings (digital form). Accessible in MidtRum	No meetings yet in C1.2
Minutes of meetings accessible in MidtRum	No meetings yet in C1.2
Evaluation of the meetings (digital form). Accessible in MidtRum	No meetings yet in C1.2
Report on results and initiatives from the project "Cities and the rising sea"	Will be submitted with the Final Report
Note on the results and experiences drawn from the projects (C8 – C24) from afternoon workshop with all partners.	Will be submitted with the Final Report

Evaluation:
All the activities in phase 2 have provided us with a lot of experiences and important knowledge.

We have among others learned that the municipalities handle CCA actions differently. This could e.g. be seen from the CCA and risk management plans that varied in the content of the plans and the quality of them. There is also a great different in how municipalities prioritize CCA and the resources for CCA actions. This is partly due to a lack of resources and because of knowledge gaps in the municipal administrations.

Municipal CCA were also addressed on the national conference showing that there is a need for a national CCA strategy with guidelines for municipal CCA e.g. which climate scenarios to plan from. We have thus collected important information on what to act on in relation to governance and municipal CCA. And a lot of this knowledge can be used in sub project C5 Governance.

The national conference and other workshops and theme days also showed that knowledge on climate change and the implementation of climate change adaptation is developing. Different digital aid tools have been developed for CCA, new CCA projects and partnerships like the Realdania project, "Cities and the rising sea" has started. It does thus look like, that we are on the right track.

But there are also areas that need development, changes and improvements. There is still a tendency to work in silos and within administrative and sectorial borders. Instead we need to collaborate across borders as the climate and water does not respect these borders.
We have also experienced that there still is a tendency to think of CCA, environment, society in separate boxes where we instead need to plan and work holistically for more sustainable solutions.

Projections and new climate data and scenarios have also shown us how climate change might result in even greater increases in temperature and thereby also sea level rises which means that it is urgently important to keep focus on CCA in the coastal regions which we will continue to have in phase 3.

Finally, we have also experienced how valuable it is to collaborate in networks. Cooperating with the other networks, projects and regions on the national conference and the theme day has really showed how much we can accomplish and how much attention we can get when we work together.

Action modifications:
The analysis on knowledge gaps has been developed according to the original objective and as described under "achieved results" the second part is not finished yet. We will thus continue working on the report in 2021.

After Life:
Knowledge from C1 will be very useful in relation to future coastal protection and CCA projects in coastal areas. We have gathered a lot of examples, experiences and knowledge on solutions and projects that can be used for inspiration later on.

The results from the analysis on knowledge gaps are valuable and can be used as input to promote national CCA legislation.

Target and goals for Phase 3*:*
In the last phase of the project, phase 3, we will make an effort of getting our knowledge and experience from conferences and workshops in phase 1 and 2 into use and practice by e.g. producing a report on results and experiences together with our partners or when we contribute to the development of an integrated river-coastline network.

Another objective for phase 3 will be to complete the second part of the report on knowledge gaps and use the knowledge and experiences on municipal CCA and coastal management when defining the integrated network but also transfer the knowledge to C5 governance and use it in this relation to inform relevant stakeholders.

Action	*Quantifiable milestones:*	*Date by end of*
C1.1	Phase 3: One Workshop on synergies One note on replication and gathering of experience One desk analysis of knowledge gaps	 01/10/2021 31/12/2022 01/09/2021
C1.2	Phase 3: One workshop on results and experiences Report on results and initiatives from the project "Cities and the rising sea" Report on the establishment of a permanent Danish integrated river-coastline network.	 01/12/2021 01/12/2021 01/06/2022

Action	*Deliverables:*	*Date by end of*
C1.1	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 One desk analysis of knowledge gaps	 31/12/2022 31/12/2022 31/12/2022 01/12/2021 01/09/2021

C1.2	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.	 01/06/2022 01/12/2021 01/02/2022

The desk analysis on knowledge gaps has been developed from its original objective and includes an analysis on municipal CCA plans, risk management plans, coastal protection and cross border collaborations in relation to the C2C CC project. This comprehensive analysis required a lot of time for preparation and completion of the interviews (with 17 municipalities). The analysis of the results from the interviews also requires a lot of time as all the interviews (of app. 1-hour duration) will be transcribed. And even more time will be required when C2CCC and DCA formulate a report on the basis of the results. The second part of the desk analysis has thus been postponed until 01/09/2021 in phase 3.

Action C2: Rivers and Lakes

Beneficiary responsible for implementation: *Central Denmark Region*

Foreseen start date: 01/01/2017 ***Actual start date:*** 01/01/2017

Foreseen end date: 31/12/2022 ***Actual (or anticipated) end date:*** 31/12/2022

Expected results:
C2.1: 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).
C2.2: 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).
C2.3: 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.
C2.4: Capacity building of 35 professionals build up among all partners with knowledge on 'Impacts of CCA on freshwater ecology'.

Achieved results:
An interactive 3D decision-support tool has been delivered in the combined tool between C3 and C6. C2C CC has also developed the KAMP tool in collaboration with the Danish Environmental Portal, Local Government Denmark (KL) and the Danish Environmental Protection Agency. The tool is available at the website for climate adaptation: https://kamp.miljoeportal.dk/nedboer/bluespot?value=bluespot_ekstremregn_0.

Considerable knowledge has been shared between C10-C14 and C16 about the set-up of the model work. This knowledge sharing has taken place at bilateral meeting between the partners when necessary. No joint workshops on hydraulic calculations in the hinterland have been held.

There is an ongoing work with the development of an early warning system, which can inspire all partners. The development of the system will be presented at a major public workshop in Phase 3. Experiences have been gathered in a report and new experiences are currently added.

On 1 December, C2 held a workshop for the partnership on the impacts of CCA on freshwater ecology, mainly in river valleys. Many of partner experience difficulties completing climate adaptation projects due to delays of water in the catchment areas because valuable nature is often located here and are protected by Danish law or EU legislation (Natura 2000). At the workshop, partners presented examples of the challenges the face and experts presented research results and told about the consequences of biotopes. Details in the national and EU legislation were reviewed in detail to define the framework for the climate adaptation work. A report on the subject has been made including the experiences gathered in this field.

Status of deliverables 31/12/2020:

Main deliverables:

An interactive 3D decision support tool on the water flow in catchment areas across municipal borders (same as C6.2).	Submitted in the Annex C3.1 – delivered in both C2, C3 and C6
1 forecast system based on models and meteorological forecasts available for the public	Submitted in the Annex C12.1 – delivered in both C2 and C12
1 Note on new concept for utilities to pay farmers to retain water upstream cities, and thus save costly investments in the cities.	Postponed to phase 3

1 report on different business models to ensure win win solutions between the agriculture and urban areas.	Postponed to phase 3
Action Report on the synergies between agriculture, CCA and wetlands	Postponed to phase 3
1 report on 'Impacts of CCA on freshwater ecology'.	Submitted in the Annex C2.2
Follow-up-rapport with recommendations about Experiences with modelling large catchments	Will be submitted with the Final Report
Rapport, describing the possibilities in delaying climate water in low laying areas (peatland)	Will be submitted with the Final Report

Other deliverables:

Minutes and presentations of meetings accessible on the webpage www.c2ccc.eu	
• Workshop about models and data, 17/01/2019	Submitted in the Annex C2.3
• Workshop about models and data, 25/04/2019	Submitted in the Annex C2.4
• Meeting arranged by Gudenåkomiteen, 06/05/2019	Submitted in the Annex C2.5
An interactive 3D decision support tool on the water flow in catchment areas across municipal borders	Available in the tool
Evaluation of the meetings (digital form)	-
Minutes and presentations of meetings accessible on the webpage www.c2ccc.eu	Submitted in the Annex C2.3, C2.4 and C2.5
Materials and presentations from the workshop. Follow-up-rapport with recommendations	Submitted in the Annex C2.3, C2.4 and C2.5. Follow up rapport in phase 3.
Workshop material on 'Warning systems, civil protection and contingency planning' accessible on www.c2ccc.eu	Submitted in the Annex C2.4
1 forecast system based on models and meteorological forecasts available for the public	Submitted in the Annex C2.6
Minutes of meeting concerning the development of the early warning system	Submitted in the Annex C2.7
Materials and presentations from the workshop	Submitted in the Annex C2.7
1 Note on new concept for utilities to pay farmers to retain water upstream cities, and thus save costly investments in the cities	Will be submitted with the Final Report
1 report on different business models to ensure win win solutions between the agriculture and urban areas	Will be submitted with the Final Report
Report on the synergies between agriculture, CCA and wetlands	Will be submitted with the Final Report
Rapport, describing the possibilities in delaying climate water in low laying areas (peatland)	Will be submitted with the Final Report
Rapport form the state of art-study and the materials and presentations form the workshop	Will be submitted with the Final Report
Materials that shows where the method/concept has been used	Will be submitted with the Final Report

Some of the English summaries are still missing. They will come

Evaluation:

The partners now have a very good tool to identify current and future dangers of flood from streams. In combination with the KAMP tool, the possibilities are even better for partners and citizens. The development of the early warning system in successfully ongoing, though challenges exist in obtaining accurate data. With the workshop" Impacts of CCA on freshwater ecology", partners have become clear on the legal framework in the area and how to act in relation to climate adaptation.


The workshop "Impacts of CCA on freshwater ecology".

Action modifications:
There are no longer workshops on the model work in catchments as it does not make sense anymore. Exchange of experiences between sub-projects takes place when relevant. The workshop on the early warning system has been postponed to Phase 3 together with the reporting of experiences gathered. The work with farmers and climate adaptation has also been postponed to Phase 3 together with workshop on water delays in peatland areas. We have not made digital evaluations of all the workshops, as it did not make sense when the collaborating parties met so often and themselves had an influence on the content of the meetings.

After Life:
The total efforts in connection with the development of tools will be used also after termination of the C2C CC project. The same applies to the early warning systems implemented in the project and the many systems which have been established through inspiration from the C2C CC project.

Target and goals for Phase 3:
In Phase 3, knowledge will still be shared between the hinterlands concerning model work. Early warning systems for implementation will be completed and reporting on this will be made together with the other recommendations on the management of water in the hinterlands. Moreover, "the farmer as a manager of water" will be further developed and possibilities on how to delay water in farming areas and natural areas will be explored.

Action	*Quantifiable milestones:*	*Date by end of*
C2.1 – C2.4	Phase 3: Workshop – future tools (HIP and KAMP), (35 participants) Design of forecast system Implementation and early warning systems Report on the synergies between agriculture, CCA and wetlands Report, describing the possibilities in delaying climate water in low laying areas (peatland)	 01/07/2021 31/12/2021 31/12/2022 31/12/2022 31/12/2022

Action	*Deliverables:*	*Date by end of*
C2.1	Phase 3: Activity 9: Materials and presentations from the workshop. Follow-up-rapport with recommendations	 31/12/2022
C2.2	Phase 3: Activity 5: Minutes of meeting concerning the development of the early warning system Activity 6: Materials and presentations from the workshop	 31/12/2021 31/12/2022
C2.3	Phase 3: Activity 4: Rapport, describing the possibilities in delaying climate water in low laying areas (peatland)	 31/12/2022

	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	31/12/2022 31/12/2022

Action C3: **Groundwater**

Beneficiary responsible for implementation: *Central Denmark Region*

Foreseen start date: 01/01/2017	***Actual start date:*** 01/01/2017
Foreseen end date: 31/12/2022	***Actual (or anticipated) end date***: 31/12/2022

Expected results:
C3.1: 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.
C3.2: 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.
C3.3: 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.

Achieved results:
C3.1: All partners work with the tool to obtain an overview of the challenges related to flooding according to the work with CCA. All municipalities have been trained in using the tool. Several have launched hydraulic models focusing on details in the local conditions. All maps are available in the tool and there is no need for distributing maps to the municipalities. No joint tender documents have been made but experiences have been shared through dialogues and trainings sessions between partners. C2C CC has joined the work on making a national hydraulic screening tool (HIP and KAMP), which is described in detail under C6. On the 2 February there was at national training session in the new tools.

On the 2 September 2020, a capacity building workshop was held for 42 partners and other professionals on groundwater modelling, the groundwater tool in C2CCC was evaluated and improvement of the tool was identified. On the same session the partners were presented to the new national tools HIP and KAMP by The Danish Agency for Data Supply and Efficiency and the Danish Environmental Portal among others gave presentations. At the workshop is was discussed how the combined tool in C2CC could be a supplement to the two new products, HIP and KAMP.

C3.2: Common knowledge has been shared on the use of e.g. MIKE modelling and use of 3DI from Holland, which have been used in several of the projects – C8, C10, C17 and C18. It has proved more useful to share knowledge about modelling than to arrange a large joint workshop, because everyone has specific needs. There have been arranged training sessions in the tool 3DI for those with has local challenges with groundwater near terrain. All data are adjusted to local conditions in the development of the tool with local data from the municipalities (see the appendix C3.1).

C3.3: Will be activated in phase3.

Status of deliverables 31/12/2020:

Main deliverables:

Report with maps showing groundwater flood prone areas. Training material in the form of maps and descriptions.	Submitted in the Annex C3.1
Report on the available tools on groundwater mapping including relevant test and demonstrations	Submitted in the Annex C3.1

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.	Submitted in the Annex C3.5
Guideline on local scale and regional scale modelling.	Submitted in the Annex C3.1
Report - Identifying conflicts built in the present tax system on energy and water consumption.	Postponed to phase 3. Will be submitted with the Final Report
Guideline in how to use the C2C CC tool in combination with the governmental developed tools HIP and KAMP	Will be submitted with the Final Report
Catalogue of measures for reducing flood risk from rising terrain near	Will be submitted with the Final Report

Other deliverables:

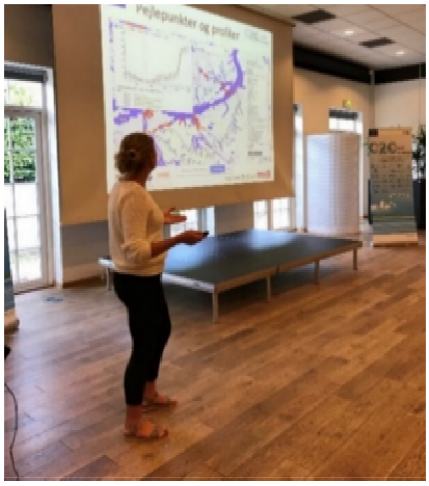
Minutes from the workshops. Specifications on the tendering of the tool C6.1	Submitted in the Annex C3.2
Minutes and workshop materials	Submitted in the Annex C3.2
Output maps of groundwater flood prone areas distributed in the whole of CDR	Will not be implemented. They are all digital and available.
Maps are adjusted to the local conditions	Submitted in the Annex C3.1
Training material made and distributed for the users	Submitted in the Annex C3.3
Report on the available tools on groundwater mapping including relevant test and demonstrations	Submitted in the Annex C3.1
Workshop report on the results discovered	Submitted in the Annex C3.2
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	Submitted in the Annex C3.4
Guideline on local scale and regional scale modelling	Will be submitted with the Final Report
Guideline in how to use the C2C CC tool in combination with the governmental developed tools HIP and KAMP	Will be submitted with the Final Report
Report - Identifying conflicts built in the present tax system on energy and water consumption	Will be submitted with the Final Report
Local reports containing Ideas for relevant use of excess groundwater in other areas	Will be submitted with the Final Report
Report on relevant use of excess groundwater on a regional and local scale	Will be submitted with the Final Report
Report on study tour	Will be submitted with the Final Report
Catalogue of measures for reducing flood risk from rising terrain near groundwater (made together with TOPSOIL).	Will be submitted with the Final Report

Some of the English summaries are still missing. They will come

Evaluation:

The partners now have a tool making it possible to gain an overview of where problems with high groundwater will occur in each municipality; this has so far not been possible. The knowledge each municipality now has as a result of the detailed hydraulic models has been shared – bilaterally and at workshops in C3.

The experiences C2C CC have gained through the development of the tool have been shared with the Danish Agency for Data Supply and Efficiency and the Danish Environmental Portal. This has made it possible for them to further develop the tool to be used nationally (see C6).

Workshop 2 September 2020 on groundwater modelling and tools

Action modifications:
Making a joint tender and harmonise the approach for each partner has not been in focus. Each partner has very different needs in their approach to hydraulic calculations concerning the level of detail, need for communication on the subject etc. Instead we have ensured a dialogue between individual partners when this made sense concerning needs and progression.

The work with identification of conflicts incorporated in the present tax system on energy and water consumption is moved to Phase 3 together with the work concerning use of excess groundwater.

After Life:
Our groundwater tool will definitely get an afterlife in the nation tools HIP and KAMP. Without C2C CC, this would have been much more expensive to develop and with a much longer perspective.

Target and goals for Phase 3*:*
In Phase 3, We will further develop the collaboration between the tool in C2C CC and the two national tools, HIP and KAMP, to make the best use of both to the benefit of the partnership. Moreover, there will be focus on use of groundwater close to terrain for useful purposes/process water.

Action	*Quantifiable milestones:*	*Date by end of*
C3.1 – C3-3	Phase 3: Guideline in how to use the C2C CC tool in combination with the governmental developed tools HIP and KAMP finalized. Study tour with approximately 30 professionals	31/12/2021 01/07/2022

Action	*Deliverables:*	*Date by end of*
C3.2	Phase 3: Activity 4: Guideline in how to use the C2C CC tool in combination with the governmental developed tools HIP and KAMP	31/12/2021
C3.3	Phase 3: Catalogue of measures for reducing flood risk from rising terrain near groundwater (made together with TOPSOIL) and with information on possible conflicts with rules and regulations on use of excess water and related tax systems and make recommendations available for relevant stakeholders (made together with TOPSOIL). 5. Report on study tour	31/12/2022 31/12/2022

	6: Phase 3 report	31/12/2022

Action C4: Rainwater

Beneficiary responsible for implementation: *Central Denmark Region*

Foreseen start date: 01/01/2017

Actual start date: 01/01/2017

Foreseen end date: 31/12/2022

Actual (or anticipated) end date: 31/12/2022

Expected results:
C4.1: 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.
C4.2: 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. 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.
C4.3: 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)

Achieved results:
C4.1 The capacity building on SUDS has mainly taken place in collaboration with the Danish Technological Institute and the network Water in Urban Areas (which is now integrated in DNNK (Det Nationale Netværk for Klimatilpasning), as C2C CC has organized and completed a number of courses in collaboration. The courses have thus been completed both at Zealand and in Jutland. Without C2C CC, the courses would probably not have been offered in Jutland, but we have ensured that. During the courses, we have used the opportunity to talk about C2C CC and the possibilities for EU support for innovation, etc. We have also secured, that partners in C2C CC have been further qualified in SUDS and have learned from experiences from Greater Copenhagen, as mentioned in the description of the action.

As an example we refer to "Kvalitet I regnvandsafstrømning fra A-Åen" (Quality in rainwater runoff from A-Z), a course over several days and in three workshops. This course was targeted at technical and administrative staff: http://regnvandskvalitet-abc.teknologisk.dk/. The first two workshops took place in Phase 1 and the last in Phase 2. The results and conclusions is presented at partnership meetings etc.

Karin Cederkvist from Technological Institute introduces the workshop III

C4.2 Another example of collaborative capacity building is the education to "Regnvandskonsulent" (rain water consultant). This course is targeted at the construction site practitioner and sewer master. Also here the planning and implementation in collaboration with Danish Technological Institute and the network Water in Urban Areas. The courses are still running in phase 3.

C2C CC have met a lot of relevant producers of SUDS. We did that by participating twice in Sewers Exhibition. We had a booth from which we showed the Storymap and told about holistic climate adaptation related to rainwater. We tested the idea of putting developers from the major SUDS manufacturers together with consultants and municipalities in an innovation workshop. The idea has been received very positively, but was not implemented in 2020 as planned due to Covid-19. We do this in phase 3 under action C7 Innovation.

C4.3 Both at partnership meeting, where also supporting beneficiaries are invited, the bigger conferences as the national conference in 2019, which included exhibitions and booths from companies, the project partners have good contact to many different stakeholders and discuss the learnings and recommendations from C2C CC. The subject of co-creation with stakeholders have been subject for several meetings in the partnership. Especially in the master class about added value (under C5) and the workshops about Connective Negotiation during the study trip to the Nederland's and at Climatorium in September 2020 for the partnership. This task continues and the report is postponed to phase 3.

Status of deliverables 31/12/2020:

Main deliverables:

Evaluation report on the capacity of SUDS and the limitations set by the local hydrology, geology and other framing conditions.	Submitted in the Annex C4.1
A report on SUDS used in C2C CC and possible SUDS systems to be introduced as means to prevent flooding from heavy rain events.	Presented at this webpage: http://regnvandskvalitet-abc.teknologisk.dk/
A report on consultation with relevant producers of SUDS.	Postponed to phase 3. Will be submitted with the Final Report
Report on the learnings within stakeholder involvement in relation to sewage separations and SUDS.	Submitted in the Annex C4.3
Training and inspirational material for the authorities and utilities to inspire the citizens on the possible solutions.	Postponed to phase 3. Will be submitted with the Final Report

Other deliverables:

Evaluation report on the capacity of SUDS and the limitations set by the local hydrology, geology and other framing conditions	Submitted in the Annex C4.5
Minutes and output material from the workshop. Accessible on www.c2ccc.eu	See the following 3 workshops:
Workshop 1	Submitted in the Annex C4.6
Workshop 2	Submitted in the Annex C4.7
Workshop 3	Submitted in the Annex C4.8
Output report and material on relevant SUDS to be used. Accessible on www.c2ccc.eu	Will be submitted with the Final Report
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	Will be submitted with the Final Report
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	Will be submitted with the Final Report

Engagement of relevant producers of SUDS and giving them relevant learnings to be built in in future products	Will be submitted with the Final Report
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	Will be submitted with the Final Report
Report on the learnings within stakeholder involvement in relation to sewage separations and SUDS. Accessible on www.c2ccc.eu	Will be submitted with the Final Report
Training and inspirational material for the authorities and utilities to inspire the citizens on the possible solutions. Accessible on www.c2ccc.eu	Will be submitted with the Final Report
Report on the learnings in using the SDGs in co-creating with citizens	Will be submitted with the Final Report

Evaluation:
It has been a gift with the close collaboration with the Danish Technological Institute as the experts in Denmark on SUDS. In CDR, Aarhus Municipality has also worked a lot with SUDS, and we have had the opportunity to draw on their experiences at partnership meetings and theme meetings. It is the experience that municipalities and authorities have been upgraded. Especially in Master Class about added value (under C5) and Connective Negotiation (also under C5), the interaction with citizens and local stakeholders has been developed. This is an example of interplay between actions in C2C CC.

Action modifications:
Modifications are not necessary, but as mentioned above, the training and inspirational for authorities and utilities are delayed and will be made in phase 3. Inspiration to citizens is submitted in the form of an animation movie.

After Life:
-

Target and goals for Phase 3:
Describe target and goals for Phase 3. Please be aware of, that this text will be the description, that will be put in the next Grand Agreement as the text we work after in Phase 3. Therefor it has to be clear in showing the direction and exactly what you expect to achieve in Phase 3.

Action	*Quantifiable milestones:*	*Date by end of*
C4.1 – C4.3	Phase 3: Workshops and presentation material on SUDS experience in C2C CC Distribution of knowledge and implementation Evaluation on the SUDS experiences within C2C CC.	 01/06/2021 31/12/2021 31/12/2021

Action	*Deliverables:*	*Date by end of*
C4.1	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	31/12/2021
C4.2	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	31/12/2021
C4.3	Phase 3: 5. Report on the learnings in using the SDGs in co-creating with citizens	31/12/2021

Action C5: **Governance**

Beneficiary responsible for implementation: *Central Denmark Region*

Foreseen start date: 01/01/2017	***Actual start date:*** 01/01/2017
Foreseen end date: 31/12/2022	***Actual (or anticipated) end date:*** 31/12/2022

Expected results:
C5.1 Phase 2 and beyond: 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. Participation of at least 100 partners and stakeholders at C2C CC workshops.

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.

C5.3: The Advisory Committee build 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 2 and beyond: 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.

Achieved results:
C5.1 In the phases 1 and 2, we have created a foundation to be able to create a common strategy for climate adaptation in the project area. We have done this by building capacity in the partnership, creating common dogma rules and by seeking to create interest in climate adaptation at all levels from the local employee in the supply and the municipality, over the local management (administrative and political) and to the highest political level in the Danish Parliament (Folketing) and with the political rapporteurs and ministers.
We have had the opportunity to discuss organizing / role distribution and responsibility for climate adaptation cross borders with political rapporteurs at the national level and the relevant ministers.

The strategy will be conducted in phase 3. Workshops about the subject has been integrated in the partnership meetings, the master class and a workshop in Connective Negotiation. The total number of participants far exceeds 100.

C5.2 The National Conference about Climate Adaptation in 2019 and the National Climate Summit in 2020 has contributed with important and useful inputs to both process and academic content of the future common strategy work. An example is the recommendations from the national Conference in October 2019. Annex E5.1 is an English version of the conference recommendations. The total number of participants in the two arrangements far exceeds 200 The National Conference in 2019 had 320 participants and the summit around 1.400.

C5.3 The Advisory Committee was deeply involved in arranging and completing the two mentioned national arrangements. In addition, one member of the Knowledge Committee is responsible for

implementing a master class in climate adaptation with a focus on creating added value. The master class we have had to adjust a bit due to Covid19, so it does not end until phase 3, and some of the activities is changed from workshop to interviews. We have had less participants, than the mentioned number of 300. But since several of the sub-projects in C2C CC were involved, we have found it very satisfying. We will start replication by using the collected experiences and the teaching material in phase 3 and here after. And the master class gives important knowledge to use in making common strategy about climate adaptation.

C5.4 Capacity building workshops, seminars etc. has been many. The master class about added value is one of them. Emergency / contingency planning was discussed at a theme meeting for partners the 6th June 2019. The work is continued under Action C2.

The method to negotiate/create climate adaptation in collaboration with citizens, Mutual Gains Approach or Connective Negotiation, the partnership experienced during to study trip to The Netherlands in May 2018. We had a workshop/course over 3 days in September 2020.The workshop took place at Climatorium in Lemvig. We plan to do a second workshop in phase 3. The pandemic made it necessary to wait until it again is possible to meet physically, which is expected in the summer 2021. Next time the workshop will take place at AquaGlobe in Skanderborg. This method is expected to be of great importance in the work with a common strategy for climate adaptation, as it is precisely in a trusting collaboration between the authorities, citizens and other stakeholders the most sustainable solutions will be developed.

Status of deliverables 31/12/2020:

Main deliverables:

Newsletter on the activities of the Advisory Committees available at www.c2ccc.eu	On going. https://www.c2ccc.eu/nyheder/
Small videos on the experiences, benefits and recommendations of the C2C CC actions available at www.c2ccc.eu	On going. https://www.c2ccc.eu/english/project-materials/films/
Reports on expert consultations	Will be submitted with the Final Report
Peer reviewed journal article on the experiences of network governance in C2C CC.	Will be submitted with the Final Report
1 guideline for network governance based on the experience in C2C CC	Will be submitted with the Final Report
1 common regional strategy on CCA with the outset in integrative planning and network governance.	Will be submitted with the Final Report

Other deliverables:

Program, presentations and evaluations from all meetings/workshop, available at www.c2ccc.eu	On going. https://www.c2ccc.eu/aktiviteter/tidligere-aktiviteter/
Newsletter, information at website and press releases for each meeting	https://www.c2ccc.eu/nyheder/
Inspiration material on experiences and recommendations for future practice in Danish and English. Published in 200 copies and available at www.c2ccc.eu	Submitted in the Annex Danish: C5.1 English: C5.2
Study tour report	See list below
• Holland – Study Trip May 2018	Submitted with Interim report No1 and is available in the Annex C5.3
• Holland 3DI - February 2018	Submitted with Interim report No1 and is available in the Annex C5.4
• England, June 2019	Submitted in the Annex C5.5
Peer reviewed journal article on the experiences of network governance in C2C CC.	Will be submitted with the Final Report
1 guideline for network governance based on the experience in C2C CC	Will be submitted with the Final Report

A capacity development program for training courses, workshops and master classes available at www.c2ccc.eu	Will be submitted with the Final Report
A master class training course on making added value in corporation with all relevant stakeholders locally and broader as described above.	Will be submitted with the Final Report
Innovative teaching material / governance manual on value-creating climate adaptation	Will be submitted with the Final Report
Course and workshop materials available at www.c2ccc.eu	On going. https://www.c2ccc.eu/aktiviteter/tidligere-aktiviteter/
One article in a Danish journal for professionals such as 'Teknik og Miljø'	Submitted in the Annex C5.6
1-2 international research publications	Submitted in the Annex C5.7
Course and workshop materials available at www.c2ccc.eu	On going. https://www.c2ccc.eu/aktiviteter/tidligere-aktiviteter/

The participants in the workshop over 3 days about Connective Negotiation, which took place in Lemvig

Evaluation:
Many of the experiences from all actions come into play in C5, and we experience that there is a great need for a well-proven model to be presented for how to plan a holistic and sustainable climate adaptation - not just in Denmark, but also every were else. That's one of the reasons, that C2C CC was deeply involved in the formation of a new association National Network for Climate Adaptation, called DNNK.

It is our experience that the use of SDGs is well established in general in Denmark. However, we have worked on a guide, but have not had the topic up in the partnership specifically in this phase.

The work in C5 tends to be more extensive than planned, and it is challenging to cut the task. We try to solve this by adding elements to complementary projects and other strategic work in the region and in the organizations, e. g. in DNNK.

It is exciting to experience that the experiences gained in the sub-projects and in the secretariats' work with C1 - C7 can to a large extent be reused / replicated in the strategy work.

Action modifications:

An opportunity has come to link action C5 with a national initiative, DK2020, which will work with a national climate strategy - both mitigation and adaptation. DK2020 is created in a collaboration between all the regions, the national association of municipalities and the foundation Realdania. The think tank Concito is engaged as a knowledge partner. It will be natural to connect the C5 with the DK2020, but we have not yet been able to clarify the timetable. It is possible, that we need to seek extend of parts of C2C CC in order to combine the two projects. Unfortunately, we are not ready yet to tell if an extension is needed.

No modifications are needed.

After Life:
It is definitely the expectation that governance structures will also be discussed after the C2C CC project and experiences from the project will be included in the discussions.

Target and goals for Phase 3:
The main target for Phase 3 is the common strategy for climate adaptation in CDR, but also collection of the experiences made in the project in order to pass them on to relevant recipients.

A very important complementary project, DK2020, is approved and initiated nationally. The purpose is a nationwide coordinated climate plan comprising both adaptation and mitigation. At the beginning of phase 3, we will try to coordinate the work in the 2 projects and thus provide the best possible opportunities for experiences from C2C CC to be continued. One consequence may be that we have to apply for an extension of C2C CC for 6 - 12 months.

Action	*Quantifiable milestones:*	*Date by end of*
C5.1	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	 30/09/2022 01/01/2022 01/06/2022
C5.2	Phase 3: Two annual workshops, 200 participants all together	 31/12/2021: 31/12/2022
C5.3	Phase 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
C5.4	Phase 3: Five training courses, 150 participants Evaluation workshop organized at the end and the Phase 3, 60 participants 1-2 international publications in review	 31/12/2022 31/12/2022 31/12/2022

Action	*Deliverables:*	*Date by end of*
C5.1	Phase 3: Program, presentations and evaluations from all meetings/workshop, available at www.c2ccc.eu Newsletter, information at website and press releases for each meeting	 Ongoing Ongoing 31/12/2022

	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	
C5.2	Phase 3: Program, presentations and evaluations from all annual workshops, available at www.c2ccc.eu	Ongoing
C5.3	Phase 3: 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	31/12/2022 31/12/2022
C5.4	Phase 3: Course and workshop materials available at www.c2ccc.eu	Ongoing

Action C6: **Tools**

Beneficiary responsible for implementation: *Central Denmark Region*

Foreseen start date: 01/01/2017	***Actual start date:*** 01/01/2017
Foreseen end date: 31/12/2022	***Actual (or anticipated) end date:*** 31/12/2022

Expected results:
C6.1: All CDR municipalities have applied the model and use the results in decision making and spatial planning.

C6.2: 15 municipalities have applied the screening tool and use the results in decision making and spatial planning.

C6.3: 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.

Achieved results:
C6.1 and C6.2 All municipalities and facility companies in the partnership have used the combined tool in C6 to gain an overview of the challenges related to flooding from streams, the sea and groundwater. The tool has also been used to identify the need for making further detailed hydraulic models. Moreover, the municipalities will use this in their work with climate plans in DK2020 and the joint climate adaptation plan to be finished by 2022. An agreement to establish a hotline has been made with SCALGO to support the calculations of the municipalities. Based on selected statistical figures from the tool, it appears that up to 90 different partners have used the tool every month (see the figure).

C6.3 In relation to the early warning systems, The River Gudenå C12 project is the first case in the development of a system to predict events leading to flooding. The hydraulic model is the basis for this made by DHI for the entire River Gudenå. This work is based on knowledge from WSP in Denmark and New Zealand as well as the consultancy company EnviDan, which has made an offer on how to construct the optimal early warning system. Moreover, we have brought in experiences from our study trip to England in the discussions about the optimal system. All experiences have been reported.

By the end of phase 2, C2C CC was introduced to a tool that would make it possible for municipalities to determine the level of service for citizens. A tool that shows the values in play when flooding becomes a problem for the municipalities, which can be used to compare the costs of making climate adaptation projects - a cost-benefit analysis. The tool should be used together with facilities to find the public service level that makes sense.

We are in dialog with complementary projects such as WaterCoG and Topsoil sharing results/experiences.

Status of deliverables 31/12/2020:

Main deliverables:

A High resolution groundwater-surface water model	Submitted in the Annex C6.1
User guideline for the model	The guideline is available online. Education of users is submitted in the Annex C6.2
An interactive 3D decision support tool on the water flow in catchment areas across municipal borders	Submitted in the Annex C6.1 (combined tool) www.scalgo.dk/live (full program - log in)
User guideline for the tool.	Submitted in the Annex C6.2
Report on the test and demonstration of warning systems	Will be submitted with the Final Report

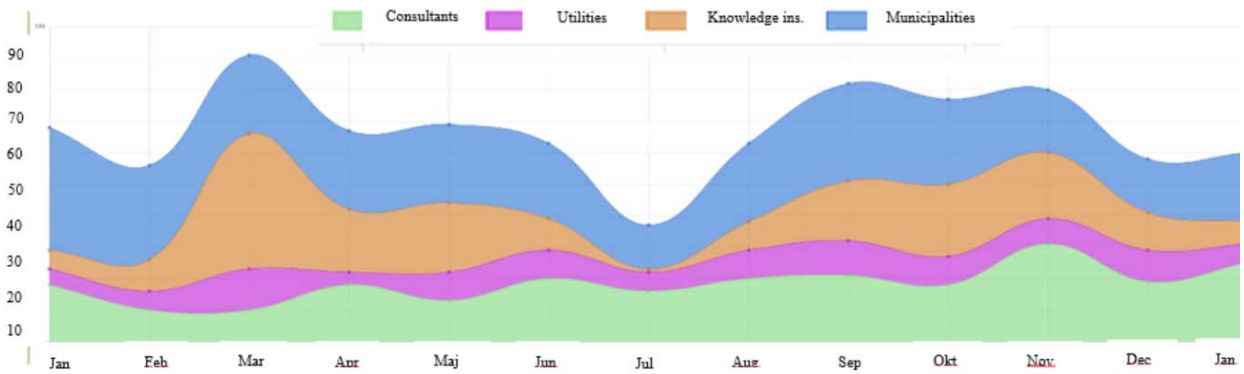
Other deliverables:

A High resolution groundwater-surface water model in combination with the interactive 3D decision tool	Submitted in the Annex C6.1 www.scalgo.dk/live (full program - log in)
Report on model construction	Submitted in the Annex C6.1
Report on model calibration.	
Report on climate projections and climate impacts.	
User guideline for the model	The guideline is available online. Education of users. Look at annex 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	Submitted in the Annex C6.1
Technical background report	
User guideline for the tool	The guideline is available online. Education of users is submitted in the Annex C6.2
Report on known warning systems in DK and abroad	Submitted in the Annex C6.3
Test and demonstration of warning systems	Will be submitted with the Final Report
DEMA and 2 municipalities have adapted the new improved system	Will be submitted with the Final Report

Evaluation:

The combined tool developed in C6 has been a success. Using SCALGO as the common platform for the tool proved to be the right solution. This has made the tool user-friendly and usable for all municipalities to get an overview of and make plans in connection with imminent flooding. The tool was evaluated at a workshop with the partnership on 2 September 2020.

It has been challenging to make a good early warning system due to the complexity of predicting the water levels in streams based on rainwater prognoses. With the aid of machine learning, data will be optimised to provide citizens with a reliable warning of flooding.



Statistics witch showing how many people among the partners that have used the tool every month.

Action modifications:
The only modification in C6 is that the high resolution groundwater-surface water model is made in combination with the interactive 3D decision tool.

After Life:
We work to get data from the national HIP project entered into the SCALGO tool as a supplement to the existing to ensure partners still have access to updated data in the tool.

Target and goals for Phase 3:
In Phase 3, partners will be continuously supported by the tools. A new tool is developed for the municipalities to use when prioritising what to do first, creating an overview of which tools would be cost-effective compared to the damages they can avoid. Further development of early warning systems is in progress as well as implementation of systems in at least two municipalities.

Action	*Quantifiable milestones:*	*Date by end of*
C6.1	Phase 3: All CDR municipalities have applied the tool and use the results in decision making and spatial planning.	31/12/2022
C6.2	Phase 3: Developing of a tool for cost benefit calculations to define climate adaptation goals for the municipalities/utilities	01/08/2021
C6.3	Phase 3: Exploring and testing of warning systems done DEMA and 2 municipalities have tested an extended warning system module for flood prediction	31/12/2022

Action	*Deliverables:*	*Date by end of*
C6.1	Phase 3: Finished	-
C6.2	Phase 3: A tool for cost benefit calculations to define climate adaptation goals for the municipalities/utilities	01/08/2022
C6.3	Phase 3: Report on known warning systems in DK and abroad Test and demonstration of warning systems DEMA and 2 municipalities have adapted the new improved system	31/12/2022

Action C7: **Innovation**

Beneficiary responsible for implementation: *Central Denmark Region*

Foreseen start date: 01/01/2017

Actual start date: 01/01/2017

Foreseen end date: 31/12/2022

Actual (or anticipated) end date: 31/12/2022

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.
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.

Achieved results:
During C7.1, Climatorium in particular is very active and has initiated several quadruple helix projects in the form of complementary projects. In particular, they have succeeded in getting the state to co-finance annual climate summits for four years. The first of its kind was completed over three days in August. On day one, a summit about energy, circular economy, mobility and climate adaptation was in focus. Second day a partner meeting was held on future collaborations and third day a children climate meeting. All parts were due to Covid-19 held as coupled physical and virtual meetings.

C7.2: The CDEU makes a major effort to assist companies in developing projects and seeking EU funding for business innovation. Whenever it is relevant, CDEU participates in partner meetings in order to offer their advises. Far more than the mentioned 10 companies have received advice and far more than 4 applications have been submitted. A few Horizon2020 applications in relation to water and waste water, but also bottom-up market maturation under the SME instrument (EIC Accelerator), Eurostars 2 and Erasmus2. Finally, CDEU has had dialogues with companies about LIFE possibilities, but yet no one has applied.

The booth at Sewers Mess, January 2020

C7.3: At different occasions the secretariat has had contact to stakeholders interested in Eco System Services. Fx. when we were invited to give a speak at a coastal conference the 24th September 2019 by Nohrcon. At the conference private stakeholders (companies) participated, and they were offered inspiration about the subject. Later, in the spring 2020, we negotiated starting of Ph. D study on the subject in collaboration with the consultant company Orbicon (today called WSP).

C7.4: In order to get direct contact with the contractors / companies, the secretariat has in February 2020 participated in the Sewer Fair with a booth together with the Danish Technological Institute. We did the same two years earlier. The contact with many companies has focused on the practical side of the holistic and sustainable solutions as well as the possibilities for obtaining grants for innovation from the EU. It has, among other things led to CDR, the Danish Technological Institute and several craftsmen's organizations together, developing a project "The green water worker", for which we applied for Social Fund funds. Unfortunately, the application was met with a rejection, but there is now a good basis for repeating the experiment when the opportunity arises.

In addition, C2C CC has throughout the project period contributed to the training as a rainwater consultant held by The Danish Technological Institute, where students are taught the practice of making sustainable rainwater solutions, and where we have talked about the potentials of innovation in companies, EU funding and a holistic approach rather than just solving the current challenge. These courses are now run several times every year.

Status of deliverables 31/12/2020:

Main deliverables:

Information material on best practice cases	Will be submitted with the Final Report
Information material on EU support and funding possibilities	On going. https://www.c2ccc.eu/center-for-climate-challenge/finansieringsmuligheder/
Report describing potentials for Danish Water Hub in CDR and recommendations for After LIFE	Will be submitted with the Final Report

Other deliverables:

Information material on best practice cases	Will be submitted with the Final Report
EU-Catalog for water companies (2017)	Submitted in the Annex C7.2
Leaflet for water companies	Submitted in the Annex C7.3
Information – used at DANVAs annual conference 2019	Submitted in the Annex C7.4
Information Danish Export Association, November 2020	Submitted in the Annex C7.5
Four applications for EU-funding	Se following list:
Application 1	Submitted in the Annex C7.6
Application 2	Submitted in the Annex C7.6
Application 3	Submitted in the Annex C7.7
Application 4 - CREST	Submitted in the Annex C7.9
Two applications for funding (EU and national)	Se following list
Application 1 - "Den grønne vandarbejder":	Submitted in the Annex C7.10
Application 2 - ReDoCO2:	Submitted in the Annex C7.11
Application 3 - BioScape:	Submitted in the Annex C7.12
Report describing potentials for a Water Hub in Central Denmark Region and recommendations for After LIFE	Will be submitted with the Final Report

Evaluation:
It is the experience that the activities in C7 greatly contribute to companies seeing opportunities for relevant inspiration in municipalities, supplies and universities. The contact with the companies takes place only to a lesser extent via social media, pore announcements and newsletters, but to a large extent through trade fair participation and at exhibitions in our events.

Action modifications:
As mentioned in the first interim report, there has been a change in the division of tasks between the state, regions and municipalities in Denmark. The region is no longer allowed to work with direct business promotion. We therefore focus instead on innovation. It also contains the need to adjust the wording of the expected results of C7.4 from "Increasing .." to "Support ...".

After Life:
-

Target and goals for Phase 3:
Project development and Ecosystem Services are in focus at the beginning of phase 3, where 2 applications are submitted. It is about innovation in municipalities and utilities and about method development - ie innovation more generally. Naturally, teaching and inspiration workshops follows hereafter.

Action	*Quantifiable milestones:*	*Date by end of*
C7.1	Phase 3: Evaluation after each of the six workshops on best practice and/or topical issues carried out as a questionnaire via survey exact	 31/12/2021 31/12/2022
C7.2	Phase 3: Progress evaluations of action following	 31/12/2022
C7.3	Phase 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	Phase 3: Report on support for export done	 31/12/2022

Action	*Deliverables:*	*Date by end of*
C7.1	Phase 3: Information material on best practice cases	 31/12/2022
C7.2	Phase 3: Information material on EU support and funding possibilities Four applications for EU-funding	 On going
C7.3	Phase 3: Two applications for funding (EU and national)	 31/12/2022

Action C8: Håb til Håb - Development of the Coastal land between Glud Håb and Håbet

Beneficiary responsible for implementation: HEDKOM *(Hedensted Municipality)*

Foreseen start date: 01/01/2017 ***Actual start date:*** 01/01/2017

Foreseen end date: 31/12/2022 ***Actual (or anticipated) end date:*** 31/12/2022

Expected results:

C.8.1.: 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. Discussion among stakeholders on appropriate – and eventual – solutions to the challenges. 2,000-3,000 stakeholders involved in the process.

C8.3: 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.

Achieved results:

C8.1: The local focus group of stakeholders established in phase 1 has advised HEDKOM in the project development in phase 2. The involvement of the focus group led to adjustments for the scenarios to focus specifically on the 800 hectares mentioned in Expected results, instead of the entire area. In addition to this, the focus group has contributed to the definition of the areas so they reflect the perceived affiliation of the citizen.

At workshop II with participation of the local focus group of stake holders we presented 4 scenarios on workshops with participation with local residents. The scenarios included Hjarnø, Snaptun, Glud, Pøt, As Vig and Strandhusene, and presented the different efforts and tools that can be managed and performed in the area. Presentation of scenarios in annex C81.

At the workshop we used visualization of different actions on the pilot projects As Vig, Sandbjerg Vig and Håbet to show the options for action and the clearness of the future effect within each action. Visualization of pilot projects in annex C8.2. We have used 3DI modelling for testing solutions and consequences for new dikes at the cases Hjarnø and Pøt Strandby. Continuously we have used The report "C8 – Værdi- og risikokortlægning i området Håb til Håb" to make an account of the area. Report on values and risks in the area in annex C8.3.

The stakeholder involvement included mini-workshops, knowledge collection of local values and input to scenario development. The tool 3Di was applied partly by the use of consultancies in an interactive process with the citizens at the workshops. The interactive tool 3Di provides modeling of scenarios and visualizes flooding. The tool support and qualify the political discussion far better than traditional means.

The workshops, activities and reports have contributed to greater local understanding of the local areas, the climate-related challenges and the opportunities to protect values and change the landscape. The workshop group recommends, that HEDKOM continue to refine and develop solutions in order to strengthen the recreational opportunities through climate adaptation.

C8.2 The stakeholder analysis and stakeholder mapping is completed and will be elaborated in collaboration with Aalborg University. Stakeholder analysis in annex C8.4.

C8.3 In HEDKOM, we have placed great emphasis on the direct contact / dialogue with citizens about possible solutions, emphasized solutions that come from the bottom up, this work has been made more difficult by Covid-19 restrictions especially in 2020. So far the restrictions seem to be

extended in 2021 and this is of great importance for our ability to work with our method on citizen involvement and will likely have remorse for the end date.

Status of deliverables 31/12/2020:

Main deliverables:

Report on three descriptive scenarios for the area's development with different actions	See the list below:
Scenarie 1 - Håb til Håb area	Submitted with Interim report No1. Availeble in the Annex C8.5
Scenarie 2 - As Vig	Submitted with Interim report No1. Availeble in the Annex C8.6
Scenarie 3 - Hjarnø	Submitted with Interim report No1. Availeble in the Annex C8.7
Scenarie 4 - Snaptun	Submitted with Interim report No1. Availeble in the Annex C8.8
Scenarie 2 - As Vig 2018 - Video med havstigning	Submitted with Interim report No1. Availeble in the Annex C8.9
Scenarie 3 Hjarnø og 4 Snaptun 2018 - video med havstigning	Submitted with Interim report No1. Availeble in the Annex C8.10
Report on recommendations on the area's development for the City Council.	Will be submitted with the Final Report

Other deliverables:

C2C C8 Håb til Håb Workshop 1 intro to the area	Submitted in the Annex C8.11
Præsentation of scenarios - Workshop I - Niras	Submitted in the Annex C8.2
Report on Cultural heritage description	Submitted in the Annex C8.12
Development efforts divided into stages.	Postponed to phase 3 due to Corona
Detailed proposal for first stage	Postponed to phase 3 due to Corona. Will be submitted with the Final Report
Visualisation examples	Submitted in the Annex C8.2
1-3 scenarios for the area's development.	Submitted in the Annex C8.1
Test project, which test new solutions.	3DI model test for Hjarnø and Pøt Strandby. Submitted in the Annex C8.13 and C8.14
An account of the area (mapping of risks)	Submitted in the Annex C8.3
At least one pilot project, which shows the option for action and the clearness of the effect	Submitted in the Annex C8.2
At least one project description ready for execution	Postponed to phase 3 due to Corona. Will be submitted with the Final Report
Detailed proposal for first stage.	Will be submitted with the Final Report
Test project, which test new solutions	Will be submitted with the Final Report
At least one project description ready for execution	Will be submitted with the Final Report
Report of each excursion and minutes	See the list below:
Bus trip - Håb til Håb	Submitted in the Annex C8.15
Bus trip - Bustur- Vejle, Bogense, Uldum kær and Urlev	Submitted in the Annex C8.16
Ground hiking - As vig	Submitted in the Annex C8.17
Ground hiking- Snaptun	Submitted in the Annex C8.18
Ground hiking - Åstrup Kær	Submitted in the Annex C8.19
Report from workshop (Internal Workshop about co-creation)	Submitted in the Annex C8.20

Report from citizen-politician workshop on descriptive scenarios	Postponed to phase 3 due to Corona. Will be submitted with the Final Report
Minutes on decision from City Council meeting	Postponed to phase 3 due to Corona. Will be submitted with the Final Report
Project ideas selected and deselected	Submitted in the Annex C8.2

Many of the English summaries are still missing. They will be added.

Evaluation:

The prescriptive scenarios were developed in co-creation with citizens' assessment of local values in workshop II. HEDKOM has a complementary project initiated a pilot project in As Vig regarding "Multifunktionel jordfordeling" ved As Vig, which HEDKOM hope will make a large future contribution to the climate adoption in the area. The 3Di tool support and qualify the political discussion far better than traditional means. The basis for involving local residents and political decision making is improved.

HEDKOM has run a series of internal cross-sectoral workshops and meetings in collaboration with Aalborg University with the purpose to discuss and map core elements of added value of CCA and how to make a digital user involvement due to Covid-19 and ahead.

Action modifications:

The Report from citizen-politician workshop on descriptive scenarios and Minutes on decision from City Council meeting have been transferred to phase 3 due to the situation caused by Covid 19 that have made it impossible to meet local residents and politicians.

The same is regarding the activities Development efforts divided into stages, Detailed proposal for first stage, At least one project description ready for execution, and Project ready to be executed, which is transferred to phase 3, because they are dependent of decisions made by local residents and politicians.

After Life:

By the end of Phase 3 it is expected to have formulated actual CCA projects to be implemented after LIFE.

Target and goals for Phase 3:

Action	*Quantifiable milestones:*	*Date by end of*
C8.1	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
C8.3	Phase 3:	
	Citizen-politician workshop (Delayed due to Covid-19)	31/12/2021
	Projects selected and deselected.	30/06/2022

Action	*Deliverables:*	*Date by end of*
C8.1	Phase 3:	
	Scenarios created and divided into stages	31/01/2022
	Detailed proposal for first stage.	31/07/2022
	Test project, which test new solutions	31/07/2022
	At least one project description ready for execution	31/12/2022

C8.3	Phase 3: Report from citizen-politician workshop on descriptive scenarios ((Delayed due to Covid-19) Minutes on decision from City Council meeting ((Delayed due to Covid-19) Project ideas selected and deselected	 31/12/2021 31/12/2021 31/12/2021 31/12/2022

Action C9: The Thyborøn Channel and the Western Limfjord

Beneficiary responsible for implementation: *Lemvig Municipality*.

Foreseen start date: 01/01/2017	***Actual start date:*** 01/01/2017
Foreseen end date: 31/12/2022	***Actual (or anticipated) end date:*** 31/12/2022

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.

Achieved results:
Substantial reporting regarding the tasks in 9.1 incl. the assignment from 9.2 regarding decision making on the optimal permanent level of protection, from consulting engineer Rambøll were issued in November 2019. On the basis of Rambøll's calculations, the partnership has decided to work on a narrowing with an opening of only 250 meters in the channel. Thereby, it is expected that until 2050-2060, higher water levels will not occur in the Western Limfjord by storm surge than what is experienced today and which can be handled. Se the Rambøll report in annex C9.1
The main report and its conclusions were presented at a joint conference for all 7 Mayors, municipality directors and technical staff on 7th of February 2020.

Rambøll has subsequently submitted an abstract regarding C9 Thyborøn Channel and the Western Limfjord to the International Water Associations, IWA's, World Water Congress & Exhibition, which were scheduled for autumn 2020. Due to the Corona pandemic, it will be presented at a virtual IWA world conference in the spring of 2021.

During the autumn of 2020 prequalification and competitive dialog with 5 large consulting groups on detailed design and financing of the general storm surge mitigation in Thyborøn has been completed. Two rounds of detailed technical and financial dialogues with qualified consulting groups lead by WSP (Orbicon), Rambøll and Sweco revealed a broad range of added value options. Subjects as sea food production, restaurants, surfing, water sports, tourism and recreational life were discussed as added value elements improving finance and local development. Finally, a group, comprising consulting engineer Rambøll, architect SLA and special consultant R. Johnsen, were awarded contract on C9.3 and C9.4 on November 2020.

A collaboration with the two regional emergency services south and north of the Limfjord, "Nordjyllands Beredskab" and "Nordvestjyllands Brandvæsen" has been initiated at a meeting in the new Climatorium, on 25th of November 2020 (annex C9.3b)

In 2020, a film about C9 Thyborøn Channel and the Western Limfjord, has been casted. The film will be on display at e.g. Climatorium in Lemvig.

Status of deliverables 31/12/2020:

Main deliverables:

Two surveys of major stakeholders	Submitted in the Annex C9.1
An analysis of the optimal, permanent protection	Submitted in the Annex C9.2
A cross-border emergency preparedness plan	Will be submitted with the Final Report

Other Deliverables:

A survey of major stakeholders and significant secondary effects of a regional CCA solution by Thyborøn Channel. Deadline 31. Dec 2017	Submitted in the Annex C9.2
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	Submitted in the Annex C9.2
An analysis of the optimal, permanent protection for submission to policymakers and stakeholders. Deadline 30. June 2019	Submitted in the Annex C9.2
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	Two meetings to start: Submitted in the Annex C9.3a and C9.3b
A cross-border emergency preparedness plan for handling of storm surges. Deadline 30. June 2021	Will be submitted with the Final Report
A review of proposals for financing models that can support that the optimal CCA project can be implemented. Deadline 31. Dec 2021	Will be submitted with the Final Report
A number of conceptual designs addressing the CCA in the Western Limfjord and add value. Deadline 31. December 2021	Will be submitted with the Final Report

Evaluation:
At the Mayors conference in February 2020, general support and agreement for a concerted action was obtained. The support and contribution from the administrative staff of the partners is. It creates great value that we visit each other, as we see and hear about various local climate adaptation projects in the 7 municipalities.

The experiences from other C2C CC projects with the use of a dialogue-based tender process have, with good experience and results, also been used in relation to the tender for the tasks in 9.3 and 9.4.

The project C9 Thyborøn Channel and the Western Limfjord is included as an element in the project at Lemvig Gymnasium, where the high school will educate climate students, which i. a. will take place in collaboration with Climatorium in Lemvig.

The municipalities of Lemvig, Struer, Skive and Vesthimmerland are part of the DK2020 project, where a climate action plan must be made in relation to reducing CO2 emissions and adaptation in relation to climate change, where the C9 project will be part of the climate action plan.

Action modifications:
Despite COVID-19 restrictions, it has luckily been possible to ensure progress in the project by attending virtual meetings, although it has challenged the progress and not the least the coherence of both the C9 project and the entirety of C2C CC project.

After Life:
After completion of the C2C CC project in relation to the C9 project, contraction of Thyborøn Channel, several major tasks lie ahead of us. A full EIA report must be made, potential corrections of the design and further involvement of stakeholders, probably also further work looking into financing options, a European tender for the structure, erection of the piers and perpetual maintenance.

It is anticipated that the contraction of Thyborøn channel has to take place in stages, due to environmental and climatic impacts. Consequently, there will be a need for continuous monitoring and analysis of environmental and climatic development, as well as continued cooperation between the 14 Partners.

A continued focus on dissemination and learning from the project, which could take place through the Climatorium in Lemvig. The co-operation with the emergency services must also be maintained and further developed.

Target and goals for Phase 3:
9.2: The co-operation with the emergency services will be further developed, and agreements will be made on how to strengthen the co-operation in the future.

9.3: The possibilities for external support and financing of the contraction of Thyborøn Channel will be investigated. Models on how to distribute the investment among the 7 municipalities and water utilities as well as landowners shall be developed.

9.4: A proposed design will be prepared for the detailed design and staging of the contraction of Thyborøn Channel - including the location as well as the size and design of the first stage. The detailed design shall include environmental consequences such as the water exchange in the Limfjord, and navigational conditions. Proposals will also be made for how the facility can support the nature experiences in the area as well as the recreational opportunities with water in focus. Business development opportunities will also be explored - tourism and other professions.

Action	*Quantifiable milestones:*	*Date by end of*
C9.2	Phase 3: Project team established with the participation of emergency management units North and South of the Western Limfjord. One agreement with an Advisor on the assistance for building professional and civil capacity to deal with the storm events at the Western Limfjord One agreement with an Advisor on assistance for the preparation of a cross-border emergency preparedness for handling of storm surge events A cross-border emergency management for handling of storm surge events. A review of the strengthening of the professional and the civilian capacity to deal with the storm events are available. 3rd Seminar for relevant decision makers.	31.01.2021 31/03/2021 31/03/2021 31/12/2021 31/12/2021 30/06/2022
C9.3	**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. A number of proposals for funding are available. Seminar for relevant decision makers.	31/03/2021 31/12/2021 30/06/2022
C9.4	**Phase 3:** At least three conceptual designs addressing CCA challenges in the Western Limfjord and contribute with added value are available.	31/12/2021 30/06/2022

	Seminar for the relevant decision-makers	

Action	*Deliverables:*	*Date by end of*
C9.2	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.	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.	31. Dec 2021
C9.4	**Phase 3:** A number of conceptual designs addressing the CCA in the Western Limfjord and add value.	31. December 2021

Action C10: The River Grenaa Catchment

Beneficiary responsible for implementation: *Norddjurs Municipality*.

Foreseen start date: 01/01/2017 ***Actual start date:*** 01/01/2017

Foreseen end date: 31/12/2022 ***Actual (or anticipated) end date:*** 31/12/2022

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.

Achieved results:
C10.1. have collected data for the model, because most data are put directly into the model, we have made explanation notes of the data, when there is not reports for all data.
Groundwater data: Annex C10.1
Calculating on connection between water flows: Annex C10.2
Water quality: Annex C10.3
Measurement of the rivers: Annex C10.4
Geological and geotechnical processes that cause theorems of the terrain: Annex C10.5
Draft presentation of the model and some preliminary scenarios: Annex C10.6

C10.2. have made involvement of: Stakeholders in stakeholder meetings before Covid-19, where material is located online: https://www.grenaaensopland.dk/arrangementer/foelgegruppemoeder
Landowners in a questionary: Annex C10.7
We have made a facebookpage for public involvement: Grenåens opland - hvordan håndterer vi vandet? | Facebook which have 145 followers and more every day.
A Website incl. a dialogue portal: https://www.grenaaensopland.dk/
For an overview over the full projectarea and the waterstreams and area around the rivers in the catchment area, we have made public movies from drone videos: Syddjurs Kommunes WebTV (videotool.dk)

C10.3. We have begun the involvement and strategic planning for climate adaption in the catchment area cross the two municipalities and in all the local cities and areas in the catchment area. We will proceed this strategic planning in phase 3.

Status of deliverables 31/12/2020

Main deliverables:

Calibrated hydraulic model for the Grenaa Catchment	Submitted, but not yet available outside a stationary computer. Will be fully submitted with the Final Report
Strategic plan for the area and its climate adaptation	Will be submitted with the Final Report

Other deliverables:

Groundwater data	Submitted in the Annex C10.1
Calculating on connection between water flows	Submitted in the Annex C10.2

Water quality	Submitted in the Annex C10.3
Measurement of the rivers	Submitted in the Annex C10.4
Geological and geotechnical processes that cause theorems of the terrain	Submitted in the Annex C10.8
Geological and geotechnical processes that cause theorems of the terrain	Submitted in the Annex C10.5
Draft presentation of the model and some preliminary scenarios	Submitted in the Annex C10.6
Idea catalogue with possible solutions and assessments for CCA in the project area	Will be submitted with the Final Report
Catalogue with selected solutions and their in depth analysis	Will be submitted with the Final Report
Website incl. a dialogue portal	https://www.grenaaensopland.dk/. Submitted with Interim report No1
Stakeholder meetings	https://www.grenaaensopland.dk/arrangementer/foelgegruppemoeder. Submitted in Phase 2
Landowners in a questionary	Submitted in the Annex C10.7
Facebookpage for public involvement	Grenåens opland - hvordan håndterer vi vandet? (facebook.com) Submitted in Phase 2
Movies from drone videos of the catchment area	Syddjurs Kommunes WebTV (videotool.dk) Submitted in Phase 2
Strategic plan for the area and its climate adaptation	Will be submitted with the Final Report

Evaluation:
The project cross municipality borders have made a public and political focus and understanding for working on full catchment areas, the correspondence in the water flows between local areas and how climate adaption is local responsibility in correspondence to the full climate adaption on the catchment area. It is difficult to work as a joint cross municipality borders, while the political agendas are different in the two municipalities. It will be too ambitious to have a end goal as one large joint strategic plan for climate adaption of the full catchments area. The strategic plan will consist of local plans and an adaptive approach in correspondence with each politic direction in each municipality.

We have begun preliminary stakeholder dialog for future wetland areas for water storage in following areas: Ørum River, Skærvad River, Mårup River, Frelling and Bugtrup rivers. These will be a part of the stakeholder dialog for the future strategy for the full catchment area.

We are beginning city transformation project in Nimtofte, where climate adaption is a key aspect, which opens for new solutions of infrastructure and integrating of water in the city.

We have in the end of phase 2 made the focus area of Grenaa, which is the coastal city where Kattegat (sea) and all the water from the catchment area meet. This will result in a new local project in Grenaa that compliments this C2C C10 project. The Focus project results in application for financing from Real Dania (a fond in Denmark), which will secure implementation of the knowledge and learnings from C10 into final solutions of climate adaption in Grenaa through a large transformation of Grenaa.

Coast to coast project has contributed with new knowledge, we try to integrate use of the model presentation and smart tool of 3Di, which is intuitive and therefore ideal for communication of modelling of the future climate with stakeholders, landowner and the public.
In the involvement of stakeholders, landowners and the public we will try to use mutual gain approach (MGA) and are looking at a contract with P2 from Nederland

The network of coast to coast and all the partners has created new knowledge and inspiration of how to work with resilient and multifunctional climate adaption in the municipality. Climate

adaption has become a DNA in the municipality for different professionals in the municipality, the politicians and the citizens.

Action modifications:

C10.1 *The set-up of a hydrological model*

5. Continuing model setup with data and input from stakeholders and citizens, this has been delayed due to COVID-19, where it has not been possible to hold meetings with citizens about the modelling. The project will try new ways for citizen involvement in phase 3, because we need involvement digital due to the COVID-19 situation.

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. We have added more local areas, while the local societies can be involved in smaller groups in this COVID-19 situation.

C10.2 *Public awareness rising: website and citizens meetings, etc.*

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.

The end of phase 2 has been troubled with COVID-19 which has complicated involvement face to face. Therefore, we have tried and will try more digital solutions in phase 3 for an ongoing dialog 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.

The hydraulic model for Grenaa Catchment area consists of three technical models that works together. We have now a model for groundwater and model for surface water and a model for salt groundwater interface. The model is a technical computermodel, which only works in a stationary computer at the institute of GEUS and will when it is finished be transferred to a technical model-database. The model outputs will be a part of the documentation for the work, but the model as it is can't be delivered or available online before phase 3.

C10.3 *Laying the basis for decision-making*

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.

In phase 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. In phase 3 additional complementary local projects will be established the plan was original to be begin this in the end of phase 2, but has been delayed due to COVID-19. The additional complementary projects in phase 3 will use data from the SEGES report made in phase 2. Due to the ongoing COVID-19 the original plan from phase 2 with physical meetings will be exchanged with a try out for more digital in phase 3, we need to investigate possibilities or wait for possibilities for face to face meetings again.

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. This will possible be made digital, if we find a perfect solution for involvement of stakeholders and citizens across the large geographical area of C10 river of Grenaa catchment area.

We have not yet been able to clarify the timetable and digital possibilities for carry out involvement digital. It is possible, that we need to seek extend of parts of C2C CC in order to combine the two projects. Unfortunately, we are not ready yet to tell if an extension is needed.

After Life:
We are sending an application for a city transformation project in Grenaa to integrate climate adaption in multifunctional solution and at the same develop the city with a new DNA of climate adaption and water.
We will try to carry out establishment of new wetland in the catchment area. We will focus on development of new local climate adaption projects like the one in Nimtofte. We will have an ongoing dialog with farmers and landowners of climate adaption of the farmland and land outside the cities.

Target and goals for Phase 3:
The main target is an cross border strategic plan for climate adaption of the catchment area, which can be accepted by both Syddjurs and Norddjurs municipality political councils. This strategy depend on local engagement from stakeholder, landowner and the public, and the strategy therefore can be delayed beyond 2022 due to the difficult COVID-19 situation.

Action	*Quantifiable milestones:*	*Date by end of*
C10.1	Phase 3: Elaboration of model and calibrating done Screening and qualifying options incl. risk assessment done Assessment on environment, nature and recreational values done Impact assessment of chosen scenarios and prioritization (2021-2022) Solutions for political decision-making identified	 31/12/2022 31/12/2022 31/12/2022 31/12/2022 31/12/2022
C10.2	Phase 3: Citizens meetings held, 500 participants	 31/12/2022
C10.3	Phase 3: Public meetings and a conference with representatives from the Norddjurs and the Syddjurs City Councils, 100 participants	 31/12/2022

Action	*Deliverables:*	*Date by end of*
C10.1	Phase 3: Calibrated hydraulic model for the Grenaa Catchment 31/12/2021 Idea catalogue with possible solutions and assessments for CCA in the project area Catalogue with selected solutions and their in depth analysis	 31/12/2021 31/12/2021 31/12/2022
C10.2	Phase 3: Website incl. a dialogue portal	 Ongoing
C10.3	Phase 3: Strategic plan for the area and its climate adaptation	 31/12/2022

Action C11: **Randers Fjord**

Beneficiary responsible for implementation: *Norddjurs Municipality*.

Foreseen start date: 01/01/2017

Actual start date: 01/01/2017

Foreseen end date: 31/12/2022

Actual (or anticipated) end date: 31/12/2022

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.

Achieved results:
C11.1. We have finished report on cost benefit analysis tool, a holistic value analysis for climate protection of the fjord, 11.000 hectares has been screened and we have made a holistic tool for future analysis of the area to climate adaption. We haven't made the final calculations, when the solutions are still in discussion. We have therefore made a tool, where we can calculate holistic values on different solutions. Due to the fact, that the areas will have ongoing development – in Randers with the city, in the open land with tourism, the tool can be calculated with latest data, when it can be updated instead of being a status que value (https://midtrum.rm.dk/api/documents/42221/data?inline=true).

C.11.2. The model for Randers Fjord made by the coastal directorate has been delivered to Cowi, who is calibrating the model before beginning the assessment of a sluice.

Status of deliverables 31/12/2020:

Main deliverables:

Report on mapping, modelling and analysis of the Randers Fjord	Submitted in the Annex C11.1
A feasibility study into a possible subsequent EIA for a dam project	Will be submitted with the Final Report
Modelling Tools and two municipal strategies for land use in and around Randers Fjord	Will be submitted with the Final Report

Other deliverables:

Report on mapping and analysis of Randers Fjord at different scenarios for the preparation of the Fjord Model.	Submitted in the Annex C11.1
Technical background report, and a fjord model.	Technical information and explanations are available online in the model.
Report on cost benefit analysis, a holistic value analysis for climate protection of the fjord	Submitted in the Annex C11.3
A feasibility study into a possible subsequent EIA for a dam project	Will be submitted with the Final Report

Reports on modelling tools and two municipal strategies for land use in and around Randers Fjord	Will be submitted with the Final Report

Evaluation:
In phase 2 we have had a lot of complementary work, we have a joint work in preparation of risk management plans according to the flood directive for Randers Fjord in Randers municipality and Norddjurs Municipality, this work has been strengthened due to our joint C2C C11 project.

We have been looking at preliminary correspondence of climate adaption for different cities around Randers Fjord in a joint dynamic adaptive policy pathway report, which will be an additional information in our last deliverance of a joint strategy in C11, where we will make the strategy from knowledge obtained in the project and complementary work.

In Allingåbro there has been a focus on climate adaption, therefore the mayor in Norddjurs has purchased a strategic property by the river and fjord in Allingåbro for the climate adaption of the city in the future. The purchase where in order to own the land and therefore better be able to implement future adaption actions.

To contribute to development of Allingåbro around climate adaption and activities around the river and fjord, there has been made preliminary construction of a working group which consists of citizens, citizen association and other associations. The group will be further involved in C2C C11 in the future, when the strategy will be formed or in the afterlife of the project.

In the upland for the river Allingåbro and Randers Fjord, there has been made an agreement for a future wetland which contributes to flooding area outside the city, when flooding from Randers Fjord accrues in Allingåbro.

Action modifications:
C11.1 *Development of a 'fjord model' and cost-benefit analyses*
The fjord model is finish by The Danish Coastal Authority, 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. The delivery of the model from the coastal directory has been delayed in phase 2, the scenarios by COWI are therefore delayed.

A technical report has not been prepared and will not be prepared. Technical information and explanations are available online in the model.

C11.2 *Assessment of the consequences of establishing a sluice*
The calculated scenarios will be evaluated, and we expect a need for more scenarios, which then will be calculated. The work in phase 2 has been delayed due to a delayed delivery of the model from the coastal directory.

After Life:
The last delivery in this project will be an overall municipal strategy for land use in and around Randers Fjord. This will be a strategic document for the cross border strategy for climate adaption of cities around Randers Fjord.

Central Denmark Region, VIA University, Aarhus University, Randers Municipality and Norddjurs Municipality are joint together in an project around Randers Fjord for a Green Deal application, where we will take results from C2C C11 project and make the afterlife of implementing the municipality strategy together with stakeholders and citizens in terms of involvement through mutual gain approach methods, which we have learned theoretical in this full C2C CC project. Randers Municipality will begin the process of citizen and stakeholder involvement in Uggelhuse.

Norddjurs Municipality will begin the process of citizen and stakeholder involvement in Allingåbro and the drainage associations surrounding Allingåbro

Further will the citizen association group in Allingåbro continue their work around the river and fjord together with the municipality.

***Target and goals for Phase 3**:*
The main target of the project is an overall strategy for climate adaption cross municipality borders, where scenarios and CBA contributes to the understanding and evaluation for the strategy.

Action	*Quantifiable milestones:*	*Date by end of*
C11.1	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

Action	*Deliverables:*	*Date by end of*
C11.2	Phase 3: A feasibility study into a possible subsequent EIA for a dam project	31.12.2022
C11.3	Phase 3: Reports on modelling tools and two municipal strategies for land use in and around Randers Fjord	31.12.2022

Action C12: **The River Gudenå**

Beneficiary responsible for implementation: *Hedensted Municipality.*

Foreseen start date: 01/11/2016	***Actual start date:*** 01/01/2017
Foreseen end date: 31/12/2022	***Actual (or anticipated) end date:*** 01/04/2022

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 Gudenå 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.

Achieved results:
Silkeborg and Randers Municipality has had the previous responsibility for project management. This passed July 2, 2020 to Hedensted Municipality.

The recent project period has been very busy and there has been intense work on the project across the many partners (7 municipalities and 1 utility company) which together have achieved incredibly good results through knowledge sharing and collaboration across organizations.

According to C12.1 we have developed a report and catchment tool for the area (C12.1)
There are developed a scenario- and simulation model using river- and climate data and it is nearly up and running. We had made a run with 8 different scenarios measuring the effect of individual measures and the models scenarios and responses has been adjusted according to results. We had a listing of possible projects for those affected and made a catalogue of solutions, cost, etc. Assessment of legal and social consequences of possible actions is described in the report in relation to the 8 different scenarios, (C12.1 -table 7-22, p. 102). The report lists a comprehensive but overall overview of environmental legislation in relation to climate adaptation. Before concrete climate adaptation plans and projects can be realized, a detailed analysis of the consequences, legal basis and including the Environmental Protection Act must be carried out. The legal bindings are likely to vary in each case depending on the initiatives and locations chosen. Further description will be carried out in collaboration with a project-partnership called "The Master

plan for the River Gudenå" derived from the common knowledge gained in the project and initiated by the 7 mayors of the municipalities. An online web portal is under development.
External validation of the model has been performed (C12.8). In relation to the warning - and forecast model a demo-version is up and running (Link: Website under development) and we are in an ongoing process to ensure ease of use of this 'river alert model'.

In relation to C12.2, we have worked intensively to develop vision and goals and involve stakeholders along the river Gudenå.
We have developed a common vision for handling the water of the river Gudenå, and this vision is joined by the seven city councils (C12.7). Stakeholder analyzes and mapping of actors (C12.9) have been carried out and 4 workshops (C12.6) have been held along the whole river (online due to the Corona situation) with 84 unique stakeholders e.g. business and recreational organizations, associations, landowners, etc. The Gudenå committee (political) is continuously kept informed and involved in the project (e.g. C12.4). Through the main DHI report mapping of land use has been done, and now, together with a new PhD. partnership, we are in the process of mapping the values in the river basin. The PhD student will also refine the stakeholder analysis and mapping of actors.

We are now looking forward to an ongoing process working with identification of the challenges in cross-municipal co-operation, developing a financing models for compensatory actions and prepare key parts of the project to be part in the climate adaptation plans and other initiatives along the river Gudenå.

Status of deliverables 31/12/2020:

Main deliverables:

Report and catchment tool and River Gudenaa Catchment area	Submitted in the Annex C12.1
Catalogue of solutions, costs, etc	Submitted in the Annex C12.1
Material from workshop, travels etc. with stakeholders	See below
• ECCA2019, C12 participated • Meeting Gudenå Comeittee - 19 06 2020 • Theme Meeting for Citizens - 21 06 2020 • Meeting Following Group 24 09 2020 • Report about virtual workshops 2020	Submitted in the Annex C12.2 Submitted in the Annex C12.3 Submitted in the Annex C12.4 Submitted in the Annex C12.5 Submitted in the Annex C12.6
Develop a financing models for compensatory actions	Will be submitted with the Final Report

Other deliverables:

Report and catchment tool	Submitted in the Annex C12.1
Web portal with warning and exchange of experiences, lessons learned etc.	DEMO - link
Catalogue of solutions, costs, etc.	Submitted in the Annex C12.1
3D simulation model developed	Submitted in the Annex C12.1
Scenario Run measuring the effect of individual measures	Submitted in the Annex C12.1
Assessment of legal and social consequences of possible actions	Will be submitted with the Final Report
Extern validation of the model	Submitted in the Annex C12.8
Listing of possible projects for those affected	Submitted in the Annex C12.1
Identify challenges in cross-municipal co-operation	Will be submitted with the Final Report
Adjusting scenarios and responses	Submitted in the Annex C12.1
Ensure ease of use of the river alert model	Will be submitted with the Final Report
Other initiatives in Gudenåen's catchment in local CCA plans	Will be submitted with the Final Report
Mapping of land use	Integrated in the holistic plan
Developing a shared vision for handling River Gudenås water	Submitted in the Annex C12.7

Stakeholder analyses	C12.9
Identify and report challenges in cross-municipal co-operation	Will be submitted with the Final Report
Develop a financing models for compensatory actions	Will be submitted with the Final Report
Prepare key parts of the project to be incorporated into climate adaptation plans	Will be submitted with the Final Report
Reporting the project	Will be submitted with the Final Report

Evaluation:
Partners in the project have developed and strengthened their collaboration across organizations and borders. A deep understanding of the complexity of the water challenges along the river Gudenå is developed and understanding is continuously developed. We are still working in making the model more robust and we expect to publish it by March 2021. The cross border work with stakeholders has been an incredibly rewarding process and we expect a lot of this work when refined, including value mapping along the river.
The project and the extra attention in the River Gudenå area has initiated a very large partnership project by the seven mayors. The Master plan project will look further into conditions along the River Gudenå. The project has also resulted in a Ph.D. students have started researching in the area especially around stakeholder involvement which gives many new stakeholders angles on the complex issues.
Media of various kinds has mentioned the project and its partners many, many times. Here just a single reference to an article, attached as C12.9.

The online workshop with stakeholder involvement (Online due to the Corona situation).

Action modifications:
A 2D model has been developed instead of a 3D model due to lack of groundwater data for such a large catchment area.

After Life:
Will be more relevant to report when we reach the end of the project and have gained further experience. A lot of experience is being developed at the moment.

Target and goals for Phase 3:
The scenario model and the river alert model will be finished and we will continue the process to ensure ease of use of the model. We will be working with identification of the challenges in cross-municipal co-operation together with a PhD-student and there will be developed a financing models for compensatory actions and key parts of the project will contribute to the climate adaptation plans and other initiatives along the river Gudenå. A lot of this work will be carried out during the partner project 'The Masterplan for the River Gudenå' that will benefit and support the work of C12.

Action	*Quantifiable milestones:*	*Date by end of*
C12.1	Phase 3: Measures in the municipal climate adaptation plans implemented	31/12/2022
C12.2	Phase 3: Measures in the municipal climate adaptation plans implemented into the project Cross-municipal political agreement on the selection of projects	31/12/2022 31/12/2022

Action	*Deliverables:*	*Date by end of*
C12.1	Phase 3: Ensure ease of use of the river alert model Other initiatives in Gudenåen's catchment in local CCA plans	31/12/2021
C12.2	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	31/12/2021

Action C13: **The River Storå**

Beneficiary responsible for implementation: *Herning Municipality.*

Foreseen start date: 01/01/2017

Actual start date: 01/01/2017

Foreseen end date: 31/12/2022

Actual (or anticipated) end date: 31/12/2022

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 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.

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.

Achieved results:
Herning Municipality wanted to shed light on the possibilities of retaining surface water in the catchment area to resp. Hodsager Lilleå and Lillekjær Bæk. For both watercourses, it was desired to describe a project in which the water level is raised by establishing a number of smaller spawning banks in the watercourse. The main purpose of retaining surface water in the meadows is to help reduce the floods down in Holstebro City, which is regularly challenged by Storå running over its banks. As a side benefit, the project should also contribute to improving the water quality in the two watercourses and in the entire Storå system, where a number of ochers occur today. We have received a report from Envidan which showed that it is not possible to retain water very much by means of physical changes in the watercourses.

We asked of a new report with simple calculations of possible stowage of watercourse water in Hodsager Lilleå and Lillekær Bæk. It is possible to make an insertion of a metal plate with a hole which will result in a delay of the water. The drainage conditions in the river valleys are described using impact maps, where the distance from the terrain to the upper groundwater table are presented on maps using drainage classes with 25 cm equidistance. The up-storage potential in the two project areas are also estimated.

Holstebro Municipality contributes with knowledge sharing based on knowledge obtained from monitoring actions connected to Holstebro Municipality's own climate adaptation project (complementary project).

Prolonged and extensive natural floods of natural areas in connection with an event on February 2020 did provide the opportunity to investigate and concretize a factual incident against theoretical "worst case scenarios". The results have been presented at a theme meeting and will be followed up by a discussion about perspectives and uncertainties. The actual, potential phosphorus load of the areas is estimated to be more than 10 times lower overall than the theoretical calculations in the environmental report, which were based on sea sediments. Also for nitrogen applies that the total potential load is significantly lower than calculated in the environmental report.

Status of deliverables 31/12/2020:

Main deliverables:

Report on designation of test areas and mapping of drainage factors	Submitted in the Annex C13.1
Description of solutions for testing	Submitted with Interim report No1 – here attached as C13.2
Monitoring reports	Will be submitted with the Final Report

Other deliverables:

Workshop material from meetings with stakeholders;	Submitted in the Annex C13.3
Programme for a Study Trip to the UK – Rivers Trust – together with landowners and other stakeholders.	Submitted in the Annex C13.4
List of the activities used to transfer knowledge and present the project's progress and results	Submitted with Interim report No1 – here attached as C13.5
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".	Will be submitted with the Final Report
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).	Submitted with Interim report No1 – here attached as C13.6
Report on designation of test areas and mapping of drainage factors;	Submitted in the Annex C13.7
Registration of cultivation/area use	Submitted in the Annex C13.1
Description of solutions for testing	Will be submitted with the Final Report
Report on challenges between climate adaptation projects and nature conservation	Submitted in the Annex C13.8
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?".	Will be submitted with the Final Report
Report on monitoring of the transfer of knowledge of/presentation of possible solutions and results	Will be submitted with the Final Report
Report on monitoring of the effect of the solutions on water retention, yields, biodiversity, leaching of nutrients.	Will be submitted with the Final Report
Transfer of knowledge/presentation in professional journals and at conferences, such as "Natur og Miljø" (Nature and Environment	Will be submitted with the Final Report

magazine) and Plantekongres (biggest conference on plant production, planning, the environment, etc., in the Nordic Region).	
Report on designation of test areas and mapping of drainage factors;	Submitted in the Annex C13.9
Registration of cultivation/area use	Will be submitted with the Final Report
Description of solutions for testing	Will be submitted with the Final Report
Report on challenges between climate adaptation projects and nature conservation	Submitted in the Annex C13.10
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?".	Submitted in the Annex C13.11
Report on monitoring of the transfer of knowledge of/presentation of possible solutions and results	Will be submitted with the Final Report
Report on monitoring of the effect of the solutions on water retention, yields, biodiversity, leaching of nutrients.	Will be submitted with the Final Report

Some of the English summaries are still missing. They will come.

Evaluation:
There are many challenges in DK when you want to flood nature areas to reduce the risk of flooding of cities. It is both about nature being harmed and in our current pilot areas there may be habitat for internationally protected birch mice. We are working hard to find solutions to make it possible to create the two physical projects and to create a generally understanding of the challenges throughout the river valley at both authorities, landowners and organizations. The start of constructions has been delayed due to delayed design in detail and postponed to 2021.

Due to the pandemic, it has been difficult to collaborate and do cross-cutting actions and other actions in C2C CC. We still have a job ahead of us to benefit from the complementary projects.

Action modifications:
We have no requests for changes in relation to activities in the action compared to what is written in the current application. The start of constructions is postponed to 2021.
We still hope it could be possible to exchange experiences with other EU countries.

After Life:
We hope to be able to present some ways to collaborate with the landowners to solve concrete flood problems in the future.

Target and goals for Phase 3:
The mail target for Phase 3 is to be able to present the two pilot projects as physical projects to all interested parties including some preliminary results of these. We also hope to be able to present some concrete examples of how to reach agreement on the nature of compensation.

Action	*Quantifiable milestones:*	*Date by end of*
C13.3	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.	 31/12/2022 31/12/2022
C13.2	Phase 3: Measures in the municipal climate adaptation plans implemented into the project Cross-municipal political agreement on the selection of projects	 31/12/2022 31/12/2022

Action	*Deliverables:*	*Date by end of*
C13.3	Phase 3: Report on challenges between climate adaptation projects and nature conservation	31/12/2022

	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.	31/12/2022 31/12/2022

Action C14: **Flood-proofing Horsens Town Centre**

Beneficiary responsible for implementation: *Horsens Municipality.*

Foreseen start date: 01/01/2017	***Actual start date:*** 01/02/2017
Foreseen end date: 31/12/2022	***Actual (or anticipated) end date:*** 31/12/2022

Expected results: The action will result in basis for decision making on which outlined solutions will be further developed and clarified. And 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.

Achieved results:
C14.1: Status report for pilot project was finished in phase 1. The wastewater company model added C14 relevant adjustments. **C14.1 is completed**.
C14.2: Provision of knowledge, data collection and model setup. Model set-up to calculate scenarios for the total flooding from the sea, watercourses and sewage systems and reports for scenarios for the present and a future climate. Recommendations for water retention capacity and dimensions of barriers, pumps and sluices. Dimensioning of technical facilities is optimized with consideration for improving nature and the environment. Steering group committee decided to proceed with water retention in the Bygholm Lake, barriers, pumps and sluices at Horsens Fjord. **C14.2 is completed.**
C14.3: Tender for a cloudburst masterplan including identifying locations for water retention in urban areas and identifying cost efficient service level for wastewater management. Technical analysis and climate scenarios are commenced and carried out in corporation with the utility company and consultant.
Agreement in draft of collaboration between Horsens Municipality and the wastewater company (SAMN Forsyning) in relation to co-financing sluices and pumps etc. Preliminary knowledge sharing, constructive discussions and meetings with partner Randers Municipality and Randers wastewater company.

Figure 1: Horsens City Council climate adaptation theme session, 25th of August 2020

C14.4: Lecture given at primary school (1). Lecture given at high school (1). Lectures and excursions given at VIA University College (2). Planning and Environment Committee has been to the Netherlands to see climate adaptation measures in operation. In connection with the National Climate adaption Conference in Horsens, the Municipality of Horsens held an excursion on the C14 project. Lecture given at Folkeuniversitetet/Open University and the Association for Better Urban Development. Presentation of climate adaptation approach and measures given to Horsens City Council at a theme session. Presentation given to the wastewater company board (SAMN Forsyning). Presentation of climate adaptation and added value given to the Green Committee (GRO).
C14.5: Construction programme and cost estimations for water retention at Bygholm Lake completed. Conceptual design for barriers, pumps and sluices at Horsens Fjord is commenced.

Status of deliverables 31/12/2020:

Main deliverables:

A model that can calculate scenarios for the total flooding from the sea, watercourses and sewage systems	Submitted in the Annex C14.1 NOTE: Confidential material
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	Submitted in the Annex C14.2 Submitted in the Annex C14.3
Design material of dikes, sluices and pumps that inspire to provide recreational urban spaces	Will be submitted with the Final Report

Other deliverables:

Status report for pilot project	Submitted in the Annex C14.4 Submitted in the Annex C14.5 NOTE: Confidential material Submitted in the Annex C14.6 – Annexes in MidtRum
Report on model for scenarios for the total flooding	Submitted in the Annex C14.5 NOTE: Confidential material Submitted in the Annex C14.6 – Annexes in MidtRum
Status report for pilot project	Submitted in the Annex C14.4

Report on model for scenarios for the total flooding	Submitted in the Annex C14.7 Ringvej Syd Will be submitted with the Final Report
Planning scenarios with technical background report of model methodology and results is delivered	Submitted in the Annex C14.7
Background report with designated local sites and needed solutions	Submitted in the Annex C14.7 Partly in future deliverable - Skybrudsplan (medio 2021)
Technical report on calculated filling times for reservoirs and dimensioning of pumps and sluices	Submitted in the Annex C14.7
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.	Submitted in the Annex C14.3
Masterplan for long term climate adaptation according to cloud bursts, stream flow and flooding from the fjord	Will be submitted with the Final Report
A construction program for technical facilities	Will be submitted with the Final Report
Presentation and visualization	Will be submitted with the Final Report
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.	C14.8 Ringvej Syd Will be submitted with the Final Report
A decision base to determine whether climate adaptation is needed and if necessary, decide what action should be taken.	Will be submitted with the Final Report

Evaluation:
Close cooperation with the wastewater company (SAMN Utility) is necessary to ensure ownership and that all aspects are accounted. Negotiation of legal agreements between Wastewater Company and the municipality facilitated by a mediator improves the process. An ongoing dialog and corporation between the wastewater company is established. A steering committee according to climate adaptation and with participation of CEOs from the wastewater company and the technical administration is also established.

It is important that politicians and administrative leaders comprehends and early in the process take ownership on the big picture of climate adaptation and city development. Multiple challenges demands holistic solutions that comprehends not only consideration of climate adaptation (flooding from sea, rain and watercourses) but also urban infrastructure, urban living and urban space. Politicians and company board are involved during theme meetings about climate adaption. Funds are released solely by political approval.

Steering group committee has an important role as drivers according to resources and the political agenda.

It's an economic win to integrate climate adaptation in urban development. However, investor schedules and political ambitions on progress do not always make optimal working environment for added recreational value and multifunctional solutions.
Politicians wish to secure financial investment in the low part of the city through barriers. Overall, the city council is not planning to refrain urban areas and values.
CBA analysis indicates that an increased service level for storm water management is cost-efficient in the majority of the urban areas.
Knowledge sharing in between partners and excursions abroad have been of great value for inspiration and motivation.

Action modifications:
The cloudburst masterplan including identifying locations for water retention in urban areas and identifying cost efficient service level for storm water management was expected complete in phase 1. Due to changes in national law (amended 1st of January 2021) regarding division of responsibilities and financing for climate adaptation the completion has been postponed to phase 3. The new legislation establish methods and principles for analyzing risks and measures for storm water. The city council may decide service levels according to storm water management.

After Life:
The C14 results are used as a basis for decisions in the Horsens plan and environmental committees as well as in the City Council. The results will directly be incorporated into infrastructure plans and climatic adaptation needs, and are mainly expected to be realized in connection with infrastructure projects and city developments. Construction for increased water retention at Bygholm Lake and new sluice is commenced.

Target and goals 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.

C14.4	Phase 3: Final approval of the described solutions done.	30/06/2021
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. • 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.	30/06/2021 31/12/2021 30/06/2021 31/12/2021 30/06/2022 30/06/2022

Action	*Deliverables:*	*Date by end of*
C14.6	Phase 3: A decision base to determine whether climate adaptation is needed and if necessary, decide what action should be taken.	30/6/2022

Action C15: **CCA in Hedensted and Tørring**

Beneficiary responsible for implementation: *Hedensted Municipality.*

Foreseen start date: 01/01/2017	***Actual start date:*** 01/01/2017
Foreseen end date: 31/12/2022	***Actual (or anticipated) end date:*** 31/12/2022

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 and 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.

Achieved results:
C15.1: As was written in the reporting of phase 1, it has proved not to be useful to work with an added value barometer. But in our work with local citizens, our purchase of the 3Di model for Hedensted and Tørring, respectively, has proved far more useful. Citizens can see where water accumulates however where nothing is written. We can then interact with the citizens to try whether their proposal for a possible solution provides something useful or not, almost immediately. We have used this method both in smaller residential areas and in larger agricultural areas (Olinemindevejs and Hedensted / Gesager Å). We have also used the method (3Di) when planning a new neighbourhood in Tørring (The new neighbourhood), see figure 1 below.

C15.2: In an interdisciplinary context, we have had a good dialogue with our partners in C2C (Horsens municipality) about the opportunities / needs for HEDKOM to retain water in our common watercourse Gesager Å. This dialogue will continue in phase 3.

C15.3: The idea was that we first worked in the Hedensted area and then eventually took our experiences to Tørring and started there. The local need for development has shown that this timing was not workable, so we have had to start earlier in Tørring. Among other things, this has been at various workshops with local citizens, again using 3Di (which in turn proved useful in visualizing water on the ground for citizens). We have also assisted school children in their work to come up with ideas for solutions in Tørring and their ideas were shown at a workshop together with 3Di, see figure 1 below.

3Di is shown/used on a workshop together with suggestions from school children, Nov. 2019 Tørring

A plan has been prepared for the new area in Tørring, with assistance / knowledge using the 3Di model and our method of involving citizens (https://www.hedensted.dk/politik/planer-og-politikker/byudvikling/toerring-byudvikling)

The 3Di model has also been used in our collaboration with the Danish Road Directorate (a proposal for relocation of Sole Bæk).

Status of deliverables 31/12/2020:

Main deliverables:

An added value catalog for Hedensted Town a citizen involvement tool	Submitted with Interim report No1. Attached here as annex C15.1
The stakeholders' (Citizens) local climate proofing plan(s) for Hedensted and Tørring	For Tørring submitted in the Annex C15.2 For Hedensted will be submitted with the Final Report
1 leaflet with rekommandations	Submitted in the Annex C15.3
Technical report on drainage systems and scenario results for one area	Submitted in the Annex C15.4

Other deliverables:

Technical background reports (bullet 1 and 2)	Submitted with Interim report No1. Attached here as annex C15.5 C15.10
A catalogue of examples of added values with CCA (bullet 3)	Submitted with Interim report No1. Attached here as annex C15.6
Stakeholder map (bullet 4)	Will be submitted with the Final Report
Report from workshop on assets, solution options and added value (bullet 5)	Submitted in the Annexes C15.7 and C15.8
An added value catalog for Hedensted, including a method description (bullet 5)	Submitted with Interim report No1. Attached here as annex C15.1
The stakeholders' (Citizens) local climate proofing plan(s) for Hedensted Town (bullet 6)	Submitted in the Annex C15.9
Report on drainage systems (bullet 1)	Submitted with Interim report No1. Attached here as annex C15.4
Report from workshop on combined urban / open country solutions to common climate challenges (bullet 4)	Will be submitted with the Final Report
1 leaflet with recommendations (bullet 6)	Submitted in the Annexes C15.11 and C15.12
Recommendations for process, instruments and cooperation on combined urban / open country solutions to common climate challenges (bullet 5)	Will be submitted with the Final Report
One project is ready for execution by the end of the action. (bullet 7)	Will be submitted with the Final Report

A process report/description on how climate proofing and the setting of goals has occurred through local organizing	Will be submitted with the Final Report
An added value catalog for Tørring, including a method description	3Di model Tørring new part of the city
Stakeholder map	Will be submitted with the Final Report
The stakeholders' (Citizens) local climate proofing plan(s) for Tørring.	3Di model Tørring new part of the city
1-3 project proposals	Will be submitted with the Final Report

Many of the English summaries are still missing. They will come.

Evaluation:
According C15.1.1 the project area is defined in cooperation with the stakeholder group. This is still an important starting point, but we have had to revise (and are still working on) the plan / idea of adding value barometer.

The mapping of values and risks (especially 3Di) has supported the discussions in the actor group and contributed to the designation of special focus areas within the project area. The stakeholder survey shows e.g. mutual interests for different landowners' associations.

Working with added value at a basic level has proved to be inappropriate, as mentioned above. The work with added value is still under considerations/evaluation. It will be conducted further on in Phase 3.

The stakeholder analysis is absolutely necessary when planning the further work.

Related to C15.2 we can tell that we have considerations for redefining the sub-project in to "sustainable water management" and we still are working on this subject.

Action modifications:
As mentioned in the transition from phase 1 to phase 2, we have moved from an overall theoretical approach to working with citizens to a more concrete and site-specific method, especially with the help of 3Di. It has proved useful in several contexts. We will still work on whether a value-added barometer can be built up or we need to work further with the site specific.

Interaction with citizens in particular has been challenged by Corona, and it is not unlikely that we will have to request a minor project extension in order to complete that part of the project.

After Life:
It has on several occasions proved necessary to be able to show citizens what happens to their home / area if nothing is done in relation to climate adaptation. Next, it has also proved necessary to be able to display local data for rain, flood and more. This experience will be worked on further.

Secondly, it has also been shown that the fact that you can visually show what is happening in an area (like a kind of film, youtube) in the form of 3Di at a given rain event has a great effect in the work with local citizens and that you can quickly show what a given change also means is important.

This has so far led to the conclusion that we must continue to work with our 3Di model and presumably also expand / update it in the future.

Target and goals for Phase 3:

In phase 3, we will continue to focus on our close collaboration with the citizens and how we can bring their ideas forward and into play in a way that is useful to them, make it relevant for the citizens.
The project with too much water in the field will be continued in phase 3 and here we will have extra focus on whether there is too much water in the field and / or too little water for the crops. Both issues are important to the individual farmer. In phase 3, we will seek to resume cooperation with SEGES and partners in C2C. The new scheme MUFJO (Multifunctional land consolidation) may be used here (here we use the methods with very early citizen / landowner involvement and the experiences we have made in C.8 especially about this). At present, there are no specific plans in the C15 area to work with MUFJO, but it cannot be denied to apply. In the C8 area we have applied for money for MUFJO and received a rejection, but we are looking for other funding either via private funds and / or EU life, Bioscape (concept note accepted and final application will be submitted in February 2021) We continue the dialog with partners in C2C and especially Horsens Kommune in our common interest Gesager Å.

In Hedkom, we have placed great emphasis on the direct contact / dialogue with citizens about possible solutions, emphasized solutions that come from the bottom up, this work has been made more difficult by Covid19 restrictions especially in 2020. So far the restrictions seem to be extended in 2021 and this is of great importance for our ability to work with our citizen method and will most likely have remorse for the end date.

Action	*Quantifiable milestones:*	*Date by end of*
C15.1	Phase 3: At least one project is prepared At least one project is ready for execution Stakeholder integration done	 31/12/2021 31/12/2022 31/12/2021
C15.2	Phase 3: Report for one area on elevated land done Leaflet about elevated land done.	 31/07/2021 31/07/2022
C15.3	Phase 3: Local organization finalized Local plans finalized 1–3 project proposals drafted At least one project is ready for execution Review of the project finalized	 31/12/2021 31/12/2021 31/12/2021 31/12/2021 31/12/2022

Action	*Deliverables:*	*Date by end of*
C15.1	Phase 3: The stakeholders' (Citizens) local climate proofing plan(s) for Hedensted town (bullet 6)	31/12/2021
C15.2	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)	31/12/2021
C15.3	Phase 3: The stakeholders' (Citizens) local climate proofing plan(s) for Tørring. 1-3projectproposals	31/12/2021

Action C16: **Randers Climate Ribbon**

Beneficiary responsible for implementation: *Randers Municipality.*

Foreseen start date: 01/01/2017	***Actual start date:*** 01/01/2017
Foreseen end date: 31/12/2022	***Actual (or anticipated) end date:*** 31/12/2022

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.

Achieved results:
Dissemination of results (16.1, 16.2 and 16.3)
In phase 2, the results from phase 1 has been widely communicated and publicly debated. Citizens, investors, politicians and other stakeholders have visited the showroom (Havnegadeboksen). The showroom contains visualizations of the principal solutions created in phase 1 from the two teams, such as physical models, a movie and a web based application. The display was updated regularly. In 2019 and 2020, the dissemination of C2CCC C16-results has been closely related to the communications efforts for the overlying urban development project "The City to the Water", where the main strategic plan is finalised and published. A new glass container with a model of the City to the Water was installed next to the showroom, thus giving local people yet another reason to visit the showroom. This generated a lot of public attention. The Climate Ribbon thus benefited from the investments made in the complementary project, as this maintained a high degree of public awareness. Official public events were cancelled due to the pandemic, but a glass container and outdoor displays made informal, outdoor visits possible.

Finally, activities such as engaging local students have been carried out in 2019, in which the Climate Ribbon was part of a project week based on the UN's sustainable development goals.

Implementation of the Climate Ribbon (16.4)

In phase 2, we have successfully developed and adapted the innovative ideas of the Climate Ribbon for implementation.

1) The Climate Ribbon was integrated into the main development plan for The City to The Water, thus giving the first comprehensive vision of the CCA measures integrated in the new urban areas. All sub areas will be further developed in the coming process.
2) The overlying development plan contains a budget for the entire urban development project. Integrated into this is an initial budget for the Climate Ribbon. This will be further developed in phase 3.
3) Based on the development plan (as mentioned above), we have developed a roadmap for a staged implementation of the climate ribbon. The roadmap shows how relatively small, additional investments will make it possible to achieve an initial protection level at 2,2 m, even before the Climate Ribbon is fully realised.
4) The roadmap for staged implementation has been coordinated with the DAPP analysis made in coordination with C11 Randers Fjord and the complementary project "Byerne og

det stigende havvand". Thus ensuring that the strategy for CCA implementation in the city centre is aligned with the strategy for the broader area in risk of flooding.

5) Randers Municipality has then initiated first stage of the Climate Ribbon, which consists of a dike on Justesen's Lawn. First we worked on an architecturally focused, overlying concept. Now, alongside with this, the main construction project has been initiated in 2020. This will continue into phase 3.

Status of deliverables 31/12/2020:

Main deliverables:

Report on the identification of the Climate Ribbon's exact size as well as geographical, biological circumstances (e.g. groundwater layers, soil, contamination etc)	Submitted with Interim report No1. Attached here as annex 16.1
Publication of program for an international professional competition on the Climate Ribbon	Submitted with Interim report No1. Attached here as annex 16.2
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	Will be submitted with the Final Report

Other deliverables:

Report on best practice from other EU projects, similar international and national projects and other knowledge (01/06/2016)	Submitted with Interim report No1. Attached here as annex C16.3
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)	Submitted with Interim report No1. Attached here as annex 16.4
Brief evaluation from study trip published	Will be submitted with the Final Report
Minutes of meetings accessible on MidtRum	Submitted in the Annexes C16.5 and C16.6
Summary of meeting on implementation of CCA measures	Submitted in the Annexes C16.7 and C16.8
Publication of program for an international professional competition on the Climate Ribbon (01/01/2018)	Submitted with Interim report No1. Attached here as annex C16.9
Publication of summary report from Climate Ribbon Competition ("Klimabåndskonkurrencen") (01/01 2019)	Submitted with Interim report No1. Attached here as annex C16.9
The project website is online and updated with relevant materials available	Website: https://www.randers.dk/udvikling-by-og-land/byudvikling/flodbyen-randers/klimabaandet-klimatilpasning-af-randers-by/
Dissemination of results: communication and awareness raising	See list below
- Workshop 1	Submitted with Interim report No1. Attached here as annex C16.10
- Workshop 2	Submitted in the Annex C16.11
- Workshop 3	Submitted in the Annex C16.12
Report on best practice from showroom/workroom of events, seminars as well as methods for development of digital forms of communication (01/12/2019)	Submitted in the Annex C16.13
Evaluation of the collaboration with schools and college students	See list below:

- Project Week, 40, 2018	• Submitted with Interim report No1. Attached here as annex C16.14
- Project Week 40, 2017	• Submitted with Interim report No1. Attached here as annex C16.15
- Project Weeks 41 and 43, 2018	• Submitted with Interim report No1. Attached here as annex C16.16
Final summary of best practices in CCA communications with citizens with a particular emphasis on digital methods and young people	Submitted with Interim report No1. Attached here as annex C16.17
Maintenance of the showroom with at least one update on the content	Submitted with Interim report No1. Attached here as annex C16.16
At least two events in the box plus informal activity	Links to articles: https://amtsavisen.dk/artikel/kom-og-se-model-af-flodby-flyttet-ind-i-glashus-p%C3%A5-dronningekajen Submitted in the Annex C16.18
A masterplan for The City to the Water with CCA integrated into urban development	Submitted in the Annex C16.19
Memo on storm surge protection levels with a particular focus on flexibility in regard to the uncertainties in CC until 2100 and beyond.	Will be submitted with the Final Report
Brief report on available methods for financing CCA and the expected model for financing the Climate Ribbon and related CCA measures	Will be submitted with the Final Report
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.	Submitted in the Annex C16.20
Minutes of meetings accessible on MidtRum	Submitted in the Annex C16.21
An initial budget for the Climate Ribbon full and light versions	Will be submitted with the Final Report
A strategy for staged development on the Climate Ribbon	Submitted in the Annex C16.20
An evaluation of C2CCC C16 The Climate Ribbon with strategy for the continuous development of CCA within the city of Randers	Submitted in the Annex C16.21
Maturation of the first stages of the Climate ribbon	Will be submitted with the Final Report

Evaluation:
Activities related to public awareness have had a lot of focus in phase 1 and 2. As centre point for these activities, the showroom has worked really well as a place for formal and informal talks on climate adaptation and a showroom for communicating around the climate ribbon and the city to the water. Public awareness in Randers now shifts to the general urban development project and related issues such as traffic investments. Simultaneously, activities in the C16 project shifts to more technical and practical aspects related to the actual implementation of CCA measures. We find that the timing of this shift is ideal.

In phase 2, we initiated a complementary project supported by Realdania (Byerne og det stigende havvand). This, amongst other things, have made it possible to develop the technical and financial aspects of the Climate Ribbon further in phase 2 than expected. This work now allows us to start preparing the actual construction of the first stage. The work will further continue in phase 3.

Action modifications:
The strategy for staged development on the Climate Ribbon planned in phase 3 has been initiated in phase 2. The studies related to this has been further strengthened as part of the complementary project supported by Realdania. An analysis of different financial models for implementation urban CCA in Randers has been initiated. The work will continue in phase 3.
A study trip was initially planned as part of the Climate Ribbon. The trip has been cancelled as the C2C CC partnership already hosted 2 study trips. Funds have been transferred to further analyses instead.

After Life:
The implementation of the Climate Ribbon CCA measures will continue throughout the next decades in Randers City, financed as part of the new urban development where new building lots generate new funds (but only if CCA measures are in place, as this is a requirement for the development – hence the investments are closely interlinked, each dependent on the other).

The principles of the Climate Ribbon will work as inspiration when Randers Municipality initiate other urban development projects in flood prone areas. Both the financial principles, the toolbox with design ideas and the work methods will be useful. In new projects we will, however, also integrate other experiences from the C2CCC partners and beyond, as much knowledge has been generated since the start of the Climate Ribbon project.

Target and goals for Phase 3:
In phase 3 the focus will be twofold:
- Further development of CCA measures with a focus on issues related to implementation: financial models, implementation strategy, staged development and an improved contingency to improve resilience until the CCA measures are fully implemented.
- The continued realisation of stage 1, Justesens Plæne, where preparations of the actual dike construction will be initiated.

Action	*Quantifiable milestones:*	*Date by end of*
C16.3	Phase 3: 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	Phase 3: 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	 31/12 2022 31/09 2020 31/12 2022

Action	*Deliverables:*	*Date by end of*
C16.1	Phase 3: Summary of meeting on implementation of CCA measures Minutes of meetings accessible on MidtRum	 31/12 2019
C16.2	Phase 3: Dissemination of results: communication and awareness raising Minutes of meetings accessible on MidtRum	 31/12 2022 31/12 2022
C16.3	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	 31/12 2022 31/12 2022 31/12 2022

C16.4	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	 31/12 2022 31/09 2020 31/12 2022 31/12 2022

Action C17: **Thyborøn City and Harbour**

Beneficiary responsible for implementation: *Lemvig Municipality.*

Foreseen start date: 01/01/2017	***Actual start date:*** 01/01/2017
Foreseen end date: 31/12/2022	***Actual (or anticipated) end date:*** 31/12/2022

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 an 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.

Achieved results:
C17.1 - phase 1: CDR has collected a large number of historical records containing knowledge about the contamination on Harboøre Tange. The huge material has been made available for other stakeholders through an on-line information base, which ensure better availability. An overview for each site are made in historical survey (two deliverables). The knowledge obtained will be a foundation for future work at the sites.

In phase 2: A hydrogeological model for simulating groundwater flow at the contaminated sites at Harboøre Tange have been used the show the significance of climate change. The scenario of FN's RCP 8.5 has been used to evaluate the groundwater flow and the threat from the contamination to the surrounding environment throughout the next 80 years. The remediation strategy at the sites is to pump and treat the contamination. The modelling of the climate change showed that the remedy generally appears to be very robust to the modeled climate changes. An increase in precipitation will result in a greater risk of spreading the pollution. Although an increase in the water level in the surrounding surface water of about one meter does not seem to present problems with regard to the spread of the pollution, such will, however, with high probability cause significant problems with floods on the factory's present production areas. The preconditions, the modelling and the result is presented in a report (deliverable). All results were explained and shared with the factory so it can be included in their future plans to secure the production areas against flooding.

All the activities regarding the contaminated sites has been terminated through phase 2.

C17.1 - phase 2: A dynamic model has been built showing the water challenges in Thyborøn consisting of data in relation to the pipe network, rainwater, groundwater, seawater as well as the way the land is subsiding and soil conditions. The model has also been fine-tuned during the period.

The versatile 3D modelling system, the 3Di model from Dutch consultant Nelen and Schuurman https://nelen-schuurmans.nl/en/home/, has been purchased and a rough factory calibration has proved a fair reproduction during torrential rain conditions and flooding of the streets in Thyborøn.

LV has completed a partial inspection of the concrete drainage system in Thyborøn. It its estimated that the system has another 25 years of functional lifetime. In the short term Thyborøn may pump its way out of subsidence, increased precipitation and an increasing sea level.

C17.3: Subsidence rates for the entire city of Thyborøn has been surveyed and prospective subsidence until 2070 has been forecasted by Geopartner. See C17 Thyborøn By og Havn, Klima, Kloak og Sætninger, June 2020. A network of 6 reflector stations are permanently monitoring the subsidence of Thyborøn, see DANVA, Satellitdata til Strategisk Ledningsnet Overvågning SASLO, June 2020. The forward-looking monitoring of the way the land is subsiding means that the maintenance of the underground pipes can be optimized and many maintenance costs can be reduced.

Lemvig Vand (LV) has maintained hourly ground water measurements from 10 stations within the city of Thyborøn. These data and precipitation data from LV's rain gauge in Thyborøn are available from LV's SCADA database, along with information on extracted water volumes from the drainage network and pumping stations.
LV has purchased access to the GEO Atlas Live database and the most recent geological model of the aquifer below Thyborøn and the entire Harboøre Tange, the so-called Vesterhav Nord model of April 2020.

C17.4 All activities in phase 3

Status of deliverables 31/12/2020:

Main deliverables:

A detailed investigation program for monitoring groundwater levels, pollution and land subsidence in Thyborøn and Harboøre Tange	Submitted in the annexes C17.1a, C17.1b and C17.1c
A dynamic adaptation model describing the interaction between e.g. rainwater, groundwater, seawater, and pollution on the basis of a hydrogeological mode	Submitted in the annexes C17.1a and C17.1c
A number of conceptual designs developed, that can solve the climate challenges in Thyborøn and Harboøre Tange	Will be submitted with the Final Report

Other deliverables:

A report on compilation of data on pollution.	Submitted in the annexes C17.3a and C17.3b
Reporting from citizens meeting 1 - *17 06 2017*	Submitted with Interim report No1. Here as annexes C17.4a, C17.4b, C17.4c and C17.4d
Reporting from citizens meeting 2; deadline 30/12 2018	Will be submitted with the Final Report
Reporting from last workshop	Will be submitted with the Final Report
Status report on development	Submitted in the Annex C17.5
A number of conceptual designs developed, that can solve the climate challenges in Thyborøn and Harboøre Tange; deadline: 30.06.2022	Will be submitted with the Final Report

Evaluation:
The 3Di model needs a profound calibration to become a reliable model for prediction the precise interaction of the natural aquifer and the drainage network and pumping station. However, the ground water information is already available at 10 stations, and the unison picture is "too high". The short term option in Thyborøn is to increase pumping, but pumping is not a sustainable long term option due to the high hydraulic conductivity of the aquifer. Thus, the C17 project is closely connected to the C9 Thyborøn Channel and the Western Limfjord project. It is crucial for the climate protection measures in relation to C17 Thyborøn City and Port whether there will be a contraction of the Thyborøn Channel or not. A significant part of the storm surge challenges in Thyborøn city will be solved if the Thyborøn Channel is contracted.

Action modifications:
Due to COVID-19 the tasks related to C17.2 have been postponed in regards to involvement of the citizens. It is expected to be able to catch up on these parts in phase III.
Reporting from citizens meeting 2 is postponed to phase 3 because the meeting is not yet held.

After Life:
The knowledge obtain through the historical survey has already been put into use as a foundation for a large investigation of the contamination on one of the sites (the factory's old production ground).
The hydrogeological model for simulating groundwater flow at the contaminated sites at Harboøre Tange will be used for further modelling in the future. The model will be shared free of charge for the factory at the site and other stakeholders. The factory has made plans to raise the dikes to secure the production against flooding and raising sea levels. One of the contaminated sites will be cleaned within at the next decade.

In collaboration with GeoPartner and Climatorium in Lemvig, work is being done to ensure that the tools and methods for monitoring the subsidence can be introduced generally in the maintenance of pipe networks worldwide, the DANVA SASLO project of June 2020.

The dynamic model of the water challenges in Thyborøn will subsequently also be used to continuously monitor developments and continuously shape the foundation for necessary climate adaptation measures. The model can also be extended to other areas in Lemvig Municipality.

Target and goals for Phase 3*:*
Tender and agreements in regards to advisory assistance for the involvement of citizens and stakeholders as well as preparation of various proposals for climate adaptation measures for Thyborøn City and Port. Opportunities and proposals for incorporating value-added solutions into climate adaptation measures must be available. Financing models – this includes the distribution of costs related to the project, which must be described.

Action	*Quantifiable milestones:*	*Date by end of*
C17.2	Phase 3: 2nd Meeting and workshop for citizens and stakeholders 3rd Meeting and workshop for citizens and stakeholders Meeting for decision-makers done	 30/06/2021 31/03/2022 30/09/2022
C17.4	Phase 3: 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	 31/03/2021 30/06/2022

Action	*Deliverables:*	*Date by end of*
C17.2	Phase 3: Reporting from last workshop	 30/11/2022
C17.4	Phase 3: A number of conceptual designs developed, that can solve the climate challenges in Thyborøn and Harboøre Tange	 30/06/2022

Action C18: **Citizen-driven CCA in Juelsminde**

Beneficiary responsible for implementation: *Hedensted Municipality.*

Foreseen start date: 01/01/2017

Actual start date: 01/01/2017

Foreseen end date: 31/12/2022

Actual (or anticipated) end date: 31/12/2022

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 resilience 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.

Achieved results:
C18.1 The hydrological data such as groundwater heads and salinity have successful been collected throughout phase 2. A proposed Short Scientific Mission (SSM) has been sent to the C2C-CC project. In the SSM machine learning (ML) will be used to evaluate if there can be found a relationship between the groundwater level and the sea level. If such a relationship can establish the ML can be used to predict future climate impacts.
A project application (complementary project) was sent to MUDP (title: Internet of Climate. However, the project did not receive funding.
C18.2 With the headline *Landowners decide* the Municipality of Hedensted the 29. of Jan 2019 invited 1150 landowners to an information meeting about CCA in Juelsminde. Among the app. 580 participants there was an overall support from the landowners to be in charge of how to secure Juelsminde to CCA the future.
A group of local landowners has from Feb 2019 to Sep 2019 on several meeting worked with the articles of association, the delamination and a plan for including the Søkjær pump association in

Juelsminde dike association.

In Sep 2019 the landowners were finished with the boundary, the articles of association and a plan for Søkjær. HEDM sent the work in public hearing and hosted two information meetings in Sep 2019. The 27th of Nov 2019, the city council approved the citizens' proposal the boundary and articles of Juelsminde dike association.
The city council approval was sent to over 3.500 landowners where was entitled to appeal, Result: 0 complains
The 31th of March 2020 was planned the founding meeting og Juelsminde Dike association should have taken place but as consequence of COVID19 it is postponed to fall 2021.

Status of deliverables 31/12/2020:

Main deliverables:

Hydrological model of the risk of rising groundwater (saltwater) after high tides + Recommendations	Postponed. Will be submitted with the Final Report
Booklet about rising groundwater in coastal areas	Will be submitted with the Final Report
Two articles for international periodicals, e.g. Journal of Hydrology	Will be submitted with the Final Report
Process description for the establishment of a new dike association	Submitted with Interim report No1 C18.1
Model for local organisation for climate change adaptation and development in Juelsminde	Submitted in the Annex C18.2

Other deliverables:

Technical reports on data collection and data processing	Will be submitted with the Final Report
Technical reports on data collection and data processing	Will be submitted with the Final Report
Hydrological model of the risk of rising groundwater (saltwater) after high tides	Will be submitted with the Final Report
Continued monitoring and verification of hydrological model for C18.1.	Will be submitted with the Final Report
Midway evaluation	Deleted. Will be submitted with the Final Report
Continued monitoring and verification of hydrological model for C18.1.	Will be submitted with the Final Report
Recommendations Booklet about rising groundwater in coastal areas	Will be submitted with the Final Report
Articles for international periodicals, e.g. Journal of Hydrology	Will be submitted with the Final Report
Conference material from presenting results	Will be submitted with the Final Report
Process description for the establishment of a new dike association.	Submitted with Interim report No1 C18.1
Dissemination of dike association and cost sharing model	Submitted in the Annex C18.3 (Articles of association (legal document))
Evaluation of local organisation for climate change adaptation and development in Juelsminde related to the three main challenges	Will be submitted with the Final Report
Evaluation of local organisation for climate change adaptation and development in Juelsminde related to the three main challenges	Will be submitted with the Final Report

Evaluation:
C18.1 The collection of data has been successful. However, the initial hydrological model conducted from the area showed that more data was needed in order to produce a good and realistic model and therefore we decided to continue with the data collection. With the SSM we are able to achieve more data that will make the hydrological model better and more precise as well as

set the foundation for using machine learning (ML) to evaluate if there can be found a relationship between the groundwater level and the sea level. Thus, the deliverables of C18.1 have been postponed to phase 3.

C18.2 the close cooperation with the local frontrunners/ local citizens has worked very well and had a huge significance for the process but also for the shared understanding and acceptance among landowners that CCA is an issue we all have to deal with together. We have practiced listening, watching, talking, seeing and accepting different wishes and opinions. The local frontrunners buzzword among the process has been *we work for a common solidarity solution*, which benefits the city, the society and the landowners.

The process in C18.2 to use citizen driven CCA has been presented at several conferences during phase 2. C18.2 has been described and mentioned in multiple newspapers and medias and used as example how to involve citizens in CCA to other municipalities, partners and Danish the coastal government agency.

Action modifications:
C18.1 Due to Covid-19 and in order to achieve a much hydrological data as possible the deliverables have been postponed to phase 3.

C18.2 Due to Covid-19 the founding meeting of Juelsminde Dike association and also the final evaluation of the local organization for CCA and development in Juelsminde related to three main challenges is postponed to 31.12 2021.

C18.2 has spent over budget in phase 2 regarding to increased need for external services from lawyers assistance to the article of Juelsminde association and external communication experts to facilitate citizen meetings, Hedensted municipality covers the over consumption. The total budget of the project will not be applied extended.

A midterm report was planned, but is not made. Now it does not make sense do make it, why the task is deleted

After Life:
C18.1 The SSM project as well as the expected results from C18.1 will be transferred to other coastal areas e.g. Lemvig.
C18.2 will have an afterlife within the HEDM due to really good experiences in involving citizens from the beginning in projects, HEDM have a complementary project - Cities and the raising sea level - Landowners decide. Where HEDM, citizens and business community including the local Marina is working on how to get from a strategic plan to a specific and concrete project where the turning point is, it must build on recommendations and learnings from ideas and visions in collaboration with dike association, citizens, landowners and HEDM.
An ongoing complementary project is to separate sewerage in a big cottage area in the middle of Juelsminde, this can affect the groundwater level in the area.

Target and goals for Phase 3*:*
C18.1 Finish the deliverables for C18.1

C18.2 Finish the evaluation of experiences with citizen driven CCA.
Approval of the Juelsminde dike association, including a board of directors who must continue to work on securring Juelsminde against the rising sea levels and high tide.

Action	*Quantifiable milestones:*	*Date by end of*
C18.1	Phase 3: The project is finished with model/tool for general use	31/12/2022

Action	*Deliverables:*	*Date by end of*
C18.1	Phase 3: Continued monitoring and verification of hydrological model for C18.1.	31/12/2022

	Recommendations Booklet about rising groundwater in coastal areas Articles for international periodicals, e.g. Journal of Hydrology Conference material from presenting results	
C18.2	Phase 3: Evaluation of local organisation for climate change adaptation and development in Juelsminde related to the three main challenges	31/12-2021

Action C19: **Sustainable Urban Drainage Systems**

Beneficiary responsible for implementation: *Samsø Municipality (SAK).*

Foreseen start date: 01/01/2017	***Actual start date:*** 01/01/2017
Foreseen end date: 31/12/2022	***Actual (or anticipated) end date:*** 31/12/2022

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.

Achieved results:
In January 2019, the licitation process was begun and the tender documents were send out to three parties. We received two bids for the hydraulic entity plan and chose the best one according to the outlined criteria.
On the 20th of May 2019, the municipality held a meeting introducing the hydraulic entity plan for Sørenden to the stakeholders of Tranebjerg Mose, Samsø Golf course and Besser Made. This concludes the preliminary investigations, initial stakeholder involvement and Technical background report for modelling.

In the autumn of 2019, the municipality has been working on stakeholder material for the area of Besser Made. This involves maps with drainage systems and suggestions for solutions to handle the water in the future.

The stakeholder involvement session for Besser Made took place on the 5th of December 2019 in the local cultural centre and was a big success. We received a lot of valuable information, which the local farmers had on drainage systems unknown to the municipality. Furthermore, the stakeholders were mostly supportive towards a future project in the area.
Before the holiday's tender, documents were send out on a project that addresses the issues of retaining and impoundment of the water.

At the municipality, we engaged in an interviewing process for an article in the environmental magazine "Vand og Jord". The article was issued in the February 2020 edition. Furthermore, we have had dialogs with the consultants from NIRAS, regarding the project in Besser Made.
The second quarter of 2020 has been influenced by the global pandemic situation with Corona virus. At the municipality, we have been working in isolation from our homes during March, April and May. The focus in this quarter has thus been things that were more critical, here among our own safety.

On the 9th of June 2020 though it was possible to meet with a small Group of people in Besser. Mainly represented were the owners of land in Besser Made and people from the municipality. The purpose was to discuss the willingness to either sell their land or sell some of the rights to the land.
The conceptual design for Besser Made has been finalized in a report from august 2020.

Status of deliverables 31/12/2020:

Main deliverables:

Documented stakeholder network methodology	Ongoing. Will be submitted with the Final Report
Report of conceptual designs for SUDS at Tranebjerg, Ballen and Samsø Golf Course and Besser Made	Submitted in the Annex C19.1
Report of conceptual designs for SUDS at Tranebjerg, Ballen and Samsø Golf Course and Besser Made	Will be submitted with the Final Report
Project video accessible at the C2C CC portal, at the Energy Academy's homepage (with LIFE logo) and at SAK homepage (with LIFE logo)	https://youtu.be/9MDLHL4EBOk
Hydraulic modelling incl. zero-alternative, coupled events and climate scenarios	Will be submitted with the Final Report

Other deliverables:

Technical background reports on site analyses and hydrologic modelling	Submitted with Interim report No1 C19.3
Report of conceptual design for the area around Samsø Golf Course and Besser Made.	Submitted in the Annex C19.4
Report of conceptual designs for SUDS at Tranebjerg	Delayed. Will be submitted with the Final Report
Technical background reports on site analyses and hydrologic modelling	Will be submitted with the Final Report
Stakeholder involvement material and stakeholder input	Will be submitted with the Final Report
Report of conceptual design for rainwater retention and coupled events at Ballen	Ongoing. Will be submitted with the Final Report
Tender documents	Submitted in the Annex C19.2
Documented press coverage in minimum 20 articles.	Ongoing. Will be submitted with the Final Report
Hydraulic modelling incl. zero-alternative, coupled events and climate scenarios will be initiated in the fall of 2020 and concluded within phase 3.	Will be submitted with the Final Report
Conceptual Designs will be finalized	Will be submitted with the Final Report

The English summaries are missing. Will be made in phase 3

Evaluation:

We have been testing a new flow device called Sorbisense. It gives a result based on the content of water dripping through the device within a period of approximately a month. Thereby you should get a more representative result than from a test in a cup that only represents that moment you collect your sample.

The project has been working together with another project on Besser Made. That project has been focusing on the possibilities for the nature restoration of the areas and is funded by the Danish foundation "The 15th of June Foundation".
At the moment, many things are on hold due to the global CORANA crisis. For this reason alone, we do not know what the future brings and when and how society will open again. Therefore, it is also hard to predict when it will be possible to meet with local societies to discuss possible solutions in different areas.

Action modifications:

- The first mentioned deliverable was postponed from phase 1 to two. And now to phase 3. Hasn't been worked enough with due to Conona.
- The report of conceptual designs for SUDS at Tranberg is delayed due to Corona. The corresponding report for Besser Made and Samsø Golf Course is attached as deliverable C19.1.

A big part of the milestone work package is finding the right solutions together with the local citizens. This process is not possible to participate in when the population are permitted to gather in society.
The above mentioned deliverables have been postponed to phase 3 due to a year of 2020 where it hasn't been possible to meet and interview people. Hopefully 2021 will be different. It is still our estimate that we will be able to complete the deliverables within the end of 2022.

After Life:
Coast to Coast Climate Challenge has become a unique network of people from around the whole region. From Samsø we definitely see an afterlife for this network, but it needs to be initiated in the right way. How to make this happen is being discussed amongst the project holders. C5 and Governance are amongst other subjects a key issue. The initiatives from C19 will live on through the municipal plan for Samsø when the project ends. Especially an updated plan for coastal protection and climate adaptation will have huge effect locally. Also the local solutions concerning coupled events and rainwater retention in Ballen and Tranebjerg will, if realized, have an effect on the local citizens.

Target and goals for Phase 3:
The process of preliminary investigations and initial stakeholder involvement, technical background report for modelling in Ballen will commence in phase 3.

Action	*Quantifiable milestones:*	*Date by end of*
C19	Phase 3: The process of preliminary investigations and initial stakeholder involvement, 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 will be completed.	01/04/2021 31/12/2021

Action	*Deliverables:*	*Date by end of*
C19	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 within the project ending. Conceptual Designs will be concluded. Whather 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.	 31/12/2022 31/12/2022 31/12/2022 31/12/2022

Action C20: AquaGlobe

Beneficiary responsible for implementation: *Skanderborg Utility A/S*

Foreseen start date: 01/01/2017 ***Actual start date:*** 01/01/2017

Foreseen end date: 31/12/2019 ***Actual (or anticipated) end date:*** 31/12/2019

Expected results:
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.

Achieved results:
All promised deliverables are delivered in phase 1.

Innovation and jobs:
We cannot estimate the number of new jobs due to AquaGlobe. We have been involved in creating new solutions to water challenges, both regarding drinking water and waste water, in some private companies, for example Kamstrup´s new acoustic smart meter (flowIQ® 2200) and Suez´s introduction to the Danish/Nordic market of a innovative settling clarifier (DensaDeg XRC). There has been no Innovation Camp held in 2019 and 2020, but a Climate Innovation Camp will be held in 2021 in collaboration with DNNK. It was unfortunately postponed in 2020 due to COVID-19.

Visits and primary/secondary school involvement:

We had more than 5.000 visitors in the first year of AquaGlobe (2018) and approximately 3.000 visitors in 2019. Main categories of events for visitors are three:

- Visits and network gatherings of the water sector
- International visits with the subjects: water, utility management and climate adaption
- Events for local utility consumers and citizens.

In collaboration with primary/secondary schools, we have had several visits and smaller projects, including three day/week courses on drinking/waste water issues with the local high school. In the winter of 2019/2020, we also had an interesting collaboration of three visits (1. drill/water work, 2. day care center, 3. waste water treatment plant) involving seven local day care centers.

Status of deliverables 31/12/2020:

Main deliverables:

Evaluation report of amount of visitors and business collaboration	Submitted with Interim report No1 C20.1

Other deliverables:

Partner agreements	Submitted with Interim report No1 C20.2
A concept for a Master Class	Submitted with Interim report No1 C20.3
Funding applikations	Submitted with Interim report No1 C20.4
Description of innovation camp concept	Submitted with Interim report No1 C20.5

Visitor concept description	Submitted with Interim report No1 C20.6
Water Academy concept description	Submitted with Interim report No1 C20.7
Water School concept description	Submitted with Interim report No1 C20.8
Online and offline teaching material	Submitted with Interim report No1 C20.9

All deliverables were delivered in phase 1, now with English summaries.

Evaluation:
The AquaGlobe, understood as a partnership with 15 stakeholder/partners, has continued beyond the C2C CC funding ending in 2018.

We are still working on pushing on other C2C CC projects to use AquaGlobe. The use of Aqua Globe by other C2C CC projects is so far still limited, but we hope, the Water Valley project with Climatorium and CDR will make a difference post-COVID-19.

Local municipality ownership is essential. AquaGlobe did not succeed in establishing this by the end of Phase 1. Following the change of the CEO of Skanderborg Utility in the beginning of 2020, the Aqua Globe approach to both AquaGlobe private partners and the municipality has been changed to a more bottom-up approach, emphasizing the core challenges of Skanderborg Utility in the elaboration of innovative projects.

The further development of the Water Visit, the Demonstration System and the Test & Prototyping concepts will follow the development of these more bottom-up projects.

Due to the change of CEO and more changes on top level management, and due to the COVID-19 situation, there has been a slowdown on AquaGlobe activities in 2020. We look forward to a situation of full onboarding of the company´s top level management group and an end to the pandemic.

Action and budget modifications:
In Grant Agreement, there are no activities planned for Phase 3

After Life:
All After LIFE activities are combined in the Water Valley created with Climatorium and CDR, focusing on climate adaption.

Target and goals for Phase 3:

Action	*Quantifiable milestones:*	*Date by end of*
C20	Phase 3: No eligible activities in Phase 2 and 3.	

Action	*Deliverables:*	*Date by end of*
C20	Phase 3: No eligible activities in Phase 2 and 3.	

Action C21: **Climatorium**

Beneficiary responsible for implementation: *Lemvig Vand A/S*

Foreseen start date: 01/01/2017

Actual start date: 01/01/2017

Foreseen end date: 31/12/2022

Actual (or anticipated) end date: 31/12/2022

Expected results:
The Climatorium expects to facilitate a minimum of 10 companies and organizations situated in the house.
The activities of the house and the company's businesses will create 50 new jobs.
All companies and organizations 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, and creates awareness about climate change.

Achieved results:
Stage 1 of the house was finished December 9th, 2020, and there are currently 4 companies with offices in the house and 7 private company members associated who all has access to the 20 fly-by workspaces in the house.

Due to Climatorium there are at the moment created 5 direct jobs, 10 jobs generated through projects in Climatorium and 10 government jobs, which have been moved to Climatorium in Lemvig due to Climatorium.

An exhibition has been made in Climatorium where the projects and the other C2C CC projects are disseminated. For the celebration of the commissioning, on 9th December 2020, an exhibition catalog was prepared, annex C21.7.
Projects worth more than 25 DKK million (3,3 mill EUR) are already underway with: 1. Corner reflector for receiving satellite data, 2. Geophysical filter for filter flushing and 3. Climate roads for cleaning polluted water on roads.
The projects from phase 1 have been completed and already now, the following research projects have been launched; Geophysics in Filters, Bachelor's project on optimization of water distribution networks, ground subsidence, PhD thesis "Coastal Floods - Assessment Climate Impacts to Provide for Long-Term Planning and Adaptation", internship collaboration with AAU Master's degree student in techno-anthropology, VUDP and SASLO projects on strategic satellite monitoring, collaboration with New Zealand on climate adaptation solutions.

Climatorium is set to become "Erhvervsfyrtårn"/commercial lighthouse central Jutland in 2021, but 2020 has been affected by restrictions due to corona, and have therefor not had visitors as to be expected. C21- December 2020 Climatorium won the renowned Danish prize as the building of the year. https://aaretsbyggeri.dk/vindere/#klimatorium

Award Construction of the year 2020 Climatorium

Awareness has also been made in events throughout the year such as:

- **The International Climate Summit** was held on 19th of August 2020: 1434 attendees on the live streaming on www.klimatorium.dk, as well as 50 guests and presenters present at the actual event. The event is an annual recurring event.

- **The member event**, which was for the Climatorium members only, was held on the 20th of August 2020: 50 people present at the actual event including presenters.

This member event will be held 4 times annually.

- **The Childrens Climate Meeting** was held on the 21st of August 2020: 1270 attendees through the online streaming channel on www.klimatorium.dk, furthermore 70 school children attended at the actual event. This event is an annual recurring event.
- **The celebration of the opening of the Climatorium building** was held on the 9th of December 2020: 1764 attendees online throughout the entire live streaming, 3177 online attendees in total during the day via www.klimatorium.dk, 50 attendees, guests and presenters, were present at the Climatorium building on the day.

All above events were held according to the COVID-19 restrictions, and therefore limited guests allowed at the actual location.

The organization Climatorium has 11 members, some of them are collaborating on Climatorium projects. Climatorium connects and facilitates events where some of them take place at the Climatorium building.

Status of deliverables 31/12/2020:

Main deliverables:

A concluding report with feedback from interviewees on their interest in the Climatorium and a list of potential companies having expressed interest as tenants	Submitted with Interim report No1 C21.1
A feasibility study of tourism documented in a report	Submitted with Interim report No1 C21.1

Other deliverables:

A list of potential companies and knowledge institutions.	Submitted with Interim report No1 C21.1
Design criteria for the purpose of the house documented in a report.	Submitted with Interim report No1 C21.2 - presentation of the result: C21.3
A zoning plan (digital and pdf.)	Submitted with Interim report No1 C21.4

All the deliverables is now with English summaries.

Evaluation:

The project is progressing according to schedule.
The exhibition has been established at the Climatorium building, as well as presentations of the C2C CC-projects. In this way Climatorium becomes the beacon for the other C2C CC projects and functions as a joint exhibition platform for the C2C CC projects. The building also offers conference facilities. See appendix C21.5
The website www.klimatorium.dk as well as social media like Facebook and Linkedin are important media for communication as well as generating awareness.

Action modifications:

Economic resources have been relocated from tasks under phase 2 as we have experienced, that several activities in phase 1 and phase 2 are needed to be performed concurrently to achieve progress in the concept development.
No further changes.

Climatorium-the brand new building

After Life:
The Climatorium is now physically established as a building in Lemvig. The building is close to the fjord, were you think, you are having your feet in the water. The building is the first stage of the build and houses offices, exhibition and conference facilities. Around the building there is a space where you can play with the environment and climate – especially Children.
See appendix C21.6
The Climatorium membership organization is also established. Here we work with the content. The content is to define a climate challenge on the Quadruple Helix model: The public (is having the problem) – The universities (are having new solutions) – The private companies (are making the solutions alive) - the civil society (is gaining value from the solutions). The Climatorium is already involved in projects for more than 20 mio. Dkk. (approx. 3 mill EUR) were the Climatorium will secure that the solutions come to life. During the year 2021, there will be 4 meetings for members, presenting their solutions. There will be a Climahackathon for students at Lemvig Gymnasium, municipalities, universities and companies in February (split into two with a climate hackathon kick-off in February and the actual Climate Hackaton in June due to the Corona situation). In august there will be a 3-days Climate meeting: Day 1 the recurring National Climate Conference, Day 2 the recurring Childrens Climate Meeting and day 3 an event for the civil society. Right now we are working on phase 2 for the building, 2000 m2 housing private companies and universities. In New Zealand, in Nelson, they are going to build a Climatorium based on the same Quadruple Helix model, where we work together on projects.

***Target and goals for Phase 3**:*
In C21 – Climatorium, phase 3 there are no milestones or deliverables.
There will continuously be worked towards developing concrete content by contacting potential users and stakeholders. This work will be executed by employees at Climatorium, Lemvig Utility as well as at Lemvig Municipality and consultants.
This is done based on the vision for Climatorium as well as the description about the 'after life'.

Action	*Quantifiable milestones:*	*Date by end of*
C21	Phase 3: Done – There is no further milestones in phase 3	 -

Action	*Deliverables:*	*Date by end of*
C21	Phase 3: Done – There is no further deliverables in phase 3	 -

Action C22: **Infiltration of surface water through permeable coating**

Beneficiary responsible for implementation: *Hedensted Municipality*

Foreseen start date: 01/01/2017 ***Actual start date:*** 01/01/2017

Foreseen end date: 31/12/2022 ***Actual (or anticipated) end date:*** 31/12/2022

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.

Achieved results:
C22.1 Establishment of a climate road (pilot project)
4. Purification tests: In order to address this result a PhD project have been establish within the context of the C2C CC project. One of the research areas of the PhD project is to investigate Purification capacities of the climate road as well as to address the optimal construction of the roadbed in order to achieved the best possible purification. The status of the purification test is accessible among the deliverables listed below.

The overall purpose of the Ph.D. is to investigate fate of pollutants in stormwater runoff in climate roads. Climate roads are a somewhat broad term used to describe road that include some kind of green technology. In this context a climate road is defined as a system with a pervious asphalt surface and porous underlying roadbed. These types of roads are primarily being constructed for the purpose of stormwater management and flood prevention. Stormwater runoff can run through the asphalt surface and stored into porous roadbed for delayed discharge to the stormwater sewer system or local infiltration. This function is well-documented; however, little is known about the fate of pollutants within the stormwater runoff. In this Ph.D. the fate of pollutants in climate roads are investigated through three different studies. Furthermore, the Ph.D. will include a fourth study on stormwater retention ponds in order to have a point of comparison with a well-established treatment technology.

A great focus in the studies will be on a new and emerging pollutant; namely microplastics and tire wear as well as more traditional pollutants such as heavy metals, nutrients, and PAHs. The first study investigates the presence of microplastic, tire wear particles and heavy metals in road dust from seven climate roads in Denmark. This study revealed the presence of microplastics in similar concentrations to those found in studies on stormwater retention ponds. Further analysis on other pollutants are ongoing.

Another study will be conducted on three test-sites established on the parking lot of Climatorium. These test-sites consists of areas with a different underlying road construction to test treatment effect of the addition of limestone. In parallel, lab-scale columns experiment with interchangeable road construction will be conducted. Sampling from these experiments are being initiated soon. The purpose of these experiments is to, within a controlled environment, explore the fate of pollutants. This knowledge is important for further implementation of this technology as a tool for storm water management and gives crucial insight into distribution of micro plastic and tire wear in the urban environment.

5.Geothermal/cooling potential:

The Geothermal/cooling potential is still under evaluation. Until now the climate road have produced all energy for the kindergarten. The preliminary results have been reported in Danish articles as well as on international conferences. All articles are located on Midtrum.

C22.2 Involvement of politicians and other stakeholders
1. Political discussions of the results and survey of the challenges: The climate road has been presented to politicians' numerous times.

2.Stakeholder process (landowners, citizens, municipal employees and knowledge institutions): Conducted throughout the project through meeting and conferences. Furthermore, an AR solution for the climate road that is created and is now operational. Hence, people can go to the Climate road as get the story and results behind the project. The goal of the solution is to be able to communicate the project in a new and exciting way to civil society.
3. Review of the results from the current project and how they can be used in the future.
The project results have been published in international as well as in national articles and conferences etc. All presentations and articles are accessible among the deliverables listed below. Report on recommendations, Guidelines and recommendations prepared in connection with the establishment of the climate road is expected to be finished in 2021. The report is conducted as a collaboration between VIA, Danish technological institute and multiple Danish companies. A state of the art report of the results have not been conducted.

4.Execution of two workshops:
A workshop has been held with Hedensted Municipality, the kindergarten, "HM Entreprenør" and "Løsning VVS". At the meeting the climate road design, types of surfacing that will be used in the climate road, monitoring strategies and success criteria were discussed.

5.Conference: The project has been presented at the National conference on climate adaption the 23-24 of October, 2019.

Status of deliverables 31/12/2020:

Main deliverables:

Report on the test of installation of a permeable coating (climate road)	Submitted with Interim report No1, C22.1
Articles:	See the list submitted in the Annex:
• A review of nature-based solutions for urban water management in European circular cities: a critical assessment based on case studies and literature	C22.2
• Partnerskabsmøde 03 11 2017	C22.3
• Klimavej giver varme til børnehave	C22.4
• Vand & Jord	C22.5
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	Will be submitted with the Final Report
Sub-report on examination of the degree to which permeable surfacing can be integrated with geothermal heating/cooling	Will be submitted with the Final Report
Final reporting on the individual permeable surfacing's time-related infiltration capabilities and the roads performance as a climate adaption solution	Will be submitted with the Final Report

Other deliverables:

An online portal with LIFE logo and link to C2C CC main portal: Accessible on www.c2ccc.eu	https://www.hedensted.dk/borger/natur,-miljoe-og-energi/klima-og-energi-tilpasning-og-forebyggelse/hedensted-klimavej
Workshop results: PPT presentations published on the portal. Accessible on www.c2ccc.eu	Submitted in the Annex C22.1 and C22.6

Ongoing reporting on the individual permeable surfacing's time-related infiltration capabilities	Submitted in the Annex C22.5
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	Will be submitted with the Final Report
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	Will be submitted with the Final Report
Sub-report on examination of the degree to which permeable surfacing can be integrated with geothermal heating/cooling.	Submitted in the Annexes C22.1, C22.2, C22.3, C22.4 and C22.5
Reporting of results: Reports, workshops, articles and conferences.	Submitted in the Annexes C22.1, C22.2, C22.3, C22.4 and C22.5
Final reporting on the individual permeable surfacing's time-related infiltration capabilities and the roads performance as a climate adaption solution	Will be submitted with the Final Report
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	Submitted in the Annexes C22.7a and C22.7b
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.	Will be submitted with the Final Report
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).	Submitted in the Annex C22.8
Finishing conference: Knowledge sharing across municipalities and stakeholders. PPT presentations published on the online portal.	Will be submitted with the Final Report
Complementary projects: complementary project proposals, which is sent for example to EUPD or MUDP.	Submitted in the Annex C22.9
Reporting on recommendations: Guidelines 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.	Will be submitted with the Final Report
Conference attendance e.g. ECCA where project results will be presented.	Submitted in the Annexes C22.10 and C22.11

Evaluation:

Despite Covid-19, many good activities have come out of C22 in phase 2. The ongoing pHD project is running according to plan and we are in the process of testing the purification potential on the climate road. in addition, the many good results from C22 have resulted in VIA getting a complementary project: An EUDP application "Combined energy-efficient sustainable district heating and cooling and surface water drainage system (Thermo-road"). Furthermore, the C22 project have been published within the framework of the COST action: CA17133 – Implementing nature based solutions for creating a resourceful circular city"and also presented at the Cost action

CA18219 ” Research network for including Geothermal technologies into Decarbonized Heating and Cooling grids”.

The C22 project have been presented at multiple virtual conferences during phase 2.

A Climate road, inspired by C22, have also been constructed at C21: Climatorium. Hence, the concepts and results of C22 will through C21 be presented to a broader audience.

Action modifications:
Due to Covid-19 the final reporting on the individual permeable surfacing's time-related infiltration capabilities and the roads performance as a climate adaption solution have been postponed to 2022.

After Life:
C22 will have an afterlife within the framework of the EUDP project “Combined energy-efficient sustainable district heating and cooling and surface water drainage system (Thermo-road”) as well as within the two COST actions CA17133 and CA18219.

Target and goals for Phase 3:

Action	*Quantifiable milestones:*	*Date by end of*
C22.1	Phase 3: Fifth season monitoring results are evaluated and reported Article about the climate road is made Guidelines and recommendations are finalized	 31/12/2021 31/12/2022 31/12/2022
C22.2	Phase 3: Planning of meetings with politicians and stakeholders done Field trip - done Stakeholder integration - done Workshops held and working groups meet. Finishing conference - done Pilot project descriptions prepared. At least one complementary project description ready for execution - done	 31/08/2021 31/12/2021 31/12/2021 31/12/2021 31/08/2022 31/08/2022 31/12/2022

Action	*Deliverables:*	*Date by end of*
C22.1	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.	 31/12/2022 31/12/2022 31/12/2022
C22.2	Phase 3: Reporting on recommendations: Guidelines 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	 31/12/2021

	between VIA, Danish Technological Institute and multiple Danish companies. Conference attendance e.g. ECCA where project results will be presented.	31/12/2022

Action C23: **Potentials for increased infiltration in new urban areas**

Beneficiary responsible for implementation: *Horsens Municipality*

Foreseen start date: 01/01/2017	***Actual start date:*** 01/01/2017
Foreseen end date: 31/12/2021	***Actual (or anticipated) end date:*** 31/12/2021

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.

Achieved results:
C23.1:
1.Quantitative (statistical) clarification of the individual soil's infiltration capabilities.
2.Quantitative correlation between the geological descriptions from the drillings and the soils' infiltration capabilities.
3.Quantitative correlation between the soils' electrical resistivity and infiltration capabilities.
Bulletpoints 1 to 3 have been published in the article "Detailed Geophysical Mapping and Hydrogeological Characterisation of the Subsurface for Optimal Placement of Infiltration-Based Sustainable Urban Drainage Systems". The article is located in Midtrum and the abstract is seen below.

Abstract: *The continuous growth of cities in combination with future climate changes present urban planners with significant challenges, as traditional urban sewer systems are typically designed for the present climate. An easy and economically feasible way to mitigate this is to introduce a Sustainable Urban Drainage System (SUDS) in the urban area. However, the lack of knowledge about the geological and hydrogeological setting hampers the use of SUDS. In this study, 1315 ha of high-density electromagnetic (DUALEM-421S) data, detailed lithological soil descriptions of 614 boreholes, 153 infiltration tests and 250 in situ vane tests from 32 different sites in the Central Denmark Region were utilised to find quantitative and qualitative regional relationships between the resistivity and the lithology, the percolation rates and the undrained shear strength of cohesive soils at a depth of 1 meter below ground surface (m bgs). The qualitative tests enable a translation from resistivity to lithology as well as a translation from lithology to percolation rates with moderate to high certainty. The regional cut-off value separating sand-dominated deposits from clay-dominated deposits is found to be between 80 to 100 Ωm. The regional median percolation rates for sand and clay till is found to be* 9.9×10^{-5} *m/s and* 2.6×10^{-5} *m/s, respectively. The quantitative results derived from a simple linear regression analysis of resistivity and percolation rates and resistivity and undrained shear strength of cohesive soils are found to have a very weak relationship on a regional scale implying that in reality no meaningful relationships can be established. The regional qualitative results have been tested on a case study area. The case study illustrates that site-specific investigations are necessary when using geophysical mapping to directly estimate lithology, percolation rates and undrained shear strength of cohesive soils due to the differences in soil properties and the surrounding environment from site to site. This study further illustrates that geophysical mapping in combination with lithological descriptions, infiltration tests and groundwater levels yield the basis for the construction of detailed planning maps showing the most suitable locations for infiltration. These maps provide valuable*

information for city planners about which areas may preclude the establishment of infiltration-based SUDS.

4.Production of a detailed infiltration potential map for urban development areas. The report and detailed infiltration potential map for 4 urban developments is reported.

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 – postponed due to Covid-19.

C.23.2 Integrated stakeholder process
1. Stakeholder process (landowners, citizens, municipal and utility company employees and knowledge institutions) - postponed due to Covid-19.
2. Review of the results from the current project and how they can be used in the future - postponed due to Covid-19.
3. Execution of a workshop, where we discuss the advantages, disadvantages, possibilities and consequences of the results from action C23.1 - postponed due to Covid-19.
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 - postponed due to Covid-19.

C.23.3 Definition of complementary projects
1. Final stakeholder conference, where the results are presented to other municipalities and stakeholders facing similar challenges - postponed due to Covid-19.
2. Prepare complementary projects based on the results.
3. Initiate complementary projects with external co-financing.
Bulletpoints 2 and 3: Funding for complimentary project. The complimentary project "Internet of Climate" were applied for in 2020 but not approved.

Status of deliverables 31/12/2020

Main deliverables:

4 reports of the test results of the infiltration potential methology	Submitted in the annexes C23.1, C23.2, C23.3 and C23.4
1 guideline with process description of how the infiltration potential map can be prepared	Will be submitted with the Final Report
Complementary project description	Submitted with Interim report No1. Attached here as annex C23.5

Other deliverables:

1 report on Quantitative (statistical) clarification of the individual soil's infiltration capabilities by soil type mapping.	Submitted in the Annex C23.6
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.	Will be submitted with the Final Report
Final report on C23.1	Will be submitted with the Final Report

Reports on best practices and guidelines for local management of precipitation in urban development areas.	Will be submitted with the Final Report
Stakeholders workshop. Report, which is published on the C2C CC website.	Will be submitted with the Final Report
Articles for international periodicals	Submitted in the Annex C23.6
Results will be presented at conferences in Denmark and abroad. Presentations will be published on the C2C CC website and in Midtrum.	Submitted in the Annex C23.7
Knowledge sharing across municipalities and stakeholders.	Will be submitted with the Final Report
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.	Will be submitted with the Final Report

Evaluation:
By collecting data to the article dealing with C23.1.1,2,3 we have been in contact with most of the municipalities in the Central Region Denmark. It has provided good discussions and feedback which can be used in C23.2. Due to Covid-19, the vast majority of Deliverables in C23.2 have been postponed to phase 3. Unfortunately, it has not been possible to get funding for a complimentary project (C23.2,3).

Action modifications:
As described in achieved results C23.1,5, C23.2 and C23.3,1 have been postponed to phase 3 due to Covid-19.

After Life:
The deliverables for C23 will be published and used by municipalities when new urban developments are conducted. Furthermore, the results will also be presented at the National Network for Climate Adaptation (DNNK) in Denmark after the project.

Target and goals for Phase 3:

Action	*Quantifiable milestones:*	*Date by end of*
C23.1	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 Al data is collected for the reports and guidelines, but due to Covid-19 this deliverable is postponed to phase 3	01/07/2021 31/12/2022
C23.2	Phase 3: Workshop, where we discuss the advantages, disadvantages, possibilities and consequences of the results from action C23.1 Recommendations prepared for stakeholders	01/06/2022 01/01/2022

Action	*Deliverables:*	*Date by end of*
C23.1	Phase 3: 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.	01/07/2021 01/07/2021 01/07/2021

	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	01/07/2021 31/12/2022 31/12-2022
C23.2	Phase 3: 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	 31/12/2022 01/06/2022 01/06/2022 01/07/2022
C23.3	Phase 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.	 01/06/2022 01/06/2022

Action C24: **Climate history | culture history**

Beneficiary responsible for implementation: *Aarhus University*

Foreseen start date: 01/01/2017	***Actual start date:*** 01/01/2017
Foreseen end date: 31/12/2022	***Actual (or anticipated) end date:*** 31/12/2022

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).

Achieved results:
Our key insight is that certain segments of citizens – in our case in fact especially the elderly – can be efficiently engaged via a combination of history and climate issues. Moreover, landscapes and narratives have proven good tools for establishing dialogue. This can be in publish institutions such as galleries and museum or outdoors, as supplements to 'culture-free' meeting fora. History is an effective and efficient platform for engaging citizens around changing climates and their effects on, for instance, hydrology, sea-levels and a range of ecosystem services.

To bolster intergenerational dialogue and engage younger citizens, we have developed general learning resources for Danish schools about climate/environmental history; see https://danmarkshistorien.dk/leksikon-og-kilder/vis/materiale/miljoehistorie-hvad-er-det/ and https://danmarkshistorien.dk/leksikon-og-kilder/vis/materiale/oekokritik/, showing how different societal actors can come together in climate change adaptation.

C24.1 *Landscape use and settlement patterns in the early Holocene in Central Jutland*: Several contributions on aspects of past land-use in the CDR have been published in the widely used and freely accessible webpage danmarkshistorien.dk. These cover aspects of past climate change, its human impacts as well as aspects of landscape management. For the Danish versions, please see: https://danmarkshistorien.dk/leksikon-og-kilder/vis/materiale/gudenaaen-ressourcer-og-forvaltning-gennem-historien/ and https://danmarkshistorien.dk/leksikon-og-kilder/vis/materiale/forordning-om-vand-fra-marker-enge-moser-og-aaer-fra-1790/ (English summaries are available in annex C24.5).

C24.2 *Storm surges and tsunamis along the Central Jutland coasts in historical, landscape- and geo-archaeological perspective:* One contribution on historical storm surges in the CDR has been published in the widely used and freely accessible webpage danmarkshistorien.dk. Additional work on storm surges and even tsunamis in the past is ongoing. For the Danish versions, please see: https://danmarkshistorien.dk/leksikon-og-kilder/vis/materiale/stormflodernes-tid-klima-natur-og-flytningerne-af-noerre-vosborg-i-1500-tallet/. As noted, it has not been possible to collaborate with historiskatlas.dk on presenting Storm Flood Pillars but data on these as well as historical maps for the CDR are freely available here: https://historiskatlas.dk/ and https://eng.gst.dk/danish-cadastre-office/cadastral-archives/. Instead, a substitute deliverable focusses on extreme weather/climate in Denmark's past (https://danmarkshistorien.dk/leksikon-

og-kilder/vis/materiale/fimbulvinteren-virkeligheden-bag-myten-fra-nordisk-mytologi/) (English summaries are available in annex C24.5).

C24.3 *Citizen-near storytelling and marketing of coupled culture and climate history:* We have presented this project at project workshops, at the National Climate Conference in Horsens (https://www.c2ccc.eu/aktiviteter/tidligere-aktiviteter/national-konference-om-klimatilpasning/ - se the programme in C24.3) hosted by C2C CC and held our own workshop, C24.4, which has resulted in a booklet (annex C24.1) for coupling cultural and climate history together across sectors: C24.1. In addition, we have designed an exhibition about the topic at AquaGlobe, which could also be seen at the National Climate Conference in Horsens in October 2019 (see C24.2 a small movie).

Status of deliverables 31/12/22020

Main deliverables:

4 Open Access scientific papers distributed across Sub-projects 1 and 2	Submitted in the Annex C24.6
4 popular science/outreach articles	Submitted in the Annexes C24.7, C24.8, C24.9, C24.11 and C24.12. English summaries in C24.5
Climate tourism brochure for the Region	Will be submitted with the Final Report
Data on storm flood pillars archived at http://historiskatlas.dk and on CD-ROM	This delivery has been discontinued and should have been removed from this list.
A synthetic popular science book on climate and culture history in CDR	Submitted in the Annex C24.1

Other deliverables:

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.	Submitted in the Annex C24.9 and C24.11. English summaries in C24.5
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.	Submitted in the Annex C24.7, C24.8 and C24.12. English summaries in C24.5
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.	Submitted in the Annex C24.1
Teaching materials regarding climate and environmental history for high school level (31/10/2021).	Submitted in the Annex C24.10
Exhibition about climate history and culture history in the Region of Central Jutland (31/10/2022).	Submitted in the Annex C24.2 and C24.2a

Evaluation:

Much has been learned during Phase 2 of this project. There is a great enthusiasm amongst project partners for non-technological or non-managerial aspects of climate change adaptation – but we also learned of many hurdles. Administratively, climate change adaptation is mostly handled by engineers or biologists and there is little knowledge of whom to collaborate or what to be aware of when it comes to relevant cultural history or heritage. In fact, we also uncovered conflict between the missions of different municipal or state actors when it comes to climate

change adaptation versus, for example, the preservation of cultural heritage. Clearly, there is a potential but also need to more synergistic thinking around climate change adaptation. Our collaboration with project C8 has been instructive in this way and all parts have been able to try out working together. The work in C24 tends to be more extensive than planned, and it is challenging to achieve all deliverables as planned. We have accommodated this by changing the content foci of some deliverables slightly, and their venues. Please note that it has unfortunately not been possible to track the number of visitors at AquaGlobe, not least due to the COVID situation.

Action modifications:
We have merely changed some of the milestone/delivery dates that had been incorrectly listed.

After Life:
The inclusion of non-technocratic climate change adaptation measures involving public-sector actors such as museum can only be recommended. Drawing on local and regional histories as resources for framing particular contemporary issues is cost-effective and can only strengthen such efforts. Furthermore, from February 2020, there will be a H2020 MCSA-IF (895147, CHICC) starting at Aarhus University who will be investigating the impact of climate change on cultural heritage and the way in which such losses are handled by local communities in Denmark and Scotland.

Target and goals for Phase 3*:*
The main target for C24 is wrap up our contribution with the outstanding deliverables.

Action	*Quantifiable milestones:*	*Date by end of*
C24.1	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 3: Milestone 2.I – target publications complete Milestone 3.I – the synthesis over the Region's coupled natural and cultural heritage and the C2C CC contributions published	 31/10/2021 31/12/2022
C24.3	Phase 3: Milestone 2.I – Workshop 2: The role of cultural heritage in climate adaptation Milestone 3 – Climate history brochure for the Region complete	 01/06/2021 01/10/2021

Action	*Deliverables:*	*Date by end of*
C24.3	Phase 3: Teaching materials regarding climate and environmental history for high school level Climate tourism brochure for the Region Exhibition about climate history and culture history in the Region of Central Jutland 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	 31/10/2021 31/10/2021 31/10/2022 31/10/2022

Action D1: Monitoring the project's contribution to the implementation of the CCA plans

Beneficiary responsible for implementation: *Central Denmark Region*

Foreseen start date: 01/01/2017	***Actual start date:*** 01/01/2017
Foreseen end date: 31/12/2022	***Actual (or anticipated) end date:*** 31/12/2022

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.

Achieved results:
The C2C CC secretariat has during 2020 conducted preparing activities that will feed in to a baseline- and phase 2 monitoring report on a comparison of the C2C CC actions and actions mentioned in the municipal CCA/Risk management plans.
This has among others involved searching for the right indicator platform to use for the comparison.
One of the platforms that we have considered is the FN 17 Sustainable Development Goals (SDG). We have in relation to this participated together with the secretariat of Regional Development at the Central Denmark Region in two workshops in January 2020. The workshops were facilitated by the consulting company, Deloitte and gave us an idea of how to use the SDG´s and get inspiration of how to connect them to the C2C CC project.

A questionnaire is also being developed to collect knowledge from the partners on the effect of C1-C7 and C20-C24 on their sub projects. This will also contribute to the baseline- and phase 2 monitoring report. Indicators will be integrated in the questionnaire when an indicator platform has been chosen.

The sub projects C13 and C22 are continuously being monitored and we are often in contact with the project leaders from respectively Herning Municipality and VIA university college.

Phase 2 has also included activities concerning monitoring of capacity building in relation to C2C CC actions.
A questionnaire has been developed for Aquaglobe to hand out to people who have borrowed and used their facilities to ask them about their experiences with the building and the facilities. The preliminary results from these questionnaires show satisfaction with Aquaglobe and its facilities. More detailed analysis of the results will follow at the project end.

In April 2019 the C2C CC secretariat hosted a workshop on data and models in relation to C1 Sea and Fjords where partners presented how they use different data and models in their projects e.g. warning systems along the river Gudenå or use of climate data modelling in Horsens Municipality. Presentations and other material from the workshop can be found here:
https://www.c2ccc.eu/aktiviteter/tidligere-aktiviteter/temadag-om-modeller-og-data/program-

prasentationer-og-billeder/. This day clearly gave an impression of development within climate adaptation research but also within development of planning tools and models which the municipalities need and demand. Many of our partners are already using available tools and models and have great use of them.

We have finally also created a partnership with all the regions in Denmark, Danish Regions and the National Network for Climate Change Adaptation (DNNK) on creating a national survey on knowledge and opinions about climate change and climate change adaptation among citizens and companies. The partnership was established in November 2020 and in December 2020 we had defined the project and our objectives. In the same month we held a tender to find the best qualified consulting company to help us with development of the survey, distributing the survey and analyzing the results. This ended up with us choosing Epinion.
We are currently developing the survey which will be launched in Q2 in 2021 and we expect to have the final results in the summer 2021.

Status of deliverables 31/12/2020

Monitoring protocols	Will be submitted with the Final Report
Baseline report	Will be submitted with the Final Report
Monitoring report for phase 1	Will be submitted with the Final Report

Evaluation:
Through phase 2 we have experienced that most of the partners in C2CCC are using different CCA tools and climate data e.g. SCALGO and the integrated groundwater tool, warning systems along the river Gudenå, 3Di, Klimaatlas and many others. This clearly shows us that the development of aid and planning tools, and climate data are increasing and that they are very supportive in the municipals.

When planning the national survey on knowledge and opinions among citizens and companies on climate change and climate change adaptation we experienced that there have already been conducted a number of similar surveys by several different stakeholders. There is thus a lot of focus on monitoring citizen awareness and knowledge.

Action modifications:
As described under "Achieved results" we have started the preparations for a baseline and phase 2 monitoring report on a comparison of the C2C CC actions and actions mentioned in the CCA/Risk management plans.
We have however had challenges in finding the right indicator platform for monitoring added value when assessing the impact of C1-C7 and C20-C24 on C8-C19. As we have to measure on a great variety of different parameters it narrows down the selection of tools. We have, as described earlier, been considering the SDG´s but we are also currently examining if it would be possible to extract indicators from a new assessment tool for CCA projects called, PLASK. Finally, we are also cooperating with Aalborg University on a number of master classes on added value in relation to CCA where we hope to find inspiration for indicators.
Monitoring and baseline reports will thus be postponed until we have found and decided on the right platform.
Also it will not bring any new results to make a monitoring report now as CCA and risk management plans have not been revised or developed in phase 2.
As described earlier on our monitoring meetings, Danish legislation does not require municipalities to renew their CCA plans. However, since most municipals have integrated the CCA plans into their municipal plans, we expect most of them to revise the plans in 2021 when the municipalities have to make new municipal plans.
Municipalities in risk areas are also legally required to renew their risk management plans in 2021. We have thus planned to monitor development of the plans when the new plans have been presented in Q4 2021.

Also the questionnaire to be handed out among visitors at the Climatorium has been postponed until phase 3 as the construction of Climatorium has been delayed and it has thus not been

possible to start the development of the questionnaire until the opening of Climatorium in December 2020. The questionnaire is expected to be finish in spring 2021.

After Life:
The comparisons of actions from the IP application and actions in the CCA/risk management plans are going to be very valuable when evaluating on the C2CCC project and its effects as they will give an indication of how much of the knowledge and experience from the subprojects have actually been used in the municipal CCA work.

The questionnaires that have and will be developed for Aquaglobe and Climatorium will provide valuable knowledge for the two beacons that are supposed to become centers for CCA after C2CCC. It is thus important to evaluate on visitor's experiences to be able to develop the two centers according to demand and wishes to attract new citizens.

Also the results from the national survey is expected to provide important information for CCA projects after C2CCC. Because of the size of the test sample (4000 citizen questionnaires and 1000 company questionnaires) we are able to get a very representative impression of general knowledge and opinions to climate change and CCA which can be used to influence national politics and guide future projects and actions.

Target and goals for Phase 3*:*
Our goals for phase 3 will be to gather the latest information on how actions from the IP application have influenced on actions in the new municipal CCA/risk management plans that are presented in 2021 to be able to assess how much influence the C2CCC project has had on municipal CCA planning.

We will furthermore be developing a questionnaire in collaboration with Climatorium to hand out to visitors at the beacon to both evaluate on visitor experiences but also to examine who visits the Climatorium. The results from the questionnaire will be used with the results from the questionnaire from Aquaglobe for further analysis and will be included in the final report.

We will also be collecting results from the sub projects C13 and C22 to monitor the results and impacts of the actions.

Another target for phase 3 will be to finalize the national survey and use the results as a guide for our future work and as input for national CCA politics.

We will finally create a qualitative analysis on the basis of the workshop in April 2019 on models and data, to evaluate on how tools and models have contributed to the demonstration of projects.

Action	*Quantifiable milestones:*	*Date by end of*
D1.1	Indicators for added value defined	01/01/2022
D1.1	Baseline for CCA plans established	01/06/2022
D1.1	Monitoring completed	01/06/2022
D1.2	Data from beneficiaries received (Phase 2)	31/06/2021
D1.3	Reports on results from questionnaires and surveys	01/06/2021
D1.3	Survey to be used for researching citizens awareness of climate change	01/03/2021
D1.3	Qualitative evaluation of how the tools and models contribute to the demonstration projects	01/06/2021
D1.3	Statistical models and analyses on questionnaires and surveys to be included in the interim and final reports	01/03/2022

Action	*Deliverables:*	*Date by end of*
D1	Monitoring protocols Baseline report	 31/12/2021 31/12/2021

	Monitoring reports (Delivered every second year prior to phase 2, 3 and the end of the IP)	31/03/2023

Four new milestones have been added to D1.3. The first two is related to the national survey that we have started up. We expect the survey to be ready for launch in the spring and the results should be analysed and finalized in the summer.
The qualitative evaluation of tools and models will add to the previous workshop on models and data which was held in 2019. Since then a lot has happened, and we find it relevant to make a final evaluation on this matter.
Finally, we have added the task of gathering of all analyses conducted in D1 to the final report as it is a comprehensive task in D1.3.

Action D2: **Monitoring of the project's impact on climate objectives**

Beneficiary responsible for implementation: *Central Denmark Region*

Foreseen start date: 01/01/2017 ***Actual start date:*** 01/01/2017

Foreseen end date: 31/12/2022 ***Actual (or anticipated) end date:*** 31/12/2022

Expected results:
The monitoring of D2 will results in documentation of reduced flood risk and carbon emissions by the end of the IP.

Achieved results:
The CDR calculate the carbon footprint for municipalities in the region every second year except in 2017 and 2018 where calculations were made both years.
The results from 2018 were presented in phase 2 and show that a decrease in CO2 emissions according to the baseline level (2015 emissions) can be found in three new municipalities when we compare with the emission levels from 2017. These new municipalities are Lemvig, Ringkøbing-Skjern and Silkeborg. There are however also two municipalities, Ikast-Brande and Skive municipality where CO2 emissions have increased a bit from 2017 to 2018. The main reasons for the increase can be found in the import of electricity. In Ikast-Brande Municipality the import has increased a bit and in Skive municipality the export of electricity has decreased a bit resulting in higher CO2 emissions.
The other municipalities keep showing a decrease in CO2 emissions according to the baseline level. A spreadsheet showing the emission rates can be found in annex D2.2.

Status of deliverables 31/12/2020

Baseline report on flood and risk maps	Submitted in the Annex D2.1
Final monitoring report	Will be submitted with the Final Report
Monitoring report, phase 1	Submitted in the Annex D2.2
Monitoring report, phase 2	Submitted in the Annex D2.2
Monitoring report, phase 3	Will be submitted with the Final Report

Evaluation:
Calculations on the carbon footprint in the CDR show a promising development with an overall decrease in CO2 emissions according to the baseline level and more municipalities start to show a decrease in CO2 emissions in comparison to 2017 levels.
This means that we despite a small increase in emissions in two municipalities in 2018 still see an overall decrease in the carbon footprint for all of the CDR.

Action modifications:
We have through an examination of the municipal CCA and Risk management plans in relation to the desk analysis on knowledge gaps in C1 Sea and Fjords established, that no changes have been conducted in the plans in phase 2. This is also the case for the flood and risk maps that are integrated in these plans.
However, in 2021 the risk management plans are legally required to be revised and new municipal plans, in which the CCA plan typically is integrated, are presented. We can thus expect new flood and risk maps in 2021. Monitor report on development in flood and risk maps will thus be postponed until Q4 2021 after the new plans have been presented.

After Life:

When monitoring both severe flood events and the development in flood and risk maps we will be able to evaluate and assess the precision and value of the maps in relation to CCA planning and flood management and thereby gain valuable information for future revisions of flood and risk maps after the C2C CC project has ended.

C2C CC is mainly concerned with CCA. However, some of the actions and sub projects will as a side benefit have a reducing effect on CO2 emissions e.g. the Climate Road. It is thus interesting to monitor how the carbon footprint in the CDR develops and examine if there is further potential in our projects and solutions to explorer that will have a reducing effect on the CO^2-emissions.

Target and goals for Phase 3:
Our target for phase three will be to finalize a report in collaboration with the Danish Storm Council on registered severe flood events during the project period and a report on the development of flood and risk maps.
We will also complete our monitoring report on the carbon footprint in the CDR and estimate the carbon footprint in one or two sub projects, if possible.

Action	*Quantifiable milestones:*	*Date by end of*
D2.1	Baseline for flood maps, risk maps and severe flood events (>20 year event) done Final reporting done	01/10/2021 10/10/2022
D2.2	Monitoring report on carbon emissions in the Central Denmark Region	01/03/2022

Action	*Deliverables:*	*Date by end of*
D2	Monitoring protocols Baseline report Monitoring reports (Delivered every second year prior to phase 2, 3 and the end of the IP)	31/03/2019 31/03/2021 31/03/2023

Action D3: **Monitoring of the project's socio-economic impact (incl. ecosystem functions)**

Beneficiary responsible for implementation: *Central Denmark Region*

Foreseen start date: 01/01/2021	***Actual start date:*** 01/01/2018
Foreseen end date: 31/12/2022 and beyond	***Actual (or anticipated) end date:*** 31/12/2022 and beyond

Expected results:
The results of D3 documents direct in indirect 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.

Achieved results:
The project management started early in the project to 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. Regional Development in CDR follows the development of the Danish SDG indicators on an ongoing basis, but are waiting with publication until the baseline of the relevant goals has been prepared for the SGDs. This was expected to be ready to work by the end of 2019 / early 2020. Due to Corona it was delayed, and is ready for use primo 2021.

The project management have been in dialogue with the beneficiaries of C8-C19 in phase 2 in terms of the actions' impact of the ecosystem functions. During the first 6 months of 2019 a student from Aarhus University was performing his final exam regarding the implementation of the ESS. He made a good report which inspires in the partnership and has given him a job.

The attention to socio-economic effects and ecosystem services has led to CDR, together with three of the municipalities in the partnership and Aalborg University, are preparing an application for a larger LIFE project - a complementary project in spe.

Status of deliverables 31/12/2020

Monitoring protocols	Will be submitted with the Final Report
Report on Ecosystem services assessment methodology	Will be submitted with the Final Report
A leaflet about ESS	Submitted with Interim report No1. D3.2
Implementing Ecosystem Services in C2C CC	Submitted in the Annex D3.3
Webinar about integrating biodiversity and climate adaptation	Submitted in the Annex D3.4a – D3.4f
Monitoring Report	Will be submitted with the Final Report

Evaluation:
It turns out to be difficult to provide financial data all the way down to the municipal level and it can therefore be difficult to prove that the effects are due to C2C CC. We have therefore entered into a collaboration with Danish Industry, which is represented in the Steering Group, and through its members follows the development. They can hopefully create data that we can use.

As the monitors have been informed, CDR initiated a collaboration with the 2030 Panel on Danish SDG indicators, which could possibly be used constructively in this action. Unfortunately, it seemed

neither interesting nor appropriate, which is why the secretariat has now joined forces with other departments in the CDR on a guide for SDG work in the CDR. At the beginning of 2021, it must be tested whether, on this basis, a baseline and common method can be created that is relevant to the entire partnership. It is noted that C2C CC, and thus the EU, has not co-financed these studies apart from the time the Secretariat has spent on the work.

Action modifications:
No modifications needed. The secretariat continues the dialogue in the partnership about the use of ESS, especially during making the common strategy for climate adaptation

After Life:
-

Target and goals for Phase 3*:*

Action	*Quantifiable milestones:*	*Date by end of*
	No milestones in Phase 3	

Action	*Deliverables:*	*Date by end of*
D3	Monitoring reports	Delivered by the end of the IP

Action D4: **Environmental monitoring**

Beneficiary responsible for implementation: *Central Denmark Region*

Foreseen start date: end of IP

Actual start date: 01/01/2022

Foreseen end date: 31/12/2024

Actual (or anticipated) end date: 31/12/2024

Expected results:
The environmental monitoring will verify that the IP contributed to improved environmental state of water environments after the end of the IP.

Achieved results:
No results yet.

Status of deliverables 31/12/2020:

Data gathered from existing databases	Beyond IP

Evaluation:
There is a significant complication built into this action. C2C CC is basically brainwork, why the project itself does not have environmental consequences. The realization of the developed sustainable solutions is to be expected, but in many cases the solutions are not implemented immediately. Therefore, we cannot obtain a true picture of the environmental consequences of C2C CC after project completion.

Nevertheless, we initiate the monitoring programme as described in phase 3.

Action modifications:
None.

After Life:
CDR carries out the data collection after project completion, and will in particular use the collected data to identify topics for future cross-disciplinary project collaborations and cross-cutting targeted planning, but also to create increased interest in environmental change among municipalities and other relevant stakeholders.

Target and goals for Phase 3:
In phase 3 we will focus om creating a monitoring programme to follow in at least two years after the IP. This will also include creating the baseline in dialogue with the relevant national authorities.

Action	*Quantifiable milestones:*	*Date by end of*
D4	No specific milestones in Phase 3	

Action	*Deliverables:*	*Date by end of*
D4	Monitoring reports	Delivered after the end of the IP

Action E1: Communications and outreach plan

Beneficiary responsible for implementation: *Central Denmark Region*

Foreseen start date: 01/01/2017

Actual start date: 01/11/2016

Foreseen end date: 31/09/2022

Actual (or anticipated) end date: 31/06/2022

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.

Achieved results:
The intensive dissemination activity in the C2C CC project has continued throughout Phase 2. There have been far more newsletters than planned and an ever-increasing number of followers (237 subscribers at the turn of the year). Similarly, in LinkedIn, where we have 659 followers. We follow the use of www.c2ccc.eu. Every quarter we have more than 2.500 unique visitors at the website. Also here we see an increasing number of users.

In addition, both the secretariat and several of the partners have published articles describing the work and results of the project. Here too, expectations have exceeded what was planned.

We have succeeded to be broadcasted in both radio and TV.

Figure 2: *Henrik Vest Sørensen from the Secretariat in an interview at "Klima Folkemødet" in Middelfart. He's shortly telling about the climate adaptation activities in C2C CC at national TV - TV2.*

We have continuously carried out evaluations of our activities, which has led to us today having a very well-functioning concept for partner meetings, stakeholder activities, webinars etc.

For details, please consult the attached list E1.1
We have started a partnership with Climatorium and AquaGlobe in order to collaborate on after LIFE activities – specially to prepare the future collaboration in order to continue and increase the strategic work with a holistic approach on adaptation among all relevant stakeholders. This work will accelerate in Phase 3.

Status of deliverables 31/12/2020:

Communication and outreach plan	Submitted with Interim report No1 E1.2
Report on feedback on quantitative statistics	Will be submitted with the Final Report
List of media contacts	Updated regularly by our journalists in CDR
Communication plan for After LIFE activities (F1.1)	Will be submitted with the Final Report

Evaluation:
We have learned, that press releases nearly have no importance. Posts at LinkedIn, articles, news-letters and pitch talks and marketplaces etc. are much more effective and attractive. We are lucky often to be invited to present learnings from the project both in complementary projects and else were.

The biggest effect has probably been that C2C CC has been one of the main players in creating a national network for climate adaptation in Denmark (DNNK). The project manager in C2C CC holds the position of deputy chairman of DNNK. This has made the project a significant national player.

Similarly, both the secretariat, several of the projects and our partner in the Brussels, CDEU, have had many presentations on the international stage as well, which has contributed to the knowledge of the project, our approach and learnings, gradually are becoming well known in the EU.

However, we must acknowledge that we sometimes experience that the national political level is not so responsive to our experiences and ideas. It is an effort we are intensely working on in phase 3.

Action modifications:
No modifications are necessary. It's just important, that the secretariat all the time are focused on using the possibilities to communicate whenever the opportunity arises.

In order to ensure the best possible collection of project experiences in connection with project completion, the reporting work is initiated at the beginning of phase 3 in a collaboration across the partnership. In this connection, a separate communication plan is prepared for the dissemination of the overall project experiences.

After Life:
The communication experiences from C2C CC are used directly in the Water Valley collaboration, which has been created between CDR, Climatorium and AquaGlobe. Furthermore, it is part of the concept in the National Network for Climate Adaptation (DNNK) that experiences from, for example, C2C CC are gathered and disseminated there to both Danish and European stakeholders and actors.

Target and goals for Phase 3:
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.

We will evaluate and incorporate feedback from outreach activities in order to ensure a consistent high quality plan and prepare After LIFE communication activities.

Action	*Quantifiable milestones:*	*Date by end of*
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
E1.6	Communication activities for After LIFE is prepared	31/09/2022

Action	*Deliverables:*	*Date by end of*
E1.4	Compilation of feedback in quantitative statistics	30/09/2022
E1.5	List of media contacts	30/09/2022
E1.6	Included in the After LIFE plan (F1.1)	30/09/2022

Action E2: **Tangible communication products**

Beneficiary responsible for implementation: *Central Denmark Region*

Foreseen start date: 01/01/2017

Actual start date: 01/01/2017

Foreseen end date: 31/12/2022

Actual (or anticipated) end date: 31/12/2017

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 platforms, templates notice boards, at least 12 newsletters and 1 layman's report distributed in at least 400 copies and online download.

Achieved results:
In Phase 2 we have continued the communication effort. The website has received a bruch up, especially the English part, we have sent out more press releases, more newsletters, made more posts on LinkedIn, more films, more booklets and a mid-term evaluation in Danish and English prepared as a combined printed material with QR codes for small films about the individual subprojects.

The Water Valley collaboration with Climatorium and AquaGlobe has given the project many good opportunities for publicity and further information. Also the membership of DNNK, the National Network for Climate Adaptation.

The Corona shutdown has intensified the virtual meetings, and this has provided opportunities to more publicity about the project in various contexts.

For information, it can be stated that we have listed on the website the most important articles that have been published in the project. The Danish articles are seen at www.c2ccc.eu here (annex E2.1) and the English here (annex E2.2). Similarly, we have collected Danish-language leaflets and booklets here (annex E2.3) and the English ones here (annex E2.4).

We monitor www.c2ccc.eu to track the usage. By the end of Phase 2, in the last quarter there were 2,533 unique visitors and more than 11,000 page views.

For a total list of communication products, please consult the attached file E2.5.

Figure 3:Some of the leaflets produced in Phase 2 in C2C CC

Status of deliverables 31/12/2020:

1 C2C CC website and 1 online platform	www.c2ccc.eu - Submitted with Interim report No1
24 notice boards (1 large and 5 smaller notice boards for 4 projects).	Submitted with Interim report No1 E2.6
12 newsletters incl. articles, progress reports, etc.	https://www.c2ccc.eu/nyheder/
1 layman's report in 400 colour copies and online download	Will be submitted with the Final Report

Evaluation:
Overall, we are more satisfied with our communication work in phase 2 than in phase 1. We have experienced to a greater extent being heard and being invited to tell about our experiences. In addition, we are consulted by authorities, colleagues, etc. to hear about good advice and guidance in connection with them applying for new LIFE IP within the climate agenda, including waste.

We look forward to preparing the final report on the project and have in this relation set up a working group across the sub-projects. This will prepare templates for reporting on the individual sub-projects and ensure that the overall report contains the most important learnings and recommendations. We plan to engage a journalist or similar to write the layman's report. It will be readable in both Danish and English.

Action modifications:
No modifications are needed or planned.

After Life:
It is important for the secretariat that experiences and recommendations from the C2C CC project are still disseminated after the end of the project. We will ensure that this work is carried out professionally of the two beacons Climatorium and AquaGlobe as well as in DNNK, the national Network for Climate Adaptation.

Target and goals for Phase 3:
The work will continue in Phase 3 in accordance with the milestones and deliverables listed below.

Action	*Quantifiable milestones:*	*Date by end of*
E2.4	Layman's report is finalized	10/11/2022

Action	*Deliverables:*	*Date by end of*
E2.3.	Newsletters every month, articles, progress reports, etc.	31/12/2022
E2.4	1 layman's report in 400 colour copies and online download	10/11/2022

Action E3: **Seminars and conferences**

Beneficiary responsible for implementation: *Central Denmark Region*

Foreseen start date: 01/01/2017 ***Actual start date:*** 01/01/2017

Foreseen end date: 31/12/2022 ***Actual (or anticipated) end date:*** 31/12/2022

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.

The activities will raise the level of competences in the partnership.

Achieved results:
In phase 2 we have arranged a lot of seminars and conferences and have participated in many, arranged by others. In this text the focus is in the seminars and conferences the secretariat has been involved in. Be aware, that also the sub-projects arrange seminars and workshops in C2C CC targeted at citizens and more local stakeholders. These arrangements are not mentioned here.

To give a picture of the deliverables the following events are highlighted:
The National conference about climate adaptation 23 and 24 October 2019. This was the half way there conference of C2C CC, but we took advantage of a welcome opportunity to arrange the conference together with a number of other actors and projects within climate adaptation. The conference had more than 300 participants. A number of participants from the Interreg North Sea area, as the TopSoil project, which CDR are lead partner of, had integrated its closing conference into the event.

The conference activated a large number of international experts as presenters, facilitators, etc. The results of the 30 workshops and the final panel debate were collected and disseminated, and the presentation appeared as common recommendations from both practitioners and experts for climate adaptation within the following topics:

- Strategic added value of climate adaptation
- Techniques and concepts
- Organization and cooperation

Both the programme and recommendations exists in Danish and English (accessible at the webpage).

Figure 4:The National Conference is opened 23 October 2019 by Stewie Swenne, Head of Team International Cooperation, Flanders Environment Agency. Next speaker was Claus Kondrup, Senior Expert – DG Climate Action – European Commission.

The IWA World Water Congress & Exhibition was planned to be the second very big event for C2C CC. The conference is planned to take place in Copenhagen. Due to Covid-19, the conference was postponed, initially until May 2021 and finally until September 2022.

C2C CC has put a lot of resources into preparing for the participation by submitting abstracts for both workshops, posters and technical tours to CDR and the sub-projects in C2C CC. We have also prepared to participate in the Danish booth to spread knowledge of the project and have the opportunity to share experiences and get inspiration – just like we did in Japan in 2018. Many of the efforts we now have to make again, as the entire planning will be restarted during 2021.

In addition, there are a number of smaller events, which are held more specifically under the auspices of C2C CC. For example, a National Climate Summit over 3 days in Lemvig in 2020, which due to Covid 19 was completed as both psychical and virtual meeting, and a workshop over 2 days at Climatorium in Lemvig, where experts from the Netherlands trained the partners in C2C CC in Connective Negotiation and the masterclass on climate adaptation with added value, which has been conducted at AquaGlobe over several meetings.

The complete list of seminars and conferences in phase 2, with the secretariat as the main organizer is accessible as annex E3.1

Status of deliverables 31/12/2020

Agenda for the seminar and presentation on review of legal barriers (cf. E3.1)	Submitted with Interim report No1 E3.2
Conference material and one pagers for three C2C CC conferences	See list below:
- Kick Off	Submitted with Interim report No1 E3.3
- ENCORE	Submitted with Interim report No1 E3.4
- Half way there/Nationalt klimatopmøde, 2019	Submitted in the Annex E3.5
- National Climate Summit 2020	Submitted in the Annex E3.6
Booth material (demonstration projects) for use for three conferences	See list below
- Kick Off	Submitted with Interim report No1 E3.7
- Half Way There/National Konference 2019	Submitted in the Annex E3.8
- IWA Tokyo	Submitted in the Annex E3.9
Presentation to use at IWA World Water Congress & Exhibition in Copenhagen	Will be submitted with the Final Report
Presentation and booth material for the conference "Coast to Coast Climate Challenge – Done! What comes next?"	Will be submitted with the Final Report

Evaluation:
It is rewarding that many of the specific activities in sub-actions are carried out as seminars and conferences across the partnership and together with other relevant actors from, for example, complementary projects. In this way, we manage dissemination and competence building at the same time. In addition, cross-cutting networks are created and strengthened.

Covid 19 has postponed and changed several planned events. It has also meant that we have learned to work much better with the virtual meeting. These are definitely experiences we take with us further.

Follow-up evaluations of most events have been carried out. We have used this information constructively to improve the concepts.

Action modifications:
No modifications are needed.

After Life:
The experiences about both professional knowledge, but also concepts for physical and virtual meetings, must clearly be used afterwards.

Target and goals for Phase 3*:*
The main conferences in Phase 3 will be IWA in september 2022, the C2C CC conference "Done – What comes next" and the platform meeting. Our ending conference we plan to combine with the COST networks annual meeting, which is planned to have in CDR.

The date and theme for the platform meeting has not yet been set, why the date of the deliverables is not noted.

Action	*Quantifiable milestones:*	*Date by end of*
E3.4	The final C2C CC conference "Done! What comes next?" is held	15/11/2022
E3.7	Presentation and all relevant material is ready to bring to the platform meeting	Date is not yet set

Action	*Deliverables:*	*Date by end of*
E3.6	Presentation to use at IWA 2021	05/09/2021
E3.7	Presentations to use at the platform meeting	?

Action E4: **Media works**

Beneficiary responsible for implementation: *Central Denmark Region*

Foreseen start date: 01/01/2017

Actual start date: 01/01/2017

Foreseen end date: 31/12/2022

Actual (or anticipated) end date: 31/12/2022

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.

Achieved results:
Throughout phase 2, there has been ongoing communication about C2C CC and the sub-projects. The full range of media has been in use.

Key figures on media works in phase 2:

- 7 press releases
- 24 short films
- 1 animation movie

Especially in relation to the major events and the mid-term report, booklets, press releases, posts at the social medias and films have been prepared in order to provide broad information about the project.

We always combine meetings in the partnership with visiting the sub-projects in C2C CC, and both Climatorium and AquaGlobe communicates the subprojects now, when they both have physical buildings to exhibit in.

The secretariat has listed all the media work we have been involved in in annex E4.1 In continuation of this list, a lot of communication has taken place directly from the sub-projects. See an example in the annex E4.2, where C24 exhibit at AquaGlobe (a short video).

TV was there, when we visited Svostrup Inn during the partnership meeting in February 2020

Status of deliverables 31/12/2020:

24 press releases over the course of the six years	Submitted in the Annex E4.3 – the list will grow in phase 3
17 agendas for the "study trips" to the demonstration projects	Submitted in the Annex E4.4 – a list of agendas on the 10 project visits made all ready

24 signature stories	Submitted in the Annex E4.5 – a list of the 14 signature stories made now

Evaluation:
It is difficult to determine whether enough has been communicated. As you see in E1, the outreach of our earlier communication has been rather effectful though we are well known and are invited to collaborate in new consortiums, projects, speak at arrangements etc. We would have liked our collaboration also had reached by more private people. But it is certain: there has been a broad and effective communication. Most importantly, it is clear that the project is integrated across borders of many kinds.

Figure 5: Screen dump from the animation movie made in C2C CC. Se the English version with English subtitles here

Action modifications:
No modifications are needed.

After Life:
None.

Target and goals for Phase 3:
Continuation of securing the 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.

	Quantifiable milestones:	*Date by end of*
E4	Press release 13-14 are finished	31/12/2021
	Press release 15-16 are finished	31/12/2022
	17 study trips have been planned and executed	31/10/2022
	24 signature stories are finished	31/12/2022

Action	*Deliverables:*	*Date by end of*
E4	12 press releases over the course of the six years	31/12/2022
	17 agendas for the "study trips" to the demonstration projects	31/12/2022
	24 signature stories on C2C CC	31/12/2022

Action E5: **Networking with other projects**

Beneficiary responsible for implementation: *Central Denmark Region*

Foreseen start date: 01/01/2017 ***Actual start date:*** 01/01/2017

Foreseen end date: 31/12/2022 ***Actual (or anticipated) end date:*** 31/12/2022

Expected results:
Networking with other projects result in dissemination of C2C to the Brussels' environment and bringing in European best practice to C2C CC.

Achieved results:
C2C CC has successfully been presented to several other EU funded projects (in particular LIFE IP's) and European networks (CPMR, Climate Alliance, CoM, Eurocities, ERRIN, EPC). From the project start, C2C CC has increasingly, been encouraged to join a number of conferences (CoM, Eurocities, Climate Adaptation Strategy Stakeholder Forum), and 'bilateral'/'multilateral' counselling on how to write an application, in which C2C CC knowledge has been disseminated and put into context. These activities were not originally foreseen, but have been highly valued by recipients. To this purpose, one-pagers and power point presentations have been produced.

As examples, in phase 2, C2C CC had a visit from a delegation from Brittany, which was well on its way to preparing an application for a LIFE IP. We have also contributed to the application for a LIFE IP project 'Beyond Waste', which is being elaborated by CDR.
We have also visited the Swedish LIFEAdapt. At the international conferences we have met a number of projects with which we have had more informal mutual discussions.

The very large formal project collaboration takes place under the auspices of DNNK (The National Network for Climate Adaptation), where many of the Danish climate projects are organized. In DNNK, many webinars and workshops are held, and experiences are given and received across all actors and topics within climate adaptation.

Status of deliverables 31/12/2020

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	Will be submitted with the Final Report
24 confirmation letters/emails of attendance to events	See the list below of currently completed activities
Networking with LIFE IP	Submitted in the Annex E5.2
Presentation at Climate Alliance Essen 2017	Submitted with Interim report No1 E5.3 More in MidtRum
Networking with FP7 project Opera	Submitted in the Annex E5.4
Presentation of C2C CC at meeting for NCPs	Submitted in the Annex E5.5 More in MidtRum
Networking with a number of Life IPs at welcome meeting: • Finance ClimAct (F), • CEI Greece (GR), • ForEst&FarmLand (EE), • etc.	Submitted in the Annex E5.6. List of 22 presentations from the meeting 17 02 2020. Available in MidtRum

Networking with (later eventually) Life IP (CY), IACO	Submitted in the Annex E5.7a and E5.7b
Networking with Life IP, URBAN KLIMA 2050 (ES) and Brittany Regional Council (preparing TA application)	Submitted in the Annex E5.8
Networking with Life IP (UK) Natural Course	Submitted in the Annex E5.9
EP Life Workshop 2017	Submitted with Interim report No1 E5.10
Networking with Life IP. Life Coast Adapt	Submitted in the Annex E5.11a, E5.11b, more in MidtRum
Networking with Brittany 2019 in preparing their TA application	Submitted in the Annex E5.12. Pictures in MidtRum
Networking with LIFE IP (SE) Rich Waters	Submitted in the Annex E5.13a and E5.13b
Networking with LIFE IP (DE) Atlantic Region	Submitted in the Annex E5.14
Networking with LIFE IP (BE) BEINI	Submitted in the Annex E5.15a and E5.15b
Networking with LIFE IP (FR) REVERSEAU	Submitted in the Annex E5.16a and E5.16b
Participation in event by PLACARD H2020	Submitted in the Annex E5.17

Evaluation:
There is no doubt that project collaborations - formal and informal - are important in developing the approach to climate adaptation.

We have probably tended to be so grateful for the invitations and offers for cooperation we received that we have participated in too much. It has given good experiences and knowledge, and the knowledge of C2C CC widely disseminated, but it has probably taken too much time from the work internally in the project and the sub-projects. Now we are paying more attention to that and we also are more attentive to meeting exactly those we need to meet.

Action modifications:
No modifications needed.

After Life:
-

Target and goals for Phase 3:
Continuing the dissemination activities.

Action	*Quantifiable milestones:*	*Date by end of*
E5	Phase 3 Participation in 4 events on CCA and/or CCM (year 5) Participation in 4 events on CCA and/or CCM (year 6)	 31/12/2021 31/12/2022

Action	*Deliverables:*	*Date by end of*
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	 On going On going

Action E6: **International dissemination**

Beneficiary responsible for implementation: *Central Denmark Region*

Foreseen start date: 01/01/2017

Actual start date: 01/01/2017

Foreseen end date: 31/12/2022

Actual (or anticipated) end date: 31/12/2022

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.

Achieved results:

Figure 6: *Birgitte Karnøe Frederiksen, CDEU, is presenting C2C CC at the NEEMO and EASME welcome meeting for new LIFE IP's, February 2020. Deliverable E6.1*

Both the Secretariat and CDEU has had several meetings with relevant audiences for international dissemination such as EU professionals, project and policy officers etc. In action E4 the meetings and other contacts is listed.

More than 24 short films are produced by the end of Phase 2. The film production was particularly strong when we made the mid-term report, where we made films of C7-C24. These were interviews with the project managers, where they tell briefly about the project's content, results and challenges. In addition, films made in larger events and an animated film to increase citizens' knowledge of climate adaptation on their own land. The latter is intended as the first in a series of animated films to promote adaptation in citizens' consciousness.

All films are available at www.c2ccc.eu:

The Danish films (link)
The short films made at mid-term (link)
The English films (link)

The short films are also integrated in the Storymap.

All films are available in both Danish and English.

In addition, there are a few films that are made for newsletters or postings on social media. It has often been connected to larger events, including both invitations and pitch, after a larger event and one at a monitor meeting.

Status of deliverables 31/12/2020

24 short films (one for each demonstration project and crosscutting capacity building activity) are made and disseminated on the C2C CC website:	
1. film	https://www.youtube.com/watch?v=fJTLYYxfzDE
2. film	https://www.youtube.com/watch?v=9ETYvjux1wo
3. film	https://www.youtube.com/watch?v=VO0Yok_UGUU
4. film	https://youtu.be/hLNE8BX8ndw
5. film	https://www.youtube.com/watch?v=1sXJrbUB_ns
6. film	https://region-midtjylland.23video.com/video/62766705/
7. film	https://region-midtjylland.23video.com/video/60904067/
8. film	https://region-midtjylland.23video.com/video/62766727/
9. film	https://region-midtjylland.23video.com/video/60904043/
10. film	https://region-midtjylland.23video.com/video/62766854/
11. film	https://region-midtjylland.23video.com/video/62766657/
12. film	https://region-midtjylland.23video.com/video/62782261/
13. film	https://region-midtjylland.23video.com/video/62766746/
14. film	https://region-midtjylland.23video.com/video/62792547/
15. film	https://region-midtjylland.23video.com/video/62690243/
16. film	https://region-midtjylland.23video.com/video/62766873/
17. film	https://region-midtjylland.23video.com/video/62766922/
18. film	https://region-midtjylland.23video.com/video/62766686/
19. film	https://region-midtjylland.23video.com/video/62766910/
20. film	https://region-midtjylland.23video.com/video/62766957/
21. film	
22. film	
23. film	
24. film	
The animation movie:	
Danish without text	https://region-midtjylland.23video.com/secret/65008339/e8a191418a4193ffd3fc775fab7f83d5
Danish with Danish text	https://region-midtjylland.23video.com/secret/65008697/a1dedc7ab7b8bc99d7062877811924f4
Danish with English sub text	https://region-midtjylland.23video.com/secret/65008860/7d9f529ab4bec184ef0299e651eb8113

English without text	https://region-midtjylland.23video.com/secret/65009085/396598ab8a3a3c067204c91b59a26c78
Anglish with Danish sub text	https://region-midtjylland.23video.com/secret/65009101/6710d970bf28b8439d6b70a20a691dc4

Evaluation:
Short film is a really good medium for dissemination - both nationally and internationally. We experience that the films are seen by many and that they can be used again and again. We therefore continue to produce films even though far more have now been produced than promised.

Action and budget modifications:
No modifications needed.

After Life:
-

Target and goals for Phase 3:

Action	*Quantifiable milestones:*	*Date by end of*
E6	24 short film are finished	31/10/2022

Action	*Deliverables:*	*Date by end of*
E6	24 short film are finished	31/10/2022

Action F1: **Establishment of organizational structure**

Beneficiary responsible for implementation: *Central Denmark Region*

Foreseen start date: 01/01/2017 ***Actual start date:*** 01/11/2016

Foreseen end date: 31/01/2017 ***Actual (or anticipated) end date:*** 20/11/2017

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.

Achieved results:
In the first interim report recruitment challenges was mentioned as a reason for lack of personnel. This is over a long time ago. Today, the organization is so well known and interesting to work in that we get a lot of applicants by posting new jobs and offers of internships. A professional secretariat is created and in operation.

Similarly, both the steering group and the knowledge committee work well. The steering group provides advisory advice for the work in the project and the members all act as good ambassadors. Here is a good connection to the important players that we do not have as partners for various reasons.

One of the members of the knowledge committee has resigned due to illness, and we have a new well-functioning member from Aarhus University. We have tested different working methods to get the knowledge committee to challenge and build competence in the projects in the best possible way - and get to create synergies across. The model here at the end of Phase 2 is that the three members of the knowledge committee have slightly different roles. VIA University College is deeply academically involved in several of the sub-projects and creates complementary projects for C2C CC. Further contact has been made here with the COST network, where Theis Raaschou Andersen represents Denmark. Aalborg University conducts the master class on climate adaptation with added value and creates knowledge about knowledge gaps, needs and wishes through interviews and project visits. The new member from Aarhus University is involved in making the partnership work across and has so far especially contributed with professional knowledge, organization of seminars and conferences as well as contributions in many contexts, in the project and at international conferences.

All knowledge committee members are active presenters and contribute to drawing the project.

Status on deliverables 31/12/2020:

Phase 1 progress report	31/09/2018
Phase 2 proposal	
Phase 2 progress report	31/03/2021
Phase 3 proposal	30/09/2020
Mid-term report	31/09/2020
Phase 3 progress report	30/09/2022
Final report	31/06/2023
Electronic Log book	On going

After LIFE Plan	30/10/2022

Evaluation:
Many important experiences have been gained in the project. When it comes to the organization, having a steering group, which is composed partly of representatives of the organizations that are partners in the project, but also other relevant actors in climate adaptation, a recommendation that we pass on. The project has the steering group's full attention and the project is highlighted in many other contexts, as the steering group are also ambassadors for the project.

Similarly, it is rewarding to have a knowledge committee that comes from the very universities and knowledge institutions that have competencies within climate adaptation in Central Denmark Region. We ensure a high level of knowledge in the projects and provide the students (and teachers) with a practical knowledge that contributes to increasing the relevance of the programs.

All in all, we have achieved that today we appear as a highly competent player in climate adaptation in Denmark. We are invited to participate in many new development projects at home and abroad.

However, we are still struggling to convince national administrative and political actors that the regions in Denmark should have a formal role in climate adaptation and other cross-cutting issues. It is an effort that continues with undiminished vigor. Though we experience rewarding collaboration and mutual respect at the official level across organizations. It must therefore be described as a question of border demarcation and power structures.

Action modifications:
No modifications

After Life:
The experience gained in C2C CC will to a large extent be used after the end of the project. This will be done through DNNK (The National Network for Climate Adaptation) and in Water Valley, which has been created in a collaboration between CDR, Climatorium and AquaGlobe.

Target and goals for Phase 3:
In phase 3, the professional operation of the project will continue until a satisfactory reporting and continuation of rewarding collaboration subsequently.

Action	*Quantifiable milestones:*	*Date by end of*

Action	*Deliverables:*	*Date by end of*
	Phase 2 progress report	31/03/2021
	Phase 3 progress report	30/09/2022
	Final report	31/06/2023
	Electronic Log book	On going
	After LIFE Plan	30/10/2022

Action F2: **Internal seminars and workshops**

Beneficiary responsible for implementation: *Central Denmark Region*

Foreseen start date: 01/01/2017

Actual start date: 01/01/2017

Foreseen end date: 28/02/2017

Actual (or anticipated) end date: 31/03/2017

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).

Achieved results:
The action is done in Phase 1

Status of deliverables 31/12/2020:

Report on Kick-off seminar	Submitted with Interim report No1 F2.1 – a report is never made, but the Kick off seminar was. Here you see the program.
Report on Communication workshop	Submitted with Interim report No1 F2.2 – the final communication strategy.

Evaluation:
-

Action modifications:
No modifications.

After Life:
-

Target and goals for Phase 3*:*

Action	*Quantifiable milestones:*	*Date by end of*
F2	No milestones in phase 3	

Action	*Deliverables:*	*Date by end of*
F2	No deliverables in phase 3	

7. Key Project-level Indicators

To monitor how C2C CC and the project actions comply with the overall objective and affect climate resilience in the CDR the C2C CC secretariat has calculated a number of quantitative Key Project Indicators (KPI) that represent target values to be reached by the project end and 5 years after C2C CC has ended.

In the following we will provide an assessment of the project progress towards reaching these KPI´s.

All 24 C2C CC sub-projects are concerned with CCA activities and initiatives that take place in the entire CDR and even outside of the region, including municipalities in the North Denmark Region affecting and benefitting inhabitants in these areas. Many of the capacity building activities like conferences, workshops and masterclasses often also involves stakeholders outside of the CDR. This means that we will be complying with the targets of indicator 1.5 and 1.6.
The actions in sub projects C8 – C19 are directly related to the actions in the municipal CCA and risk management plans. This means that C2C CC contributes to the promotion of municipal CCA. The project area (the area of the CDR + three municipalities in the Northern Region of Denmark)) incl. appointed risk areas in CDR are thus included in the C2C CC project and benefitting from the project actions. C2C CC is thus complying with the indicator values 9.1 and 9.2.
One of the focus areas in the municipal CCA and risk management plans is flood risk and flood management. The risk management plans even contain guidelines on how to assess and control flood risk. They are furthermore revised every 6th year to ensure that the guidelines are updated.
As previously mentioned, actions in sub project C8-C19 are directly related to actions in the CCA and risk management plans. This means that experiences and knowledge from C2C CC contribute to the municipal CCA and flood management and is expected to decrease flood risk.

14 areas in Denmark have been appointed as risk areas. This means that these areas are in a greater risk of getting flooded than other places in Denmark. As a consequence of this the municipalities in these areas are required to develop the previous mentioned risk management plans that contain guidelines in relation to flood management.

3 of the appointed risk areas are placed in the CDR where values like properties, infrastructure and others are in risk of getting flooded. To monitor how C2C CC is decreasing the flood risk, we will thus take point of departure in these areas and calculate the value of the properties, infrastructure and others that are in risk of getting flooded.

At the end of C2C CC we do not expect flood risks to have been decreased by much. As C2C CC is a brainwork project and only a few physical adaptation solutions have been realized by then the effect of C2C CC will be very modest. The same goes for the effects of solutions from CCA- and risk management plans. We expect that it will take more time than until the project end before we will be able to register any pronounced effects of adaptation solutions.

However, a few C2C CC sub-projects will be finished by the project end and the risk management plans and most CCA plans will have been revised and updated by the project end. We therefore expect that values in risk of getting flooded will have decreased by 10 % and further 15 % 5 years after the project end as more C2C CC sub projects gets realized and established and contribute to flood management and increased climate resilience.

During the C2C CC project period more focus has been put on ecosystems and their services. This is also the case in C2C CC where we work holistic and cross sectoral. We have thus arranged master classes and workshops on this topic as capacity building events for the partners but also stakeholders outside of the partnership. This has had an effect on the partners who are addressing the issues in their projects. We are thus expecting that all of the partners in their projects will plan to affect and enhance ecosystems as an action or as a side benefit. Since focus is still growing on ecosystems, we expect that also ecosystems outside of CDR will be affected. This also means that conditions and trends of ecosystem services will improve during the project period. And we will thereby reach the indicator value target of no. 7.
A great deal of the C2C CC project consists of capacity building events to enhance knowledge exchange and capacity building. The same goes for communication activities and communication in general to present and share results and findings from the sub projects.
Despite the Covid-19 crisis we have still been able to conduct a lot of our activities and involve relevant stakeholders. We are thus expecting to comply with the indicator values of 10, 11 and 12. We have e.g., been able to hold our conferences and workshops on a virtual platform or as a hybrid event with both physical and virtual participants. And this has in fact been resulting in higher participation rates than what would have been possible at normal physical meetings.

All of these activities have led to employment of two new employees in the C2C CC secretariat, Anja and Pernille and we plan to hire a new employee in 2021.

Two of our colleagues have however resigned from the secretariat.

This means that we expect to comply with the indicator value 13.

Finally, we have also in phase 2 seen new examples of replication and transferability of C2C CC. E.g., the Climatorium has been replicated in New Zealand where a water management company has entered into a partnership with Lemvig Vand A/S who are behind the Danish Climatorium. Knowledge from C2C CC has also been transferred to new networks. An example of this is the new National Network for Climate Adaptation (DNNK) where the C2C CC project manager, Dorthe Selmer is the new Vice president and several of the partners of C2C CC contribute and participate. The same will also be the case after the project end. In phase 2 a contract on Water Valley has been completed and signed. Water Valley will be the C2C CC after life and will build on the foundation and knowledge of C2C CC.

We are thus on the right track of complying with the indicator values of no. 14.

8. Next phase: changes/adjustments

Not relevant for LIFE15/IPC/000006-C2C CC

9. Comments on the financial report

The project-related costs for phase 2 have overall been held within the specifications and frame of the approved budget for phase 2, and in compliance with the General Conditions of the eligibility of costs as described in the Grant Agreement.

The financial expenses, which have been held, are in line with the accumulative expenditure, that have been estimated from the 1th of November 2016 until the 30th of November 2020 by all beneficiaries - these numbers have previously been reported on the 30th of November 2020 as per Grant Agreement.

Finally the financial expenses have been held in compliance with the approved budget according to Amendment no. 3 to Grant Agreement.

The beneficiary Vesthimmerlands Vand (VV) – nr. 26 – hase reported no expenses for this period.

The following deviations can be clarified as accordingly:

1. Personnel

No comments.

2. Travel and subsistence

Minor expenses due to COVID-19 restrictions.
Besides this, the UK study tour covered some of the activities, that would have been made home in DK (capacity building, partnership meeting and dissemination).

3. External assistance

Partly due to Covid-19 and partly due to delays for various reasons, several analyses and studies have been postponed to phase 3. It is still expected that all external assistance will be carried out in accordance with the content of the project description.

A number of the realized expenses for External Assistance and services are covered by the Government and Municipality's Purchasing Agreement (SKI), which is placed in open tender every five years.

4.3 Prototype sub-lot

Extra: Milling and new permeable wear layer on Climate Road 14.872€.

6. Other cost

Extra: Study tour to UK 52.000€

9.1. Summary of Costs Incurred

Cost category	Budget according to Amendment no. 3 to Grant Agreement (€)	Budget Phase 2 according to Amendment no. 2 to Grant Agreement (€)	Consolidated cost incurred within Phase 1 & 2 (€)	Consolidated cost incurred within Phase 2 (€)	Percentage of costs incurred Phase 1 & 2 per whole project budget (%)	Percentage of costs incurred Phase 2 per whole project budget (%)	Percentage of costs incurred per budget Phase 2 (%)
1. Personnel	6.360.203	2.258.569	4.601.126	2.168.957	72%	34%	96%
2. Travel and subsistence	388.855	140.766	184.111	43.145	47%	11%	31%
3. External assistance	3.825.912	1.478.577	2.531.633	906.342	66%	24%	61%
4. Durables goods: total non-depreciated cost			-				
• ***Infrastructure sub-lot.***	-	-	-	-			
• ***Equipment sub-lot.***	1.335	-	551	-	41%	0%	0%
• ***Prototype sub-lot.***	109.600	9.975	123.505	16.821	113%	15%	169%
5. Consumables	45.532	13.589	11.673	10.102	26%	22%	74%
6. Other costs	187.309	86.241	191.584	124.089	102%	66%	144%
7. Overheads	764.312	279.140	535.092	228.862	70%	30%	82%
Total eligible costs	**11.683.058**	**4.266.857**	**8.179.275**	**3.498.318**	70%	30%	82%

9.2. Accounting system

- The Coordinating Beneficiary has composed Guidelines for the eligible costs and for the reporting. These have been distributed to all beneficiaries (including in MidtRum).

- Each partner has its own individual accounting system. A number of the public bodies use the same accounting system. Codes have been set up for identification of the project costs and for purpose of analysing the costs consumed.

- Each partner has their own internal procedures for purchase, approval and payment of expenses.

- All partners are bound by The Government and Municipalities Purchase Agreement (SKI). This ensure the compliance of the rules regarding selection of vendors, prices etc. - Securing Value for money.

- Manual completed timesheets are used in the project. The actual productive hours per year are used for calculation of the actual hourly rate. For staff working on average less than 2 days per month in a given calendar year 1.720 hours per year are used for calculation of the actual hourly rate.

- The project employees, who are using the manual completed timesheets, are filling these out on a daily basis. After every month end, the time sheets are signed by the employee and approved by his or her superior.

- The project employees, who have specifically and contractually seconded to the project for a fixed percentage of time, have signed a special employment contract, which all have been approved by their superior.

- Every project manager for all beneficiaries ensures, that the invoices contains a clear reference to the LIFE project, ensuring that the invoices are marked with the Life project number in order to show the link to the LIFE project.

9.3. Partnership arrangements (if relevant)

- The main parts of all transactions have been carried out by each individual partner.

- In actions C9 and C12 costs for external assistance have been purchased by one partner and subsequently costs shared by the participating partners, in accordance to the actual agreement and invoice from the vendor. No addition have been made.

- All partners have booked all costs in their internal book keeping systems.

- The study tour for UK with 65 participants was paid by The Coordinating Beneficiary (CDR) and each partner participant paid a contribution to CDR of 335 €.

- CDR has calculated the hourly rate for all project employees. CDR has likewise compiled all project financial statements based on the information of expenses (uploaded in MidtRum). All associated beneficiaries have approved and signed the completed financial statements.

- CDR has also prepared the consolidated cost statement.

9.4. Certificate on the financial statement

- In accordance with art. II.23.2.d in Letter Amendment no. 1 to Grant Agreement for the project – only the Coordinating Beneficiary is covered by this rule.

- The Central Denmark Region (CDR), is obligated to produce a certificate on the financial statements and underlying accounts.

- The auditor is Ernst & Young. They will certify and follow the format of the standard audit report form available on the LIFE website

ANNEX 1: DELIVERABLE AND MILESTONES SCHEDULE

IPs with budget split into Phases: fill in below for main deliverables and milestones completed in the reporting period.

IPs with merged budget: in addition to the above, list any relevant deviations in expected completion dates for deliverables and milestones in the next period.

MAIN DELIVERABLE PRODUCTS OF THE PROJECT

Name of the Deliverable	Code of the associated action	Deadline	Actual date of completion
One note on replication of the findings in the project	C1	31/12/2022	
Note on the continuation of a CCA and coastal challenges network after the IP incl. recommendations on purpose, organisation and financing		31/12/2022	
Note on the establishment of a permanent Danish integrated river-coastline network.		01/06/2022	
An interactive 3D decision support tool on the water flow in catchment areas across municipal borders	C2	31/12/2018	February 2019
1 forecast system based on models and meteorological forecasts available for the public		31/12/2020	June 2020
1 note on new concept for utilities to pay farmers to retain water upstream cities, and thus save costly investments in the cities.		31/12/2020	Postponed to 31/12/2022
1 report on different business models to ensure win win solutions between the agriculture and urban areas.		31/12/2020	Postponed to 31/12/2022
Action Report on the synergies between agriculture, CCA and wetlands		31/12/2020	Postponed to 31/12/2022
1 report on 'Impacts of CCA on freshwater ecology'.		31/12/2020	December 2020
Report with maps showing groundwater flood prone areas. Training material in the form of maps and descriptions.	C3	31/12/2020	February 2019
Report on the available tools on groundwater mapping including relevant test and demonstrations		31/12/2020	February 2019
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.		31/12/2020	September 2020
Guideline on local scale and regional scale modelling.		31/12/2020	February 2019
Report - Identifying conflicts built in the present tax system on energy and water consumption.		31/12/2020	Postponed to 31/12/2022
Evaluation report on the capacity of SUDS and the limitations set by the local hydrology, geology and other framing conditions.	C4	31/12/2018	15/06/2018
A report on SUDS used in C2C CC and possible SUDS systems to be introduced as means to prevent flooding from heavy rain events.		31/12/2020	15/06/2020

A report on consultation with relevant producers of SUDS.		31/12/2020	Postponed to 31/12/2022
Report on the learnings within stakeholder involvement in relation to sewage separations and SUDS.		31/12/2018	December 2017
Training and inspirational material for the authorities and utilities to inspire the citizens on the possible solutions.		31/12/2020	Postponed to 31/12/2022
Newsletter on the activities of the Advisory Committees available at www.c2ccc.eu	C5	Ongoing	
Small videos on the experiences, benefits and recommendations of the C2C CC actions available at www.c2ccc.eu		Ongoing	
Reports on expert consultations		31/12/2022	
Peer reviewed journal article on the experiences of network governance in C2C CC.		31/12/2022	
1 guideline for network governance based on the experience in C2C CC		31/12/2022	
1 common regional strategy on CCA with the outset in integrative planning and network governance.		31/12/2022	
A High resolution groundwater-surface water model	C6	31/12/2018	01/02/2019
User guideline for the model		31/12/2018	01/02/2019
An interactive 3D decision support tool on the water flow in catchment areas across municipal borders		31/12/2018	01/02/2019
User guideline for the tool.		31/12/2018	01/02/2019
Report on the test and demonstration of warning systems		31/12/2022	
Information material on best practice cases	C7	31/12/2022	
Information material on EU support and funding possibilities		31/12/2017	Ongoing
Report describing potentials for Danish Water Hub in CDR and recommendations for After LIFE		31/12/2022	
Report on three descriptive scenarios for the area's development with different actions	C8	31/12/2018	26/11/2018
Scenarie 1 - Håb til Håb area		31/12/2018	26/11/2018
Scenarie 2 - As Vig		31/12/2018	26/11/2018
Scenarie 3 - Hjarnø		31/12/2018	26/11/2018
Scenarie 4 - Snaptun		31/12/2018	26/11/2018
Scenarie 2 - As Vig 2018 - Video med havstigning		31/12/2018	26/11/2018
Scenarie 3 Hjarnø og 4 Snaptun 2018 - video med havstigning		31/12/2018	26/11/2018
Report on recommendations on the area's development for the City Council.		31/12/2022	
Two surveys of major stakeholders	C9	31/12/2017	11/11/2019
An analysis of the optimal, permanent protection		30/06/2019	11/11/2019
A cross-border emergency preparedness plan		31/12/2021	
Calibrated hydraulic model for the Grenaa Catchment	C10	31/12/2018	Not yet fully submitted
Strategic plan for the area and its climate adaptation		31/12/2022	
Report on mapping, modelling and analysis of the Randers Fjord	C11	31/12/2018	07/03/2019
A feasibility study into a possible subsequent EIA for a dam project		31/12/2022	
Modelling Tools and two municipal strategies for land use in and around Randers Fjord		31/12/2022	
Report and catchment tool and River Gudenaa Catchment area	C12	31/12/2018	02/06/2020

Catalogue of solutions, costs, etc		31/12/2018	02/06/2020
Material from workshop, travels etc. with stakeholders		31/12/2022	11/11/2020
Develop a financing models for compensatory actions		31/12/2022	
Report on designation of test areas and mapping of drainage factors	C13	31/12/2018	15/02/2019
Description of solutions for testing		31/12/2020	02/10/2018
Monitoring reports		31/12/2022	
A model that can calculate scenarios for the total flooding from the sea, watercourses and sewage systems	C14	31/06/2017	29/12/2020
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		31/12/2019	24/01/2019
Design material of dikes, sluices and pumps that inspire to provide recreational urban spaces		31/12/2020	
An added value catalog for Hedensted Town a citizen involvement tool	C15	31/12/2018	29/11/2017
The stakeholders' (Citizens) local climate proofing plan(s) for Hedensted and Tørring		31/07/2021	29/11/2017 One more will come
1 leaflet with rekommandations		31/07/2021	12/06/2018
Technical report on drainage systems and scenario results for one area		31/07/2022	01/12/2020
Report on the identification of the Climate Ribbon's exact size as well as geographical, biological circumstances (e.g. groundwater layers, soil, contamination etc)	C16	01/10/2017	01/10/2017
Publication of program for an international professional competition on the Climate Ribbon		01/01/2018	01/10/2017
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		31/12/2022	
A detailed investigation program for monitoring groundwater levels, pollution and land subsidence in Thyborøn and Harboøre Tange	C17	31/03/2018	15/12/2019 (Updated)
A dynamic adaptation model describing the interaction between e.g. rainwater, groundwater, seawater, and pollution on the basis of a hydrogeological mode		31/12/2019	08/04/2019
A number of conceptual designs developed, that can solve the climate challenges in Thyborøn and Harboøre Tange		30/06/2022	
Hydrological model of the risk of rising groundwater (saltwater) after high tides + Recommendations	C18	31/12/2019	Postponed to phase 3
Booklet about rising groundwater in coastal areas		31/12/2019	Postponed to phase 3
Two articles for international periodicals, e.g. Journal of Hydrology		31/12/2019	Postponed to phase 3
Process description for the establishment of a new dike association		31/12/2018	13/12/2018

Model for local organisation for climate change adaptation and development in Juelsminde		31/12/2019	27/11/2019
Documented stakeholder network methodology	C19	31/12/2018	
Report of conceptual designs for SUDS at Tranebjerg, Ballen and Samsø Golf Course and Besser Made		31/12/2018	29/07/2020
Report of conceptual designs for SUDS at Tranebjerg, Ballen and Samsø Golf Course and Besser Made		31/12/2021	
Project video accessible at the C2C CC portal, at the Energy Academy's homepage (with LIFE logo) and at SAK homepage (with LIFE logo)		31/12/2022	08/08/2018
Hydraulic modelling incl. zero-alternative, coupled events and climate scenarios		31/12/2022	
Evaluation report of amount of visitors and business collaboration	C20	31/12/2020	15/12/2020
A concluding report with feedback from interviewees on their interest in the Climatorium and a list of potential companies having expressed interest as tenants	C21	31/12/2018	September 2017
A feasibility study of tourism documented in a report		31/12/2018	September 2017
Report on the test of installation of a permeable coating (climate road)	C22	31/12/2018	03/05/2018
Articles: • A review of nature-based solutions for urban water management in European circular cities: a critical assessment based on case studies and literature • Meeting in the partnership 03/11/2017 • "Klimavej giver varme til børnehave" • "Vand & Jord"			Ongoing
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		31/12/2022	
Sub-report on examination of the degree to which permeable surfacing can be integrated with geothermal heating/cooling		31/12/2022	
Final reporting on the individual permeable surfacing's time-related infiltration capabilities and the roads performance as a climate adaption solution		31/12/2022	
4 reports of the test results of the infiltration potential methology	C23	31/12/2020	12/02/2020
1 guideline with process description of how the infiltration potential map can be prepared		31/12/2018	Postponed to phase 3
Complementary project description		31/12/2018	September 2019
4 Open Access scientific papers distributed across Sub-projects 1 and 2	C24	30/10/2019	30/10/2019
4 popular science/outreach articles		30/10/2019	11/06/2019 25/07/2019 21/08/2019 23/10/2019 08/01/2020
Climate tourism brochure for the Region		31/10/2021	
A synthetic popular science book on climate and culture history in CDR		31/10/2022	01/04/2019
Monitoring protocols	D1	31/12/2022	
Baseline report		31/12/2022	

Monitoring report		31/12/2022	
Baseline report on flood and risk maps	D2	31/07/2017	28/01/2019
Final monitoring report		10/10/2021	
Monitoring report, phase 1		10/10/2018	29/03/2019
Monitoring report, phase 2		31/03/2021	
Monitoring report, phase 3		31/03/2023	
Monitoring protocols	D3	31/03/2017	Postponed to phase 3
Report on Ecosystem services assessment methodology		31/03/2018	Postponed to phase 3
Monitoring Report 1		10/10/2018	Postponed to phase 3
Monitoring Report 2		31/12/2020	
Monitoring Report 3		31/12/2022	
Data gathered from existing databases	D4	Beyond IP	
Communication and outreach plan	E1	31/03/2017	31/03/2017
Report on feedback on quantitative statistics		31/12/2022	Postponed to phase 3
List of media contacts		31/12/2022	Postponed to phase 3
Communication plan for After LIFE activities (F1.1)		31/09/2022	
1 C2C CC website and 1 online platform	E2	31/03/2017	01/11/2016
24 notice boards (1 large and 5 smaller notice boards for 4 projects).		30/11/2017	30/11/2016
12 newsletters incl. articles, progress reports, etc.		15/12/2022	
1 layman's report in 400 colour copies and online download		10/11/2022	
Agenda for the seminar and presentation on review of legal barriers (cf. E3.1)	E3	31/05/2018	03/11/2017
Conference material and one pagers for three C2C CC conferences		10/01/2018	
• Kick off, 30. March 2017			30/03/2017
• ENCORE, 17. March 2017			17/03/2017
• Half Way There, 23. – 24. October 2019			23/10/2019
Booth material (demonstration projects) for use for the three conferences		09/01/2020	
• Kick off, 30. March 2017			30/03/2017
• Half Way There, 23. – 24. October 2019			23/10/2019
• IWA 2018, 16. – 21. September 2018			16/09/2018
Presentation to use at IWA World Water Congress & Exhibition in Copenhagen		10/10/2021	Exhibition postponed to September 2021 due to Corona
Presentation and booth material for the conference "Coast to Coast Climate Challenge – Done! What comes next?"		30/10/2022	
24 press releases over the course of the six years	E4	31/12/2022	
17 agendas for the "study trips" to the demonstration projects		31/20/2022	
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	E5	31/12/2022	

24 confirmation letters/emails of attendance to events		31/12/2022	
24 short films disseminated on the C2C CC website	E6	31/10/2022	
Phase 1 progress report	F1	31/09/2018	05/07/2019
Phase 2 proposal			03/09/2018
Phase 2 progress report		31/03/2021	
Phase 3 proposal		30/09/2020	30/09/2020
Mid-term report		31/09/2020	11/05/2020
Phase 3 progress report		30/09/2022	
Final report		31/06/2023	
Electronic Log book		On going	
After LIFE Plan		30/10/2022	
Report on Kick-off seminar	F2	26/01/2017	30/03/2017
Report on Communication workshop		28/02/2017	October 2017

MAIN MILESTONES OF THE PROJECT

Name of the Milestone	Code of the associated action	Deadline	Actual date of completion
Common tender material to be used in the partnership	C1	01/02/2018	Not wanted
Workshop on sustainable approaches to coastal protections		01/06/2019	09/12/2020
Workshop on new governance and involvement models		01/06/2020	11/09/2020
Compiling experience of warning system	C2	30/06/2019	25/04/2019
Investigating the possibilities of areas that can be flooded and possible funding of the investment		Ongoing	
Development of forecasting		31/12/2020	June 2020
Test and demonstration		31/12/2022	
Outline of groundwater flood prone areas on a regional basis including workshop	C3	31/12/2019	February 2019
Identification of built in conflicts with existing tax system and legislation including workshop		31/12/2020	Postponed to phase 3
Relevant use of excess groundwater and the constraints and barriers		31/12/2021	
Training and inspirational material for authorities and utilities on how to involve local land owners in implementing SUDS.	C4	31/12/2022	Postponed to phase 3
Overview on SUDS experience in C2C CC		01/06/2021	
Evaluation on the SUDS experiences within C2C CC.		31/12/2021	
Interviews with Danish ministries, networks and universities	C5	01/07/2017	04/06/2018
Study tour to Germany and The Netherlands to study organizational and practical solutions on CCA and coastal challenges		31/10/2017	May 2018
Training course in integrative planning processes and network Governance		31/12/2018	04/06/2018 will continue
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)		30/09/2022	Happened several times in C12.

			Postponed to phase 3 when we work with the common strategy
Development and formulation of a common regional strategy on CCA with the outset in integrative planning and network governance.		30/09/2022	Postponed to phase 3 when we work with the common strategy
At least one of the 6 C2C CC thematic partner seminars (stormøde) has adopted integrative planning as a common theme.		30/09/2022	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		01/07/2017	01/07/2017
Groundwater-surface water model constructed (C6.1)	C6	01/07/2018	01/07/2018
Observation data collected and groundwater-surface water model calibrated		31/12/2018	15/01/2019
All CDR municipalities have applied the tool and use the results in decision making and spatial planning		31/12/2022	
3D decision support tool is constructed (C6.2)		01/07/2018	01/07/2018
Testing completed		31/12/2018	15/01/2019
Exploring and testing warning systems (C6.3)		31/12/2022	
DEMA and 5 municipalities have applied an extended warning system module for flood prediction		31/12/2022	
6 workshops on best practice and/or topical issues; Annually from 31.12.17 to 31.12.22	C7	31/12/2022	
Advising 10 companies		21/12/2020	Far more than 10 companies are advised 21/12/2020
Interviews of 30 clean-tech water companies		31/12/2018	31/12/2018
Project ideas selected and deselected	C8	31/12/2021	
Pilot project prepared		31/07/2022	
Project ready to be executed		31/12/2022	
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.	C9	31/12/2017	28/02/2017
Analysis of the optimal level of protection available		30/06/2018	28/08/2018
A cross-border emergency management for handling of storm surge events established.		30/06/2019	25/11/2020
A number of proposals for funding are available.		31/03/2021	
Collection of data for the model and other assessments	C10	31/12/2020	31/12/2020
Elaboration of model and calibrating		31/12/2022	

Screening and qualifying options incl. risk assessment		31/12/2022	
Impact assessment of chosen scenarios and prioritization		31/12/2022	
Data collection for the 'Fjord model'; the preparation of this model	C11	31/12/2018	28/02/2019
Analyses of different scenarios for future climate adaptation		31/12/2018	11/03/2019
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		31/12/2020	Postponed to phase 3
Collection of data for the model	C12	31/12/2020	02/06/2020
Establishment of model and calibration		31/12/2020	02/06/2020
Scenario Driving		31/12/2020	02/06/2020
Registration of cultivation/area use.	C13	31/12/2022	Postponed to phase 3
Agreements with farmers.		31/12/2018	02/10/2018
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.		31/12/2020	11/05/2020
Monitoring of the transfer of knowledge of/presentation of possible solutions and results.		31/12/2022	Postponed to phase 3
Monitoring of the effect of the solutions on water retention, yields, biodiversity, leaching of nutrients.		31/12/2022	Postponed to phase 3
Collection of data	C14	31/12/2017	06/07/2017
A model calculating scenarios for the total flooding from the sea, watercourses and sewage systems		31/06/2018	18/09/2018
Clarification of the possibilities for retaining water in the catchment area, including the open countryside and from the urban areas.		31/12/2020	31/12/2020
Solution proposal for water retention, dikes, pumps and if required, barriers in the fjord		31/12/2020	31/12/2020
Citizens and politicians involved in the development of the solutions		31/06/2019	25/08/2020
Technical report for one area on elevated land	C15	31/07/2021	
Leaflet about elevated land		31/07/2022	
Added value catalog finalized		31/12/2019	29/11/2017
Stakeholder integration carried out		31/12/2021	Postponed 2 years
At least one project description ready for execution		31/12/2022	Postponed one year
A process description on how climate proofing and the setting of goals has occurred through local organising.		31/12/2022	
Defining the area of the Climate Ribbon as well as analyses and studies of geographical and biological conditions	C16	01/10/2017	31/03/2017
Prequalification of 4-6 teams and launching competitive process		01/03/2018	15/06/2018
Announcement of the winner of the international "Climate Ribbon Competition"		01/04/2019	No winder was pointed out, but the two best teams was pointed out 09/08/2018

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		During final two years up to 2022	
Kick-off meeting with project group	C17	28/02/2017	28/03/2017
1st large citizens meeting		31/02/2018	17/06/2017
Contract with private company and counsellor on development of innovative, flexible pipes		30/04/2020	No longer relevant, as work is instead being done on extending the life of the pipes. Completed with agreement with Geopartner, entered into in June 2020
A number of conceptual designs that can solve the climate challenges in Thyborøn and Harboøre Tange and contribute added value		31/12/2021	
Data loggers established and data logging started.	C18	31/07/2017	31/07/2017
Continued monitoring and verification of hydrological model for C18.1		31/07/2021	Postponed to phase 3
Dike association created		31/12/2020	31/03/2020
New organization of climate change adaptation and development in Juelsminde is completed.		31/07/2020	31/03/2020
Preliminary investigation and initial involvement of possible stakeholders.	C19	31/06/2017	30/03/2017
Conceptual Design		31/06/2020	29/07/2019 Will be supplemented
Tender material		31/12/2018	31/12/2018
Preliminary investigations and initial stakeholder involvement, phase 2		31/12/2021	Postponed to phase 3
Technical background report for modelling		31/12/2021	Postponed to phase 3
Hydraulic modelling incl. zero-alternative, coupled events and climate scenarios.		31/12/2021	
Application for financing from relevant foundations	C20	31/03/2017	On going
Stakeholder agreements established with central actors		31/03/2017	On going
Innovation Camp partnerships agreements closed		31/12/2017	31/12/2017
Optional subject in Innovation/Entrepreneurship provided		31/12/2017	Not achieved
Water Visits established		31/12/2017	Still lack of funding
Innovation Camp is launched		31/12/2018	02/03/2018
The analysis of company types is finalized	C21	31/06/2017	30/06/2017
Interviews with entrepreneurs and companies are finalized		31/09/2017	30/09/2017
The feasibility study of tourism is finalized		31/12/2017	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	31/08/2018
The conceptual design is finalized.		31/12/2018	31/12/2018
Establishment of a baseline and the preparation of a monitoring programme	C22	31/12/2017	31/12/2017
First season measurements are evaluated with regard to the sub-projects and any necessary adjustments are made.		31/12/2018	31/03/2019
Third season measurements are evaluated with regard to subproject goals.		31/12/2022	Postponed to phase 3
Preparation of guidelines, recommendations and reports so that experiences gained from the current project are integrated into wider society.		31/12/2020	Postponed to phase 3
The statistical clarifications and correlations are finalized	C23	31/12/2017	31/12/2018
Production of a detailed infiltration potential map for the urban development areas.		31/12/2020	12/02/2020
Preparation of recommendations for stakeholders about future working processes for the purpose of mapping the infiltration potential in urban areas.		31/12/2021	Postponed to phase 3
Nomination of staff	C24	31/03/2017	01/11/2017
Archaeological and geological field investigations complete		31/12/2018	31/12/2018
The synthesis over the Region's coupled natural and cultural heritage and the C2C CC contributions published		31/12/2022	
Climate history brochure for the Region complete		31/12/2021	
Exhibition opens		31/12/2022	
Indicators for added value defined	D1	31/03/2021	Postponed to phase 3
Evaluation questionnaires developed		31/13/2017	31/03/2017
Baseline for CCA plans established		31/07/2021	Postponed to phase 3
Monitoring completed		31/03/2023	Postponed to Final Report
Baseline for flood maps and risk maps established	D2	31/07/2017	01/02/2019
Monitoring in relation to final reporting		10/10/2021	
Monitoring for phase 1.		10/10/2018	23/04/2019
Ecosystem service assessment methodology developed	D3	31/03/2018	31/12/2018
Data from existing databases related to employment and tourism gathered		10/10/2018	Ongoing. Will be reported in the Final Report
Coordination with beneficiaries responsible from actions C8 - C21 succeeded		07/07/2022	Postponed to phase 3
Data from existing databases related to employment and tourism gathered	D4		Ongoing. Will be reported in the Final Report and after the IP
The first draft of the communications and outreach plan is finished	E1	31/03/2017	01/10/2017
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	

The media contact list is prepared		31/02/2017	28/02/2017 Is still developed
Communication activities for After LIFE is prepared		31/09/2022	
Draft version of website and online platform	E2	26/01/2017	01/11/2016
Final version of website and online platform		31/03/2017	31/03/2017
Notice boards for 4 demonstration projects are ready		30/04/2017	30/04/2017
Notice boards for the remaining projects are ready		30/11/2017	30/04/2017
12 newsletters are published		31/12/2022	
Layman's report is finalized		10/11/2022	
Seminar on legal barriers + other research is held	E3	31/05/2018	03/11/2017
The first C2C CC conference "The first year" is held		10/01/2018	30/03/2017 It was a kick off conference instead
The second C2C CC conference "Half way there" is held		09/01/2020	24/10/2019 It was a national conference abort CA instead
The final C2C CC conference "Done! What comes next?" is held		15/11/2022	
A presentation at the ENCORE conference			16/03/2017
A presentation at the IWA2018 conference		10/07/2019	21/09/2018
Press release 1-4	E4	31/12/2017	09/10/2017
Press release 5-8		31/12/2018	13/12/2018
Press release 9-12		31/12/2019	24/10/2019
Press release 13-16		31/12/2020	11/12/2020
Press release 17.20		31/12/2021	
Press release 21-24		31/12/2020	
17 study trips have been planned and executed		31/10/2022	
The overview showing Danish projects (LIFE and other EU funds) is finished	E5	30/04/2018	12/06/2017 Ongoing
Participation in 4 events on CCA and/or CCM(year 1)		31/12/2017	31/12/2017
Participation in 4 events on CCA and/or CCM(year 2)		31/12/2018	31/12/2018
Participation in 4 events on CCA and/or CCM(year 3)		31/12/2019	31/12/2019
Participation in 4 events on CCA and/or CCM(year 4)		31/12/2020	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	
24 short film are finished	E6	31/12/2022	
New recruitments and establishment of project management unit	F1	01/11/2016	01/11/2016
Launch of steering group		06/01/2017	31/12/2016
Phase 1 progress report		31/09/2018	31/09/2018
"Clearing House" established		31/12/2018	The Steering Group is used instead

Mid-term report		31/08/2019	11/05/2020
Phase 2 progress report		31/03/2021	
Phase 3 progress report		-	
Final report		31/03/2023	
After LIFE plan		30/10/2022	
Kick-off seminar prepared	F2	26/01/2017	26/01/2017
Communication work shop prepared		28/02/2017	28/02/2017

ANNEX 2: TIMETABLE

This Annex only applies to projects with a single budget for the whole project duration, not in phases (see Chapter 8).

It should only be provided if deviations from the (amended if applicable) Grant Agreement are expected.

Highlight in a different colour the deviations. List all actions ordered by number and using their numbers or names. Tick as appropriate.

	2017				2018				2019				2020				2021				2022				
ACTION	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	

C6.1: 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	X
C.16.4: Development of financial plans									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 Harboøre 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	

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	(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	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	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	X
F1.2: Project coordination, monitoring and reporting	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	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																									

ANNEX 3: Capacity building events in phase 2

Date	Place	Name of event	Organizers	Activities
04 02 2019	Aarhus University	Partnerships for a sustainable future	Aarhus Municipality, Aarhus university an	Speaks, panel discussions and 22 exhabitions. One of these were C2C CC another Climatorium
05 03 2019	Vingsted, Bredsten	Future climate solutions in cities	ATV Soil and Groundwater	Workshop, speaks and discussion + dissimenation of C2C CC planning tool
06 03 2019	Technological Institute	Rainwater consultants SUDS	C2C CC og Technological Institute	Speaks
07-08 03 2019	Bygholm Park, Horsens	Course: Coastal municipalities	The Danish Coastal Administration and C2	Speaks, training workshop, discussions and excurtion to two coastal sites
14-15 03 2019	Aarhus University	Climate heritage	C2C CC, Center for Environmental Humani	Speaks, workshopactivity, presentation of C24 and C2C CC, discussion of cases.
21 03 2019	Technological Institute	Quality of water runoff	Vand i Byer / Water in Cities	Speaks and discussions about the future of Vand i Byer. C2C CC presentation, and discussions about how to handle sewage in the future
28 03 2019	Scandic, Silkeborg	Watec Annual Meeeting 2019	www.watec.au.dk	Speaks, discussions, relationship buidling
10 04 2019	Comwell, Aarhus	GF - Politicians conference	Danish Regions	
11 04 2019	CDR, Viborg	Soil ERFA meeting	CDR	
24 04 2019	CDR, Viborg	Holistic planning - multifunctional soil consolidation	C2C CC	
25 04 2019	Grenaa	Thematic day: Models and data	C2C CC	Speaks and discussion about models and data relevant to climate change adaptation.
06 06 2019	AquaGlobe	Masterclass and ESS	C2C CC	Speaks and workshops about alert systems and citizen involvement in CCA + speaks about ecosystem services
13-16 06 2019	Bornholm	People's Meeting	Bornholms Regional Municipality	The Central Denmark/Southern Denmark Region and C2C CC facilitated a discussion about CCA
21 06 2019	Randers	CCA in the River Catchment Gudenåen	River Gudenå Committee	
29 08 2019	Vejle	Network meeting	Southern Denmark University and Southe	Speaks and discussions about strategy for climate mitigation and adaptation in South Denmark Region. Focus on broard partnerships
30 08 2019	AquaGlobe	Denmark for the Goals	AquaGlobe	Boths, speaks, exhabitions etc. https://www.skanderborgforsyning.dk/om-os/historierne-om-os/groen-temadag-klima-klog-gennem-leg-og-quiz
12 09 2019	Lemvig	Thematic day for Lemvig Utility	Lemvig Utility	
16 09 2019	CDR, Viborg	Temamøde i regionsråd	CDR	
24 09 2019	Odense	Coastal Conference	Nohrcon	Contributing with holistic CCA
03 10 2019	CDR, Viborg	Meeting with Karlstad Universitet	C2C CC	
09 10 2019	Aarhus	Meeting with the Psychiatry and Social committee	Psychiatry and Social committee	
23-24 10 2019	Horsens	National Conference about Climate Change Adapta	C2C CC, KLIKOVAND etc	21 parallel sessions on all water in climate change adaptation issues
25 10 2019	Aarhus International Center	Opening of the Danish water cluster	Aarhus Vand Kamstrup, Grundfos etc	Speaks. Networking.
nov-19	New Zealand	Preparatory meeting between NZ and CDR		
28 11 2019	Viborg	Group management meeting	CDR	Speak about developing liveable and effective partnerships
10 12 2019	Vejle	Seminar for regional climate employees	All 5 regions	What are everybody dooing. DWS told about C2C CC as an example of regional partnership
04 12 2019	Aquaglobe	Master class: CCA with added value	C2C CC og Aalborg University	Workshop on added value in CCA.
11 12 2019	Aarhus Congress Centre	Development of Climate Plans 2021 -2025	Aarhus Municipality	Working on scenarios up to 2070, speaks, exhibiton, networking.
18 02 2020	AquaGlobe	Master class: CCA in C12		Focus om C12 in Master Class
15 06 2020	Online, ZOOM	Master Class 2: CCA in C12	Aalborg University, C2C CC	Discussion session, workshop
19 08 2020	Kystcentret	National Climate Summit	Klimatorium, C2C CC, CDR	Webinar with four sessions Energi and green transition, circular economy, transport, CCA
09 - 11 09 2020	Isværket, Lemvig	Connective Negotiation Workshop	Klimatorium, C2C CC	Mutual Gains Approach and Connective negotiation - theory and practice
01 - 12 2020	Scandic Bygholm	CCA and protected nature in river catchments	C2C CC	How do we manage the ekstra water that climate change will induce in areas with protected nature
03 12 2020	IDA Mødecenter + online	Improved planning in the water sector	Water political network	Speaks, discussions in groups and panel debate, C2C CC was presented by Dorthe Selmer