Cross-boundary Implementation of Climate Adaptation Plans in Denmark - a LIFE Integrated Project

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Rikke Nan Valdemarsen, Advisor – C2C CC
Who am I?
Introduction to Central Denmark Region

Denmark
5.5 mill. inhabitants
5 regions
98 municipalities

In Central Denmark Region:
- Highest point 178 m
- 2,500 km of coast
- 10,000 km of streams
Progress of the Danish Adaptation Policy Development
- our experience working with municipalities on a regional level

- No authority in DK has taken on the role to secure a prudent and coherent planning across municipality borders.

- It is our assertion that Water Knows No Frontiers – and that is the reason why water must be handled in broad collaborations.

- In DK no authority secures a coordination across authorities and various interests. So in Central Denmark Region we have decided to do something about it.
Progress of the Danish Adaptation Policy Development  
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- The government platform, in 2012, decided, that the municipalities should have climate adaptation plans within 2 years. We went through the plans to get an impression of how the municipalities handled the task.

- We found a vast difference in how the task had been solved. However, certain issues were the same across the municipality borders. Thus, we considered it wise to initiate collaboration on handling the joint challenges.

- It formed the basis for the project C2C CC
Progress of the Danish Adaptation Policy Development
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Legislative drivers

- 2014: Climate adaptation plans in 98 municipalities
- 2018: Climate and coastal protection in municipalities
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• Which areas will be flooded?

• Value mapping using the BBR (national housing and building register)

• Escape routes (values – what must be preserved)

• Merging various maps
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1. Oversvømmelseskort
2. Risikokort
3. Prioritering
4. Kommuneplan

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- Implementation of who must pay?
- A finance system based on rates where the consumers pay for water supply and water discharge levy respectively
- Finding the money for climate adaptation:
  - The water utilities have service objectives,
  - Political requirement that the municipality can handle a 10 or 25 year incident (historically, 5 year incident)
  - The utility can pay by a finance system based on rates, if the model is cheaper than traditionally.
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The Secretariat for Water Supply sets the price ceilings and economic limits for Danish water and waste water companies to ensure the best prices on water.

The water regulation ensures that:

- Consumers are not overcharged
- Companies have the necessary means to operate their net
- Companies continuously are streamlining their operation
Progress of the Danish Adaptation Policy Development
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• The Secretariat for Water Supply is a national board to which the utility/municipality can apply for funds.
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A finance system based on rates

- Each utility has to benchmark itself against others (just published for 2017 based on accounting figures).

- There is a CEILING. An application can be made to raise the ceiling due to extraordinary climate adaptation costs.

- The ceiling is the reason why utilities are merged, as the benchmark becomes too expensive for the individual utility.
All stakeholders put the system to the test, and the boundaries are moving. E.g. making the streams robust. Does that imply that the polluters can discharge more?

2016: 100 % financing
2017: 80 % financing (not a single project was applied for)
2018/2019: 100 % financing (again)

Still, municipalities pay for only hardware like tables and benches.
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• In order to get free resources in the coming budgets, planning **within** municipality borders

• 10 areas for special risk management plans (more far-reaching than climate adaptation plans, and not a requirement)

• No requirements for coordinated planning (only in Randers municipality)

• Coordinated planning in C2C CC
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• The utility must comply to the regulations and pay

• **Functional ownership:**
  Delay of water in the countryside/farmland fields.
  The municipality must own the function of the plant.
  If it leads to damages, the landowner is compensated.
Progress of the Danish Adaptation Policy Development
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- The municipalities and the citizens plan within the scope of the legislation. They must comply with the consideration for biodiversity and aesthetics.

- The Danish society for Nature Conservation is dissatisfied due to too few requirements.

- The state grants money for projects in the National Budget.

- Otherwise, municipal own financial contribution.
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The citizen who has the dog crap, must pay himself”

”Principle of use: The one who has got the usefulness, must pay for it”
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• Central Denmark Region makes a template with the municipalities and an advisor from the Environmental Protection Agency.
• The attention is on the dialogue across governance borders, and to merge risk maps with value maps in order to generate joint principles for value assessment (not in each municipality) in order to create a better understanding.
• Joint scenarios are made a sea levels rises +1 m and +3 m, a joint map.
• Climate adaption plans, finding the joint challenges, the holes in the cheese and filling out those holes.
Water challenges in the year 2100 (in Denmark)

- ½ - 1 m higher sea level
- 10 - 40% increased precipitation
- 0 - 2 m higher groundwater table
- 5 - 15% increased run-off water

Mutually recognised challenges
River challenges in the Gudenå

Mean annual flow, litres per second
Coastal Challenges
Water knows No Frontiers
Following CH, DK has the highest European losses connected to water incidents!

No matter how much we limit the CO₂ emissions, the climate changes and we need to adapt!

Climate change affect us in various ways, e.g. extreme heat in Southern Europe and more water in the North.

Our challenges are similar to many other places in the world.
The Project

Supporting Partners
1. Beredskabsstyrelsen
2. Concita
3. DI
4. DTU Miljø
5. Eksportforeningen
6. Forskningscenteret
7. Forsikring og Pension
8. GEUS
9. Ikast Brande Kommune
10. KLIKOVAND
11. Kystdirektoratet
12. Miljøstyrelsen
13. Naturstyrelsen
14. Odder Kommune
15. Ringkøbing-Skjern Kommune
16. SEGES
17. Teknologisk Institut
18. Vand i byer

Partners of Collaboration
1. Region Midtjylland, leadpartner
2. Central Denmark EU-Office
3. Favrskov Kommune
4. Hedensted Kommune
5. Herning Kommune
6. Holstebro Kommune
7. Horsens Kommune
8. Lemvig Kommune
9. Lemvig Vand & Spildevand A/S
10. Morsø Forsyning A/S
11. Morsø Kommune
12. Norddjurs Kommune
13. Randers Kommune
14. Samso Kommune
15. Silkeborg Kommune
16. Skanderborg Forsyningsvirksomhed A/S
17. Skanderborg Kommune
18. Skive Kommune
19. Skive Vanding A/S
20. Struer Forsyning & Spildevand A/S
21. Struer Kommune
22. Syddjurs Kommune
23. Thisted Kommune
24. Thisted Spildevand Transport A/S
25. Vestforsyning Erhverv A/S
26. Vesthimmerland Kommune
27. Vesthimmerlands Vand A/S
28. VIA University College
29. Viborg Kommune
30. Aalborg Universitet
31. Aarhus Universitet

Project period 6 years
Budget EUR 12m
Support EUR 7m
The Direction

Capacity building and sustainable
C2C CC Matrix

GOVERNANCE

TOOLS

INNOVATION

SEA & FJORDS

RIVERS

GROUNDWATER

RAINWATER

24 Actions

SUSTAINABILITY

CAPACITY BUILDING

1 region
18 municipalities
8 water companies
3 universities
1 EU rep. office

= 31 partners

+ 19 supporting partners

Life project: 6 years
12m EUR

Central Denmark Region
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We work in the C2C CC matrix where the vertical pillars represent the water circuit, whereas the three horizontal tasks handle cross-disciplinary considerations, we

• develop new ways of planning and new ways of managing the solutions

• develop the best possible tools and a joint basis for decisions thus concepts and solutions solve several challenges at the same time, and

• include the enterprises, creating business opportunities
Governance

- Hands on Preparatory Actions A1
- Mobilising broad partnerships (Bulgaria, India, Tokyo)
- Challenges, the partners needed to solve anyway, and which they could not solve on their own
- Synergies and opportunities in co-creation
- Improving processes during co-creation
- Gaps finding in existing legislation
- Legislation, new paradigm for maintenance
- The UK, the watertrusts (no demands from the governance side), local stakeholders and local ownership result in succes and maintenance
The overall objective

Better mutual planning than one can do alone

Efficiently taking care of water related climate challenges and turning them into business opportunities and improvements of society

Joint vision and strategy, collaborative planning and division of labour

Creating a Danish information centre, paving the way in Europe
We have the platform!

Thus we have good prerequisites for developing, testing, manufacturing and selling new solutions.

We must develop and demonstrate new solutions and concepts, train the labour force, create the necessary organisations (networks, cross-boundary collaborations, information centres etc.).

In other words, we shall collaborate on a shared vision, a joint strategy, coordinating plans, a rational division of labour.
Le Mur in Lemvig is a multifunctional solution
sønæs in Viborg is a multifunctional solution
Climate road in Hedensted
Klimavejen – permeable asphalt with a multi functional solution

- Precipitation is used for district heating of a kindergarten
- Innovative collaboration started among participants, on a European Climate Change Adaption Conference in Glasgow, where they met by chance
- 13 participants, VIA University College, PhD students, Hedensted Municipality, and Lemvig Public Utility.
- NCC (construction), Lemvig Public Utility and Klimatorium did the initial sale to NZ.
- VIA University College and Lemvig Public Utility collaborated with an interest in NZ.
- Resulting in prolonged training of engineers, and a study tour to NZ.
- One on one replication of Klimatorium in NZ.
Welcome to the web space for the WaterCo-Governance (WaterCoG) project. WaterCoG is a project co-funded by the North Sea Region Programme 2014 - 2020.

Working with a range of partners and stakeholders from Sweden, Germany, Denmark, Netherlands and the UK, WaterCoG aims to understand the extent to which effective stakeholder and community participation in water management (co-governance) can deliver more sustainable and long-term approaches to managing North Sea Region (NSR) ecosystems by improving the implementation of key environmental objectives such as the Water Framework Directive (WFD).
Many changes are needed

Now wheat

Rice in future?

Adaption of sustainable agriculture
We need to be prepared for flooding
Remote Sensing as a Tool – using the Copernicus programme data

Copernicus programme,
- Sentinel-1: High spatio-temporal resolution and spatial coverage
- Data acquisition ensured until 2030
- Free and open data policy

Great potential for nationwide deformation monitoring!

Source: Agency for Data Supply and Efficiency, Danish Ministry of Energy, Utilities and Climate

Ref: PPO.Labs, NORUT, NGU (2017)
Game changers – new paradigms in innovation and business development

- Eco System Services
- Nature based solution
- Biodiversity
AquaGlobe

Klimatorium

Forskning og Uddannelse
Innovative Virksomheder
Formidling, Klima- og Erhvervsturisme
Dissemination

• Climate history / cultural history
• Communication to raise awareness among citizens
• Platforms like museums, and 2 beacons, Klimatorium and AquaGlobe
• Films
• Events

AquaGlobe
Klimatorium
C2C CC – a Pathway to a Climate Resilient Region

**AIM**

Becoming a climate resilient (SDG) region is reached fast and efficient

Smart knowledge based Climate Change Adaptation is implemented locally and regionally

**PROCESS**

Technical and stewardship guidance and support across and from outside the consortium to implement local and catchment based CCA solutions

Capacity development for the use of climate adaption, targeted decision makers

Science-based climate change adaptation knowledge (methods, data and innovation)
The Life Integrated Project Coast to Coast Climate Challenge is,

- 48 triple/quadruple helix partners making the region climate resilient
- focusing on catchment based holistic solutions
- working on climate adaptation and water in partnerships
- combining societal challenges with business opportunities
- a truly integrated project
Thank you for listening

Rikke Nan Valdemarsen
rikke.nan@ru.rm.dk
Mobile +45 29 64 60 52
www.c2ccc.eu