LIFE Integrated projects 2015
Climate Action

Stage 1 - Concept Note (CN) forms

LIFE 2015	FOR ADMINISTRATION USE ONLY LIFE15 IPC/

PROJECT

Project title (*max. 120 characters*): Coast to Coast Climate Challenge

Project acronym (*max. 25 characters*): EU LIFE IP C2C CC

The project will be implemented in the following Country(ies) and/or Administrative region(s):

The project takes place in Central Denmark Region (CDR). Denmark is administratively divided in five regions of which CDR administrates the central part of the Jutland peninsular. The project is a multi-city/regional project as it involves the 19 municipalities within the region. It thus complies with the criterion of covering a large territorial area.

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

PROJECT POLICY AREA

You can only tick one of the following options:

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

The project aims at implementing the following action plan/strategy/ roadmap (*full copy is to be provided in attachment*): The below list of plans are the climate change adaptation (CCA) plans of 18 municipalities and three Flood Risk Management Plans (Risikostyringsplan, derived from the EU Floods Directive) located in Central Denmark Region.

The municipal CCA plans build on the Danish Government's recommendations[1], but vary among municipalities in relation to the level of ambition and level of details. According to an agreement between the Government and Local Government Denmark (KL), CCA plans must contain the following themes: background, risk assessment (flooding and values), general CCA targets, and proposed concrete actions. All plans must be presented to public approval and – later – integrated into spatial planning. All plans are politically approved

An overview of the content of the plans is given in Figure 1. In Denmark, most plans are digitalised and do not exist as hard copy. The attached (printed) copies are thus pdf. printouts of the digital plans. The plans may be updated with new data after the submission date of the concept note, where we refer to the municipal homepages for the updated versions.

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

Climate Change Adaptation Plans:

1. Aarhus Kommune, 2014. *Klimatilpasningsplan 2014 – tilpasning til mere vand.* Aarhus Kommune, 40 pages - http://www.aarhus.dk/da/borger/natur-og-miljoe/vand/spildevand/klimatilpasning.aspx
2. Favrskov Kommune, 2014. *Klimatilpasningsplan.* Favrskov Kommune, 51 pages - http://favrskov.viewer.dkplan.niras.dk/dkplan/dkplan.aspx?pageId=392
3. Hedensted Kommune, 2013. *Kommuneplan 2013, Hovedstruktur.* Hedensted Kommune, 28 pages - http://www.hedensted.dk/borger/natur,-miljoe-og-energi/oversvoemmelser/klimatilpasningshandleplan
4. Herning Kommune, 2014. *Klimatilpasningsplan, Tillæg nr. 13 til Herning Kommuneplan 2013-2024.* Herning Kommune, 31 pages - http://kommuneplan.herning.dk/planer-for-hele-kommunen/miljoe-og-klima/klima-og-energi/klimatilpasning
5. Holstebro Kommune, 2014. *Klimatilpasningsplan for Holstebro Kommune 2014. Kommuneplantillæg 2009:32.* Teknik og Miljø, 29 pages - http://www.holstebro.dk/Klimatilpasningsplan-9717.aspx
6. Horsens Kommune, 2014. *Kommuneplantillæg 1 – 2013 Klimatilpasningsplan. Vind med vandet.* Horsens Byråd, 89 pages - http://www.horsens.dk/Nyheder/Planer%20og%20hoeringer/2014/December/KPT1-2013.aspx
7. Ikast-Brande Kommune, 2014. *Klimatilpasningsplan 2013. Tillæg nr. 2 til Ikast-Brande Kommuneplan 2013-2025.* Ikast-Brande Kommune, 56 pages - http://www.ikast-brande.dk/erhverv/virksomheder,-landbrug-og-miljoe/klimatilpasning
8. Lemvig Kommune. 2014. *Klimatilpasningsplan 2014 – 2017.* Lemvig Kommune, 29 pages - http://www.lemvig.dk/Planer-og-projekter/Klimatilpasningsplan.aspx
9. Norddjurs Kommune, 2015. *PLANPORTAL Norddjurs Kommune. Beskrivelse af indsatser i udpegede risikoområder.* Norddjurs Kommune, 23 pages - http://klimatilpasning.norddjurs.dk/
10. Odder Kommune, 2014. *Klimatilpasningsplan Odder Kommune 2014.* Odder Kommune, 50 pages - http://www.oddernettet.dk/site.aspx?MenuID=141&Langref=75&Area=&topID=&ArticleID=4634&expandID=1374&moduleID=&ParentID=4454&UndersideID=2178
11. Randers Kommune, 2014. *Forslag til Tillæg nr. 6 til kommuneplan 2013.* Randers Kommune, 45 pages - https://klima.randers.dk/FrontEnd.aspx?id=3205
12. Ringkøbing-Skjern Kommune, 2012. *Handleplan 2011-2015 for klimatilpasning.* Ringkøbing-Skjern Kommune, 49 pages - http://rksk.viewer.dkplan.niras.dk/2798.aspx?status=v
13. Samsø Kommune, 2013. *Klimatilpasning.* Samsø Kommune, 4 pages - http://planer.samsoe.dk/dk/kommuneplan/redegoerelse_hovedstruktur_og_retningslinjer/miljoe_og_klima/klimatilpasning.htm
14. Skanderborg Kommune, 2014. Klimatilpasningsplan. Kommuneplan 13 · 13-09. Skanderborg Kommune, 50 pages - https://www.skanderborg.dk/Borger/Natur-og-miljoe/Klimatilpasning-og-oversvoemmelse.aspx
15. Silkeborg Kommune, 2014. *Klimatilpasningsplan 2014 for Silkeborg Kommune.* Silkeborg Kommune, 66 pages - http://silkeborgsektorplaner.viewer.dkplan.niras.dk/9820.aspx
16. Skive Kommune, 2015. *Klimatilpasningsplan 2014 – 2017.* Skive Kommune, 87 pages - http://skive.viewer.dkplan.niras.dk/DKplan/dkplan.aspx?pageId=1205
17. Struer Kommune, 2015. *Struer Kommune arbejder på Klimatilpasningsplanen, notat.* Struer Kommune, 1 p – http://www.struer.dk/webtop/site.aspx?p=25631
18. Syddjurs Kommune, 2014. *Syddjurs Klimatilpasningsplan 2014. Tillæg nr. 7 til Syddjurs Kommuneplan.* Syddjurs Kommune, 30 pages - http://www.syddjurs.dk/borger/natur-miljoe-og-klima/klima-og-energi/klimatilpasning
19. Viborg Kommune, 2014. *Klimatilpasningsplan Tillæg nr. 19 til Kommuneplan 2013-2025.* Viborg Kommune, 28 pages - http://viborg.viewer.dkplan.niras.dk/1621.aspx?status=v

Risk Management Plans:

20. Hedensted Kommune, 2014. *Risikostyringsplan 2015 for Juelsminde.* Hedensted Kommune, 28 pages - http://www.hedensted.dk/politik/offentliggoerelser/risikostyringsplaner
21. Holstebro Kommune, 2014. *Risikostyringsplan 2015-2021 Forslag til offentliggørelse 2015.* Holstebro Kommune, 11 pages - http://www.holstebro.dk/Risikostyringsplan-9718.aspx
22. Randers Kommune, 2014. *Risikostyringsplan.* Randers Kommune, 71 pages - https://klima.randers.dk/FrontEnd.aspx?id=3205

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

Climate Change Adaptation Plans Municipality	Rainwater	Sea and fjords	Lakes and rivers	Groundwater	Tools	Cooperation
Favrskov	p. 18m p. 39b		p. 16b	p. 47	p. 44b	p. 15t p. 16b
Hedensted	p. 23b	p. 21m p. 23m		p. 22t + m		p. 25b
Herning	p. 25n p. 28m		p. 22	p. 9t + m p. 20		p. 7t p. 22
Holstebro	p. 15 no 6	p. 12	p. 10 p. 14 p. 15 no. 1-9	p. 13	p. 15 no 10-11	p. 16m
Horsens	p. 7m	p. 10m p. 34 P. 35m	p. 35t+b	p. 22t	p. 35t + b	p. 84m
Ikast-Brande	p. 13 m p. 14 b		p. 27m	p. 13t+m		p. 27 b
Lemvig		p. 15m+b		p. 8 b	p. 26 m	p. 20t+m p. 26m
Norddjurs	p. 3-5	p. 1-2		p. 3m p. 13b		in nearly all mentioned projects
Odder	p. 18 p. 24	p. 21 p. 40	p. 19	p. 24		
Randers	p. 15-16 p. 22 p. 28m p. 35-38	p. 13 p. 20-21 p. 24 p. 35-38	p. 14 p. 21 p. 25-28m p. 35-38	p. 18 p. 23 p. 35-38		p. 6b-7t p. 35-38
Ringkobing-Skjern	p. 20-25	p. 20-25 p. 40	p. 20-25 p. 40	p. 20-25		p. 21, Skjern Å p. 45, column 2
Samso	3m-b	p. 3m p. 4t		2b		
Silkeborg	p. 32t (Ans) p. 32m (Knudlund) p. 32b (Thaaning)	p. 32m (Gudenåen)		p. 32 (Alderslyst/Gødvad)	p. 32t (Alderslyst/Hvinningda l	p. 13
Skanderborg	p. 30m p. 41	p. 41		p. 41	p. 41	p. 32b p. 41
Skive	p. 36 p. 39-40	p. 31b		p. 22	p. 22b p.66	
Struer*						
Syddjurs	p. 12m p. 16, no 2-3			p. 24t	(p. 24t)	p. 5b p. 7
Viborg	p. 23m	p. 22m p. 23m		p. 23b-p. 24	p. 23m	
Aarhus	p. 29 p. 34m	p. 29		p. 24m-25m p. 29		p. 8m p. 19
Risk Management Plan						
Hedensted		p. 9 p. 16-17				p. 26t
Holstebro		p. 2-4				p. 2m
Randers	p. 68-71	p. 68-71				p. 65-66

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

***Note:** The municipality of Struer has not yet any CCA-plan. It is planned to be adopted in December 2015. Their main target is the challenges from the sea

BENEFICIARIES

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

The associated beneficiaries have **all signed a letter of intent s**igning to take part in development of the Life C2C CC project. A large part have also committed the local authority to join Mayors adapt.

Name of the associated beneficiary (2): Favrskov Municipality

Name of the associated beneficiary (3): Hedensted Municipality

Name of the associated beneficiary (4): Herning Municipality

Name of the associated beneficiary (5): Holstebro Municipality

Name of the associated beneficiary (6): Horsens Municipality

Name of the associated beneficiary (7): Lemvig Municipality

Name of the associated beneficiary (8): Norddjurs Municipality

Name of the associated beneficiary (9): Randers Municipality

Name of the associated beneficiary (10): Samsø Municipality

Name of the associated beneficiary (11): Skanderborg Municipality

Name of the associated beneficiary (12): Skive Municipality

Name of the associated beneficiary (13): Struer Municipality

Name of the associated beneficiary (14): Syddjurs Municipality

Name of the associated beneficiary (15): Limfjordsrådet (Limfjord Council) (consisting of Lemvig together with Vesthimmerlands, Morsø and Thisted municipalities from North Denmark Region)

Name of the associated beneficiary (16): Gudenåkomitéen (Gudenå River Committee) (consisting of Hedensted, Horsens, Skanderborg, Silkeborg, Favrskov, Viborg and Randers municipalities)

Name of the associated beneficiary (17): Kystdirektoratet (Danish Coastal Authority)

Name of the associated beneficiary (18): Naturstyrelsen (Danish Nature Agency)

Name of the associated beneficiary (19): Aarhus University

Name of the associated beneficiary (20): SEGES (Knowledge Centre for Agriculture and the Danish Pig Research Centre)

Name of the associated beneficiary (21): VIA University College - Horsens

Name of the associated beneficiary (22): DTU Miljø (DTU Environment, Department of Environmental Engineering)

Name of the associated beneficiary (23): GEUS (Geological survey of Denmark and Greenland)

Name of the associated beneficiary (24): Alectia (Consulting engineering company)

Name of the associated beneficiary (25): Scalgo (technology company specialised in massive terrain data)

Name of the associated beneficiary (26): Skanderborg Forsyning (water utility company)

Name of the associated beneficiary (27): Confederation of Danish Industry (DI)

Name of the associated beneficiary (28): Danish Technological Institute

PROJECT BUDGET AND REQUESTED EU FUNDING

Total integrated project budget:	6,026,667 € (contribution by beneficiaries)
Total eligible project budget:	15,066,667 €
EU LIFE financial contribution requested:	9,040,000 € (= 60 % of total eligible budget)

Coordinating Beneficiary Profile Information			
Short Name	CDR	**Beneficiary n°**	1

Legal information on the Coordinating Beneficiary			
Legal Name	Central Denmark Region	**Legal Status**	
VAT No	29190925	**Public body**	X
Legal Registration No	29190925	**Private commercial**	
Registration Date	01/01/2007	**Private non- commercial**	

Legal address of the Coordinating Beneficiary					
Street Name and No	Central Denmark Region Emil Møllers Gade 41			**PO Box**	N/A
Post Code	8700	**Town/City**	Horsens		
Country Code	DK	**Country Name**	Denmark		

Coordinating Beneficiary contact person information			
Function	Chief Consultant		
Surname	Johnsen	**First Name**	Rolf
E-mail address	rolf.johnsen@ru.rm.dk		
Department / Service	Regional Development/Regional Udvikling		
Street Name and No	Skottenborg 26	PO Box	N/A
Post Code	8800	**Town/City**	Viborg
Country	DK		
Telephone No	T: +45 78411944 M: +45 29620830	**Fax No**	+45 78410001

Coordinating Beneficiary details	
Website	www.rm.dk and specific for climate change adaptation: http://www.klimatilpasning.rm.dk

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

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

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

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

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

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

COORDINATING BENEFICIARY DECLARATION

The undersigned hereby certifies that:

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

1. My organisation is legally registered in the European Union.

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

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

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

At Horsens on 8/10-2015

Signature of the Coordinating Beneficiary:

Name(s) and status of signatory: JES PEDERSEN

Head of Office

Regionshuset Horsens

Emil Møllers Gade 41
8700 Horsens
Tlf. 87 28 50 05

SUMMARY DESCRIPTION OF THE PROJECT

1. Overall context/background/geographical scope

Coast to Coast Climate Challenge (C2C CC) supports the targeted and full implementation of 18 municipal climate change adaptation (CCA) plans and 3 risk management plans under the flood directive in the Central Denmark Region. It provides decision-makers with a framework for sustainable and integrative CCA planning, mainstreams CCA into local planning and integrates other policy areas. Concrete actions cover capacity-building within all themes in the hydrological cycle, improve multi-level management structures, and carry out a number of demonstration projects and pilots. The CCA plans deal with cities as well as the countryside and coastlines, and include solutions in the hinterlands to prevent flooding in the cities.

Costs of inactions are substantial – on a European level[1] as well as in Denmark[2]. Consequently, the national government made it mandatory in 2013 for municipalities to prepare CCA plans. It also encouraged that the CCA action plans be integrated into the municipal spatial planning covering all spatial areas including cities and countryside, simultaneously complying with the EU Water Framework Directive and the Floods Directive. To date, the CCA plans have been adopted but implementation of actions are yet to be initiated. The C2C CC project will provide a comprehensive base for this implementation, evaluate the results and the process as well as give local authorities the tools for better integrated planning, taking into account the uncertainties of future climate change.

CCA in the region generally deals with challenges related to managing more water[3] and securing water quality, touching upon all aspects of the hydrological cycle: rainwater, sea and fjords, lakes and rivers, and groundwater. Rainwater is an issue for the whole region due to an increase in the amount and intensity of rain and cloudbursts. In the western part, the interconnectivity of the elements of the hydrological cycle means that more precipitation causes rising groundwater table and intrusion into houses. In the eastern part, hydrogeological differences and urbanization cause scarce groundwater resources. Cloudbursts cause flashfloods in many cities, and the increase in rainwater and more incidents with heavy rains cause watercourse floods and damages on infrastructure and urban areas. In the coastal areas, storm surges are increasing causing floods in the cities at the Limfjord in the north and on the east coast. When future storm surges occur simultaneously with heavy rain, most notably cities, but also other areas along the river banks, are in high risk of severe flooding.

On an administrative level, Denmark has implemented a municipal structural reform in 2007 and a company formation of the wastewater utility sector in 2009. 271 small municipalities were merged into 98 larger municipalities, and 14 counties merged into five regions having no legal responsibilities for water and spatial planning[4,5]. Alongside, new CCA regulations require that the municipalities prepare individual CCA action plans in relation to the municipal spatial plans leaving coordination of CCA across administrative borders in an 'institutional void'. As a result, these reforms have decentralized and increased the fragmentation of authorities hampering integrative CCA planning and coordination between local authorities. Since 2007, CDR has aimed at filling this institutional void by initiating and facilitating climate change measures and projects on a voluntary basis, e.g. CCA network-building activities creating a forum for knowledge sharing, collaboration and capacity building. Wastewater utilities and industries have supported collaboration and development of new holistic solutions to benefit the society and new clean-tech businesses. Municipalities within the region have welcomed and supported these CDR initiatives – in many ways preparing local stakeholders to engage in future CCA[6].

1.1. Present gaps or shortcomings that hinder effective implementation of the plans

CCA is cross-sectoral in nature and demands new forms of governance involving citizens at the local

[1] European Environment Agency (EEA), 2015, EEA Signals 2015: Living in a changing climate. EEA.

[2] Danish Meteorological Institute (DMI), 2014, Fremtidige klimaforandringer i Danmark – Danmarks klimacenter rapport nr. 6 2014. Klima-, Energi- og Bygningsministeriet.

[3] DMI (2014) finds that: observed precipitation has increased the latest 150 years with 100 mm, and is expected to further increase with 4,6-6,1 % in year 2100; observed sea level rise since year 1900 has increased 1,7-2,2 mm/year, and is expected to further increase with 0,34-0,61 m.

[4] Ministry of the Interior and Health, 2006, *The Local Government Reform: In Brief.* Ministry of the Interior and Health, CPH

[5] Andersen H T, 2008, "The emerging Danish Government reform – centralised decentralisation", *Urban Research and Practice,* 1(1) 3-17.

[6] This is documented in several publications at CDR Webpage: http://www.rm.dk/regional-udvikling/klimatilpasning/publikationer/

level as well as the national government. One major shortcoming hindering effective implementation of the CCA plans relates to the structural reform and the company formation of the water utilities. Since 2007, no single governmental body has the responsibility to coordinate CCA among the municipalities, increasing the risk of suboptimal solutions (e.g. one municipality leading excess water downstream with eventual damage to others). In addition, the company formation of the wastewater utilities has entailed that CCA in practice is regarded as a wastewater issue to be solved traditionally by gray infrastructure such as sewer pipes and basins. The synergies of green infrastructure, e.g. biodiversity and urban livability, are often not exploited, as it increases the potential costs in areas outside the responsibilities of the utilities. The Danish government has tried to accommodate the use of e.g. Sustainable Urban Drainage System (SUDS) by making amendments to the water sector law. Amendments, that evaluated by Deloitte[7], do not fully meet the needs.

Another shortcoming is a lack of knowledge, knowledge sharing and capacity building on commonly shared issues and solutions among local authorities. The region possesses many water clean-tech companies (55 of 219 in Denmark[8]), but due to a lack of coordination, the presence of the newest knowledge and best available technologies (BAT) is not utilized. According to the Confederation of Danish Industry (DI), Danish BAT within water could double by 2025 compared to the present level. There is thus an unused potential for capacity building and innovation within the region among the municipalities, the utilities, water companies and research institutions.

A third gap is the difference in level of ambition and implementation between the prosperous and less prosperous municipalities within the region. The less prosperous, especially in the western part of the region, lack the resources and the capacity to carry out the necessary analyses and implement the CCA plans. In some instances, this gap reflects insufficient political and societal awareness in the municipalities – a gap which proves unjustified and therefore leaves the municipalities unprepared when a major, sudden, and unpredictable flood occurs. These municipalities will not only benefit economically, but also highly in terms of experience sharing from the C2C CC.

C2C CC will help overcome these shortcomings by providing decision-makers and local communities with multi-level and public-private cooperation forums, tools, shared capacities to implement their CCA plans and further develop their work on CCA. Furthermore, a number of concrete actions and demonstration projects will provide municipalities with best practice examples, synergies and data for further development, increasing the number of cities making use of integrated CCA planning.

1.2. Why the proposal falls under the IP definition

This proposal falls under the IP definition, as it implements CCA plans on a large territorial scale using a multi-city approach. The region covers 13,142 km^2, of which about 10% is vulnerable to cloudbursts, has 1000 km coastline, and 1.282.750 inhabitants. More than 50% live in cities larger than 10.000 inhabitants – with the eastern part of the region experiencing rapid urbanisation[9]. The proposal deals with CCA projects laid out in the municipal CCA action plans required by the Danish government while at the same time including other EU (legislative) objectives. Designed to last longer than traditional projects, C2C CC consists of several sub-projects, some developed more than others; some ripe to be implemented during a first phase, others at later stages. The experiences and results from these early projects will feed into later ones, making C2C CC a truly adaptive project.

The C2C CC fulfills the following European Union legislation:

- The 'Life Regulation'[10] and An EU Strategy on adaptation to climate change[11] since it directly deals with extreme weather conditions leading to floods and rising sea levels, helping the cities, the municipalities, and the region to become more resilient. The CCA plans cover cities, their surroundings, as well as major rivers, vulnerable coastal areas, etc. in an integrated, coordinated way.
- The Floods Directive[12]: Three cities appointed to be risk-prone areas and their local communities participate in C2C CC, creating more resilience in the cities and the region.

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[7] Deloitte, 2013, "Evaluering af Vandsektorloven" LETT, DHI. (in Danish).

[8] Corresponding to 27%, and is only surpassed by the Capital Region with 35% of the water companies. The water companies within the region export 68% and has the highest share of the water clean-tech production in Denmark. Sourse: Brøndum and Fliess, 2013, "Kortlægning af vand i Region Midtjylland" (in Danish).

[9] 80.000 citizens are expected to move to the eastern part of Jutland within the coming 10 years

[10] REGULATION (EU) No 1293/2013 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 11 December 2013 on the establishment of a Programme for the Environment and Climate Action (LIFE) and repealing Regulation (EC) No 614/2007

[11] COM(2013), 216 of 16/4/2013. An EU Strategy on adaptation to climate change.

[12] DIRECTIVE 2007/60/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 23 October 2007 on the assessment and management of flood risks

- The Water Framework Directive[13]: The CCA plans are by the law required to comply with the Directive and encouraged to use synergies with CCA to improve water ecology e.g. through establishment of wetlands.
- The overall objective of the Marine Strategy Framework Directive[14]: The C2C CC project revolves around the hydrological cycle and thus higher quality inland water will discharge in to the seas creating a positive effect on the marine environment, thereby ensuring clean, healthy and productive seas in order to protect the ecosystems[15].
- The targets of the EU Biodiversity Strategy and the EU Habitats Directive[16]: Biodiversity is an issue in a number of CCA cases, primarily when dealing with fjords, rivers and lakes and providing species with better living conditions through green infrastructure[17] and nature-based solutions[18], and increasingly when carrying out SUDS in cities, enhancing urban liveability.
- C2C CC also integrates and furthers a number of supplementary objectives: Business development, as it is firmly anchored within a strong regional emphasis on business development and public-private cooperation in general and in the water sector. It also promotes the development of sustainable and high-quality coastal, nature and business tourism[19].

1.3. Similar brief information on the complementary actions

By nature, complementary actions fall under Life IP, as they reflect the complexity of the Life IP, support all themes of C2C CC actions, and will be coordinated by the C2C CC consortium. Some of the actions directly complement actions within the local communities, others are meant to replicate actions in other cities, municipalities and regions, some are already known, while others will be catalysed by Life IP. The future complementary projects are adaptive by the IP generated knowledge and raised awareness e.g. among politicians, industry and citizens, and many will continue after the IP finishes. Complementary actions are, first and foremost, construction works financed by local authorities, wastewater companies, as well as private funds; second, research projects and developing training material support; third, EU interregional projects involving some of the partners and will supplement activities within C2C CC.

2. Project objectives:

The overall objective of C2C CC is: ***To create climate resilient cities in a climate resilient region through the formulation of a common long-term strategy among local stakeholders, implementing in a targeted way the local CCA plans, coordinating the CCA analyses and activities, and identifying and improving the resources and adaptive capacities of municipalities, utilities, companies within the water sector and citizens.***

The objective covers the IP project itself, complimentary projects and projects initiated after the IP project period. The objective of C2C CC is based on the concept of resilience, which deals with both ecological and social resilience. Vulnerability and adaptive capacity are important elements in the concept of resilience[20]. Vulnerability may weaken both the ecological and social systems' ability to respond to change, and adaptive capacity is the ecological and social systems' ability to cope with change. Within adaptive capacity lies also an understanding of resilience as a process, where capacity to cope with change can be developed and strengthened, and where change can be used as a possibility to innovate.

C2C CC approaches the CCA plans as a cross-boundary challenge where coordination, knowledge sharing and capacity-building are necessary for improved multi-level governance and development of tools and innovation. The IP consists of four themes related to the hydrological cycle: rainwater, sea and fjords, lakes and rivers, and groundwater. These are supplemented with three crosscutting themes: governance, tools, and innovation.

As this IP deals equally with the hydrological cycle as a whole and with the coordination of activities within an integrative CCA planning approach, the following objectives are of equal importance.

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[13] DIRECTIVE 2000/60/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 23 October 2000 establishing a framework for Community action in the field of water policy

[14] DIRECTIVE 2008/56/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 17 June 2008 establishing a framework for community action in the field of marine environmental policy (Marine Strategy Framework Directive)

[15] European Commission (EC), 2011, Seas for life, pages 1-32, p. 12.

[16] THE COUNCIL OF THE EUROPEAN COMMUNITIES (1992), Council Directive 92/43/EEC of 21 May 1992. The conservation of natural habitats and of wild fauna and flora

[17] COM(2013), 249 of 6/5/2013. Green Infrastructure (GI) — Enhancing Europe's Natural Capital

[18] EC (2015). Nature-based solutions. Defining Nature-Based Solutions. DG Research & Innovation. Web: https://ec.europa.eu/research/environment/index_en.cfm?pg=nature-based-solutions

[19] COM(2010), 352 of 30/6/2010. The world's No 1 tourist destination – a new political framework for tourism in Europe

[20] Folke, C. 2006. Resilience: the emergence of a perspective for social-ecological systems analyses. *Global Environmental Change*, 16: 253-67.

The objectives of the hydrological cycle related to the challenges documented in the CCA plans are:

- *Rainwater:* To increase urban resilience taking into consideration the synergies with green infrastructure and urban livability.
- *Sea and fjords:* To increase the coastal resilience taking into consideration the environmental state and marine biodiversity and to enhance urban resilience.
- *Rivers and lakes:* To increase the resilience of land alongside river banks taking into consideration the environmental state and biodiversity and to enhance urban resilience.
- *Groundwater:* To increase resilience towards rising near-surface groundwater optimizing the use of surplus groundwater.

The objectives of the cross-cutting themes related to the challenges documented in the CCA plans are:

- *Governance:* To increase the resilience through capacity-building, strengthened network governance and cross-border coordinated planning.
- *Tools:* To increase resilience through enhanced decision-making processes.
- *Innovation:* To increase resilience by generating jobs and green investments.

2.1. Similar brief information on the complementary actions

Complementary actions are designed to support core activities of the Life IP project, in some cases reflecting, continuing, and integrating prior commitment of the region to water-related issues, in some cases expanding on activities within future phases of the C2C CC project. The complementary actions thus support the objectives of the IP itself.

3. Actions and means involved:

The expected C2C CC actions will meet the challenges described in Section 1 and the content of the CCA plans. Stakeholders have provided input through interviews, a one-day workshop, and the pursuant communication. Page numbers in the CCA plans relating to the themes are listed in Figure 1 (CNa). The actions will be carried out in different phases of the project according to their respective development e.g. handling rainwater with SUDS is already a developed method compared to handling issues related to rising groundwater.

3.1. Actions financed by LIFE

Preparatory actions (A):

1. *Framework for integrated CCA within the region (IP + complementary projects):* establish a project management unit; launch of steering group, project groups and stakeholder teams (related to F actions in IP guideline); create an online platform for communication, outreach and file sharing, communication and outreach plan (incl. to other Danish regions and EU Member States), and a replication plan (related to E actions in IP guideline); hold kick-off seminar for all stakeholders incl. politicians, citizens and NGOs.
2. *Capacity-building Task Force:* establish a capacity building team to coordinate and plan capacity-building activities across all themes. The activity takes place throughout the project period.
3. *Review of legal barriers to integrated CCA:* review legal documents within the water sectors incl. barriers for business development; analyze state-of-the-art of current mainstreaming of CCA into local planning and possibilities for cross-sector cooperation; interview municipal and utility officials; start dialogue with Local Government Denmark (LGDK) the interest group of Danish municipalities, and relevant ministries and agencies.
4. *Data and reports as basis for integrative CCA planning:* collect existing data analyses about the region and combine data in a common database.
5. *Monitoring systems:* develop qualitative and quantitative measures and use existing monitoring systems (e.g. in river basins); define new monitoring methods and systems. Qualitative evaluations and interviews will be included in the monitoring of the capacity development.

Concrete implementation actions (C):

Concrete actions aim at building capacity for a new CCA governance paradigm stressing integrated planning and accommodating the entire hydrological cycle. Following a presentation of governance actions (C0), actions of the hydrological cycle (actions C1-C4) are presented separately. Actions related to the themes of "tools" and "innovation" are included in the specific actions under C0-C4.

C.0. Governance

1. Concrete actions:

1. *New paradigm and a common regional strategy integrating municipal CCA plans:* gather best practices from the Danish river basin management plans (under the Water Framework Directive) and from other EU supported projects (e.g. catchment based approach and Usserød Å[21]); establish courses in planning processes, such as network governance, for officials as well as for other stakeholders.
2. *Networking and knowledge-sharing:* establish cooperation fora and informal thematic reunions e.g. on SUDS, coastal protection, groundwater, etc.; develop showcases on climate change and water technologies.
3. *Capacity-building of officials and water professionals:* develop training courses and master classes; establish workshops on specific topics on demand, e.g. costal management and groundwater analysis.
4. *Capacity-building of officials specifically on stakeholder involvement:* develop courses and guidelines on stakeholder and citizen involvement; create a common tool for stakeholder analysis.
5. *Innovation:* counselling of innovative industries on applying for EU funding; create training material for start-up companies on business development within ecosystem services.
6. *Civil protection:* cross-border emergency/contingency planning; citizens' roles during emergencies; develop tools for before -, during - and after flooding.

2. Possible demonstration projects:
    1. *Demonstration project on flood risk zone governance (cf. C0-1.1):* establish an organization of CCA of the Limfjord, involvement of the Limfjord Council, workshops on CCA analyses results and possible solutions.
    2. *Demonstration project on catchments area governance (cf. C0-1.1):* establish an organization for CCA for Juelsminde flood risk area (under the Floods Directive) with focus on the analyses and activities related to the harbor, housing and coastal protection.
    3. *Demonstration project on physical CCA showcases (cf. C0-1.2)* for specific industries and municipalities; attract investors and tourists across the region e.g. in Lemvig and Skanderborg.
    4. *Demonstration project on development of guidelines and training of janitors to improve their technical knowledge on climate proofing of buildings (cf. C0-1.3).*
    5. *Demonstration project on establishment of training courses on citizen involvement processes (cf. C0-1.4):* focused on rainwater and SUDS, develop one-day training courses for waste- and rainwater entrepreneurs (such as sewer contractors and landscapers) on SUDS.

C.1. Rainwater:
16 of the 18 municipalities as well as the 1 risk management plan mention rainwater as a major problem and the use of SUDS as a means to cope with it in their CCA plans (cf. Figure 1).

1. Concrete actions:
    1. *Urban hydrology:* define knowledge gaps for understanding the urban area as a hydrological system; set up hydrological models and testing; report experiences and create guidelines.
    2. *Knowledge on SUDS' effectiveness in water treatment*: build on existing knowledge within the EU e.g. in green infrastructure; define knowledge gaps; involve industries and research institutions to bridge knowledge gaps; involve stakeholders within industry, research institutions, municipalities, utilities, NGOs as well as citizens.

2. Examples of possible demonstration projects:
    1. *Demonstration project on stakeholder collaboration in minimum three cities/municipalities (cf. C1-1.2):* create collaboration between water industries, utilities and municipalities on water treatment solutions to improve water quality before discharge to the environment.
    2. *Demonstration project on permeable pavements (cf. C1-1.2)*: to function as SUDS incl. flux of water and contaminants tested in different geological and hydrological environments with low operational cost after entry into service.

C.2. Sea and fjords:
13 out of the 18 municipalities as well as 2 risk management plans mention sea and fjords as a major challenge in their CCA plans (cf. Figure 1).

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[21] www.catchmentbasedapproach.org; http://ec.europa.eu/environment/life/project/Projects/index.cfm?fuseaction=search.dspPage&n_proj_id=4268

1. Concrete actions:
    1. *The CCA challenges of the fjords at the east coast:* desk analysis and identification of knowledge gaps; analysis of the CCA's impact on the marine ecology in Randers Fjord and Juelsminde coast in regard to the Floods Directive; assess synergies and possibilities of integrated solutions for the fjords at the east coast.
    2. *Integrated assessment of the CCA challenges of the western Limfjord and Thyboron Canal:* desk analysis on the challenges of the CCA in regard to the marine ecology; climate change scenario building, modelling and analysis of the Limfjord to aid decision-making; define possible integrated solutions between CCA and marine ecology. Implementing a cross-border emergency system based on an integrated forecast system (synergy with C0-1.6).
    3. *Interaction between watercourses and coastline:* create synergy with C3-1.1 by analyzing two cities under the Floods Directive (Randers and Juelsminde); modelling and analysis of at least two other areas in the region e.g. Horsens and Kolindsund.

2. Example of possible demonstration project:
    1. *Demonstration project on stakeholder based solution process (cf. C2-1.3):* define solutions based on scenario building for CCA of Skjold Å watercourse and the sea of Kattegat (Hedensted Municipality).

C.3. Lakes and rivers:
10 of the 18 municipalities as well as the 2 risk management plans mention issues related to lakes and rivers in their CCA plans (cf. Figure 1).

1. Concrete actions:
    1. *Big data in mapping of large catchments:* collect data for analysis of at least two large catchments; integrate increase in groundwater inflow, precipitation and storm surge; involve water sector ICT businesses on modeling watercourse flow on catchment level; define synergies with C2-1.3.
    2. *Impacts of CCA on freshwater ecology:* conduct desk analysis of up- and downstream impacts of CCA actions, e.g. from sluices, and define means to accommodate impacts e.g. different design of fauna corridors.
    3. *Warning system:* develop forecast systems with ICT businesses based on models and meteorological forecasts to ensure resilience.
    4. *The role of land use management and wetland restoration in CCA:* Analyze synergies between wetlands and high yield agriculture, infrastructure, and demography; cost benefit analysis on different scenarios; quantitative analysis of the retention effect of wetlands in at least three municipalities e.g. in Norddjurs, Syddjurs and Horsens.

2. Examples of possible demonstration projects:
    1. *Demonstration project on implementing the warning system (C3-1.3):* implement in at least three rivers e.g. Gudenåen, Storeåen and Kolindsund.

C4. Groundwater:
18 of the 18 municipalities mention challenges related to groundwater in their CCA plans (cf. Figure 1).

1. Concrete actions:
    1. *Interaction between rainwater and rising groundwater level:* collect data and conduct desk analysis; define knowledge gaps for understanding the surface near groundwater; bridge knowledge-gaps by involving applied knowledge and science.
    2. *Simple hydrogeological models:* conduct desk analysis of e.g. geophysical methods, boreholes, logs and chemistry, develop the models as tools for officials to describe the surface near groundwater reservoirs and table; formulate guidelines.
    3. *Reuse of excess water:* bring in practical inspiration to management of surface-near groundwater from other EU countries (e.g. the Netherlands, Germany, or Belgium); stakeholder involvement of industries, research institutions, municipalities and utilities in innovation processes to define technical solutions.

2. Examples of possible demonstration projects:
    1. *Demonstration project on testing the hydrological model (cf. C4-1.2):* test the hydrological model in at least five different local areas e.g. the cities of Hedensted, Herning, Ringkøbing.

2. *Demonstration project on reuse of excess water (cf. C4-1.3):* test the economic and environmental viability of removing excess water from upper groundwater with transfer to rivers in periods with flow capacity. Linked to technologies within e.g. heating, cooling or irrigation.

3.2. Expected complementary actions

1. *"WaterCoG":* A project around the North Sea involving eight beneficiaries from DK, NL, SE and UK. The focus is on improved water governance in the private and public sector and includes pilots in the region. Testing and demonstrating new management tools. The WaterCoG and C2C CC will have strong synergies in relation to water management, planning and stakeholder involvement. Complements C0. [To be funded by InterregVB].
2. *"KRAFT":* A knowledge-based awareness center for tourists in Ringkøbing displaying the consequences of climate change and energy issues. Complements C0. [Funded by Ringkøbing-Skjern Municipality, CDR and Vestas].
3. *Citizen awareness:* Outreach and communication to strengthen citizens' awareness to act on climate change. In cooperation with researchers, teaching staff and children. Complements C0. [Funded by Regional Development Funds].
4. *"TOPSOIL":* Focusing on issues related to rising groundwater levels and related climate change implications. Includes beneficiaries from DK, DE, NL, BE and UK and will add European aspects on groundwater to C2C CC. Complements C4. [To be funded by InterregVB].
5. *Watercourse restauration:* Actual restauration of watercourses supplementing C2C CC by retaining water flow upstream and improving biodiversity. Complements C3. [Funded by the Danish AgriFish Agency under the EAFRD 2014-2020]
6. *Municipal and Water Utility CCA projects:* the municipalities and the region are to mobilize and invest at least 16 mill. EUR on CCA projects[22] within the project period. Likewise, the Danish utilities are to spend app. 135 mill. EUR[23] annually on climate investments[24] over the next 25 years. C2C CC will contribute with added value and influence the municipal CCA plans and waste water plans and the utilities' future construction projects. Complements C1. [Financed through taxes and water fees].
7. *CCA in coastal urban areas:* Urban development and construction project on CCA of an urban area facing the sea. Complements C2 [Funded by Realdania].
8. *Smart Water Cities*: Integrating environmental and societal challenges into business opportunities in emerging city markets for water management and water supply solutions. Complements C0. [To be funded by ERDF via Growth Forum CDR].

Replication of the IP:

Replication is an adaptive process. C2C CC will contribute to other projects and the IP will make use of results from other projects. Replication of e.g. capacity-building methodology, project management, concrete solutions, multi-level governance approach, innovation, etc. are secured through the following programs, projects, cooperation fora and networks to increase the number of cities and regions making use of CCA results and processes:

- *National replication:* Through established cooperation fora on climate adaptation such as "Water in urban areas" and "Water in rural areas". Furthermore, through thematic meetings at The Academy of Technical Science (ATV), Local Government Denmark (LGDK), the Association of Danish Regions, the Confederation of Danish Industry and cooperation fora of various professional groups.
- *EU replication:* Existing and forthcoming partners in Horizon 2020, Interreg and LIFE programs; as members in the ENCORE network (Political network on Environment of Regions in Europe); the North Sea Commission, and the Association of Water Utilities. Furthermore, C2C CC shall make use of Mayors Adapt to enhance visibility of the Region's CCA and create material and design tools available to other cities.
- *Global replication:* In previous projects the consortium partners have invented new solutions for water related problems that successfully have been transferred and implemented in other parts of the world to solve severe problems with e.g. water scarcity, draught or flooding. This is also an expected outcome of the C2C CC project.

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[22] Based on: 19 municipalities and 1 regional authority each spending approximately 135,000 EUR per year in 6 years.
[23] Approximately 27 mill. EUR per regional authority per year.
[24] Danish Association of Water Companies (DANVA) (2015). "Dansk Vand Magasin #3 juni 2015", DANVA. p. 32-34. (in Danish).

4. Expected results (main outputs and achievements, qualitative and quantitative):

4.1. Expected results linked to actions financed by LIFE

Preparatory actions:

A1: The steering group of the consortium will secure the overall progress and management of the IP. The online platform will act as a one stop shop for information. The communication and outreach plan, and the replication plan will secure dissemination of the IP results. A kick-off seminar will introduce all beneficiaries, citizens, stakeholders and politicians to the IP and put integrated CCA on the political agenda. A2: A capacity-building Task Force will secure synergy between the different capacity building activities (see C0). A3: The review of legal barriers will be used to find solutions and to influence legislation to overcome the barriers of integrated CCA. A4: The aggregation of data and reports related to CCA will secure third party knowledge and function as knowledge base for integrative CCA. A5: The monitoring systems will secure transparency of the progress within all actions.

Concrete actions:

C0: Governance

C0-1.1: New paradigm and common regional strategy integrating municipal CCA plans. C0-1.2: Knowledge sharing on BAT and best practice between municipal and utility officials, industries and research institutes. C0-1.3: Enhance competences among officials and water professionals on CCA. C0-1.4: Enhance competences among officials and water professionals on processes with many stakeholders and citizens. C0-1.5: R&D and jobs within water sector in the region. C0-2.1: Organisation of CCA for the Limfjord municipalities to assist decision making for integrated CCA. C0-2.2: Organisation of CCA for Juelsminde to assist decision making for integrated CCA. C0-2.3: Showcases, an increase in water tech investments and an increase in tourism. C0-2.4: Capacity-building of technical staff and establishment of guidelines to be replicated. C0-2.5: Capacity-building of municipal and utility officials on citizen involvement and co-creation. C0-1-6: capacity building in preparing emergency/contingency planning; tools: warning systems for citizens e.g. SMS service

C1: Rainwater

C1-1.1: Tool: Urban hydrological models and related guidelines. C1-1.2: Report of experiences on SUDS and water treatment and related guidelines. C1-2.1: Innovation: Business development, and test results on SUDS and water treatment. C1-2.2: Innovation: Business development, and test results on permeable pavements' effect in different geological contexts.

C2: Sea and fjords

C2-1.1: Assessment report of the CCA challenges and trade-offs and synergies with marine ecology of the fjords at the east coast. C2-1.2: Decision support for integrated solutions on CCA and marine ecology of the Limfjord. C2-1.3: Concrete assessments of the interaction between sea and rivers in coastal zones. C2-2.1: Governance: Knowledge on stakeholder based decision making in local areas.

C3: Lakes and rivers

C3-1.1: Innovation and tool: Interactive 3D decision support tool on the water flow in catchment areas across municipal borders. C3-1.2: Guidelines of different means to accommodate environmental impacts of CCA in river systems. C3-1.3: Innovation and tool: A warning system for flooding from rivers. C3-1.4: Assessment of qualitative and quantitative retention effects of wetlands. C3-2.1: Tool: Demo result and experience of a warning system in practice.

C4: Groundwater

C4-1.1: Assessment of the impacts of climate change and precipitation on groundwater level. C4-1.2: Tool: A simple decision support tool for municipal officials to indicate future impacts from rising groundwater level and define CCA actions. C4-1.3: Innovation: Pushing for technological development to solve problems with rising groundwater level. C4-2.1: Innovation: Development of means to reuse excess water.

4.2. Expected results linked to expected complementary actions

3.2.1. WaterCoG will demonstrate new tools to improve flood resilience and water governance. 3.2.2. KRAFT focuses on tourism within the region and supports C2C CC by increasing awareness on nature and climate change. 3.2.3. The results of the Citizen Awareness project compliments with outreach and dissemination. 3.2.4. TOPSOIL's results support C2C CC on the interlinkages between climate change and groundwater and brings in European experiences. 3.2.5. The results of restauration of water courses supports C2C CC by increasing a stream's retention effect up-stream. 3.2.6. Tax and water fee financed

CCA projects support the overall goal by making the region more climate resilient. However, it is also the aim of C2C CC to influence these projects towards more green and flexible solutions serving more purposes. 3.2.7. Realdania's forthcoming program focuses on coastal urban areas, and a project within the region will support the IP by making an urban area resilient towards flooding from the sea. 3.2.8. Increased exports of CCA solutions to emerging city markets.

5. Expected contribution to the implementation of the target plan/strategy

C2C CC will support the targeted implementation of the individual municipal CCA plans and the risk management plans under the Water Framework Directive, the Floods Directive, with linkages to the objectives of the Marine Directive and the Habitats Directive. The IP will do this by:

1: Securing cross-border collaboration as a necessity for integrated CCA. The IPs capacity-building elements and decision tools will assist the municipalities in the transition to new governance needs of CCA, which includes involvement of many actors in the planning and implementation process.

2: Creating analyses and tools to assist integrated CCA planning and decision making processes. The IP will supplement the CCA plans by analysing water issues as part of a hydrological cycle and create modelling tools to assist the municipalities.

3: Involving water industries, research institutions and industry associations in demonstration projects and capacity development activities will push for research and development of new knowledge and technologies.

5.1. Similar brief information on the complementary actions

4: The complementary actions 3.2.1-3.2.3 contribute to C2C CC's cross-cutting themes of governance, tools and innovation, and bring in international experiences.

5: The complementary actions 3.2.3 and 3.2.4 contribute to C2C CC with awareness raising among citizens and tourists on climate change and attract more tourists to the region.

6: The complementary actions 3.2.5-3.2.6 contribute to C2C CC with relevant knowledge and implementation of actions within the hydrological cycle.

6. Main stakeholders involved in the project:

The IP is already characterised by thorough stakeholder involvement on which the project consortium is based. Prior to the IP proposal, all municipalities and selected water utilities, water companies and knowledge institutions were invited to a CCA workshop to define the content of this project. App.60 people participated and the programme and minute of the workshop can be found on the CDR website[25].

Water Utility companies: AquaDjurs, Energi Viborg, Herning Vand, Lemvig Forsyning, Randers Forsyning, Ringkøbing-Skjern Forsyning, and Aarhus Vand are directly or indirectly involved in implementing actions under the municipal CCA plans and will play an important role in many of the IP actions especially related to C0 and C1.

National governmental bodies: Ministry of Business and Growth Denmark, the ministry has recently overtaken the responsibility of the Danish Law of Planning and will play a role in regulatory matters.

Municipalities: *Municipalities*: Aarhus, Odder, Ikast-Brande and Ringkøbing-Skjern municipalities have not yet signed Letter of Intent (LoI).

Regional governments: North Denmark Region will play a role in the activities related to the Limfjord as it collaborates with the municipal associations and supports the northern municipalities.

Non-Governmental Organisations: Association of Danish Water Utilities (DANVA), The Confederation of Danish Employers (DA), Local Government Denmark (LGDK), Association of Danish Engineers (IDA), Center of Freshwater (Ferskvandscentret), Danish Center for Environment and Energy (DCE) - will contribute with relevant branch specific knowledge, dissemination, tools, and innovation. The Danish Society for Nature (DN).

[25] CDR website: http://www.rm.dk/regional-udvikling/klimatilpasning/aktiviteter/klimamidt---13.-august-2015/

Research institutions: Aalborg University will be involved with their expertise on citizen involvement and livable cities.

Water clean tech companies: Dansand, Grundfos, Kamstrup, and NCC will be involved in relevant innovation projects and cooperation fora.

7. Long term sustainability (including capacity building):

7.1. How sustainability of the project's results and effects will be ensured

C2C CC intends to lead to enhanced national legislation and/or international guidelines for integrated CCA – especially on future events after the end of the project. Long-term sustainability of the project is ensured by building up efficient cooperation and coordination structures - cross-boundary as well as multi-level governance. This shall be done by systematic capacity building measures and by creating various forums for exchanging information and best practices – enhancing local authorities' motivation to continue cooperation to ensure resilience. Furthermore, one of the gaps mentioned previously is that some municipalities have more ambitious CCA objectives/plans than others, which makes it difficult bringing them all together; however, C2C CC will create a common understanding and starting point, which will facilitate further cooperation on CCA in the future.

Officials from the other Danish regions will participate in C2C CC's workshops and this could constitute the starting point of replicability in the cities of their respective regions. This will entail that the methodologies and results from C2C CC will be further developed when replicated in other parts of Denmark. Business development shall ensure long-term effects of the project by building up capacities in the industry and underpin the pull and push effect of innovative technologies within the CCA sector. Due to the large-scale and cross-boundary elements of the project, C2C CC will ensure that the region stays a frontrunner within water technologies and this will benefit the private sector. C2C CC includes several large demonstration projects and construction works, and these will accelerate more financing for large projects during and beyond the project's duration. Furthermore, several of the funds mentioned in the Financial Plan (CNg) extends beyond 2022, and therefore it is expected that the local stakeholders will continue to apply for and receive funding within the area of CCA.

8. Expected major constraints and risks:

Risk 1: *The national socio-economic environment.* The Danish government proposes to cut funding for environment and climate change in the national budget and there is a lack of national requirement to implement the plans already made. However, the local socio-economic environment within the region is characterised by a large amount of water clean tech companies. The socio-economic environment is, furthermore, pushed by proactive local governments and the floodings particularly from storm surges and cloudbursts, which push the local agenda for CCA implementation.

Risk 2: *The relatively weak institutional set up of CDR in regard to climate change planning.* CDR is not legally obligated to take on the role as a facilitator or coordinator of CCA activities, however, the municipalities within CDR respect and appreciate CDR's work and acknowledge it as a facilitating, coordinating and networking body (reflected by the signed Letters of Intent). CDR has proven this through several projects (see Form CNc) and also created the basis for the establishment of a strong project consortium.

Risk 3: *The complexity of many stakeholders.* The IP deals with integrated CCA. Integrated planning involves many actors, which is the strength of the project, but which can also constrain and delay the processes. The consortium is anchored in a steering group which has the ability to make decisions on behalf of the IP and secure the effectiveness of the process.

8.1. Similar brief information on the complementary actions

Risk 4: *Funding for complementary actions are not mobilised.* CDR and CDR's funding office in Brussels assist the municipalities with applications for funding and look for alternative fund and investment mechanisms.

9. Climate and biodiversity related

Is your project significantly climate related?	Not applicable
Is your project significantly biodiversity-related	Yes ☐ No ■

MAP OF THE GENERAL LOCATION OF THE PROJECT AREA(S) IN THE COUNTRY/REGION

1.1. The geographical coverage of the LIFE IP actions.

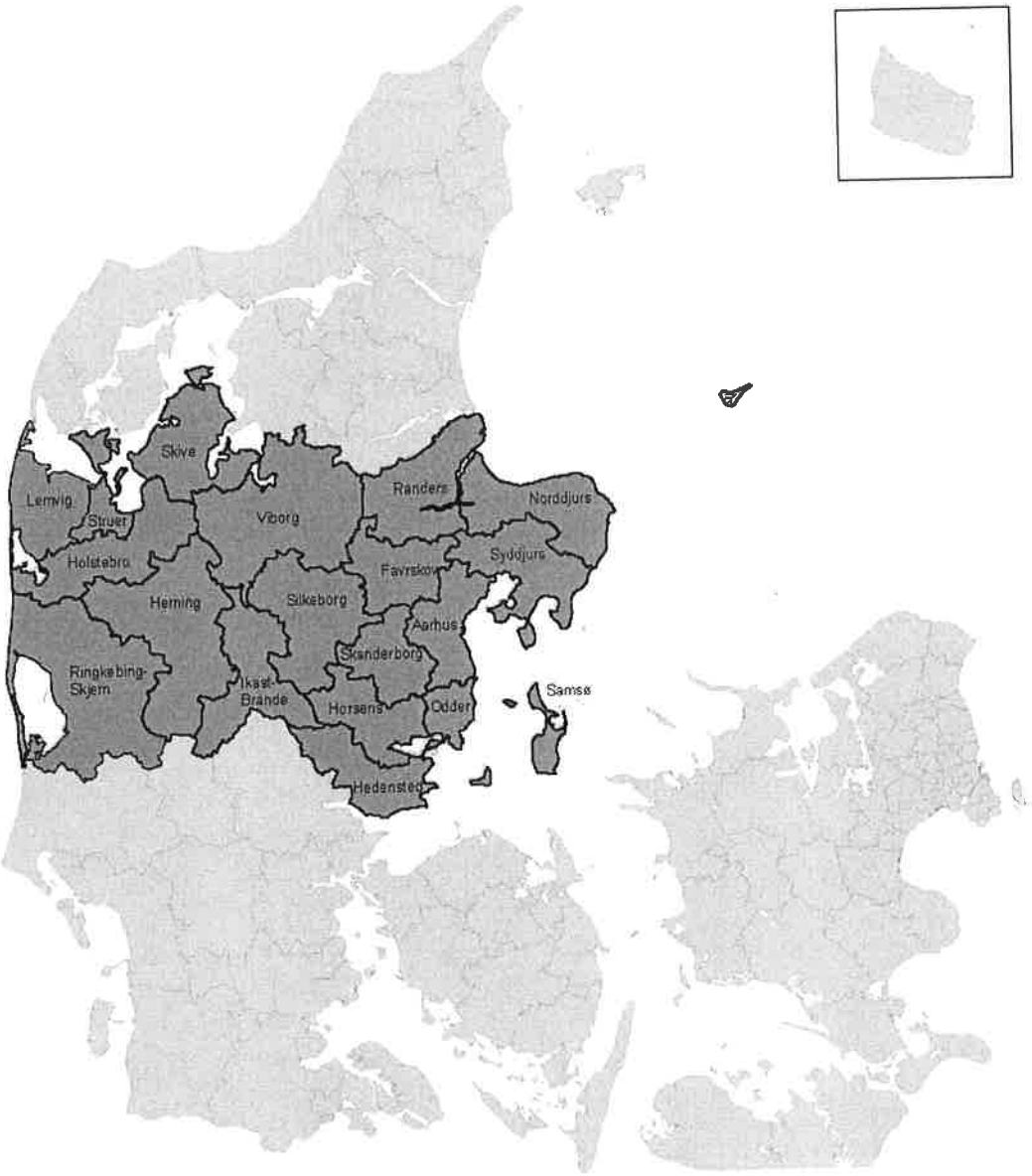

Figure 2: The region of central Denmark and the 19 municipalities.

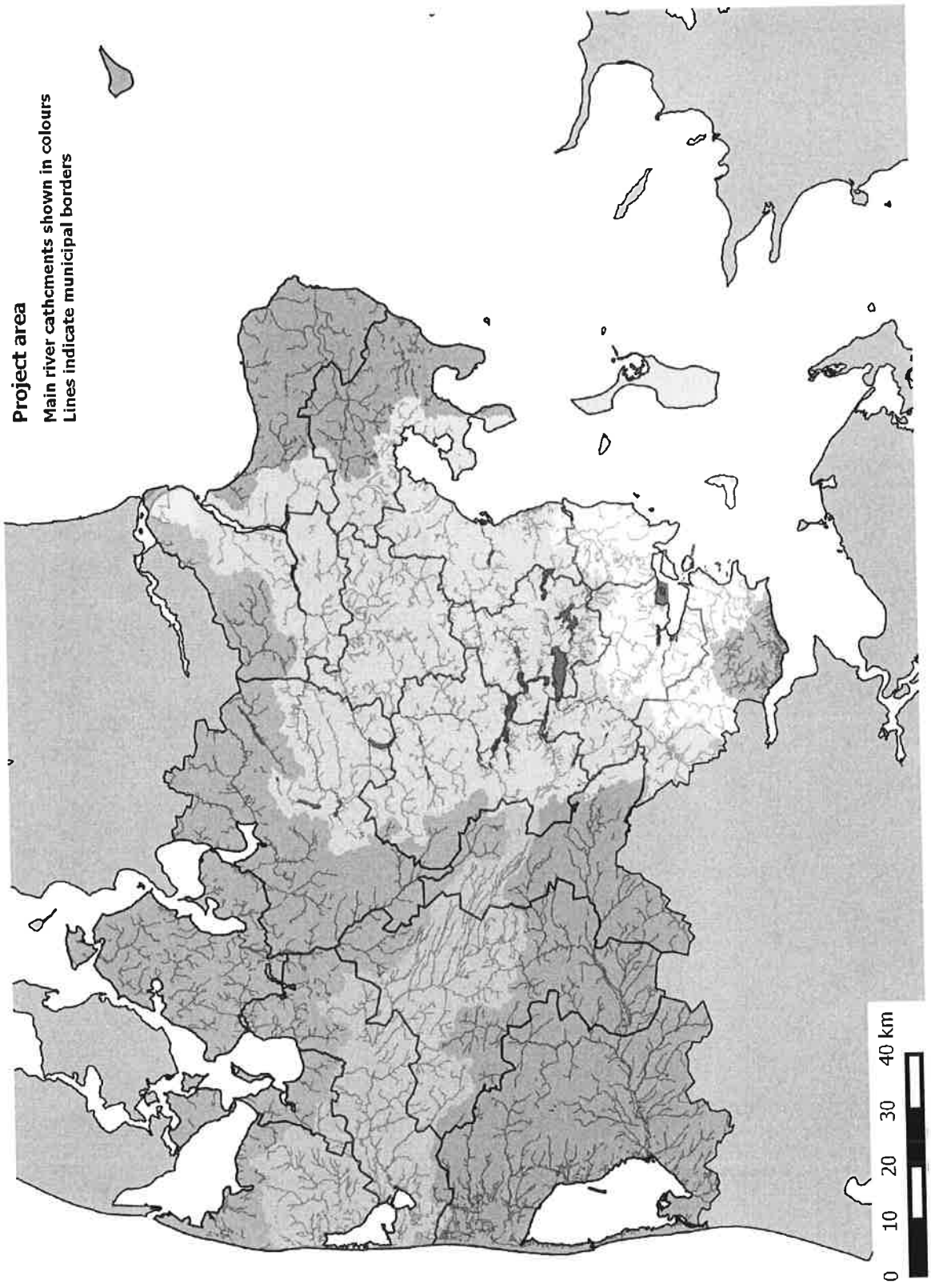

Figure 3: Project area including main river catchments. Black lines indicated municipal borders.

Financial Plan

Sources of financing	Actions/ measures to be financed	Amount of funding (EUR)	Status/date of Funding granted/ to be granted/ not yet requested	Authority/ entity managing the fund
LIFE PROJECT:				
EU contribution	NA	9,040,000 EUR	NA	NA
Contribution by beneficiaries	NA	6,026,667 EUR	NA	NA
Contribution by co-financers				
TOTAL LIFE IP		**15,066,667 EUR**		**EC, EASME**
EU FUNDS:				
LIFE Climate Action	PORE: Groundwater management Climate change and land use (C1, C2, C4)	278,000 EUR	Application submitted 15/09/2015	EC, EASME
LIFE Nature and Biodiversity	Biodiversity in marine environment (C2)	2,000,000 EUR	Not yet requested	EC, EASME
TOTAL LIFE		**2,278,000 EUR**		
INTERREG VB NSR	Climate adaptation measures (C1, C2, C3, C4)	1,000,000 EUR	Not yet requested	Interreg Secretariat, Viborg
INTERREG KASK	Transition to green economy corporation with industries (Innovation in C1, C2, C3, C4)	1,000,000 EUR	Not yet requested	Interreg Secretariat, Gothenburg and Copenhagen
INTERREG VB NSR	TOPSOIL: Climate change and groundwater resources (C3)	CDR part: 1,100,000 EUR (Project total: 7,200,000 EUR)	Application submitted 29/06/2015	Interreg Secretariat, Viborg
INTERREG VB NSR	WaterCoG: Governance and water management (C0)	CDR part: 200,000 EUR (Project total: 3,800,000 EUR)	Application submitted 30/06/2015	Interreg Secretariat, Viborg
TOTAL ERDF		**3,300,000 EUR**		
Horizon 2020	Research towards improved tools and CCA analysis (Tools C1, C2, C3, C4)	3,000,000 EUR	Not yet requested	EC
TOTAL HORIZON 2020		**3,000,000 EUR**		

Danish Rural Development Programme – Priority 4B Water Management	Watercourse restauration projects (C3)	2,700,000 EUR	Applications submitted 18/09/2015	The Danish AgriFish Agency
TOTAL EAFRD		**2,700,000 EUR**		
European Fund for Strategic Investments	Business development (Technical assistance on green tech.) (C1, C2, C3, C4)	1,500,000 EUR	Not yet requested	European Investment Bank/European Commission
TOTAL NCFF		**1,500,000 EUR**		
European Environment Agency - EEA Multi-annual Work Plan (EEA-ETC EA)	European topic center on climate change adaptation to the European Environment Agency (C0, C1, C2, C3, C4)	2,000,000 EUR (project total)	Granted 6/2/2014 (Project running 2014-2019)	European Environment Agency, EC
TOTAL EEA		**2,000,000 EUR**		
SUBTOTAL EU		**14,778,000 EUR**		
OTHER FUNDS				
Water in Urban Areas (II)[i]	A national network on climate adaptation and climate change (C0, C1)	500,000 EUR	Not yet requested	Danish Ministry of Higher Education and Science
Grønt Udviklings- og Demonstrations Program (GDUP) (EN: Green Development and Demonstration Program)	Development program supporting demonstration on sustainable solutions within climate and environmental challenges (C1, C2, C3, C4)	1,000,000 EUR	Not yet requested	Danish Ministry of Environment and Food – AgriFish Agency
Miljøteknologisk Udviklings- og Demonstrations Program (MUDP) (EN: Environmental Technological Development and Demonstration Program)	Development of technologies, processes and services within environmental issues. (C1, C2, C3, C4)	1,000,000 EUR	Not yet requested	Danish Ministry of Environment and Food - EcoInnovation
Teknologiprogram for jord og grundvandsforurening (EN: Technology Program for Soil and Groundwater Contamination)	Programme on contaminated soil and groundwater (C4)	100,000 EUR	Not yet requested	Danish Ministry of Environment and Food - Environment Agency
Waste water utilities' investments in climate adaptation and sewage systems	Investments in sewage and water retention (C1)	160,000,000 EUR	Water taxes and fees (continuous allocation)	Waste water utilities
Municipal and regional investment on climate adaptation	Implementation of climate adaptation plans (C1, C2, C3, C4)	16,000,000 EUR	Tax financed (continuous allocation)	Municipal and regional investments
Regional investments	The regional growth	1,000,000 EUR	Tax financed	Central

	and development programme funds water and climate related projects (C0, C1, C2, C3, C4)		(continuous allocation)	Denmark Region
Growth Forum of CDR	Development and export to city markets (C0, C1, C2, C3, C4)	1,000,000 EUR	Not yet requested	Danish Business Authority
Subtotal public:		**180,600,000 EUR**		
The Velux Foundations	Funding Scheme supporting research on water, climate and environmental issues (C0, C1, C2, C3, C4)	2,000,000 EUR	Not yet requested	The Velux Foundations
Realdania	Funding scheme investing in climate proof and adaptive buildings and areas (C0, C1, C2, C3, C4)	10,000,000 EUR	Not yet requested	Realdania
Innovation Fund Denmark	GEOCON: Advancing geological, geophysical and contaminant monitoring technologies for contaminated site investigation (C4)	4,000,000 EUR	Granted 01/08/2014 (project running 2014-2017)	Innovation Fund Denmark
Vestas	KRAFT (C0)	1,200,000 EUR	Granted 06/02/2015 (a continuation of a previously funded ERDF project)	Vestas
Subtotal private:		**17,200,000 EUR**		
International funds:		***0 EUR***		
Total complementary:		**212,578,000 EUR**[ii]		

Notes (if applicable)

[i] A national network working on innovation within climate adaption measures. The network consists of organizations within the public and private sector. The network is coordinating meetings, workshops and conferences among the members. Further, the network supports and funds projects complimentary to the IP.

[ii] The funding listed are contributions to complementary projects and they will not directly co-finance the Life IP project.