Baseline report

- First measurement -

July 2019

CATCH

An Interreg North Sea Region project

CATCH stands for 'water sensitive Cities: the Answer To CHallenges of extreme weather events'. The overall objective of CATCH is to demonstrate and accelerate the redesign of urban water management of midsize cities in the North Sea Region in order to become climate resilient cities that are sustainable, liveable and profitable on the long term.

This will be achieved by the joint development of decision support tools that will support midsize cities to formulate long term climate adaptation strategies. The design of the tools is based on the specific needs and characteristics of midsize cities. The tools will be tested in the formulation, execution and evaluation of 7 pilots.

CATCH addresses the special needs of midsize cities to deal with climate change adaptation and the resulting extreme weather events. In the North Sea Region 80% of the population live in urban areas of which a majority lives in midsize cities. Due to its scale, limited resources and expertise and tight connection with the surrounding region, midsize cities face a number of specific challenges to deal with climate change adaptation compared to large cities.

Inspired by the water sensitive cites theory, the experienced partnership will develop a decision support tool and roadmap to support midsize cities in designing long term climate adaptation strategies. CATCH will demonstrate that midsize cities in cooperation with their partners can accelerate the urgent process to become climate resilient. This results in inspiring examples in the 7 pilot cities, accompanied with a practical and usable set of generic tools for further uptake and dissemination in the North Sea Region.

The CATCH project offers the partnership the unique possibility to join forces (on European and regional level) and creates a unique momentum to change local behaviour, create European awareness, and support NSR midsize cities to make a significant step forward to become a water sensitive city.

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1 Introduction

In the Interreg NSR project CATCH our overall objective is to demonstrate and accelerate the redesign of urban water management of midsize cities in the North Sea Region. In order to become climate resilient cities that are sustainable, livable and profitable on the long term. This will be achieved by the joint development of a decision support tool and roadmap that will help midsize cities to formulate long term climate adaptation strategies.
The design of the decision support tool is based on the specific needs and characteristics of midsize cities. The tool will be tested in the formulation, execution and evaluation of 7 pilots. By creating this learning cycle between the development of the tool and the pilots, a new innovative tool will be made available for all North Sea Region cities combined with inspiring practical examples and long-term climate adaptation strategies

To determine the predicted effects of the decision support tool and the climate adaptation strategies a baseline study is performed at the start of the pilot projects. This report gives the results of the first baseline measurement and gives a guideline for the second measurement that will be performed at the end of the project (summer 2020).

2 Result indicators

Indicator	Target	Definition
Reduced costs from flood events due to extreme rainfall.	20%	Reducing the predicted flood damage based on the decision support tool and development climate adaptation strategies guiding the way to water sensitive cities. The reduction will be based on the results of a baseline study (WP3 and WP6)
Reduced probability of floods due to extreme rainfall.	30%	Reducing the probability of flood based on the decision support tool and developed climate adaptation strategies guiding the way to water sensitive cities. The reduced probability will be based on the results of a baseline study (WP3 and WP6)
Increased awareness of the need to accelerate the formulation and execution of water sensitive climate adaptation strategies in midsize cities	1000 people	The number of people with an increased awareness of the need to accelerate climate adaptation strategies in midsize cities measured by community events, stakeholder events, dissemination events and active uptake of communication tools (WP2).

3 Background information

3.1 The Water Sensitive Cities Theory

In CATCH we use the Water Sensitive Cities (WSC) theory as the source of inspiration. The principles of this theory are derived from the Dutch Ecopolis model, further elaborated in Australia and are now developed into a theory usable also for Northern European situations. In the NSR, the UK is considered frontrunner in Water Sensitive Urban design. Also other cities and projects draw inspiration, like the Water Sensitive Rotterdam programme.
The WSC theory provides three principles that help cities to evolve from an engineered urban water system to an integrated adaptive and climate resilient water system. These principles are to capture measures, approaches and perspectives:
1. Cities as catchments:

The urban water system is often part of a larger catchment area. The intensive exploitation of the urban landscape resulted in the progressive decrease of the natural water system to the detriment of the surrounding region. The goal is to restore the water balance within these regions.
2. Ecological services:

The same water that poses the biggest threat to society also brings life and energy to the cities. Ecological services are the benefits that people derive from ecosystems. A river area for instance can be used multifunctional for flood protection, groundwater recharge, recreation and for the improvement of the quality of live.
3. Water sensitive communities and networks:

The implementation of integrated solutions requires improved perception of the benefits from decision makers, businesses and the public across multiple constituencies and levels of governance. Therefore collaboration is key.

3.2 Relation between result indicators and the Water Sensitive Cities Theory

The result indicators are chosen in such a way that they reflect the three principles of the water sensitive cities theory.
1. Cities as catchments - Reduced probability of floods due to extreme rainfall
2. Ecological services - Reduced predicted costs from flood events due to extreme rainfall
3. Water sensitive communities and networks - Increased awareness of the need to accelerate the formulation and execution of water sensitive climate adaptation strategies in midsize cities.

To develop in the different transition stages in becoming a water sensitive city, all principles should be addressed. And developing in one principle creates opportunities and provides a basis to develop further in the other principles too.

3.3 Pilots and strategies to be developed

In CATCH all practice partners perform pilots and develop climate adaptation strategies to test the decision support tool that will be developed.

All pilots address one or more of the principles of the water sensitive cities theory, and therefore also one or more of the result indicators. As a) one principle provides support to the development of another principle and b) principles should be in balance to become more water sensitive, we state that addressing one principle indirectly influences another principle. In the strategies that the cities will develop this notion will be used.

In the table below you see what result indicators are directly and indirectly addressed with the pilots.

Result indicator Pilot	% Flood reduction	% Cost reduction	Awareness
Zwolle	Indirect	Indirect	Direct
Enschede	Direct	Direct	Direct
VMM	Direct	Direct	Direct
OOWV	Indirect	Direct	Direct
Arvika	Indirect	Indirect	Direct
Vejle	Direct	Direct	Direct
NCC	Direct	Direct	Direct

Looking at the predicted results of the CATCH project, it is our challenge to see if and in what way – based on the results of the decision support tool and the experiences of the several pilots- a climate change adaptation strategy can be produced that as a minimum fulfills the targets of the result indicators.

3.4 Example Zwolle

The pilot of Zwolle will deliver 4 products:

1. Action Plan
2. Mobile Climate Escape room
3. City Debate
4. “Sim Zwolle” serious game design

The pilot contributes in several ways to the result indicators of the CATCH project. As the pilot is about (developing a tool for) community building at street level, and thus creating water sensitive communities, this directly contributes to the result indicator on awareness. According to the Water sensitive cities theory, creating water sensitive communities also enhances possibilities in the development of cities as catchments and cities providing ecosystem services. Concrete, this means that measures to prevent flooding and reduce costs will be easier to achieve in communities with a raised awareness. This way the pilot contributes to all result indicators.

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4 Method and results

4.1 Awareness

For awareness we came up with the following way of working:

- Awareness is created when people are asking, sharing and using products, experiences and other information from the CATCH project by community events, stakeholder events, dissemination events and active uptake of communication tools (WP2)
- We can measure this by:
    - 1 external requests for information by stakeholders (written, presentations, meetings etc) and its outreach.
    - 2 articles published without an active request from a CATCH partner and its outreach.
    - 3 active shares or likes on social media.
    - 4 (active) participation in stakeholder meetings (using attendants' lists).

- These measurements are performed as part of the communication monitoring that takes place every reporting period. For this a monitoring list is developed.

- At the beginning of the project the awareness created by CATCH can be considered as 0.
- Baseline score: 0.

4.2 Flood and cost reduction

For flood and cost reduction another method had to be chosen as measurement is less straight forward. The result indicators are about predictions and probabilities that can be reached with developed climate change adaption strategies. This means it won't be possible to perform a direct measurement at the end of the project, based on the pilot results. Besides all pilots, strategies, starting positions and methods for calculation of costs and flood reduction may differ per partner. A straightforward measurement is than also not a possibility, though it might be possible to find a joint way to calculate a predicted reduction with the execution of a strategy. To examine this, a brought inventory is made of what data are available amongst the partners to provide these answers.

4.3 The inventory

The inventory for reduced costs included questions on:

- costs spend by government agencies on damage due to extreme rainfall
- claims at and costs of insurance companies on damage due to extreme rainfall

The inventory for the reduced flooding included questions on:

- calculated probabilities of flooding
- current protection levels
- achieved spatial interventions (in m3)
- notifications from citizens in different media
- items in newspapers on flooding

4.4 Results and conclusions

It would have been ideal if all partners would have a joint method for calculation of flood and cost reduction. But this is not the case. For all questions we see that there are always partners that do not have data to answer a question. Partners differ in the time lapse, spatial scale or unit of measurement to answer a question. This means we do not have the opportunity to calculate predicted results for the reduction of flooding and costs in the climate change adaptation strategies for all partners in the same way. All inventories are included in the annex.
We do see that all pilot partners can provide information to calculate flood and cost reduction in their strategies. Based on this notion we propose the following:

- The baseline outcomes for flood reduction and cost reduction will be set at 0.
- To prepare for the second and final measurement each partner is asked to give their preferred way of measuring the two indicators for their climate change adaptation strategies.
- In the development of the climate change adaptation strategies the partners are requested, based on their experiences with the DST tool and the pilot experiences, to give an indication on cost and flood reduction that will be reached with the execution of their climate change adaptation strategies.
- For the calculation of the result indicator for CATCH, we will take the average of the measured results of the practice partners.