



2 Seas Mers Zeeën SARCC

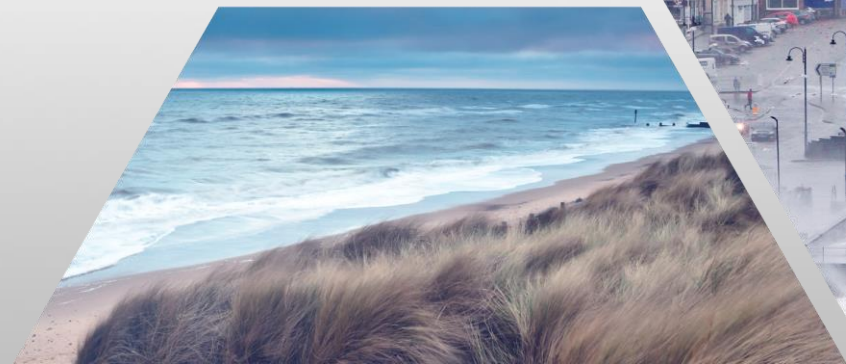
European Regional Development Fund

Lessons learned from SARCC pilots

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Outline

- Introduction
- SARCC pilot projects
- Pilot paradox
- Methodological approach
- Successful pilots
- Pilot highlights
- Conclusions



Introduction

- **WP1 Joint Evaluation Team (JET): HZ, Vives, Exo**
- **Output 1: New Framework and Monitoring Tool** for the selection of the most suitable nature-based solutions to deploy along coastal urban landscapes
- HZ task: evaluate the impact and outcomes of 7 pilot projects on the mainstreaming of Nature based solutions (NBS) into urban coastal cities in Belgium, England, France and The Netherlands

Nature-Inclusive Urban-Coastal Management-Framework

Guide for the Implementation and Monitoring of NBS to create Climate Resilient Coastal Cities

NBS instrumentalizes looking at the long-term, natural, and political processes and how to include historical, geomorphological, and paleo-environmental data sources. The Maritime Archaeological Trust provided evidence for historical coastal processes while TU Delft, Department of Urbanism and Department Hydraulic Engineering (together with HZ University of Applied Sciences) assessed urban development patterns, construction, and flood risk in the urban settings.

This is specially developed for municipalities to support the inclusion of nature as a way of coastal protection. This methodology is developed by the academic partners in the Sustainable and Resilient Coastal Cities (SARCC) project. EXO Environmental, HZ University College for applied sciences, Maritime Archaeological Trust, TU Delft, and Vives University College for applied sciences. The methodology is developed and tested in the pilot projects of the pilot partners in SARCC.

The framework can be understood through three key aspects, (i) the planning system of European, national, regional and local level informs the (ii) urban redevelopment process, followed by (iii) urban project. The framework dives deeper in the urban project level and provides guidance from the perspectives of the long term, initiation, project design, implementation as well as maintenance and feedback. The three aspects serve as a multi-level process steering development from national policy to urban project development.

1. Planning System and Process(es)

The planning system is a process in which the spheres of law, regulations, policy and institutions work together at different scales, influence each other and set the planning conditions for urban redevelopment.

The urban redevelopment process consists of four phases: (i) Initiative, (ii) Plan, (iii) Realization, and (iv) Maintenance (VROM, 2011; Yeburg and Dam, 2004). Phases i and ii are considered to be part of the 'Planning Process', whereas iii and iv are part of the 'Implementation Process'. Although these phases are variable, this division serves to distinguish planning from actual implementation of the plan. This mainframe is applicable to the four countries in the SARCC project.

2. Urban (re)Development Process

Conceptual Phase

Connecting Policy to Project Level

- Collect existing knowledge about current the situation
- Investigate local actors and the position according to local and knowledge and knowledge of local processes
- Develop and create forms (i) planning, implementation and monitoring
- Every iteration of feedback and requires continuous knowledge of the local system
- Regular spatial developments and flood risk management
- Use public from reports, research and knowledge sources

3. Urban Project: Spatial Planning Decision Making Model

Outline of the urban development processes of the former Dutch Ministry of Spatial Planning (VROM) and "Decision Model Spatial Plans" (DSMP)/Het Besluitvormingsmodel Ruimtelijke Plannen (2004)

Initiation: Start of the project. In the initiation phase, general information is processed to be able to make decisions for the project, while creating carrying capacity amongst stakeholders.

Masterplan: Shaping of the urban project. The master plan (structural plan) is the physical translation of the vision and program at the larger scale of an area. The master plan is normally the result of running different scenarios. After the visioning phase, the stakeholders refer to their sectoral visualizations, then the issues are clear and can be developed in a sectoral or in a sectional manner.

Urban Design: Design of the urban project. As part of the master plan, the urban plan is a detailed phase of development in line with the vision, and is directly connected to spatial quality. At the smaller scale, the information has a high resolution and should become a self-evident part of the urban design.

Construction: Building of the urban project. During the building phase, all data and information should be at the table and translated into construction plans.

Maintenance: Life of the urban project. Project requires regular maintenance and monitoring effort to regulate performance. Upfront maintenance will be high but requires less over time.

Feedback: Reflecting of the urban project. Iterative feedback of project performance from technical, ecological and socio-economic criteria is vital in optimizing lifespan and value.

Project Design Development Framework

Masterplan (Longue Durée): Drawing long term of human nature vulnerability. Includes Maritime Atlas, Landscape Atlas, and Planning Atlas.

Urban Project: Analyze the spatial system. Includes Flood Atlas and Urban Atlas.

Vision: Envisioning new futures with nature. Includes Problem Definition and Solution Concepts.

Strategy: Guidelines how to get there. Includes Guidelines and Modeling.

Urban Project (Spatial plan): Spatial plan. Includes Flood Atlas and Urban Atlas.

Design (Spatial design with nature): Spatial design with nature. Includes Alternatives and Integrated Benefits.

Urban Design: Design & Assess. Includes Design & Assess.

Synergy: Synergy between the different stages.

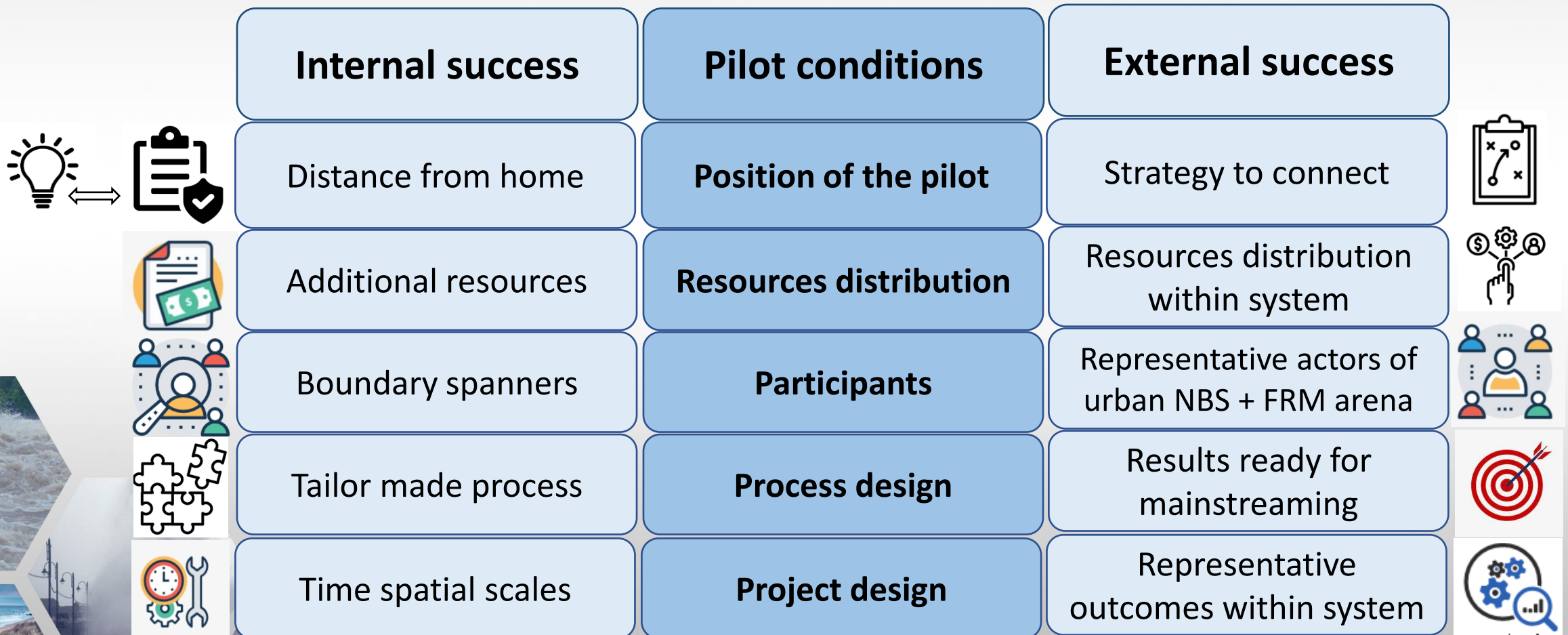


SARCC pilot projects

Pilots	NBS type	Location	Managed by
Middelkerke	Dune in front of dike	Belgium	Local and regional authorities (municipality and Flemish government)
Oostende	Dune growth, via vegetation experiments	Belgium	Local authority (municipality) and regional coastal authority (MDK)
Blankenberge	Dune growth, by making space via infrastructure reconstruction	Belgium	Local authority (municipality)
Vlissingen	Acceptance of overtopping water with retention in green/blue urban infrastructure	Netherlands	Local authority (municipality)
Southend	Greening flood protection infrastructure via vertipools, pilling habitats, gabion baskets, eco-terrace, vegetated shingle	England	Local authority (Southend council)
Newlyn	Eco-blocks for more ecofriendly water breaker	England	Regional coastal authority (environmental agency)
Gravelines	Dune growth via fences and vegetation	France	Local authority (municipality)

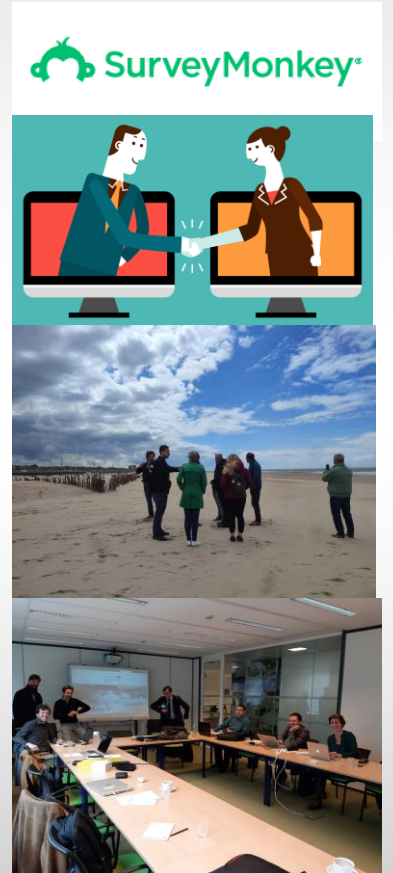
Pilot paradox (van Buuren, 2017)

- Same conditions that enable internal success hinder external success



Methodological approach

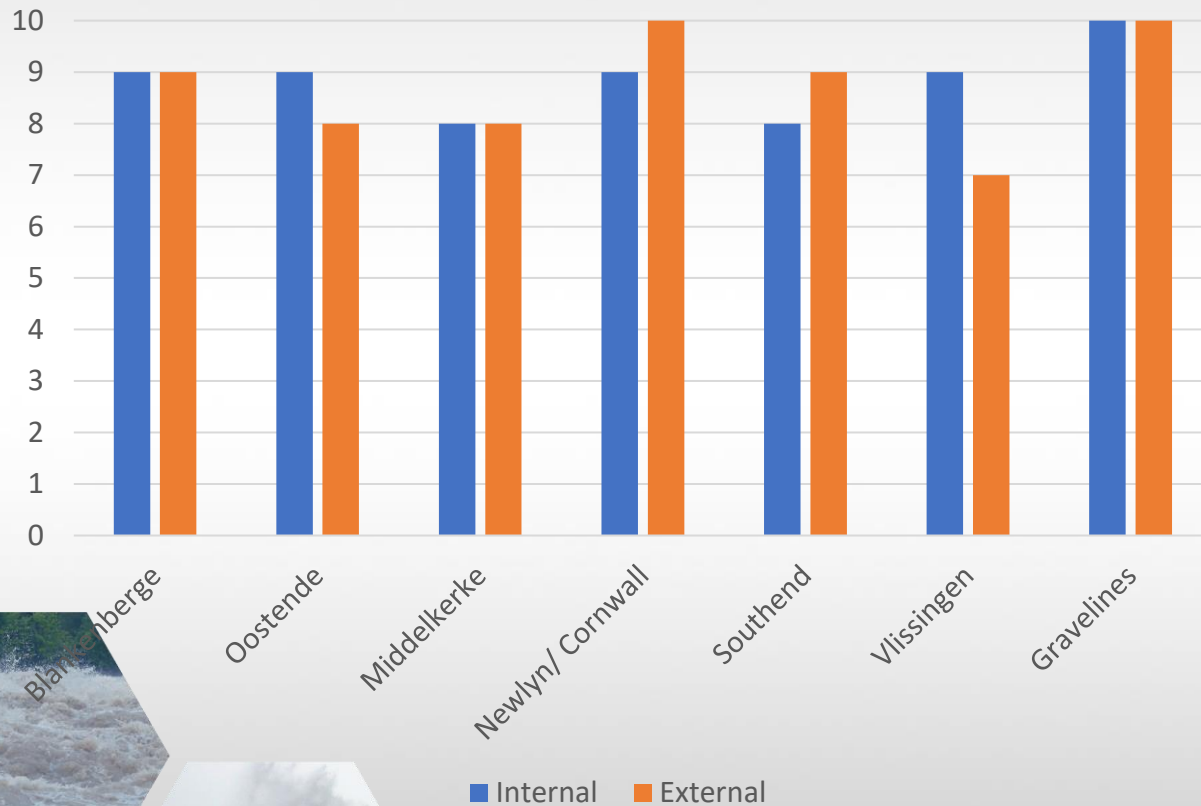
- 5 questionnaires each pilot phase
- Interviews: 7 pilot managers + 24 external actors
- Document analysis
- Pilot visits
- Transboundary knowledge exchange



Successful pilots?

It means different things to different people!

Internal and external success of pilot projects



Replicate pilots

Achieve pilot goal

Acceptance of citizens

Shift in mindset

Show NBS work

Acceptance of local communities and policy makers

Prove them scientifically

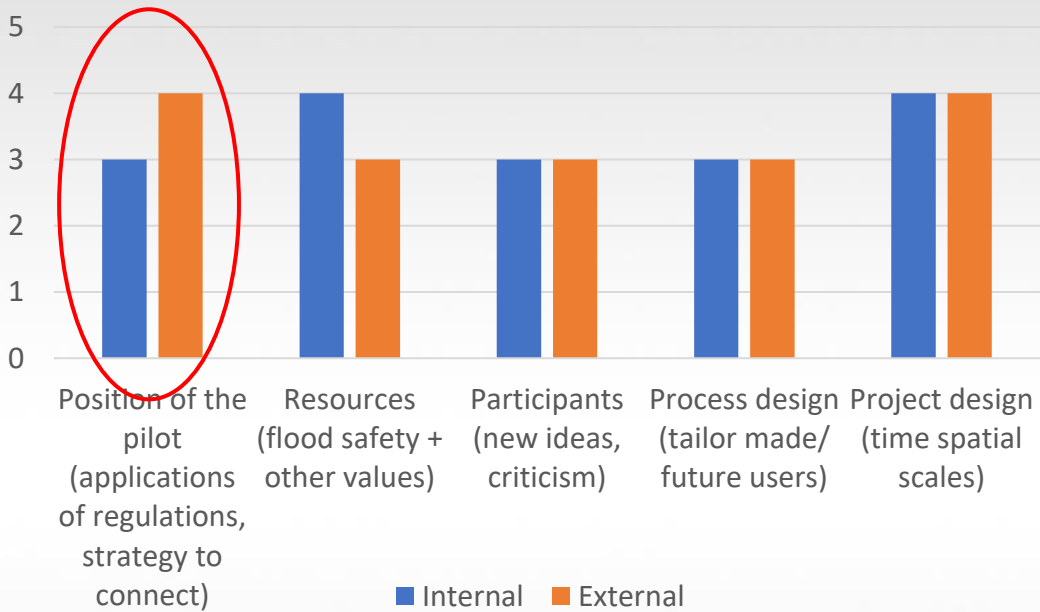
Keep dry feet and additional values (biodiversity, recreation)

Prove NBS works for coastal safety and added values

Increase awareness on flood risk of local communities

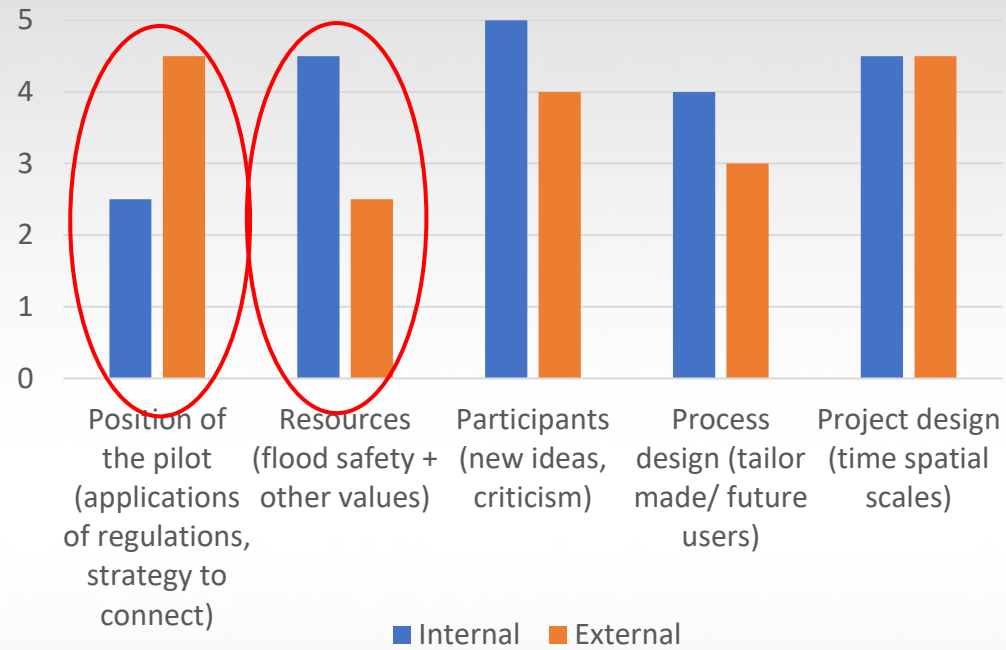


Blankenberge pilot



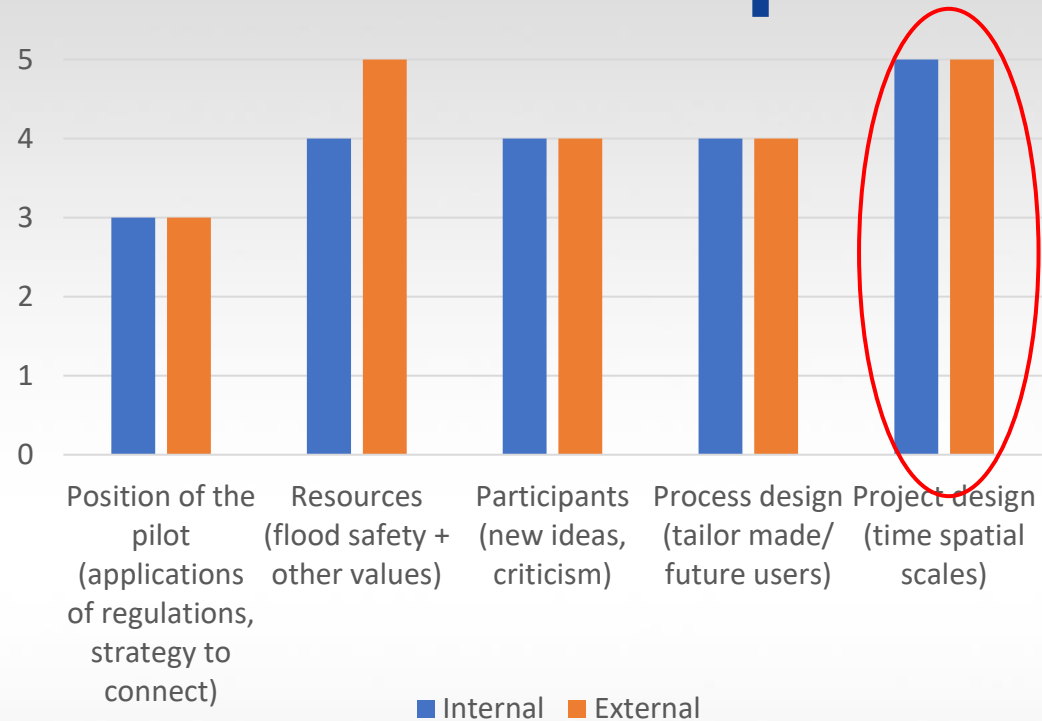
Conditions for success	Internal pilot process	External pilot process
Position of the pilot	The pilot project tested innovative NBS solutions (breaking out a road for dunes' growth) to learn	There is no strategy in place yet to connect pilot results with current coastal policies. However, current policies (master plan) supports the use of NBS.
Resource distribution	Resources (knowledge, finance, human capacity, raw materials) were sufficient during SARCC project.	Current policies do not provide sufficient resources to support the implementation of NBS. More knowledge about climate risks and NBS effectiveness More finance for long term maintenance of NBS.
Participants	The feedback from local stakeholders (citizens, businesses, policy makers) was valuable for the NBS design although many of them are still traditional thinkers.	Limited representativeness from the policy area, the municipality was the main actor. Sectors involved: crisis, transport, spatial planning, flood safety.
Process design	The pilot project was a tailor made collaborative process. The needs of future (citizens, businesses) users were taken into account in the NBS design.	The process followed in the pilot project was the same as of a non-pilot project. The lessons learned need to be picked up (e.g. by mayors) and shared with other actors. The pilot was not used yet as a policy instrument.
Project design	At first spatial and time scales were limited in the design phase. While throughout the pilot process time was enough to reach a consensus across actors and implement the NBS design.	More time is needed to monitor and prove the long term effectiveness of NBS for coastal protection. Likewise, spatial scale is limited in Belgium to replicate results.

Oostende pilot



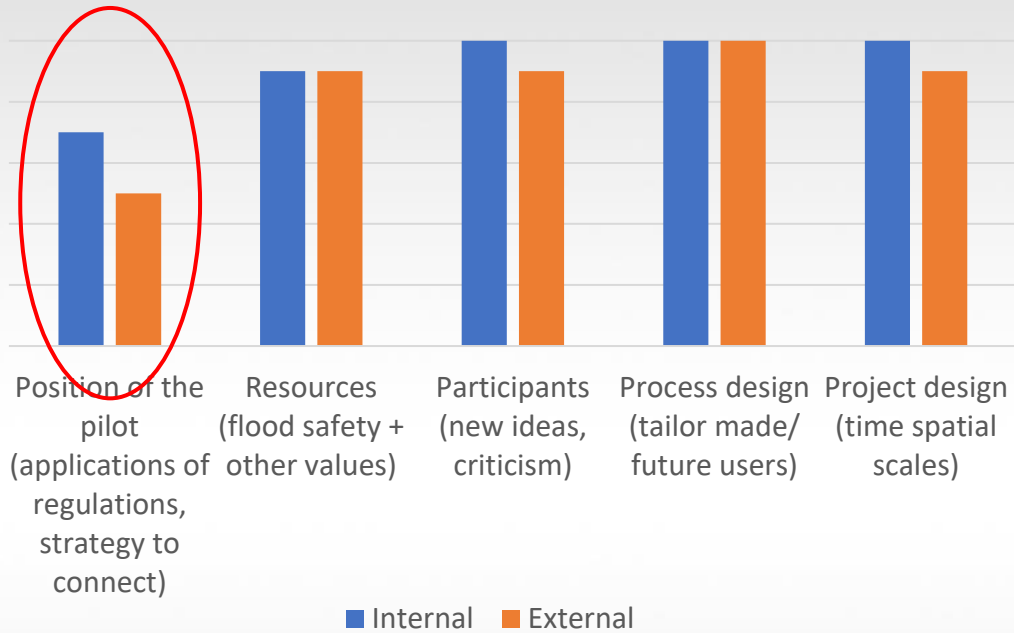
Conditions for success	Internal pilot process	External pilot process
Position of the pilot	Pilot project was used to learn more about the benefits of NBS. However, if current dunes get protection status, their maintenance will be a challenge.	A strategy is in place to connect pilot results with the new coastal vision Belgium. The coastal authority has already took ownership of the monitoring and lessons learned will be used to adapt current coastal policies.
Resource distribution	Enough resources (knowledge, finance, human capacity, raw materials) during SARCC project. Moreover, the coastal authority (MDK) provided additional finance to develop the living lab	No clear responsibilities over budget allocation between local and regional governmental authorities for the long term maintenance of NBS.
Participants	Difficult to explain new ideas but once future users (citizens) have the knowledge they are more open and can act as ambassadors. In addition, the pilot manager span boundaries and knowledge across their actors network.	Representative actors from the implementation arena: local and regional gov. authorities, private and citizens. The coastal authority will continue lead the monitoring of NBS and act as ambassadors of the knowledge generated. Multiple sectors: flood safety, spatial planning, transport, tourism, nature.
Process design	The pilot project was a tailor made collaborative process between public governmental authorities (local and regional) and civil actors.	The first results seem promising. The coastal authority (MDK) developed a Living Lab to monitor the dunes and vegetation together with UGhent They are using pilot project as policy instrument to learn about NBS and mainstream NBS. Thus, current coastal policies are changing during the pilot project.
Project design	Spatial scale was enough. Time scale was not enough for monitoring and sharing knowledge.	More time is needed to monitor and provide the long term effectiveness of NBS in order to change the mind set of people regarding NBS. Spatial scale is limited Belgian coast to scale up NBS.

Middelkerke pilot



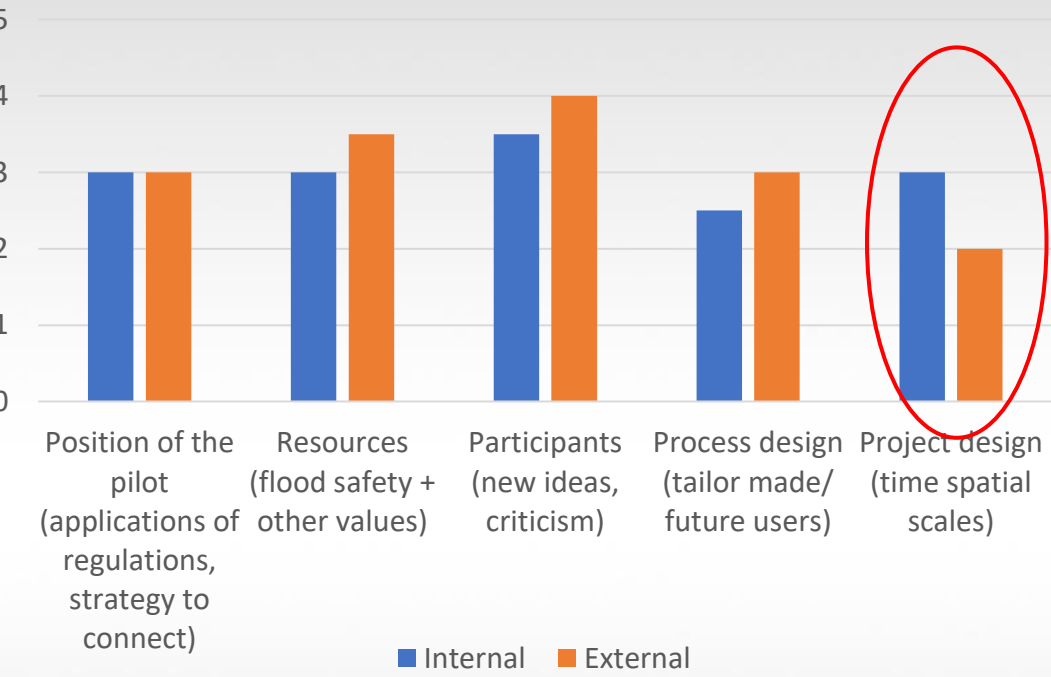
Conditions for success	Internal pilot process	External pilot process
Position of the pilot	Pilot project was used to learn more about the benefits of NBS. However, if current dunes get protection status , their maintenance will be a challenge.	A strategy used was good dissemination and education campaigns through social media and schools. Moreover, the lessons learned are useful for the coastal vision in Belgium.
Resource distribution	Enough resources (knowledge, finance, human capacity, raw materials) during SARCC project.	Although the knowledge has increased, more resources to mainstream lessons learned depends on the ambition and willingness of the client to pay.
Participants	At first stakeholders were reticent. They were more open to think out of the box after some time. Input from citizens improved the NBS design. The municipality (convince ANB and MDK) and citizens (social media) acted as boundary spanners	Representative actors from the implementation arena: local and regional gov. authorities, private and citizens. Multiple sectors: flood safety, spatial planning, transport, tourism, nature.
Process design	The pilot project was a collaborative process between public and civil actors. Citizens and nature conservation agency were consulted. Their input improved the NBS design.	The first results seem promising. The coastal authority (MDK) is monitoring the NBS and using pilot project as policy instrument to learn about NBS and mainstream NBS.
Project design	Limited time to monitor and learn about NBS benefits during SARCC project. Spatial scale was sufficient	Limited time to monitor effectiveness of NBS long term. More monitoring, more insights. Spatial scale is limited Belgian coast

Newlyn pilot



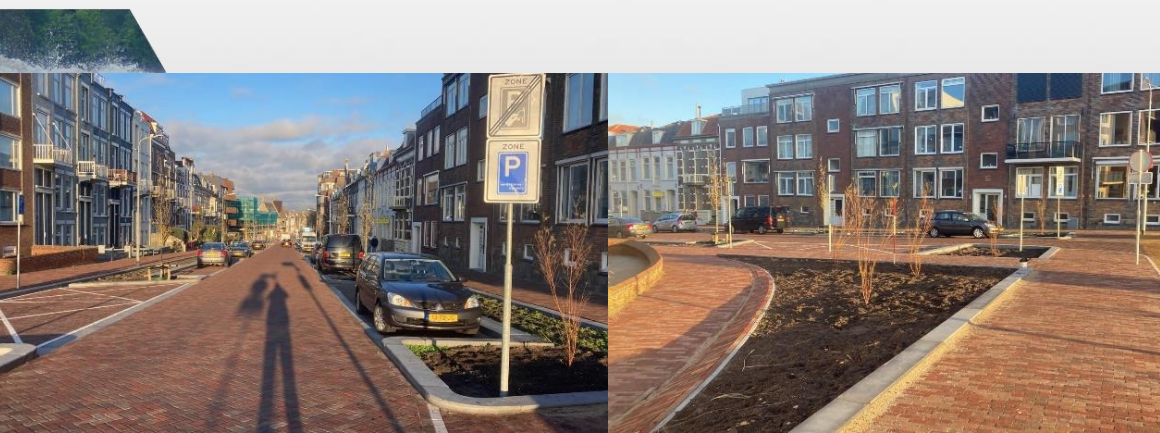
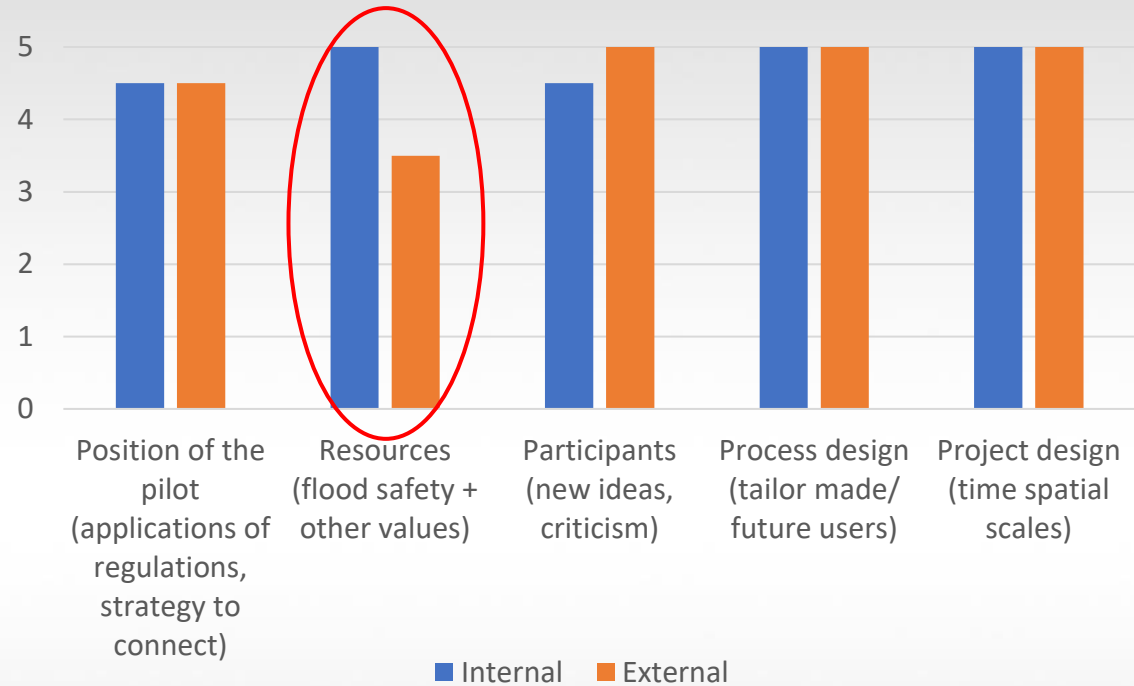
Conditions for success	Internal pilot process	External pilot process
Position of the pilot	Current policies encourage the implementation and mainstreaming of NBS but does not provide clear legal framework on how to deliver them . Thus, there is no freedom and flexibility to experiment with innovative solutions (NBS) for coastal protection.	There are local strategies to connect lessons learned to current local policies (2050 climate plan)
Resource distribution	Enough resources (knowledge, finance, raw materials) during SARCC project. At times, there was lack of human capacity due to multiple staff changes	There are local funding available for the maintenance and monitoring of the 4 pilot projects.
Participants	Actors from multiple local departments were consulted, citizens were informed by the local council	Representative actors from the implementation arena: local and regional gov. authorities, private and citizens. Multiple sectors: flood safety, spatial planning, transport, nature.
Process design	The pilot project was a collaborative process between public and civil actors. The EA acts as a boundary spanner	First results are already available from the trial eco-blocks. These are useful to improve the monitoring of the actual eco-blocks. Even though first results are not ready for mainstreaming, the pilot project was used as policy instrument to learn about NBS and replicate them in other locations.
Project design	Limited time to monitor and learn about NBS benefits during SARCC project because of staff changes Spatial scale was sufficient, it covers the entire local coastline	First results seem promising. EA continues monitoring

Southend pilot



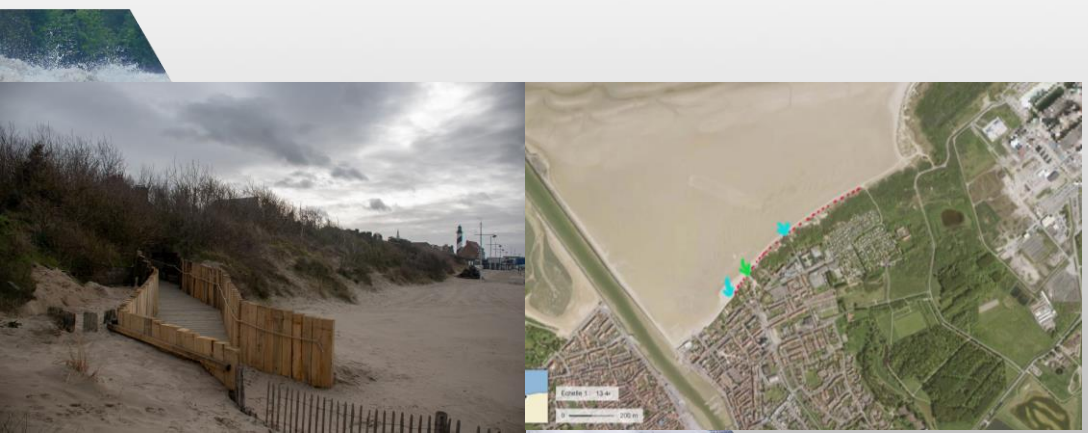
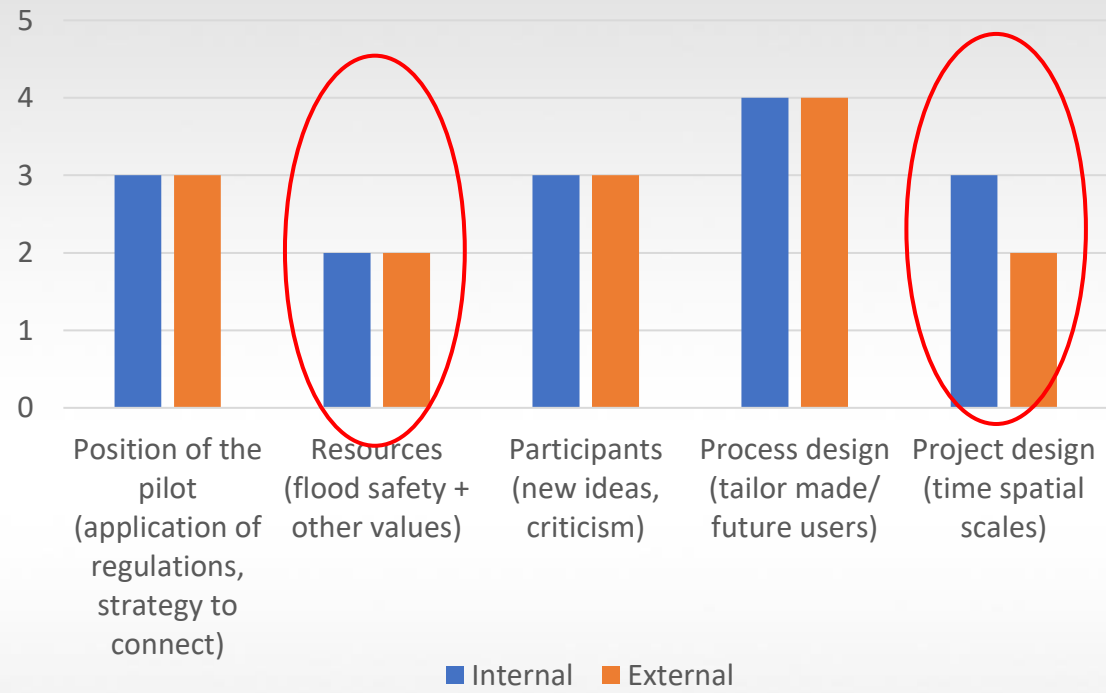
Conditions for success	Internal pilot process	External pilot process
Position of the pilot	Current (nature) policies are not flexible with getting permits for innovative solutions (NBS) for coastal protection.	There are strategies to support this (2050 climate plan, 2030 Paris) but more local standards are needed
Resource distribution	Resources (finance, knowledge, raw materials) were sufficient . Human capacity was lacking. Additional funding were secured for maintenance.	Current system does not provide enough funding for the maintenance and monitoring of NBS
Participants	Citizens were open to new ideas and thinking out of the box, but local politicians are still traditional thinkers . No presence yet of a boundary spanner.	Representative actors from the implementation arena: local and regional gov. authorities, private and citizens. Multiple sectors: flood safety, spatial planning, tourism, nature, fisheries.
Process design	Tailor made collaborative process. Needs of future users considered.	No results yet ready to mainstream. However, there is a vision to continue implementing NBS in the next projects
Project design	Spatial scale was sufficient. Time was not enough to monitor, lack of human capacity.	Not enough outcomes yet. Need of heavy storm to test the measures.

Vlissingen pilot



Conditions for success	Internal pilot process	External pilot process
Position of the pilot	Current policies provided the flexibility to experiment and learn about NBS	There are strategies (municipalities) in place to connect pilot results with current coastal strategy: local flood safety plan for the boulevard and regional climate adaptation strategy (not formalized).
Resource distribution	Resources (knowledge, finance, human capacity, raw materials) were sufficient. No additional resources provided.	Current system does not provide enough finance for innovative solutions (NBS).
Participants	Actors (water board, citizens) were open to think out of the box. Municipality acted as a boundary spanner	Limited representativeness of actors from the implementation arena: local municipality departments, water board, private and citizens. Multiple sectors: planning: transport, flood safety, spatial planning.
Process design	The pilot project as a tailor made collaborative process. Needs of future users (citizens) were considered in the design. A lot of learning took place	No results yet nor ready for mainstreaming yet. They can be used to open the debate about NBS for coastal protection.
Project design	Spatial scale was enough. Time was not enough to monitor during extreme weather conditions.	No outcomes available yet. More time needed to monitor during extreme weather conditions

Gravelines pilot



Conditions for success	Internal pilot process	External pilot process
Position of the pilot	Current policies were flexible to experiment / learn about technical effectiveness of NBS	There is no strategy in place yet.
Resource distribution	Resources (finance, knowledge, raw materials) were sufficient. No additional resources provided.	In the current policies, there are not enough resources (knowledge and funding) to implement NBS in France.
Participants	NBS are not considered new solution. The feedback of beach users was considered in the process. Citizens were not involved due to Covid.	Limited representativeness of actors from implementation arena: local municipality departments and beach users (sand yacht). Multiple sectors: tourism, flood safety, spatial planning
Process design	The pilot project was a collaborative process mainly internally. Local conditions and needs of future users (beach users) was included into the NBS design.	There are not results yet and not ready for mainstreaming.
Project design	Spatial scale was sufficient. More time is needed to monitor and validate the solutions	Not sufficient outcomes to consider them representative for larger areas.

Conclusions

- All pilots were **internally successful** because they reached their goal: the implementation of NBS. A combination of multiple conditions (project and process design, participants, resources and position of the pilot) were relevant to ensure the internal success. The most challenging was the inflexibility of currently (nature conservation) policies to allow experimentation and learning.
- For **mainstreaming** not all questions are answered yet. There was not enough time for monitoring to draw lessons learned. Based on the empirical evidence, we can conclude that Oostende, Middelkerke, Newlyn and Vlissingen show high potential for mainstreaming because there is a clear vision on how the lessons learned can be embedded into current local and regional coastal management policies.
 - *Middelkerke and Oostende*: strong collaboration between local and regional government agency. Embeddedness into the coastal vision of Belgium
 - *Newlyn*: Coastal management authority in the lead. Embeddedness into local flood safety plan (SMP)
 - *Vlissingen*: municipality in the lead. Embeddedness into urban coastal vision
- Pilot projects were employed as **policy instruments** to learn and gather empirical evidence about NBS as innovative solutions for coastal protection.
- Thus, **for external success key conditions**: key representative actors from the implementation arena and clear strategy to connect pilot results with current policies. Moreover, new policies can also support the development of pilot projects.



Conclusions

- **No pilot paradox in practice:** the conditions that enable the internal success don't hinder the external success (mainstreaming NBS)
- **Success is dynamic** and depends on a combination of conditions. It means different things to different people. Even though no formal mainstreaming happened during SARCC project, improved empirical knowledge and getting the acceptance of local communities and key actors is a step forward (small win) in climate adaptation.
- NBS pilots for urban coastal protection take place in **multiple contexts**. A pilot can be a 'seedbed' for an urban coastal strategy, but a 'battleground' in the regional flood risk management approach.
- It requires **boundary spanning capacity** to connect a multiplicity of contexts in the implementation of NBS for urban coastal protection.
- A strong **collaboration between urban and flood risk authorities** is key to facilitate the mainstreaming of NBS. In addition, it is key to get on board the local communities and nature organizations early in the process. Moreover, the transnational collaboration and exchange between pilots enhanced the empirical knowledge on NBS.



Thanks for your attention!

