Interreg North Sea

Co-funded by the European Union

MANABAS COAST

Baseline Assessment for all pilots

An initial activity of WP2 is a description and baseline assessment of each study pilot that will be used as the baseline to assess progress during the project and can aid in the future cooperation between the study pilots. The assessment also serves to establish the status of mainstreaming of NbS into the pilots. The assessment survey is divided up into three parts: 1) Description of the pilots, 2) Questions concerning how the enablers are currently addressed in the pilots, and 3) Brief questions about the MANABAS framework (inspired by ISBAM).

Please fill in this word document and return to Berry berry@resiliense.nl by 1 September 2023.

If you have questions about this or need help feel free to contact Per Per.Sorensen@kyst.dk, or Lisa lisa.vanwell@sgi.se.

All questionnaires will be used in the project, but only condensed information will be made publicly available

Part 1: Pilot description

Our aim is to mainstream nature-based solutions on the different coasts of northwest Europe. Therefore we need a description of the coastal system. This is divided into two sections: A) description of the coastal (natural) system of the pilot, and B) description of the governance system.

Name of pilot: Afsluitdijk

Name of person(s) filling out assessment: Sophie Lauwaars

Location of pilot:
coördinatesystem google maps (WGS84)
53.03145
5.22670

Please include a satellite map/orthophoto or aerial photo of the area in order to see vegetation, houses, gully's. bars etc. Provide coordinates for the center of the map and the corresponding coordinate system

Map of the Afsluitdijk between the provinces of North Holland and Friesland, the Wadden Sea and the IJssellake, the dam (the banana) were a colony of spoonbills used to live.

On the Afsluitdijk an ecological dike has been constructed, an ecotoplayer for a colony of spoonbills was realised on a dam north of Den Oever in the Wadden Sea (the banana) and a fish migration river is constructed. Other aspects which are in favour of nature are: the fish friendy pumps and the special light which is adapted to the bats (Pipistrellus nathusii) who migrate with tens of thousands along the Afsluitdijk in spring to Eastern Europe and in autumn from Eastern Europe.

A Fish Migration River is being constructed (and according to plan finished in 2025) just west of the discharge sluices of Kornwerderzand.

In this pilot description the focus is on the ecological dike and on the ecotoplayer for the spoonbills.

Figure: The ecological dike in 3 sections



Section 1: The ecotoplayer on the Levvel blocs on the lower slope, existing of a roughened toplayer and 2 holes



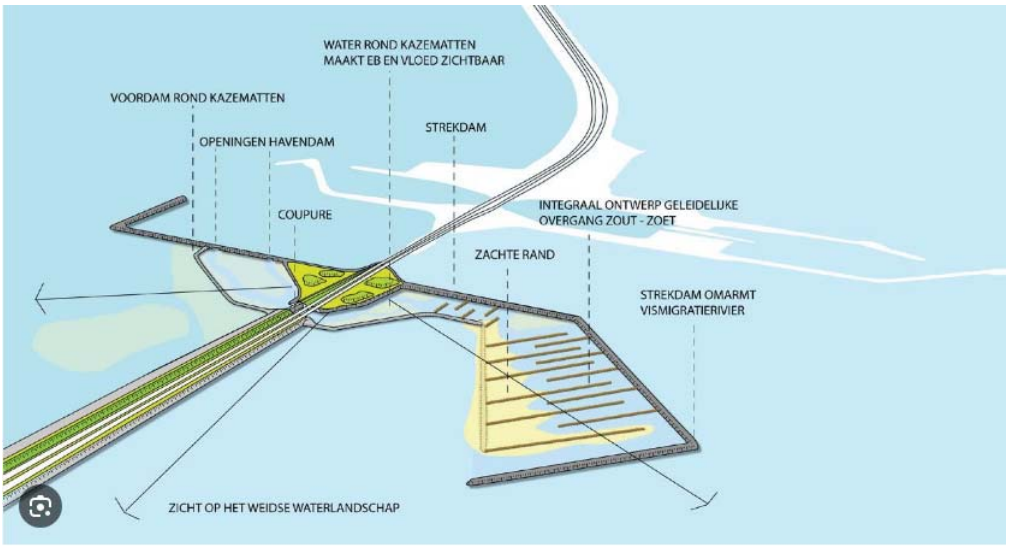

Section 2: The replaced special and rare rocky coastal vegetation on the upper slope

Section 3: The species rich grass and herbs vegetation on the top and inner slope of the dike

The Afsluitdijk project includes the reinforcement of a dam (the banana) in the Wadden Sea near Den Oever. On this dam an extra ecotoplayer for spoonbills was realized on top of the asphalt layer (which was realized for watersafety reasons). The ecotoplayer consists of stones (5-40 kg) and the original vegetation mixed with ground and clay, so the colony could return after the work was done. Due to the dry summers the vegetation is not coming up as was aspected. The colony hasn't returned yet, only in the first year after the work was done some spoonbills arrived on the dam. See also (in Dutch): https://youtu.be/_ADoBBx9R3A

A spoonbill on the new ecotoplayer on a dam (the banana) especially applied for the colony of spoonbills (photo by Jan Wessels).

A Fish Migration River is being constructed just west of the discharge sluices of Kornwerderzand. It consists of an opening in the dike with one part for the good swimmers and one part for the slower fishes. The opening in de dike will be connected to a 4 km river which will be built in the IJssellake. This project will be finished according to plan in 2025.



Fish Migration River (in Dutch)

Pilot aims/objective:

Which nature-based solutions will you be working with in MANABAS?

- The monitoring and evaluation of section 1, 2 and 3 of the ecological dike (pages before);
- The monitoring of an ecotoplayer on the dam (the banana) north east of Den Oever in the Wadden Sea, for the return of the colony of spoonbills;
- The possibilities which offers the (quality part of the) contract for NbS (nature) measures in a water safety project;
- The chance to include more nature measures in a large infrastructural watersafety project and to have in the end more ecological value.

A. Description of the coastal system

Please briefly describe those areas that are relevant for your pilot:

1. The landscape including geology, morphology, and biology.

   The Afsluitdijk is actually not a dike but a dam in the northern part of the Netherlands, between the Wadden Sea and the IJssellake. In 1932 the dike was constructed in the former Zuiderzee. In the dike were 2 openings constructed, with discharge sluices and ship-locks. At this moment the construction of an innovative Fish Migration River takes place, an opening in the dike, just west of Kornwerderzand, with an river with a length of 4 km in the northern part of the IJssellake. It is especially realized for the

migration of fish (anadrome) and it will facilitate the migration of both good swimming and the more slow swimming fish and according to plan be finished in the end of 2025.
The management of the discharge sluices includes the facilitation fish migration within the constraint of IJssellake, which needs to remain a fresh water reserve. Also the shiplocks are opened during the night specific to let fish in. Near the province of North Holland a fish passage for smaller fish species has been constructed through which many glass eel pass in the period of April - May.

2. The hydrodynamic forcing from tide, water level, wind and waves. If possible, include some statistical values
   The fresh water from the IJssellake is drained to the Wadden Sea twice a day at low tide. At the moment also pumps are realized to drain the water from the IJssellake to the Wadden Sea, also with higher water level in the Wadden Sea and which are fish-friendly. Because of sealevel rise in the case of a higher water level in the Wadden Sea there will be times the drainage of water cannot be done by the discharge sluices, but it can take place by making use of the newly build pumps.

3. Which current NBS solutions are already present (it can be a non-engineered original landscape)
   The ecological dike, see part 1 for the description of the ecological dike.
   The ecotoplayer of the dam near Den Oever (the banana) for the colony of spoonbills.

4. Describe how study pilot is monitored.
   - The monitoring of the ecotoplayer and the 2 holes of the ecological dike needs to be started yet. First a monitoringplan must be made.
   - The monitoring of part 2 takes place for the next 4 years by Waardenburg Ecology.
   - The monitoring of part 3 is not arranged yet. Waardenburg Ecoloy does some of the monitoring. At the moment we are exploring if we can participate into the project Future dikes Future dikes to test the grass herbs vegetation on top and innerslope of the dike.

5. Describe the sediment dynamics: Macro or micro sediment budget, conceptually or detailed volumetric monitoring. Include any dredging
   Does not apply here.

6. Long term trends. These could be chronic erosion, long-term subsidence or trends in mean sea level.
   Does not apply here.

7. Describe the current coastal protection being used in the study pilot.

The coastal protection consist of :

- Levvel blocs: on the under slope of the Wadden Sea talud;
- Quattroblocks: on the upper slope of the Wadden Sea talud:,
- Special erosion resistant mixture of grass/herbs vegetation: on the top and innerslope of the talud;
- The IJssellake site of the Afsluitdijk: quattroblocks and the original revetment consisting of basalt blocks;
- A newly built storm surge barrier next to the Simon Stevin locks near Den Oever;
- A newly built storm surge barrier next to the Lorentz locks near Kornwerderzand.

8. Describe the current risk of flooding and erosion.
   The risk of flooding is 1:10.000. On top of that the Afsluitdijk withstands surge overflows for 10 l/m/s.

9. Which human activities impact your coastal system?
   Travelling by car, cycling and walking.

10. Describe important culture and historical aspects in the study pilot
    Plans for making a dam in the Zuiderzee date from the 17th century. After a major flood in 1916 that caused enormous damage plans became more specific. Construction works started in 1920 and the 32 kilometer Afsluitdijk was finished on May 28 in 1932. At that time it was handwork whereas we have nowadays machines to do the work for us.
    On 28 May 1932 the final gap in the Afsluitdijk was closed, near the Vliestermonument. So now the Afsluitdijk is more than 91 ½ years old.

B. Description of the governance context

Please briefly describe those areas that are relevant for your pilot:

11. Who are the landowners of the land?
    The Dutch state, the municipality of Hollands Kroon, the municipality of Súdwest Fryslân, the province of North-Holland, the province of Friesland, Rijkswaterstaat is the manager of the Afsluitdijk.
12. What are the main land uses in the pilot area (ie agriculture, nature reserve, infrastructure),
    Infrastructure for watersafety, the discharge of water, a highway and a bike path and a walking path;
13. What are the current laws and regulations that govern the use of nature-based solutions in the pilot (i.e Natura 2000, planning)?

The Water law, the Environmental Law (from 1-1-2024) for Natura 2000. Both sides of the Afsluitdijk are Natura2000 area (the Wadden Sea and the IJssellake).

14. What is the current status of using nature-based solutions in your pilot area (ie to what extent are they mainstreamed into existing policy?)
    Part 1: Enhancing biobased building blocks gets more attention;
    Part 2: The replaced special and rare rocky coastal vegetation on the upper slope is really new/innovative;
    Part 3: a species rich grass/herbs vegetation on a dike gets more attention Because it resists erosion. Sea also the project future dikes which is about implementing more herbs in the vegetation on dikes.
    The ecotoplayer for the colony of spoonbills. The colony didn't return yet.
15. What are the current goal conflicts (ie protecting cultural vs natural areas, or protecting private land vs municipal-owned land, or agricultural uses vs nature preservation?) How are these dealt with?
    An asphalt layer is cheaper as revetment but on an asphalt layer there are no possibilities for vegetation.
16. How are the stakeholders identified and involved
    Once a year there is a stakeholder meeting with all interested parties and organisations of the Afsluitdijk project. Nature gets a lot of attention in this project, see also the second version of the brochure Caring for Nature.
    It is really inspiring to see that possibilities for nature are included in this project, like the ecological dike with the unique flora and the ecotoplayer for spoonbills. It is amazing to see how chances for nature are included in such a large infrastructural project.

17. Briefly describe the socio-economic development in the area.
    The Afsluitdijk is situated in the northern part of the Netherlands, from the province of North Holland to the province of Friesland. On the middle of the Afsluitdijk is the campsite 't Wad, a Sea fishing and camping association. On the campsite 'Everyone knows each other and helps each other', a camper tells.
    In the Frisian part of the Afsluitdijk near the Lorentz locks is Kornwerderzand a small village interest.

    Village interest Kornwerderzand has a total area of 299 hectares, of which 296 are land and 3 are water (100 hectares is 1 km2). The town of Kornwerderzand has 46 unique addresses. The average density of addresses is 14 addresses per km2. 20 households live there and there are a total of 18 homes. The place of residence has 22 cars and 9 business locations. Residence Kornwerderzand is located in the municipality of Súdwest-Fryslân. In earlier times there were also a school and a church in Kornwerderzand.

18. What do you experience as the main barriers to mainstreaming NbS in your pilot?

It is really important to have enough contact with the other Manabas partners. The plan for the mainstreaming of NbS is to have enough contact with the other partners who also have to make contracts or who also have concrete building blocks in their projects. It means we have to work together. The contacts with HZ have already been made!

The main barrier of the project Afsluitdijk is that the function of the Afsluitdijk is the function of watersafety. So the maintenance of the dike might interfere with for instance the return of the special rocky coastal vegetation. When for instance the maintenance contractor adds split (small stones) on the upper slope with the quattroblocks of the dike and without having any attention for the special vegetation which grows there.

C. Implementation scheme

Please describe your timeline for implementing NbS during MANABAS and beyond (i.e. starting point, estimated finalization, monitoring period)

Starting point: December 2023;
Estimated finalization: December 2027;
Monitoring period: Summer 2024, 2025, 2026 and 2027.

Part 2: Enabler Assessment

Please consider the barriers identified in Part 1B (question #18). The enablers below are meant to be ways to overcome these barriers. However, these enablers are not set in stone and will be further developed, augmented and /or changed during the MANABAS Coast project. There may be other enablers that are more important in certain pilots or for mainstreaming NBS. We will explore these during our project. In this assessment we want to get an initial idea of how these proposed enablers by EcoShape play out in your pilot and for mainstreaming NBS on a large scale.

Enabler 1: Technology and system knowledge

- Which types of technology or systems knowledge are important in your pilot? (i.e. Sediment cell, salt marsh protection, salt marsh dynamics, sand nourishment, enhanced dune development)
  Ecotoplayer on the Levvel blocs (concrete blocks). The Quattroblocks on the upper slope of the dike; the ecotoplayer on the dam (the banana).

- Are there any knowledge and technology gaps in your pilot that need to be addressed? Please briefly describe.
  Is the ecotoplayer on the Levvel blocks a good habitat for algae, mussels, shrimps, are there are there mussels, small butterfish in the holes, are there eels in the other holes in the Levvel blocs.

Enabler 2: Multistakeholder approach

- Who are the main stakeholders in your pilot?

Rijkswaterstaat, Levvel (the contractor), the Wadden Sea association, the Frisian Landscape, the civil engineers, ecologists, the vegetation on the Levvel blocs, the vegetation on the quattroblocks.

- How will you engage your stakeholders in the project?

We have excursions with ecologists to the new revetments of the Afsluitdijk.

Enabler 3: Management, monitoring, and maintenance

- What routines does your pilot have in place for management, monitoring and maintenance of the NbS?
  The information of the ecological dike needs to be obtained by monitoring. A monitoring plan must be made. And then (at least) 3 quotations at 3 different contractors have to be requested.

- How do you measure the success of your pilot? Do you have any indicators for successful mainstreaming of NbS?
  The indicators are the amount of growth of seaweed and macrofauna on the ecotoplayer of the Levvel blocs.
  By the monitoring of the toplayer of the Levvel blocs. We can also monitor the sides of the level blocs which have not been roughened up, and can compare these with the results of the monitoring (roughened + 2 holes and not roughened and no holes).

Enabler 4: Institutional embedding

- How do current institutional arrangements already facilitate mainstreaming of NbS? Please describe and mention the key institutions.
  Besides my work at Rijkswaterstaat I am working on an Engineering Doctorate promotion traject of the University of Wageningen (WUR). There I am working on the same subject as in Manabas.

- How committed is your organization to mainstreaming NbS within MANABAS Coast and after the project ends?
  The organization I work for is Rijkswaterstaat (or RWS). RWS has many pilots in the Manabas project, like the Sandmotor and the project along the Wadden Sea Coast. When the Manabas project ends these projects will still continue, they aren't finished yet. Monitoring will take place.

Enabler 5: Business Case

- Do you face problems with funding in your pilot? Please briefly describe, including the general sources of funding.
  At the moment there are no problems with funding. Because we haven't started the monitoring of what grows on the ecotoplayer of the Levvel blocs yet. The plan is to start with the writing of a monitoring plan for the ecotoplayer of the Levvel blocs. And after that we will start to request at least 3 quotes for the monitoring of the growth of seaweed on the Levvel blocs in 2024.

- How will your pilot and/or continued mainstreaming be funded after the MANABAS Coast project?
  The mainstreaming will take place of the here written knowledge about the quality part of the contract. For this project Sophie will bring her knowledge and experience on the relation between realizing NbS and contracting in WP1 and WP2. Sophie works at the part of Rijkswaterstaat (GPO) that is responsible for the realization of large infrastructural projects with contracts. In project Afsluitdijk we have experience about the way NbS have been implemented in the project. Contracts are awarded based on a combination of price and quality.
  In the Afsluitdijk project the contractor has implemented additional nature measures via the quality part of the contract. The Afsluitdijk project provides an excellent case study to research the 'business case' enabler.

Enabler 6: Capacity building

- What types of capacity building would your pilot need in order to facilitate mainstreaming of NbS?
  Working together with other partners of Manabas on the businesscase enabler and the enabler of the institutional embedding. And also with the different projects in Rijkswaterstaat.

Enabler ranking

To what extent are the above enablers important for mainstreaming NbS in your region? Please rank (1 is least important, 10 is most important)

Enabler 1: Technology and system knowledge

1 2 3 4 5 6 7 **8** 9 10

Enabler 2: Multistakeholder approach

1 2 3 4 5 6 7 **8** 9 10

Enabler 3: Management, monitoring and maintenance

1 2 3 4 5 6 7 **8** 9 10

Enabler 4: Institutional Capacity

1 2 3 4 5 6 7 **8** 9 10

Enabler 5: Business case

1 2 3 4 5 6 7 8 9 **10**

Enabler 6: Capacity Building

1 2 3 4 5 6 7 **8** 9 10

Suggestion for additional enablers

Are there any aspects of mainstreaming enablers from your pilot that you can already suggest? If so please briefly state these:

The enabler of the ecological value.

NbS is regarding nature / ecology. Circumstances for nature are expected to become better by taking NbS measures. The new habitat which will arise after the NbS measures have been taken is better for ecology, it has an increased ecological value.

What is the ecological value?
What is the target concerning ecology? Which species are expected to live in the newly created habitat of the NbS. Which kind of species and how many?

Part 3 MANABAS mainstreaming framework (inspired by earlier work e.g. ISBAM)

Within MANABAS Coast we are working on a framework that helps in mainstreaming NBS. To develop this framework, we need information on the pilots as well as the ambitions and goals of the different organization involved. We build on work already done in the past such as the ISBAM approach, which was developed in the Interreg BwN project (see also the brochure in the appendix for a further explanation or online). Just as the enablers, the MANABAS mainstreaming framework is still a work in progress.

As a starting point for the MANABAS framework, 3 leading principles from ISBAM are evaluated. We would like to know if these principles can also be applied across the entire northwest Europe coasts and how they can be improved. .

Three leading principles have been identified that are deemed important to enable mainstreaming of NBS:

MANABAS Coast principle 1: "Act at a landscape (system) scale, including both the natural and socio-economic system/context"

- Do you identify with this principle? That's important because you need the support of the inhabitants who live in the area.

- Is this principle applied (to a certain degree) within your pilot? And within your organization? If yes, how? We have stakeholder meetings and also meetings on a regularly base with people who live on or near the Afsluitdijk.

- In managing your assets, how are the system-wide effects and benefits taken into account? I don't know yet.

- On a scale from 1 (room for improvement) to 10 (superb), do you think your organization adheres to this principle? Why? I cannot answer this (yet).

  1 2 3 4 5 6 **7** 8 9 10

MANABAS Coast principle 2: "Integrate management of multiple assets and functions within the landscape system context"

- Do you identify with this principle?
  It is important to integrate the asset of nature among the other assets.

- Are relevant organisations/institutions efficiently cooperating to jointly address system-wide challenges? If yes, which challenges and how?
  In Rijkswaterstaat the aspect of the spatial quality gets a lot of attention.

- If you see room for improvement in the integrated management of multiple landscape assets, what would be the necessary steps to take according to you? Briefly state. Add the asset for nature.

- On a scale from 1 (room for improvement) to 10 (superb) how much is this principle applicable to your organization? I cannot answer this (yet).

1 2 3 4 5 6 **7** 8 9 10

MANABAS Coast principle 3: "Embrace and leverage upon the natural dynamics of the system"

- Is this principle applicable to your situation/organization?
  It is applicable to my organization.

- What are the main natural processes that should be considered? Are these well-known with all the stakeholders? On the Afsluitdijk there are no natural processes or it is the growth of seaweed om the Levvel blocs.

- How are using natural processes incorporated in the management practices within your organisation? They are but that's more regarding the Sandmotor.

- On a scale from 1 (room for improvement) to 10 (superb) how much is this principle applicable to your organization?

  1 2 3 4 5 6 7 **8** 9 10

Additional MANABAS Coast mainstreaming questions:

- In your view, what is essential in the mindset or way of working of people (policy makers, managers, professionals, general audience) to promote mainstreaming of NBS? Do stakeholders need more information on mainstreaming?
  Also think about the financial way, the payment, the contracts. Step away from the thinking about the process of the NbS.

- What other leading principle(s) would you suggest?
  Determine what the ecological target is you are preparing the habitat for in the project. Which species can live in the new habitat which is created by the NbS?

- How can we make these principles more applicable to the context of pilots?
  Making easily accessible slides with a few notes about the different subjects.

- **Finally: What does mainstreaming mean for your pilot? Please briefly describe.**

  All partners in Manabas who want to realize NbS have to deal with the formulation of contracts.
  In the contracts can be included an option to withdraw extra measures for nature and also measures to minimise impact on nature can be included.
  In the quality part of the contract: contractors can be challenged to do extra for nature in the project!

  And make and add an asset of nature.