

## 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).

### 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: Mainstreaming monitoring for NBS in the province of North-Holland

### Location of pilot:

*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***



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Coordinates of the region, based on google maps spans between 52.467734, 4.567405 and 53.182204, 4.855225

### Pilot aims/objective:

To optimize our maintenance and management of dunes and beaches (for flood risk, nature and recreation) we need a better understanding of the correlating effects of human interventions (buildings on beach and dune), mostly sandy solutions and nature development. We need to optimize our monitoring scheme including data storage/removal, for our sandy, dynamic beach and dune. We will start by using existing plans for monitoring of the sandy coast, and will explore possible integration of monitoring of nature values, taking into account the lessons learned of our partners in MANABAS.

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

Our sandy coast stretches along 82 km on the North Sea side. We will use the whole of our coast as a nature based solution with regular maintenance and in particular 9 locations around a storm with points of interest defined by estimates of storm events. Regular maintenance includes nourishments, sand entrapments near dune foets, buildings on the beach near coastal settlements. The 9 locations we are still choosing, but we aim at the following

- Castricum (settlement and blow out)
- Egmond aan Zee (settlement and nature area with high dunes)
- Bergen aan Zee (settlement and old blow out)
- Hargen aan Zee (NBS of Hondsbossche Dunes)
- Callantsoog and Julianadorp (settlement)
- Southwest Texel (highly dynamic natural area)
- Mid-west Texel (possible new big scale blow out)
- and the Slufter (mud-sand system, n2000 area).

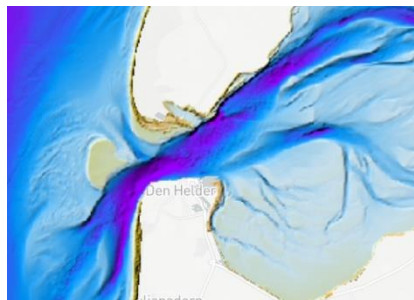
#### A. Description of the coastal system

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

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

The coast of North Holland south of the Hondsbossche Dunes consists of sandy beaches and dunes with a maintenance regular nourishments. This part

scheme of  
of the coast



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Shore-parallel sand bars (as is the region of the Sand Motor). North of the Hondsbossche Dunes the coast has a different system of barrier islands with channels and deltas. In the north a large salt marsh plain called the Slufter is an important n2000 area. The Hondsbossche Dunes is a newly built dune of 30.000m<sup>3</sup> sand and has already attracted some new species in the early years of existence.

2. The hydrodynamic forcing from tide, water level, wind and waves. If possible, include some statistical values  
Average tidal range in the south is around 1,70m, near Den Helder around 1.39, and in Texel 1.65m.  
The coast is assessed on a regular basis to meet our safety standards; wave heights in this event (storm periods with a return period of 3.000 years) range from 9.35m in the south to 10.75 m in the North of Texel. Wave periods range from 16 to 17 seconds.  
Sand particles vary around 250µm, the Hondsbossche Dunes were constructed in 2015 with particles ranging from 229 to 341 µm
3. Which current NBS solutions are already present (it ca be a non-engineered original landscape)  
The dutch coast is characterized by a sandy shoreface of natural shore-parallel bars, channels and ebdeltas, sandy beaches, salt marsh and dunes. Some groins are still visible in the Waddensea ares (north of Hondbossche Dunes including Texel), with one large one in the north of Texel. Dykes of Den Helder and the wadden sea dikes are not included in this project.
4. Describe how study pilot is monitored.  
At several locations we will use drones and surveyors for topographic measurements, we use camera's on 3 locations and we will use citizen science camera results on 2 locations. We will also use the regular yearly coastal monitoring (Jarkus). Current ecological monitoring of the Hondsbossche and Slufter will be evaluated and renewed. Main ecological monitoring of nature conservation organizations will be collected.
5. Describe the sediment dynamics: Macro or micro sediment budget, conceptually or detailed volumetric monitoring. Include any dredging  
Sediment transports will be derived from the data sets, mainly from aeolian transport on beach and dunes.
6. Long term trends. These could be chronic erosion, long-term subsidence or trends in mean sea level.  
The dutch coast is characterized by structural erosion caused by deficit of sand and sea level rise. Also, visitor numbers increase and nature interventions are likely to take place.
7. Describe the current coastal protection being used in the study pilot.  
As already mentioned, a regular nourishment scheme keeps the coast in its place.



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8. Describe the current risk of flooding and erosion.  
The risk of flooding of the inland polders is smaller than 1:3.000 year and boulevard housing will be around 1:1.000 year. The area of the Slufter floods a few times per year for the most of the area and the whole of the area can flood with a return period of 10-30 year.
9. Which human activities impact your coastal system?  
Beach pavilions, long (sometimes double) rows of cabins, beach watch, sailing companies are built on the beach, tampering the aeolian transports towards the dunes. Blow outs will be excavated in the upcoming years, however, the exact planning is not yet known (can well be after the manabas period). And of course, regular nourishments on foreshore and beach will impact the system.
10. Describe important culture and historical aspects in the study pilot  
In the north of our region the erosion is visible on the dunes and beach. Therefore, awareness is high, nature interventions (blow outs) can cause concerns. In the south however, the awareness is much lower, which results in a bigger buildings in riskier locations.

### 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?  
National real estate agency/national government/local government
12. What are the main land uses in the pilot area (ie agriculture, nature reserve, infrastructure),  
Coastal safety, recreation, nature, housing
13. What are the current laws and regulations that govern the use of nature-based solutions in the pilot (i.e Natura 2000, planning)?  
Nature conservation act, environment and planning act (2024), N2000, water safety regulations (regional water authority), spatial planning of municipalities and provinces.
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?)  
The Hondsbossche Dunes has been an example for two other locations within our area (Prins Hendrik Zanddijk, Oeverdijk). Still, many lessons need to be learned, for a changing climate (slr, heat and drought), implementing monitoring schemes of both ecology and morphology.
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?  
Increasing recreation numbers might lead to large scale development of buildings on the beach and parking lots within the dunes. This leads to more disturbance of natural areas and to a higher nourishment demand. The effect of large scale nourishment on blow outs are still poorly understood and might be conflicting.
16. How are the stakeholders identified and involved



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The dutch coastal community is very active. For implementing an integral monitoring scheme we are using the community of ecologists and morphologists of nature conservation organizations and regional water authorities.

17. Briefly describe the socio-economic development in the area.  
Tourism is increasing for both users of restaurants, houses and hotels as for the use of nature areas. Tourism tend to change in quality; e.g. many camping sites are changing to bungalow sites. Farmland might change in the future, but not perse visible in the life span of Manabas. Off shore green energy parks will land on several locations, but will not impact the sandy coast (they land mostly in the areas of dikes).
18. What do you experience as the main barriers to mainstreaming NbS in .your pilot?  
Legislation (of all parties involved), long term planning in stead of short term, visualization of scenarios.

### C. Implementation scheme

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

In 2023 we will set up the data processes and achieve a new drone. Camera's are already set up, but these data also need to be organized. We will then monitor our coast as stated previously; along the whole of the coast (yearly by jarkus and surveyors, 9 locations before and after a storm, in different years).

### 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.*

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### 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)  
The understanding of salt marsh dynamics, large scale nourishment, dune development and correlation of sand movement-buildings-blow outs. We will use mostly GIS and MorphAn for the data analysis.
- Are there any knowledge and technology gaps in your pilot that need to be addressed? Please briefly describe.  
  
Lots of knowledge is available, however the correlation of sand movement-buildings-blow outs still needs serious attention. To estimate future development of e.g. sea level rise is an unknown factor.

### Enabler 2: Multistakeholder approach

- Who are the main stakeholders in your pilot?  
Nature conservation organisations, province, municipalities, universities, recreation sector. But also the partner of Manabas for shared learning
- How will you engage your stakeholders in the project?  
We will use existing communities of the coast ([www.dynamischkustbeheer.nl](http://www.dynamischkustbeheer.nl))

### Enabler 3: Management, monitoring, and maintenance

- What routines does your pilot have in place for management, monitoring and maintenance of the NbS?  
We have streamlined data of Jarkus and land surveyors. Data of camera's and drones are not yet implemented.



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- How do you measure the success of your pilot? Do you have any indicators for successful mainstreaming of NbS?  
The success of our pilot will be an optimized monitoring scheme for our coast

### Enabler 4: Institutional embedding

- How do current institutional arrangements already facilitate mainstreaming of NbS?  
Please describe and mention the key institutions

Since 1990 the policy of dynamic coastal preservation is in act in the Netherlands. Ever since then coastline erosion is mitigated by means of implementation of nourishment schemes ('sand as a natural building block for our coast'). Extensive collaboration exists between Rijkswaterstaat (as part of the national government), waterboards and nature conservation agencies to manage and maintain our coastline in a natural way.

Extensive coastal reinforcements of dune areas have been carried out in the last 10 – 15 years. The reinforcements were dominantly designed by extending and heightening of coastal dunes, which form a natural barrier against coastal floodings.

- How committed is your organization to mainstreaming NbS within MANABAS Coast and after the project ends?  
Lessons learned from Manabas will directly contribute to our management and maintenance strategy.

### Enabler 5: Business Case

- Do you face problems with funding in your pilot? Please briefly describe, including the general sources of funding.  
Limited funding problems, but challenges with finding capacity time.
- How will your pilot and/or continued mainstreaming be funded after the MANABAS Coast project?  
When we have an optimized monitoring system, including an advise for data streaming, budget request are likely to be better substantiated.

### Enabler 6: Capacity building

- What types of capacity building would your pilot need in order to facilitate mainstreaming of NbS?  
We will need capacity building in data analysis and streamlining.

### Enabler ranking



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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:

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*



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*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?  
Yes. It does however need a lot of work to combine and integrate the different sectors; To address these large principle including e.g. spatial development of settlements is a big challenge
- Is this principle applied (to a certain degree) within your pilot? And within your organization? If yes, how?  
Within large scale projects certainly, within maintenance schemes also. But taking into account long term impacts, not so much.
- In managing your assets, how are the system-wide effects and benefits taken into account?  
See previous question. Within projects system wide effects are always taken into account, long term trends and the impact in or from maintenance not yet.
- On a scale from 1 (room for improvement) to 10 (superb), do you think your organization adheres to this principle? Why?  
  
1 2 3 4 5 6 7 8 9 10  
Yes, all water authorities are working on long term versus short term decision making. How to do this optimally is still a working process.

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

- Do you identify with this principle?  
Yes, but how? Nature, flood risk and flood protection is certainly possible. Recreation, building and drinking water supply might be conflicting. And there is always the responsibility and funding question.
- Are relevant organisations/institutions efficiently cooperating to jointly address system-wide challenges? If yes, which challenges and how?  
Within large scale projects all stakeholders involved are participating.
- 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  
We would need ways to communicate to each other, to visualize long term scenarios and to improve awareness, story telling abilities etc. An artistic mindset could be a valuable addition to the sectors.
- On a scale from 1 (room for improvement) to 10 (superb) how much is this principle applicable to your organization?



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1 2 3 4 5 6 7 8 9 10

I cannot respond to that; multiple assets means also multiple organizations. We cannot do this alone.

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

- Is this principle applicable to your situation/organization?  
Absolutely
- What are the main natural processes that should be considered? Are these well-known with all the stakeholders?  
Climate change of slr, heat, drought, hydrodynamics and morphology
- How are using natural processes incorporated in the management practices within your organisation?  
Sand on the beach can be blown into the dunes; regulations of buildings are exactly made for this reason.
- 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?  
Maybe not so much on mainstreaming but on the NBS itself. Can we speak the same language? Can we provide with good communication means?
- What other leading principle(s) would you suggest?  
Can we make use of positive framing, and also in quantifying these benefits. E.g. carbon capturing, increase of quality of biodiversity, increase of income of the tourist sector
- How can we make these principles more applicable to the context of pilots?  
Many tools exist for (ecological) cost benefit estimates. Which one would we, manabas, prefer?
- Finally: What does mainstreaming mean for your pilot? Please briefly describe.

Mainstreaming means a shared view on monitoring. It also means sharing data and experiences, a clear understanding of language (do we use the same words) and a clear knowledge of other pilots to refer to.