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## 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:** 8 fjordar

**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*

The pilot area consists of 4 different sites: Köleröd, Glose, Kyrkeby kile and Bärby.



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### Köleröd



*Latitud: 58,0524040998, Longitud: 11,6207825784 (WGS 84)*

### Glose



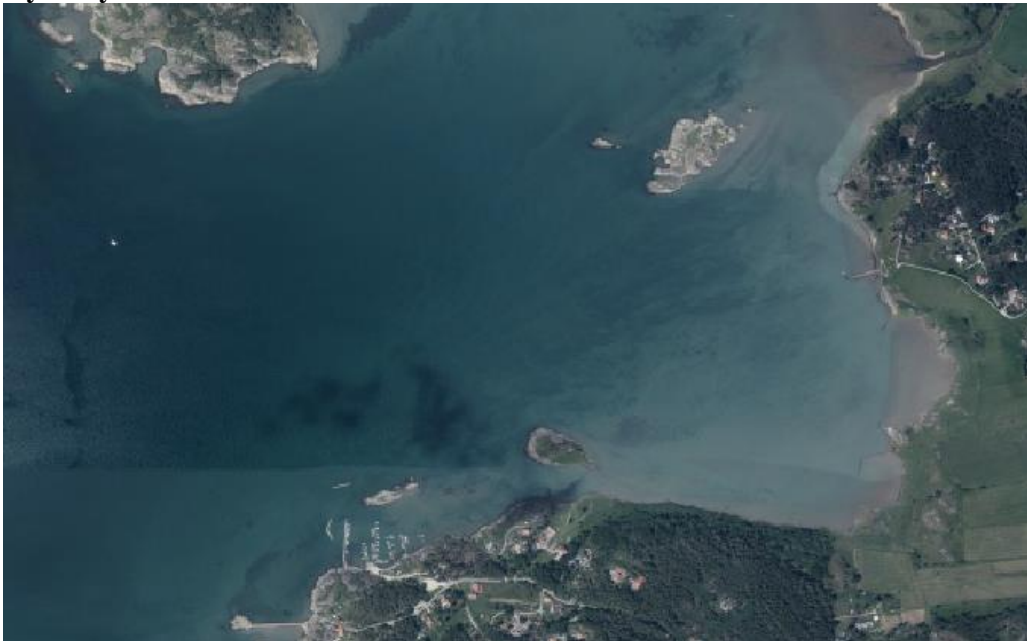
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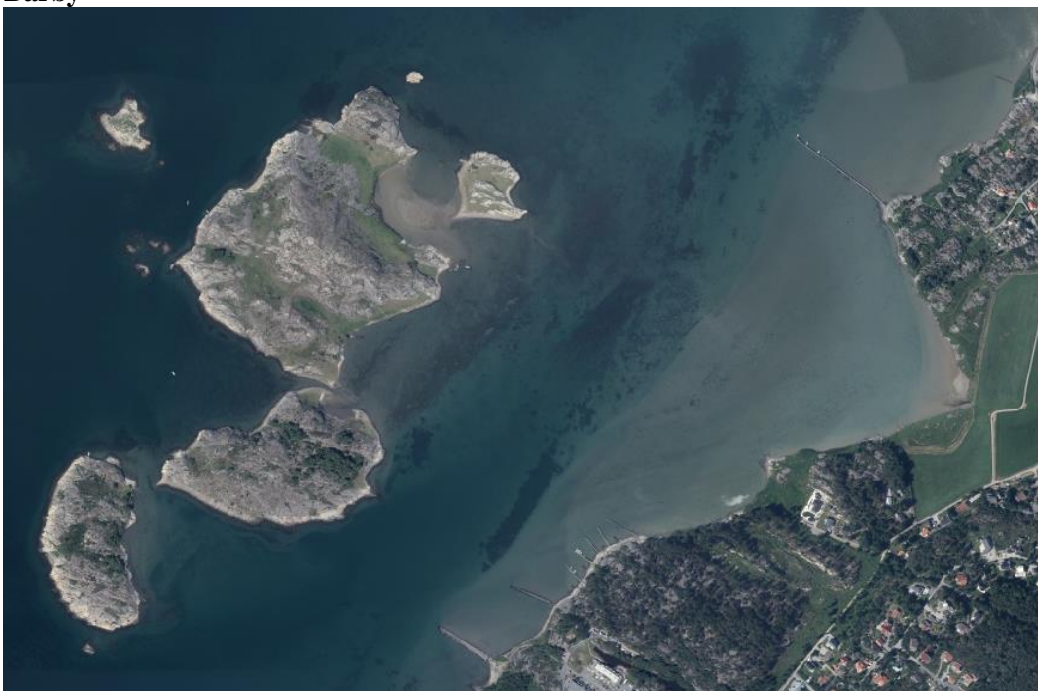
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**Kyrkeby kile**



*Latitud: 57,9896958997, Longitud: 11,808024354 (WGS 84)*

**Bärby**



*Latitud: 58,0229561591, Longitud: 11,8168995538 (WGS 84)*

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### **Pilot aims/objective:**

Prevent salt meadows from eroding, by using nature-based solutions (NbS) and improve the water quality of the adjacent shallow bays.

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

The design of the NBS will be based on the hydrodynamic forces, geological conditions, and ecological requirements at each site. Examples of solutions to be considered are sills based on biodegradable-material, blue mussels, or cobbles, breakwalls consisting of wood material, artificial reefs and establishing of eel-grass meadows. The final proposed solution for each site may be a combination of several of these solutions and will be co-created with local stakeholders.

#### A. Description of the coastal system

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

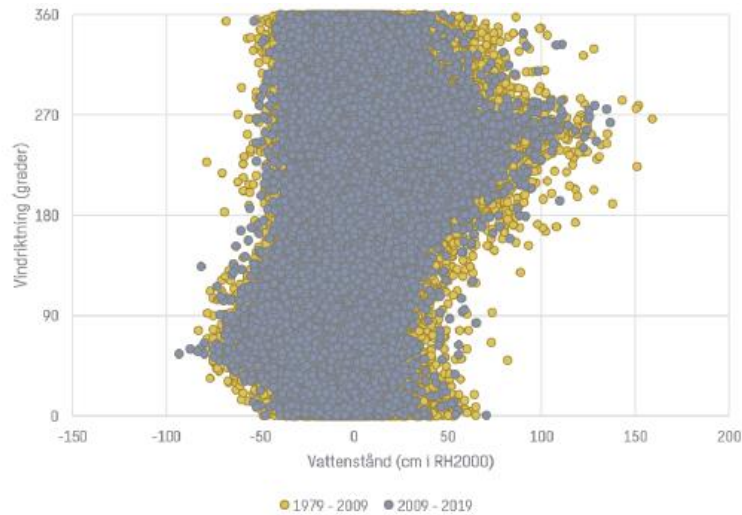
1. The landscape including geology, morphology, and biology.

Our four different pilot sites are characterized by a rocky coast with a lot of small islands and skerries. In between there are smaller areas with salt meadows, adjacent to shallow marine soft bottoms mainly consisting of silt and clay. The biodiversity is high both in the salt meadows and the shallow marine bottoms.

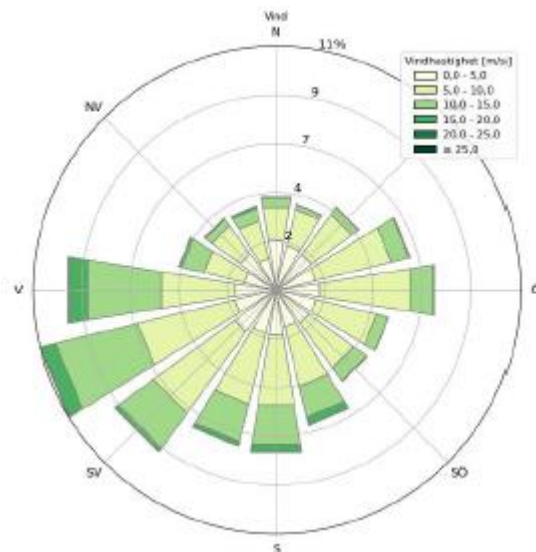
2. The hydrodynamic forcing from tide, water level, wind and waves. If possible, include some statistical values

This is a low-energy and micro-tidal (~0.3 meters) environment. In times with low air pressure and strong winds from SW-NW, which often coincides, the sea level can easily rise to 1 meter above mean sea level. The opposite: high air pressure and wind from E, can lead to sea levels up to 1 meter below average. Winds from WSW occur more frequently and with higher wind speeds.

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*Covariation between sea level and wind direction in the area*



*Wind rose from the area during 1995 – 2021. Wind speed in m/s.*

3. Which current NBS solutions are already present (it can be a non-engineered original landscape)

Since a long time ago people have made barrier of stones, both along the shoreline and as small piers, to keep the sediment in the bay.

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### 4. Describe how study pilot is monitored.

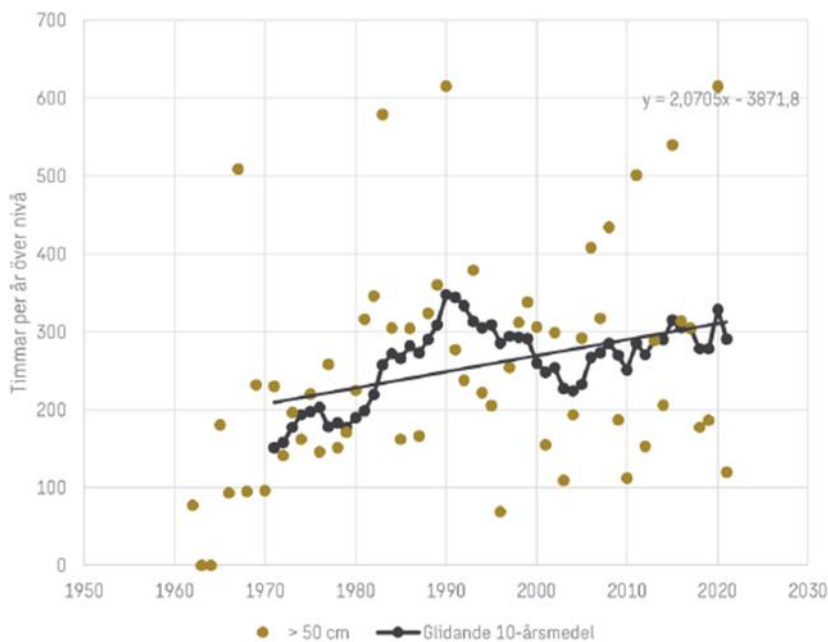
The four pilot sites will be monitored by drone. We will also set up fixed posts and use Costal snap. There will be light metering, shoreline monitoring, monitoring of flora, birds, eelgrass meadows and blue mussel reefs.

### 5. Describe the sediment dynamics: Macro or micro sediment budget, conceptually or detailed volumetric monitoring. Include any dredging.

We have given an assignment to some experts to make a hydrodynamic model for our four pilot sites, which should be delivered in the end of this year. The navigation channels in Köleröd and Glose are regularly dredged.

### 6. Long term trends. These could be chronic erosion, long-term subsidence or trends in mean sea level.

The periods of a sea level more than 50 cm above mean level are increasing slowly. Sea levels above 100 cm has also occurred more frequently the last 5 years. Since the tide normally is less than 30 cm, the salt meadows are not adapted to longer periods of flooding. The rise of sea level due to climate change, which will increase the problem, now equals the land elevation in the area.



*Sea levels above 50 cm in the area.*

**Interreg**  
**North Sea**



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Rising winter temperatures leads to less or no sea ice and fine sediments that are not frozen during the time of the year when there are longer periods of strong winds from WSW and high sea levels. This will also increase the erosion of the salt meadows.

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

There are no current protections present.

8. Describe the current risk of flooding and erosion.

See question 6 above.

9. Which human activities impact your coastal system?

Boat traffic, ponton bridges, dredging, fishing, nutrient effluences from small watercourses and storm water pipes.

10. Describe important culture and historical aspects in the study pilot

The area has a long history of grazing and fishing, including fishing for mussels. Drift lines of seaweed were taken care of yearly and used to fertilize agriculture crops (incorporate into the soil).

### 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?

Only private landowners.

12. What are the main land uses in the pilot area (ie agriculture, nature reserve, infrastructure),

Agriculture, nature reserve, boat traffic (small boats), recreation.

13. What are the current laws and regulations that govern the use of nature-based solutions in the pilot (i.e Natura 2000, planning)?

Natura 2000, nature reserve, shore protection, several national interests.



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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?)

Nothing has been done in this area before. It has not been included in the management plans for the nature reserves.

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?

The values in the nature reserves are linked to the use of the land. It is required that animals graze the meadows. Thus, there is no conflict, we have the same goal.

16. How are the stakeholders identified and involved

To identify stakeholders, we started with a (survey of) questionnaire to landowners through property registers.

We have sent information letters and held dialogue meetings with both those who are directly and indirectly affected.

We have had discussions with landowners about design and material resources.

17. Briefly describe the socio-economic development in the area.

The salt meadows are important as grazing land and as an area for walking and recreation. It is a beautiful landscape to look at and important for biodiversity.

At present, it is a tough situation for farmers economically.

Both commercial and recreational fishing have been very important in the area, but the fishing stocks are very low since some decades ago. An improved water quality and increasing three-dimensional biological structures as blue mussel reefs and eelgrass meadows, will improve the shallow bays function as breeding areas for fish.

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

There is a doubt among landowners whether the NbS will last for more than a year and if they will work as they supposed to do. It is important to be able to have cows grazing the salt meadows, and the NbS must be robust enough.

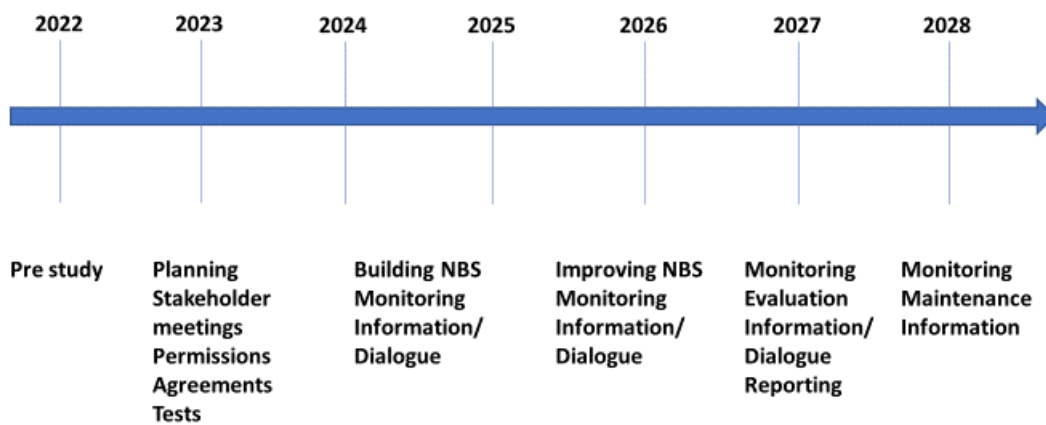
They want to be sure that the managers of the nature reserves will be responsible for both the maintenance as well as the disassemble of the NbS if necessary.



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### C. Implementation scheme

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



### 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)

New technology for monitoring (drones, Coastal Snap).  
Technology for building NbS on soft, shallow sediment.  
Hydrodynamic forces in the shallow bays (waves, currents, sediment transport).  
The distribution and variation over time of habitats and species, both in the shallow bays and on the salt meadows.

- Are there any knowledge and technology gaps in your pilot that need to be addressed? Please briefly describe.

We will use technology that we haven't used before for monitoring, such as drones and Coastal Snap.  
It is a challenge to build NbS near the shoreline in the shallow bays, since the sediment is too soft for many machines and the water depth is too shallow for a boat. So, we have to test different techniques.  
We need to know more about the hydrodynamic forces and how the shoreline varies from one year to another.  
We will monitor if the NbS have an effect of the habitats and biodiversity.

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### **Enabler 2: Multistakeholder approach**

- Who are the main stakeholders in your pilot?

Landowners, coastal managers and municipalities.

- How will you engage your stakeholders in the project?

They will be involved in designing the NbS and provide different materials for building them.

We will set up and use a website for the project, publish regular newsletters and invite them to different meetings.

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

- What routines does your pilot have in place for management, monitoring and maintenance of the NbS?

We have chosen areas in nature reserves because they already have a management. The sites are protected, both as Natura 2000-sites and nature reserves. The purpose of the protected areas is to maintain and increase biodiversity. After the end of this project, monitoring and maintenance of the NbS will be the responsibility of the managers.

- How do you measure the success of your pilot? Do you have any indicators for successful mainstreaming of NbS?

The indicators are shoreline variety, biodiversity, and the turbidity of the shallow bays.

### **Enabler 4: Institutional embedding**

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

We are working closely with the national agencies responsible for climate adaption, such as the Swedish Geotechnical Institute (SGI), the Swedish Environmental Protection Agency (SEPA) and the Swedish Agency for Marine and Water Management (SwAM).

We have a scientist (Ph.D. in NbS) from the University of Lund involved in the project.





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- How committed is your organization to mainstreaming NbS within MANABAS Coast and after the project ends?

As a County of Administrative Board, we have a government assignment to promote different solutions consider climate adaptation on a regional level. Mainstreaming NbS is expected to be a part of that.



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### **Enabler 5: Business Case**

- Do you face problems with funding in your pilot? Please briefly describe, including the general sources of funding.

Unfortunately, we had severe cuts in the budget for nature reserve management this year, due to changes in the politics (new government).

We have got financial support from the Swedish Agency for Marine and Water Management, and financial support from climate adaption funds.

- How will your pilot and/or continued mainstreaming be funded after the MANABAS Coast project?

Managers of the nature reserves will be responsible for maintenance and monitoring after the project, but future grants for managing are not secured. The landowners will hopefully continue to use the payments within the common agricultural policy.

We also think the Swedish Agency for Marine and Water Management will support the actions needed in the shallow bays.

### **Enabler 6: Capacity building**

- What types of capacity building would your pilot need in order to facilitate mainstreaming of NbS?

Develop a handbook in which permission issues, placement and design, financing will be described with good examples. It will also include contact details for relevant authorities.

### **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**



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### **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 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.*



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*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, we think so.

- Is this principle applied (to a certain degree) within your pilot? And within your organization? If yes, how?

We are working with the whole coastal system where sea meets land, and the shoreline is not considered as a barrier. What happens in the sea is affected the land and vice versa.

We are focusing on what nature as well as people in the area would gain from working NbS and what they are risking losing.

- In managing your assets, how are the system-wide effects and benefits taken into account?

?

- 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

In our organisation we are working with both natural, social, and economic sustainability, and are looking more at the landscape level today than we did before.

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

- Do you identify with this principle?

Probably

- Are relevant organisations/institutions efficiently cooperating to jointly address system-wide challenges? If yes, which challenges and how?



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Yes, we have involved both landowners as well as national agencies (the Swedish Geotechnical Institute) and institutions (Lund's University) in designing the NbS.

- 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 will involve the coastal managers more and will also contact the Federation of Swedish Farmers (LRF).

- 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

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

- Is this principle applicable to your situation/organization?  
Yes
- What are the main natural processes that should be considered? Are these well-known with all the stakeholders?

If we construct a barrier between the salt meadow and the sea, the values of the meadow would be damaged. If we affect the currents in the shallow bays, the marine environment can be harmed.  
Most stakeholders seem to be aware of this.

- How are using natural processes incorporated in the management practices within your organisation?

Our managers of the nature reserves have been building with, and not against, nature for a long time. This is also considering in different kind of permits we provide.

- 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:





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- 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?

Good examples of NbS, where you could see that the NbS work as they were supposed to do, and a Step-by-step guidance.

- What other leading principle(s) would you suggest?

Consider the natural habitat. The NbS should also promote the biodiversity of the natural habitats.

- How can we make these principles more applicable to the context of pilots?

Make them easier to understand for ‘ordinary’ people. 😊

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

For NbS to be the natural choice, we think the following is important:

- Good examples, that function as they were supposed to do.
- The NbS should be relatively cheap and easy to build, with materials that are easily available.
- A Step-by-step guidance, that are easy to follow with a lot of pictures, designs, and good examples, including how to finance the NbS, apply for necessary permits and links to people/websites to contact for more information.
- The guidance and reports have to be written in a plain and straight-forward language. You should not have to be an expert to understand them. Don't make it complicated if you don't have to!
- Regional and local authorities that promote NbS and use them as their natural choice.