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The Interreg IVB
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‘Settlement of reed at the harbor location Haken’

Measure analysis 10
in the framework of the Interreg IVB project TIDE

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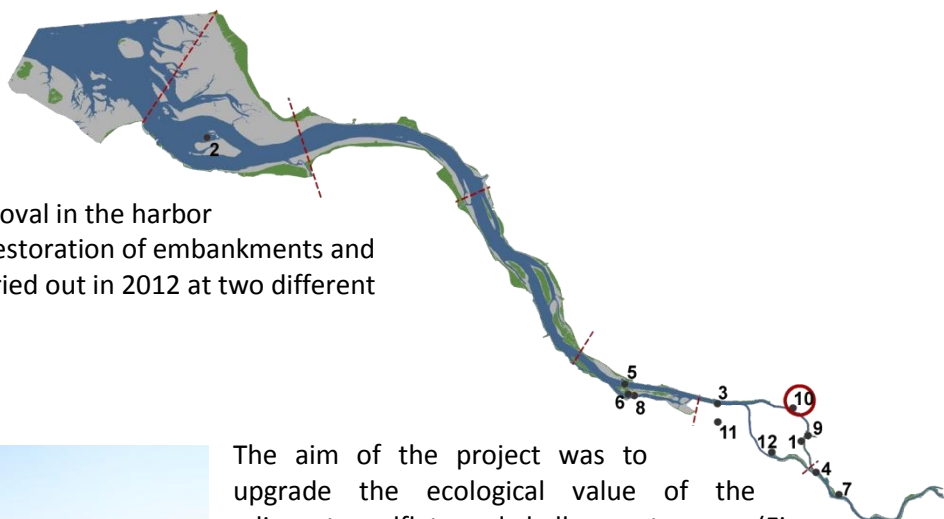


Part 1: Measure description

measure category	biology, ecology
estuary	Elbe
salinity zone	freshwater
pressure	habitat loss and degradation
status	implemented 2012
river km	619
country/location	Germany, Hamburg, Haken near Rothenburgsort
responsible authority	Hamburg Port Authority

1.1 Introduction

The measure “Reed settlement at the ‘Haken’” (near Rothenburgsort/Hamburg) should function as a compensation for reed removal in the harbor basin ‘Blumenhafen’. The restoration of embankments and settlement of reed was carried out in 2012 at two different places.



1.2 Objectives



Figure 1 Mudflats in the channel 'Haken'

The aim of the project was to upgrade the ecological value of the adjacent mudflats and shallow water area (Fig. 1). This was done by stabilizing some parts of the mudflats with sand and initial reed planting. The establishment of a typical reed habitat of the Elbe estuary floodplain should be enhanced. The reed is expected to spread over the whole measure site (0.53 ha).

Besides it is intended to create breeding sites for typical birds.

1.3 Background and side conditions

The measure was necessary in order to compensate the reed removal in the ‘Blumensandhafen’ in relation of the construction of an unloading bridge. According to the environmental agency of the City of Hamburg (BSU) the already existing mudflats in the area of the ‘Haken’ were in a bad condition (Fig. 2 and Fig. 3). Therefore stabilizing and improving the existing habitats by planting reed at the ‘Haken’ could be considered as a compensation measure for the bridge construction in the ‘Blumensandhafen’.



Figure 2: western area of the ‘Haken’



Figure 3: eastern area of the ‘Haken’

1.4 Measure

The aim was to restore the embankments and to aid reed settlement at the location ‘Haken’, which consists of a western area of 2.3 km² and eastern area of 3 km² (Fig. 4). In order to establish the reed areas, existing mudflats were filled with sand up to a height of approx. + 2m above mean low water level. That means that the area is only flooded to a minimum at normal high tide. In May 2012 approx. 10 % of the area was planted with reed, the rest is expected to be colonized by the plants themselves. The costs are estimated with 100,000 €.



Figure 4: Planned reed settlements in the ‘Haken’

1.5 Expected effect

The initial planting of reeds was considered to be qualified for a fast establishment of dense reed settlements. It should be analyzed in detail how fast the reed, which was planted on 10 % of the total area, will have spread over the whole area.

The reed settlement was considered to overlay the mudflats, and after a few years protected biotopes are expected to be developed. By the implementation of the measure the area of the harbor basin will be appreciated regarding the biodiversity.



Part 2: Execution of the main effectiveness criteria

2.1 Effectiveness according to development targets of measure

Definition of development targets:

- Development of 5.3 km² of reed bed to compensate the loss of reed in a harbor basin called ‘Blumensandhafen’ that was removed in order to build new container facilities.
- Increase of the ecological value of the adjacent mudflats and shallow water area, by stabilizing some parts of the mudflats using sand and reed.

Achievement of development targets

The measure is currently in the implementation phase, the development targets are expected to be achieved. A first control of the site showed that the western area developed as planned. In the eastern part some adaption will be necessary because the ground of the planting is partly too high and partly too low. Some material has to be removed.

2.2 Impact on ecosystem services

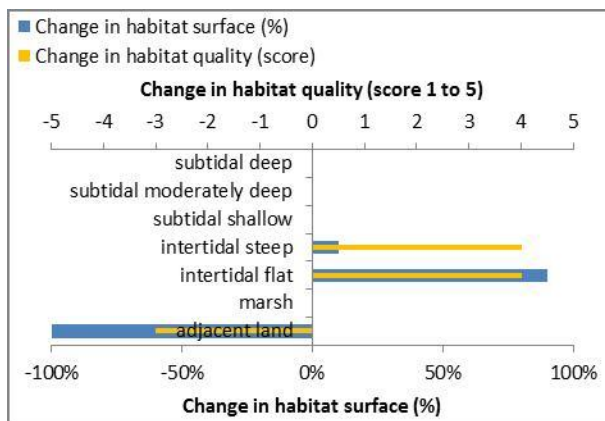


Figure 5: Ecosystem services analysis for Settlement of reed at the harbour location ‘Haken’: Indication of habitat surface and quality change, i.e. situation before versus after measure implementation.

- From the ES assessment it is concluded that this measure generates overall a positive expected impact for many ES, however also a slightly negative impact is expected for one ES.
 - o Very positive expected impact:
 - “biodiversity”
 - Some regulating services: Water quality regulation: reduction of excess loads coming from the catchment; Climate regulation: Carbon sequestration and burial; Regulation extreme events or disturbance: Flood water storage
 - o Slightly negative expected impact:
 - Water quantity regulation: dissipation of tidal and river energy
- The expected impact on the development targets (“Biodiversity”) is very positive.
- The expected impact for the different beneficiary groups is overall very positive, with a positive to very positive expected impact for indirect and future use and for local use.



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Table 1: Ecosystem services analysis for Settlement of reed at the harbour location 'Haken': (1) expected impact on ES supply in the measure site and (2) expected impact on different beneficiaries as a consequence of the measure.

Settlement of reed at the harbour location 'Haken'		
Cat.	Ecosystem Service	Score
S	"Biodiversity"	3
R1	Erosion and sedimentation regulation by water bodies	2
R2	Water quality regulation: reduction of excess loads coming from the catchment	3
R3	Water quality regulation: transport of pollutants and excess nutrients	0
R4	Water quantity regulation: drainage of river water	0
R5	Erosion and sedimentation regulation by biological mediation	2
R6	Water quantity regulation: transportation	0
R7	Water quantity regulation: landscape maintenance	2
R8	Climate regulation: Carbon sequestration and burial	3
R9	Water quantity regulation: dissipation of tidal and river energy	-1
R10	Regulation extreme events or disturbance: Wave reduction	1
R11	Regulation extreme events or disturbance: Water current reduction	1
R12	Regulation extreme events or disturbance: Flood water storage	3
P1	Water for industrial use	0
P2	Water for navigation	0
P3	Food: Animals	0
C1	Aesthetic information	2
C2	Inspiration for culture, art and design	2
C3	Information for cognitive development	2
C4	Opportunities for recreation & tourism	2

Beneficiaries:	
Direct users	0
Indirect users	2
Future users	3
Local users	2
Regional users	1
Global users	1

Legend: expected impact*	
3	very positive
2	positive
1	slightly positive
0	neutral
-1	slightly negative
-2	negative
-3	very negative

X Targeted ES

*: Indicative screening based on ES-supply surveys and estimated impact of measures on habitat quality and quantity. Quantitative socio-economic conclusions require local supply and demand data to complement this assessment.

The screening of the ecosystem services (ESS) that were effected by the measure 'Reed settlement at the location "Haken"' showed the additional benefits that were achieved with the implementation of this stabilization measure.

2.3 Degree of synergistic effects and conflicts according the uses

The compensation for the loss of reed beds in 'Blumensandhafen' is conducted by stabilizing a very fluid mudflat, located at the 'Haken'. The establishment of reed should also have a favorable impact on the adjacent mudflats that are in the same unfavorable status as the mudflat described above. The reed, once it is established, can spread, colonize and stabilize the remaining mudflats.

The citizens of 'Hamburg – Rothenburgsort' quote that at this place a shallow water area was already created in 1995. Therefore they did not agree on the implementation of the measure because an existing natural area was replaced by another. However, as earlier mentioned, the competent authority (BSU) considered the existing area as a mudflat in bad condition, which should be improved.

Part 3: Additional evaluation criteria in view of EU environmental law

3.1 Degree of synergistic effects and conflicts according WFD aims

Table 2: Effect of the measure concerning the main pressures in the freshwater zone of the Elbe estuary

Indicator Group	Code	Main pressures freshwater zone Elbe	Effect?					Description: Aim of the measure 'Reed settlement Haken'
			--	-	0	+	++	
S.I.	-	Habitat loss and degradation during the last about 100 years: Subtidal			0			
S.I.	1.1	Habitat loss and degradation during the last about 100 years: Intertidal					++	Valorization and stabilization of existing mudflats
S.I.	1.4/ 1.5	Gross change in morphology/hydrographic regime during the last about 100 years			0			
S.I.	3.1/3.2	Decrease of water and sediment chemical quality				+		
D.I.	2.3	Discharge of nutrients or harmful substances			0			
D.I.	1.3	Land claim during the last about 100 years			0			
D.I.	2.6	Capital dredging			0			

S.I. = state indicator; D.I. = driver indicator

The measure 'Reed settlement Haken' was as compensation measure not assigned to the WFD, nevertheless it covers one of the main pressures of the freshwater zone of the Elbe estuary.

3.2 Degree of synergistic effects and conflicts according NATURA 2000 aims

Table 3: Effect of the measure concerning the main conservation objectives in the operational area 2

Operational area (zone)	Natura 2000 conservation objectives	Effect of Measure on conservation objectives			Description
		Positive	No effect	Negative	
2					
2	Prevention of further increase and/or reduction of tidal range (energy)		-		
2	Conservation and development of primarily floodplain/alluvial forest (*91E0)		-		
2	Conservation and improvement of alluvial meadows of river valleys (6440) and lowland and hay meadows (6510)		-		
2	Conservation of the primarily 'Elbe Water Dropwort' (<i>Oenanthe conioides</i>) with species specific dynamic, development of further habitats to improve the habitat network		-		
2	Conservation and development of spawn and growth habitats for asp, ensuring the habitat potential for the twaite shad		-		
2	Conservation and development of the transition functionality between the Middle Elbe and the Estuary downstream for migratory fish species of Annex II BHD		-		

The measure is not assigned to BHD aims and therefore none of the development targets mentioned in the integrated management plan would be reached.

Part 4: Crux of the matter

Within the planning process of the measure 'Blumensandhafen', the idea evolved to compensate the loss of reed habitats by the valorization of another protected habitat. This idea was discussed with the environment authority of the City of Hamburg (BSU) and the measure was finally approved as compensation measure.

This is a good example for future planning especially in a densely populated area like the City of Hamburg.

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References

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Several planning maps are available (in German).

