

EUROPEAN UNION European Regional Development Fund



Nature Based Solutions in the North Sea region

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R.J.A.Wilmink¹ on behalf of Work Package 3 ¹ Rijkswaterstaat - Water, Verkeer en Leefomgeving: <u>rinse.wilmink@rws.nl</u>

Nature-Based solutions (NBS), also known as **Building with Nature** (BwN) solutions, are implemented to make coasts more resilient to climate change effects, primarily sea level rise. The Building with Nature (BwN) project demonstrates Nature **Based solutions that utilize natural processes to** deliver flood risk and coastal erosion management whilst enhancing ecosystem services.

Shared understanding resulted in an in depth overview of all common practices in coastal protection (table 1).

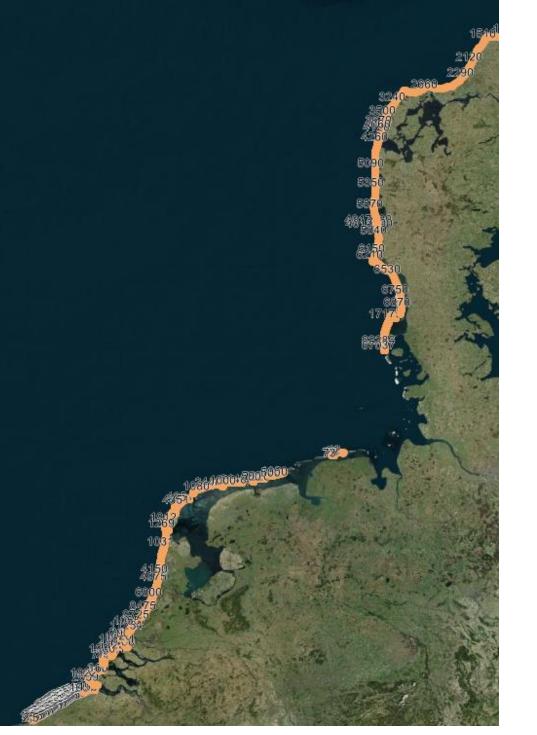
The overall objective of the BwN project is to make coasts, estuaries and catchments of the NSR more adaptable and resilient to the effects of climate change. Therefore, a common transnational evidence base is needed to justify investments and optimize the effectiveness of BwN solutions.

Common implemented BwN solutions are beach and/or shoreface nourishments. These aim at counteracting erosion, stabilizing coasts, facilitating other functions and ensuring protection to flooding. The performance of these solutions is divers and hampers wider uptake across NSR (Wilmink, Lodder & Sørensen, 2017)¹.

	Flood risk reduction goal	Policy goals (criteria)	Compensate erosion goal	NBS/B wN in policy	Nourishment type (Beach / shoreface)
1. DCA (DK, central North Sea coast)	Yes	$P(f):\frac{1}{100}$, exceptional $P(f):\frac{1}{1000}$ (Hold the line)	Yes*	Yes	Both
2. LKN.SH (DE)	Yes	(Hold the line)	Partly	Yes	Both
3. NLWKN (DE)	Yes	Protect other functions (Hold the line and dune safety)	No	Yes	Beach
4. RWS (NL)	Yes	1) $P(f):\frac{1}{300}$ up to $P(f):\frac{1}{100.000}$ 2) Protect coastal functions (Hold the line)	Yes	Yes	Both
5. MDK (BE)	Yes	 P(f): 1/1000 No fatal casualties allowed (Hold the line) 	No	Yes	Beach and experimental shoreface
6. LST (SE)	No	Shoreline protection (Building prohibited within range coastal zone)	No	No	Beach and experimental shore face

Table 1: Overview of flood risk and coastal management goals per partner.

Work package 3 proceeded to create an overview of data available of each lab and build a transnational database for coastal transect data (fig 3 & 4).



Transnational database:

- 135.432 profiles
- 5840 transect locations
- 4 countries;

BE, NL, Langeoog, Baltrum,

Work package three of Interreg BwN started the project writing a work plan and to define common understanding of flood risk protection (fig 1 & 2).

Fig 3: Transnational coastal profiles database

Sylt, Westcoast Denmark

 Measurements between 1874 – 2017 (Almost 150 years in some locations!)

In 2018 the first steps will be taken to analyse performance of executed nourishments in all laboratories using a shared methodology drafted in **2017.** The results of the co-analyses will be drafted into guidelines on the implementation and effectiveness of nourishments.





This document is a composition of six factsheets current practices from Flanders, the Netherlands, Lower Saxony, Schleswig Holstein, Denmark and Skåne (Sweden)



Fig 1: Product 1 - Work plan WP3

Status: Final version

Fig 2: Product 2 - Comparison current practices

solutions in coastal laboratories. The lessons learned and common datasets will be converted into technical guidance to help design, model and monitor building with nature solutions. Co-analysis of nourishments and performance monitoring in this context are steps to achieve the goals set. Key element in this approach is the share of data for co-analyzing, starting with an inventory on what is already available and which data needs to be gathered extra during the project. This factsheet is an accompanying letter of the factsheet Data (Factsheet_Data_namepartner.xlsx).

Factsheet Data

The factsheet data, an inventory of data by each partner, contains metadata of the available data and if possible examples (much appreciated). The factsheet has a special focus on the specific coastal laboratories (study sites) to be included in the project and only has to contain data for co-analyzing BwN solutions (for clarity reasons). Examples of available data types are: coastal conditions (tides, waves, winds), bathymetric surveys (LIDAR/beam), grain sizes, transects,... . The frequency of measuring, period data availability and other comments/notifications are presented as well.

Acknowledgements

The factsheet Data has been initiated and composed by Arfst Hinrichsen (LKN.SH Germany). All partners agreed to compose the factsheet in the predetermined format during the BwN Husum meeting on 14-06-2016.

Fig 4: Product 3 – Factsheet data

A shared common approach

Date: 05/02/2018 Status: Final version

Fig 5: Product 4 – Shared methodology co-analyses

¹ Wilmink R.J.A., Lodder Q.J., Sørensen, P (2017), Assessment of the design and behavior of nourishments in the North Sea Region. Proceedings Coastal Dynamics 2017, Helsingør, No. 043, 801-809.