Achieving the Project Indicator of the Interreg North Sea Region Building with Nature Project

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1. Introduction

The Interreg North Sea Region Building with Nature project has a project indicator. This indicator is formulated as follows:

The Interreg North Sea Region Building with Nature project aims at

- Managing new coastline plans using shared insights, designs and demonstrations of the effectiveness of the methods of Sand Nourishments, based on BwN principles, with a length of 700 km
- Managing new catchment areas using shared BwN techniques as a result of the effectiveness of project demonstrations, based on BwN principles, with a length of 500 km
- Increase Climate Change Resilience at target sites with 10%

The first goal applies to Work Package 3 (WP3, Coastal), the second goal applies to WP4 (Fluvial). The third goal applies to both WP3 and WP4.

The purpose of this note is to show that with the current sub-projects and actions in Work Package 4, the aim for WP4 can be fulfilled.

1.1 Rephrasing

First of all, it is noted that there is a mismatch with respect to units in the aim. The aim mentions 'areas' and uses as indicator 'km'. The term 'area' might be applicable to the coastal Work Package, but is less suited for the catchment Work Package. Therefore, we reformulate the aim such that the units are correct:

"The Interreg North Sea Region Building with Nature project aims at managing new catchments using shared BwN techniques as a result of the effectiveness of project demonstrations, based on BwN principles. As indicator, we use the lengths of the river or stream and we aim at improving 550 km or more."

We can consider several tiers on which to achieve this aim.

- Strategy
    - This level is rather vague to describe. It relates to influencing and inspiring policy makers, changing legislation and the importance of dissemination. It also relates to

sharing knowledge both directly (field visits and training events) and indirectly through presentations, papers, conferences and symposia (nationally and internationally)

- Policy
    - To assess this tier, we need to know how many km's really fall under the overall banner and through which influencing means and measures our partners are working
- Practice
    - How many kms have actually been restored/altered/changed?

We can summarise this in a figure:

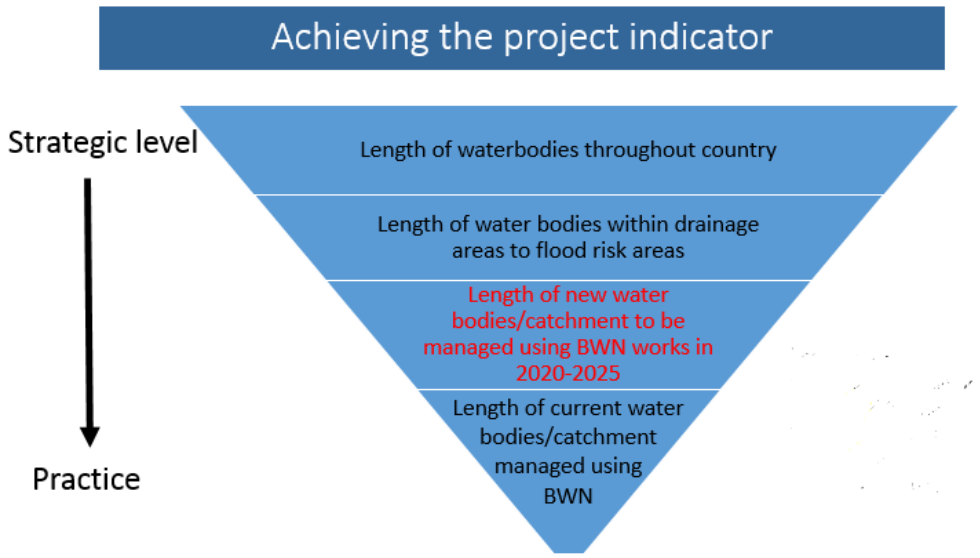

Figure 1: Achieving the project indicator on various levels.

2. Assessment of the project indicator

2.1 Assessment of the project indicator on the strategic level

It is clear that BwN satisfies the project indicator on the strategic level. Once authorities (on local and higher levels) recognise the possibilities and added values of BwN-measures, they can be applied to other waterbodies throughout the countries that take part in this project (Sweden, Belgium, The Netherlands and Scotland) and obviously, there is more than 550 km of waterbodies (main stem) present in the various countries.

2.2 Assessment of the project indicator on the policy level

It is also clear that on this level, the project indicator is met. The total length of rivers within the area of interest of Interreg North Sea Region (see figure 1 and 2) is far more than 550 kilometres. In the Netherlands, a rough estimate adds up to 400 km (the larger streams and rivers). Together with the main Tweed focus area in Scotland (370 km, River Teviot, Gala Water, Ettrick Water, Yarrow Water and Eddleston Water), Belgium (600 km) and Sweden (connected to the administrative county board of Scania the total length of streams (width 1-6 m) is 9968 km), this adds up to 10.938 km.

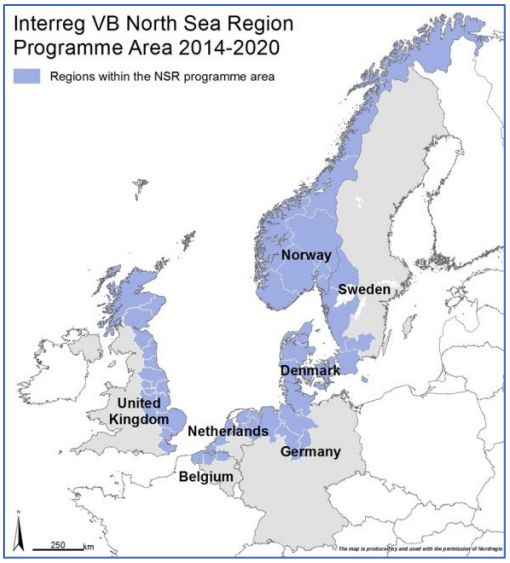

Figure 2: Interreg VB North Sea Region Programme Are

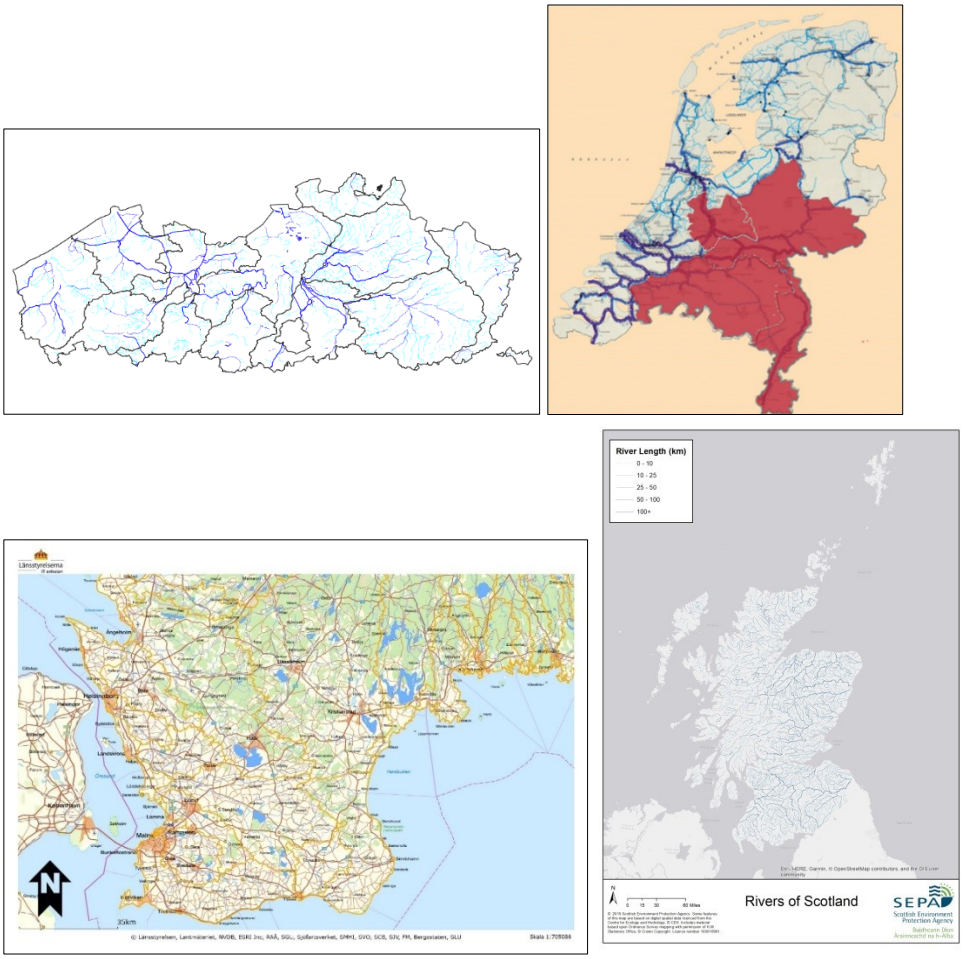

Figure 3: Waterbodies in (from left to right) The Netherlands (light and dark blue lines in the non-red area), Sweden (Scania, orange lines), Belgium (blue lines) and Scotland.

2.2.1 Outreach

In **Scotland**, the Eddleston has helped shaped policy development through informing policy papers and visits by policy makers and Ministers; improved understanding and uptake of BwN through site visits by land managers, communities, local flood groups, local government, academia and other interested parties; formed the basis of guidance on BwN (e.g. SEPA's Natural Flood Management Handbook and Scotland's Rural College Farmer's Guide to NFM) and helped identify and provide evidence of how BwN can be targeted to deliver multiple benefits.

In **The Netherlands**, the Building with Nature concept was clearly present in the Room for the River programme (constructions of side channels, depoldering, using tree planting as attenuation). In the subsequent larger policy programmes like the Delta Programme (a programme to keep the Netherlands liveable and safe also for the long term, up to 2050), similar measures to reduce flood risk which also add to increasing biodiversity and recreational values are under consideration. In the current Integral River Management programme, Rijkswaterstaat and the policy department of the Ministry of Infrastructure and Water Management not only study measures to reduce flood risk but also explores how these measures are beneficial to other basic functions of the river (navigation, economy, tourism). This is a two way process: also measure that improve navigation are assessed on its flood reducing capacities. Furthermore, the concept of Building with Nature is advocated by 10 Dutch water boards who cooperate in a knowledge programme Building with Nature ('Bouwen met de Natuur' in Dutch)

In **Sweden** the municipalities started implementation of BwN measures by reconstructing wetlands and ponds and restoring streams in order to increase the retention time of water in the landscape. The purpose was to diminish the transport of nutrients and to improve biological diversity. Later on, the positive effect of the measures on hydrology, got attention due to problems with flooding. The original small- scale projects where landowners and municipalities worked together, targeted small groups who were responsible for flooding and improvement of water quality lobbying for resources and implementing measures. As a result of this bottom-up approach, BwN measures are now supported by the Swedish Government. Monitoring and evaluation of the measures in river Råån show positive effects on flooding, nutrient retention and biological diversity. However, with small changes some of the measures can be further improved. To achieve these improvements and to upscale the projects, there is a need for new or revised legislations and possibly also new economic instruments to compensate landowners.

In **Belgium**, the creation of ecological flooding zones in recreation areas fits within a river restoration program for the Kleine Nete River, which has three goals: creation of more water storage capacity, realisation of ecological added value, and restoration of the structure of the water course. This River Restoration Program of the Kleine Nete River has become part of a coordinating commission of the provincial governor of Antwerp. Regular meetings are being held together with other agencies of the Flemish Government (Nature, Forestry, Landscape, Spatial Planning and more), local authorities and other associations (agriculture, nature). By this, the message about *Building with Nature* is wide spread between different stakeholders and decision makers.

2.3 Assessment of the project indicator on the practice level

For assessing this, we need to know how the various BwN-measures under consideration in this project, work, and we have to go into detail about the scale and location.

Figure 4: The individual projects within Building with Nature. The fluvial projects are Eddleston (Scotland), NL Rivers (side channels, The Netherlands), Råån (Sweden) and Kleine Nete (Belgium).

In **Scotland**, the BwN-project under consideration is the Eddleston. The measures consist of the construction of ponds, re-meandering and removal of flood banks, tree planting and constructing leaky dams. These all aim at slowing down the flow such that flood peaks are attenuated and lowered.

The Eddleston has helped influence delivery of many other BwN initiatives in Scotland such as the Allan Water Improvement Project (around 50 km) and helped inform the delivery of just under 100 BwN actions in Scotland's Flood Risk Management Strategies (length to be determined but expected to be hundreds of kms). Among these are projects elsewhere in the Tweed catchment on the Upper Teviot, Gala, Leader, Ettrick and Yarrow

It is estimated that the BwN-measures directly affect 26.5 km of the Eddleston Water.

In **Sweden**, the BwN project is on the Råån River. Aim is to study of the effects of constructed wetlands, flood plains and two-stage ditches in the whole catchment area through modelling and monitoring in specific locations.

It is estimated that the BwN-measures affect the total of 30 km of the Råån river. A lot of other catchments in Scania will be affected by BwN projects. All BwN projects financed by CAP in Scania will be collected and included in the project indicator.

In **Belgium**, the BwN measure is focussing on the restoration of a part of the Kleine Nete river. Measures involve creating ecological flooding zones over a stretch of approximately 30 km.

In **The Netherlands**, the measures under consideration are side channels. Unlike the measures in Sweden, Scotland and Belgium, these are mainly located in the Dutch delta of the Rhine branches. A side channel increases the discharge capacity of the main river, and hence leads to a decrease of the flood

water levels. An average side channels reduces the flood water levels with 5-10 cm. Besides, there is a so called backwater-effect: the reduction of the water level is also present in upstream direction (but slowly decreases over a distance of several kilometres, depending on the slope of the river).

In the Netherlands, there are approximately 50 side channels constructed. The BwN-project adds to the assessment of effects of side channels, not only from hydraulic point of view but also considering other benefits like increasing bio-diversity and recreation. Given the fact that a side channel is typically 1 kilometre long, and has an upstream effect of approximately 10 kilometres, this means that the Dutch measures contribute to the project indicator with a length of 50x11=550 kilometres.

Adding these numbers, we conclude that in the **four** countries, a total length of 636.5 km of river is managed using BwN techniques. This is considerably more than the aim of 550 km.

3. Influence through Knowledge Exchange and Dissemination

Although not formally mentioned as project indicator, Knowledge Exchange and Dissemination can be viewed as a yardstick with respect to building awareness and creating support. There have been many activities in this respect in the various projects.

Scotland: The Eddleston has been widely used as a case study in numerous presentations at conferences, workshops and training events not only in Scotland, the UK and partner EU countries, but wider on the international stage as well, thus reaching a wide range of policy and practitioner audiences and sharing best practice ideas and learning.

The Netherlands: In the Netherlands, the side channels in general have been subject of intensive research at the DG Rijkswaterstaat as well as at the academia. Parallel with the Building with Nature project, a PhD candidate at Twente University, Enschede, The Netherlands, studied morphological and hydraulic consequences of side channels[1] and several students (BSc and MSc) participated in this research. The research benefited from the cooperation with Building with Nature.

The insights with respect to side channels have been presented as several international conferences and the discussions in this international audience contribute to the quality of the framework.

Sweden: The Catchment of Råån has been widely used as a study area for evaluating the effects of BwN measures by different research institutes and authorities. The results are widely spread in the region of Scania, thus reaching a wide range of influential people in municipalities, agricultural sector and also at national level.

Belgium: The *Building with Nature* project made it possible to bring the ecological protection measures on the Kleine Nete River in Belgium to the attention of different stakeholders (other water managers, local authorities etc.). It served as a driving force for measures at other watercourses. The main lessons learned were at the level of stakeholder engagement and design process. By this, the principles of Building with Nature will be used at numerous other projects.

It should be noted that also by means of the Policy briefs, this project exerts influence to ministers and policy-makers on various governmental levels.

[1] Side Channel Dynamics, PhD thesis R.P. Van Denderen, University of Twente, Enschede, The Netherlands