



An assessment of Building with Nature (BwN) measures: A comparative case study from Scotland and the Netherlands

Ralph Schielen (1), Egon Baldal (1), Luke Comins (2), Heather Forbes (4), Debi Garft (3), Chris Spray (5), Susanne Quartel (1), and Mark Wilkinson (6)

(1) Ministry of Infrastructure and Water Management, The Netherlands, (3) Scottish Government, Scotland, (2) Tweed Forum, Scotland, (4) Scottish Environment Protection Agency, Scotland, (5) Dundee University, Scotland, (6) The James Hutton Institute, Scotland

Building with Nature (BwN) is (just as Natural Based Solutions, Natural Flood Management and Natural Water Retention Measures) a relatively new term in the landscape of catchment scale flood risk management and river restoration. These terms are mostly synonyms for a line of thought where sustainable practices are used for flood risk reduction and management, and habitat and nature restoration (or a combination of these and other aims). Although there is an increasing number of examples of BwN (or its equivalents) (e.g. see <http://nwrn.eu/>), and model calculations show that the measures have a certain effect, there is still a lack of empirical evidence that these measures really work in achieving flood risk reduction or in restoring habitat at larger scales. To properly assess BwN measures, there is a need for a framework to work in a uniform fashion and make results comparable. Such a framework is recently proposed in several papers (e.g. Neshöver et. al) in which the value of properly designed monitoring, collaborative learning, using transdisciplinary knowledge and dealing with uncertainty is advocated. In this contribution, we compare the Eddleston Water (70 km²) project in Scotland, with restoration work by means of a number of constructed side channels (which typically have a area of 2-5 km²) in the river Rhine in the Netherlands. The Eddleston project is a long-term study (~ 5 years data) on using natural processes to reduce flood risk and improve habitats at a catchment scale; work which includes re-meandering a stretch of the river. The construction of the side channels in the Netherlands combines flood control with reconnecting flood plains while improving habitat for fish. Both projects can be considered BwN and are comparable in size (with respect to channel restoration works) and in creating new areas of habitat. There are also differences, e.g. in governance and stakeholder participation. Therefore, these cases are very well suited to assess the effectiveness of BwN-measures, based on the indicators that are mentioned in the various frameworks proposed in the literature.

Assessment with regards to stakeholder involvement, tradeoffs (with respect to e.g. ecosystem services) and analyzing empirical data helps to quantify the effectiveness of BwN. This adds to the empirical and scientific evidence that these measures may have measurable added value with respect to traditional measures like reinforcement of levees or dikes. This evidence should be actively advocated to be recognized by authorities as valuable information that helps in their decision process when considering measures for flood control (Dutch case) or flood management (Scottish case).

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Reference

C. Neshöver, T. Assmuth, K. Irvine, G. Rusch, K. Waylen, B. Delbaere, D. Haase, L. Jones-Walters, H. Keune, E. Kovacs, K. Krauze, M. Külvik, F. Rey, J. van Dijk, O. Vistad, M. Wilkinson, H. Wittmer, The science, policy and practice of nature-based solutions: An interdisciplinary perspective, In *Science of The Total Environment*, Volume 579, 2017, <https://doi.org/10.1016/j.scitotenv.2016.11.106>.