



## **Frame communication about Natural Flood Management around its multiple benefits, not just flood risk mitigation**

### **Summary**

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Natural Flood Management (NFM) is a nature-based solution that works with nature to address societal challenges. As a result of the failure of some hard engineering flood management strategies over the last decade, support for NFM has increased in recent years, and now features in Defra's national strategy 'Making Space for Water', the Government's 25-year Environmental Plan, and NFM pilot schemes across England). Yet, uncertainty remains over the effectiveness of NFM measures in mitigating flood risk in some catchments, so there has been increasing interest in the additional co-benefits NFM provides to society. The evidence synthesis reported in this policy brief confirms that NFM delivers a range of other ecosystem services including carbon storage, water quality and amenities. Although a number of studies have estimated the monetary value of these co-benefits, (quantitative) evidence that combines estimation of their delivery (even using proxies) and of their effect on flood risk mitigation is still limited.

### **Policy recommendations**

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- Given the wide range of site-specific factors influencing the effectiveness of NFM in reducing flood risk, policy support and related communication around NFM should be framed more around the delivery of other societal benefits from NFM, especially climate change mitigation, in the context of reaching net zero.
- Further research should be funded to understand how specific ecosystem service co-benefits vary according to catchment conditions and other factors.

## Challenge

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In response to climate change, there are calls for more integrative nature-based approaches to catchment management, which are able to deliver multiple benefits to society. Hard flood defence engineering has been considered for a long time as the most efficient technique to mitigate risk of flooding and avoid damage to populations and infrastructure. However, it is now widely recognized that this approach alone is not sufficient, and needs to be combined with “softer” and more sustainable nature-based solutions, able to tackle flood risks as part of a more systemic understanding of catchments and their properties. Natural flood management (NFM) measures, alone or in combination with harder engineering techniques, as part of an integrated management approach, can deliver multiple benefits to society. Benefits provided by NFM in addition to flood risk reduction are, however, difficult to capture. Many co-benefits have no obvious market (e.g. improved water quality, increased recreational value), but when most management decisions are based on economics (e.g. cost-benefit analyses), it is necessary to evaluate the wider value of NFM strategies.

We contribute to this issue by reviewing the state of the existing evidence associated with the provision of additional benefits from NFM.

## Method

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**Literature Search:** We conducted a search using Web of Science, Google Scholar and specific journals in the field of hydrology and hydraulics, and considered grey literature via Google. Search terms included NFM itself and each of the main categories of NFM measures, which we associated with terms for co-benefits of NFM.

We extracted 184 studies that covered at least one more ecosystem service arising from NFM in addition to flood mitigation. After screening abstracts to identify those that actually reported evidence of effects of NFM on flood risk and at least one other co-benefit, there was a subset of 32 studies.

**Analysis:** Data was extracted on flooding context, co-benefits and methods used to value co-benefits.

**Synthesis:** Inductive thematic synthesis was conducted in order to cluster studies based on the criteria above.

## Results

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All the studies reviewed regarded NFM as an efficient and cost-effective way of coping with flooding in the long term, especially considering of climate change co-benefits.

However, evidence for the delivery of wider benefits of NFM beside flood risk mitigation remained limited (these ecosystem services were often assumed rather than measured empirically). Only a few studies estimated co-benefits of NFM alongside measuring flood mitigation effects. These studies relied on either modelling or economic valuation based on proxies.

A key issue in evidencing NFM co-benefits relates to the lack of standardisation in their quantification, making evidence synthesis difficult. Interdisciplinary research is needed to increase the evidence base on NFM co-benefits in a variety of contexts, and thus enhance confidence in implementing NFM measures.

## More information

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This work was conducted when Marie Ferré was working as a research fellow at the University of Leeds, before moving to Cirad in France.

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