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BRIEF

Risk transfer and reduction through nature-based solutions

About the brief

This is part of a series of briefs presenting insights from the NATURANCE project for use by **policymakers** and **finance professionals**.

The project explored **opportunities and barriers to the use of nature-based solutions (NbS) in insurance and investment**, and was conducted in collaboration with insurance industry experts, knowledge partners, and other relevant stakeholders through Innovation Labs.

This brief highlights key insights from four of these Innovation Labs that were focused on risk management and summarises NATURANCE's work to:

➤ Review how risk transfer can enable NbS and vice versa.
➤ Explore opportunities for supporting greater NbS use in the contexts of:
(1) resilience of UK housing and the built environment to withstand flooding (UK Flood Lab);
(2) rising wildfire risk due to climate change and land use pressures (Wildfire Lab);
(3) flood risk management in Italy given increased glacial melt/precipitation (Italy Flood Lab);
(4) urban heat action plans in Europe (Urban Heat Lab).

The specific topics were decided by interested participants from the project's knowledge networks (financiers, practitioners, researchers, local authorities, consultants and other interested parties). Members of the NATURANCE consortium were then selected to lead each Innovation Lab.

Context

NbS are interventions supported by nature that aim to help address climate- and nature-related risks, for example those linked to flood, wildfire or urban heat.

They also provide environmental, social, and economic co-benefits such as enhanced biodiversity, carbon sequestration, cultural and recreational services, and contribute to sustainable economic growth.

To facilitate wider use of NbS, **risk transfer** mechanisms can increase financial viability for investors. NbS can also make these mechanisms more sustainable through **risk reduction**.

RISK TRANSFER – Mechanisms that involve transferring the future potential risk (and arising liabilities) from one party to another in exchange for an agreed premium.

RISK REDUCTION – Identifying and managing hazard to reduce potential loss in relation to climate change.

Reference: Surminski, 2013

Key barriers to progress include: lack of tools and frameworks to measure NbS benefits in a standardised way; insufficient track record of NbS performance in different contexts; and potential liability issues.

Summary of NATURANCE's work

NATURANCE has demonstrated how risk transfer solutions can support the use of NbS for risk reduction. The Innovation Labs highlighted in this brief provide insights which are applicable more broadly:

When implementing NbS, it is important to identify possible benefits and trade-offs

Wildfires are a rapidly rising threat as climate change intensifies. Yet, the societal challenges addressed by NbS may demand opposing interventions, such as forest thinning to prevent wildfire risk vs tree planting for biodiversity gain.

*(see the **Wildfire Lab**)*

In densely populated northern Italy, climate change is increasing precipitation and glacial melt. While controlled flooding can reduce damages from floods, it affects those upstream and benefits those downstream, leading to an unequal distribution of benefits and risks.

*(see the **Italy Flood Lab**)*

Increasingly frequent heatwaves across Europe necessitate better heat risk management, particularly in built-up urban areas. This affects especially vulnerable populations such as rough sleepers, for whom urban green spaces could form part of a range of measures to reduce heat risk. However, these spaces could cause increased fire risk, and might not be the most effective use of funds, especially for other groups such as the elderly who face different vulnerabilities.

*(see the **Urban Heat Lab**)*

Flooding is the most prominent natural hazard in the UK, with risks and associated costs rising year after year. Existing and new housing stock are exposed to and not built to withstand intensifying floods. Additionally, there are doubts around whether NbS can deliver enough flood risk reduction, particularly in dense urban areas.

*(see the **UK Flood Lab**)*

Risk transfer can help de-risk the use of NbS and thus make them more investable

The **UK Flood Lab** explored how NbS in urban areas – such as green spaces and restoring natural waterways – could reduce flood risks while providing additional benefits beyond natural flood management (NFM).

However, financing mechanisms were highlighted as one of many barriers to scale.

Risk transfer could be utilised to encourage additional investment for NbS such as by introducing an incentive structure within insurance coverage.

Alternatively, insurance could be used to provide payments for repair and ensure integrity of NbS over time.

These risk transfer mechanisms could become more in demand with the growth of nature-specific regulations like Biodiversity Net Gain (BNG) in England.

However, a lack of integration of NFM/BNG into underwriting and risk/pricing models, and doubts around NbS's scalability and replicability, were seen as key areas of future research.

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Nature for insurance, insurance for nature

NbS can reduce the intensity of catastrophes, making insurance more available or affordable

Within northern Italy, insurance uptake by businesses and households against flood risk remains low yet infrastructure is unable to cope with increasing flood intensity.

The **Italy Flood Lab** proposed and designed twin mechanisms of using controlled flooding to reduce flood risks combined with a community-based insurance scheme to pool risk in the river basin: when there is excessive precipitation or glacial melt, controlled flooding could be permitted upstream by renaturalising agricultural land to avoid damage to more densely built communities downstream, in exchange for compensating upstream landowners. Thus providing an NbS risk transfer mechanism.

In addition to intensifying floods, global warming has increased the frequency of wildfires in Europe, worsened by the urban-wildland interface. NbS tailored to local contexts can reduce the risk of wildfires but requires appropriate financing.

A possible solution that emerged from the **Wildfire Lab** incentivises action by forest landowners by offering insurance premium discounts for implementing natural fire management. As reducing wildfire risk would largely require reducing the hazard, rather than vulnerability to it, a parametric trigger may be better suited than an indemnity-based trigger.

Risk transfer is also possible through reinsurance: the highly differentiated wildfire risks across EU countries could allow for an EU-wide pool and drive NbS adoption through either price incentives or introducing NbS into underwriting practices. This highlights how NbS as risk reduction and risk transfer can be complementary.

Conclusions and implications

1. **The development of NbS as risk transfer and reduction mechanisms is slowly gaining momentum but remains quite nascent.** Further progress requires action by both policymakers and financial stakeholders. In particular, risk transfer mechanisms can support NbS resulting from regulatory obligations such as biodiversity net gain and fund their repair (see **UK Flood Lab**).

2. **While risk transfer can accelerate the uptake of green solutions, ensuring equitable application of NbS is crucial** to avoid "*green gentrification*" that may displace vulnerable populations to more exposed areas (see **UK Flood Lab**).

3. **There are opportunities for broader risk-pooling**. For wildfire risk specifically, the lack of correlation in wildfire risks across countries within the EU provides an opportunity for risk-pooling for forest management (see **Wildfire Lab**).

4. **The costs, risks and benefits of NbS are often distributed unevenly across many different stakeholders, which can cause disincentives to scale**, especially if those who pay do not benefit and vice-versa. In particular,

   Implementing controlled flooding NbS risk transfer mechanisms requires uneven effort from landowners across a river basin and necessitates compensation for lost economic output (see **Italy Flood Lab**).

   Setting premiums according to experienced risk-reduction ensures that those who benefit the most pay to compensate those who are affected the most by NbS interventions (see **Italy Flood Lab**).

   For risk transfer to remain effective, it is crucial to incentivise risk-reduction with NbS through premium discounts (see **Wildfire Lab**).