

Understanding the economic recovery potential of investing in biodiversity in the Global South

Report to NERC Programme on Synthesising Evidence in Economics of Biodiversity

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Despite mounting evidence that we must reverse biodiversity loss to sustain the healthy soils, clean water and habitable climate that support life on earth, there has been little progress on a global scale. Nature-based Solutions (NbS) offer a way to reverse biodiversity loss while also providing benefits for people and tackling the climate crisis. However, while there are clear environmental benefits from NbS, uncertainty on their socio-economic outcomes may be hindering government support and investment.

This report presents a rapid synthesis of key evidence sources to address the following questions:

1. In the short term, could NbS generate good quality jobs and boost incomes and revenues as countries strive to ‘build back better’ in the recovery from the COVID-19 pandemic?
2. Could NbS play a role in the transition towards a sustainable resource-efficient circular economy that is more resilient to future commodity price shocks?
3. How are the economic benefits and costs of NbS distributed between different groups of stakeholders, and how can they be equitably distributed?
4. Are there trade-offs and synergies between different economic outcomes, or between economic, social and environmental outcomes of NbS?
5. How can investments in NbS be designed to deliver the greatest economic benefits?
6. What are the key evidence gaps?
7. How strong is the evidence of economic outcomes, and how could evidence gathering be improved in future?

To address these questions, we first analysed an existing systematic review of evidence on the outcomes of NbS for climate change adaptation and sustainable development (the Nature for Development (N4D) dataset, developed with IIED, the International Institute for Environment and Development), focusing on economic outcomes. We supplemented this with a systematic ‘review of reviews’, to rapidly assess evidence of short term economic recovery outcomes: jobs, incomes, revenue, skills, gross value-added and economic multipliers. Finally, we conducted a quick scoping review of analysed selected grey literature reports, which provided strong complementary evidence from economic modelling of outcomes for jobs per unit of investment, and economic multiplier effects. This report presents the preliminary findings from the review, funded by a grant from the NERC Programme on Synthesising Evidence in Economics of Biodiversity. The work is continuing with co-funding from the Oxford Martin School programme on Biodiversity and Society, and will lead to a joint final report at the end of 2022.

We found good evidence that NbS have predominantly positive economic outcomes for incomes and jobs, and strong multiplier effects for jobs and economic output throughout the economy. Importantly, available evidence shows that NbS can provide higher employment per dollar of public spending, compared to other stimulus measures. However, the strength of the evidence varied. Our analysis of the N4D database found that 93% of studies recorded positive economic outcomes, with 3% having mixed outcomes and 2% negative (the remaining 2% being unclear or having no effect). In contrast, our systematic 'review of reviews' found that only 53% of the outcomes recorded were positive, and 32% were mixed, although only 3% had predominantly negative outcomes, with 6% being unclear. This marked difference could be because the N4D database included many grey literature project reports, many of which were written by project implementers, which may have taken a less critical approach to evaluating outcomes. However, many of these projects were also specifically designed to deliver positive socio-economic outcomes, for example through participatory approaches that aimed to build local capacities and support livelihoods.

Positive economic outcomes can be generated through many pathways:

Reduced resource costs

- **Reduced agricultural inputs.** Nature-based agriculture can reduce the use of inputs such as fuel, fertilisers and irrigation, and associated costs. This pathway is expected to become more important as commodity prices rise due to geopolitical instability, climate change, ecological degradation and competition for land and water.
- **Energy savings in buildings.** Green infrastructure, especially green roofs and walls, can save energy costs by insulating buildings from extremes of heat and cold, reducing the need for heating or air conditioning.
- **Reduced urban water management costs.** Green infrastructure can also reduce storm-water runoff and associated water treatment costs.

Increased or sustained revenues

- **Increased yields.** Nature-based agriculture and agro-forestry can often increase crop yields, e.g. by increasing soil health and fertility.
- **Premium product prices.** Products may be higher quality or may attract a higher price, e.g. for certified organic or deforestation-free produce.
- **Increased profitability.** Even in the cases where yields decrease (such as due to reduced use of synthetic fertilisers in organic agriculture), the studies we reviewed found that this is often outweighed by cost savings from reduced inputs and/or premium product prices, leading to an overall increase in profitability and incomes.
- **Increased resilience to environmental change.** Nature-based agriculture and agroforestry can be more resilient to environmental change, e.g. healthier soils can hold more water, providing resilience to drought conditions and reducing the risk of crop losses.
- **Recovery of over-exploited resources.** Sustainable management of forest resources, grazing land and fisheries can allow depleted stocks to recover. There may be a short-term reduction of yield and incomes, but recovery of stocks will enable continued profitable production in the medium to long term.

Direct jobs and incomes from implementing NbS

- **Direct jobs and incomes.** NbS can generate direct jobs and incomes associated with protection and restoration of ecosystems. This can include short term jobs during the

implementation phase, e.g. growing tree seedlings and planting trees, as well as permanent jobs associated with management, maintenance and monitoring, e.g. patrolling protected areas or maintaining green roofs and walls. Similarly, jobs can be full time or part time. For example, there can be opportunities for local communities to supplement their regular incomes with payments for occasional monitoring of wildlife in a protected area.

- **Direct payments.** Implementation of NbS can be associated with direct payments to local communities, e.g. via Payments for Ecosystem Services (PES), or for providing carbon credits, e.g. via REDD+. These payments may come from private investors such as water companies wishing to protect water quality and thus reduce treatment costs, or companies and individuals wishing to offset their carbon emissions. However, this needs to be managed carefully to ensure equitable distribution of benefits.

High economic multipliers

- **NbS have high multiplier effects**, so they create more indirect jobs and revenues (from business-to-business spending, for materials and services needed for NbS implementation) and induced jobs and revenues (from increased household spending due to incomes associated with direct and indirect jobs) than many other sectors.
- **NbS create more jobs per unit of investment** than most sectors conventionally targeted for economic stimulus spending (e.g. conventional agriculture, or construction of transport and energy infrastructure).

New economic opportunities

- **New activities.** NbS can create new economic activities such as eco-tourism associated with biodiverse protected or restored ecosystems, or sustainable recreational use.
- **New products.** NbS can create new products from sustainable use of natural resources (such as natural wood climbing holds for climbing walls), but it is critical that these products are harvested sustainably (and this is not always monitored).

Skills, knowledge, training and capacity building

- NbS provide jobs at a range of skill levels, including entry-level jobs suitable for a rapid response to unemployment, and high-tech jobs such as those involving remote sensing, geographical information systems or environmental monitoring
- NbS can promote eco-innovation and a transition to a clean, efficient circular economy.
- Many NbS projects have provided training and capacity building for local communities, which can be targeted at vulnerable groups such as women, young people and the long term unemployed.

Avoided damage costs

- Although not the focus of this review, there is also substantial evidence in the wider literature that NbS can reduce or avoid the costs from damage due to hydro-meteorological hazards (storms, floods, droughts, heatwaves). For example, coastal mangroves and saltmarshes can protect from flooding due to storm surges; forests in upper catchments can reduce soil erosion, inland floods and landslides; and bio-remediation can address soil salinization and pollution.

Benefits for health and well-being

- Similarly, although not the focus of this review, there is also substantial evidence in the wider literature that NbS can improve physical and mental health and well-being, e.g. by improving air and water quality, dietary diversity and food and water security, and providing green spaces for recreation. This can provide economic benefits by increasing productivity and reducing health care costs.

Mixed or negative outcomes also arose through a variety of pathways.

- **Limits on resource extraction from protected or sustainably managed areas** for dependent communities.
- **High up-front costs** for options such as agroforestry or green roofs, which were not always recovered through resource savings and other benefits.
- **Failure for projected benefits to materialise**, e.g. if certified products could not be sold at a premium because supply exceeded demand.
- **Distributional impacts**, typically if marginalised or low-income groups lack access to the land, knowledge, machinery, credit, and other resources needed to implement some types of NbS such as agroforestry or conservation agriculture, or when revenue streams are not equitably distributed.
- **Poor design** of interventions, failing to support both biodiversity and social capital.

A key strength of NbS is that they generally offer very strong synergies between multiple objectives. Numerous sources cite strong evidence that NbS can deliver a wide range of positive outcomes as well as economic recovery, including food and water security, climate change mitigation and adaptation, social cohesion and human health and wellbeing. However, trade-offs can also occur. Sometimes short-term economic losses occur as part of the path towards longer term gains, such as if grazing or fishing levels must be reduced to enable sustainable resource use in future, or when there is a delay before trees mature or soil fertility increases. Trade-offs can also emerge between livelihoods and biodiversity, e.g. due to limits on resource use in protected or sustainably managed areas.

Trade-offs and negative outcomes can be avoided or mitigated through good design of NbS, following best practice guidelines and the IUCN Global Standard. The literature also identified two specific groups of enabling factors. Firstly, full participation of local stakeholders is essential to ensure successful economic, social and ecological outcomes and to tailor NbS to the local context, making use of local knowledge. Secondly, targeted livelihood-focused support is needed to address any trade-offs or time lags before benefits are delivered, and support must be pro-actively targeted to ensure that benefits reach the most vulnerable households.

We identified many evidence gaps where further work is needed. In addition, economic outcomes are often recorded using a wide variety of different indicators, they do not always assess distributional impacts and they do not always use suitable counterfactuals or baselines. In the next phase of work, we will develop a protocol for best practice robust evidence gathering to inform future monitoring and assessment of the economic outcomes of NbS.

Based on this evidence, there is a strong case for governments to place well-designed and equitable NbS at the heart of economic investment programmes, as they provide a unique mechanism for

simultaneously supporting economic recovery while also tackling the climate, biodiversity, food security and fuel price crises.