

Tackling climate change with nature-based solutions in Bangladesh

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Challenge

Lower income countries such as Bangladesh face severe climate threats such as floods, droughts, storms and heat waves, but conventional options such as hard flood defences can be unaffordable and unsustainable.

Solution

Nature-based solutions are a vital tool for climate change adaptation. Our review found robust evidence that they can provide resilient and effective protection from climate risks while also supporting sustainable development and enhancing biodiversity.

Recommendations for policymakers

Integrate support for nature-based solutions (NbS) into government policy, focusing on four key success factors.

- 1** Participatory delivery of NbS involving all stakeholders.
- 2** Strong and transparent governance.
- 3** Provision of secure finance and land tenure
- 4** Systematic monitoring of outcomes for people and biodiversity, in line with good practice guidelines.



**1.1 to 3.5
million**



Number of people in Bangladesh that are protected from coastal flooding during cyclones by mangroves, which can reduce storm damage by 50%.

75%



Reduction in cultivation costs that is achievable in Bangladesh using nature-based agriculture (this would also increase yields by up to 28% and use 11-33% less water for irrigation).

91%



Proportion of studies of NbS in Bangladesh that reported positive adaptation outcomes (3% were negative, 6% were mixed, neutral or unclear).

Summary

Addressing climate vulnerability with nature-based solutions

Bangladesh, like many lower income countries, is exceptionally vulnerable to increased climate risks such as cyclones, relative sea-level rise, saline intrusion, floods, landslides, heat waves and droughts, exacerbated by environmental degradation and socio-economic challenges including the COVID-19 pandemic. Nature-based solutions (NbS) could provide cost-effective options to address these challenges but policymakers lack evidence on their effectiveness. To address this, we produced a comprehensive synthesis of evidence on the effectiveness of NbS for addressing climate impacts in Bangladesh, and the outcomes for other sustainable development goals. Understanding the benefits of NbS can help to make the case for protecting Bangladesh's remaining high value natural assets, including the Sundarbans mangroves and Chittagong hill forests, as well as implementing more sustainable agricultural practices such as agro-ecology and agroforestry in the farmed landscape.

Floating gardens made from invasive water-hyacinth allow villagers to grow food year-round, despite increasingly severe flooding in Bangladesh's seasonal wetlands.

Key findings

- 1** A wide range of NbS are already being implemented in Bangladesh, including protection, restoration and participatory management of mangroves, terrestrial forests and wetlands, as well as conservation agriculture and agroforestry.
- 2** 91% of the reported outcomes were positive, with robust evidence on the benefits of NbS for reducing vulnerability to cyclones, storm surges, floods, landslides, and salinization, and helping communities adapt to sea level rise, water shortages, high temperatures and extreme rainfall while contributing to almost all the Sustainable Development Goals.
- 3** The evidence base resulting from this study highlights the value of protecting irreplaceable natural assets such as mangroves, terrestrial forests and wetlands, and the non-market benefits they deliver, in national planning policies.
- 4** However there can be conflicts and short-term trade-offs with local needs, for example through pressure to convert ecosystems to aquaculture or agriculture. This needs to be carefully managed with sound participatory governance and equitable distribution of benefits to local communities.

Enabling factors for scaling up high quality nature-based solutions

- Support for NbS in government policies
- A participatory approach that incorporates local and traditional knowledge.
- Strong and transparent governance and community institutions.
- A focus on empowering the vulnerable and equitably distributing the benefits to those most in need.
- Provision of secure finance and land tenure for local communities, in line with international guidelines.

Evidence gaps

- Urban green infrastructure.
- Lack of reporting of participatory engagement and governance arrangements.
- Inadequate monitoring of biodiversity outcomes.

Policymakers

Recognise that well-designed NbS can help Bangladesh meet its climate change, biodiversity and economic recovery goals.

Consider integrating NbS into the National Adaptation Plan (NAP), Nationally Determined Contributions (NDC), 8th Five-Year Plan (2020-2025) and plans developed in response to the Post-2020 Global Biodiversity Framework to guide biodiversity conservation through 2050.

Lead the way in showing how high quality NbS can be deployed at landscape scale to tackle sustainable development challenges in low to middle income countries, supporting a Green Economic Recovery. NbS are context-specific, but many of the lessons learnt in Bangladesh are more widely applicable.

Practitioners

Implement NbS carefully, in line with good practice guidelines, to manage trade-offs and secure multiple long-term dividends for both nature and people,

Scale-up urban NbS such as sustainable drainage systems, green roofs and walls, parks and street trees; as Bangladesh rapidly becomes more urbanised, such interventions have high potential to help manage flooding and heatwaves and to support health and wellbeing.

Undertake a more systematic approach to gathering and reporting evidence on the process and outcomes of NbS projects; this would help to build the evidence base and maximize opportunities to learn about what works in different contexts.



References

This briefing is based on the findings of:

Smith, A., Tasnim, T., Irfanullah, H.M., Turner, B., Chausson, A. and Seddon, N. (2021) Nature-based Solutions in Bangladesh: evidence of effectiveness for addressing climate change and other sustainable development goals. *Frontiers in Environmental Science (in press)*

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