Accelerating climate action in India through nature-based solutions (NBSs)

NBSs can be instrumental in achieving India's climate goals. **Madhura Mitra** and **Anjan Katna** discuss how the country can tap NBS projects for carbon credits and explore new financing options to expedite climate change mitigation and adaptation.

NBSs are increasingly being used for climate change mitigation and adaptation. The International Union for Conservation of Nature (IUCN) defines NBSs as actions to protect, sustainably manage and restore natural or modified ecosystems that address societal challenges (such as climate change, food and water security, and natural disasters) effectively and adaptively, simultaneously providing human well-being and biodiversity benefits.[21] IUCN categorises NBSs into three categories:

Nature-based: These solutions utilise existing ecosystem functions to restore degraded systems.[22]

Nature-derived: Nature-derived solutions leverage resources such as wind and solar energy.

Nature-inspired: Innovative designs and materials that mimic natural processes are developed in nature-inspired solutions.[23]

NBSs could help meet about 37% of climate change mitigation targets required until 2030 to achieve the goals of the Paris Agreement.[24] They use natural processes to provide sustainable, climate-resilient solutions.[25] NBS-related carbon credit projects focus on reducing GHG emissions and improving carbon sinks by reviving natural processes. These credits are fast becoming the preferred type of voluntary credit. Currently, the Gold Standard and Verra are the two most prominent carbon market registries with nature-based carbon credit methodologies. Take the example of Verra's voluntary carbon market registry where at least 31% of the total credits issued in the registry have been labelled with the climate, community and biodiversity (CCB) standard – a framework that assesses land management projects that address climate change, conserve biodiversity and support local communities.[26] Moreover, 44.15% of the active verified carbon units (VCUs) – those that have not been cancelled or retired – listed in the Verra registry are from agriculture, forestry and other land use (AFOLU), a prominent NBS-specific intervention.[27] Calls to adopt nature-based climate-proofing measures are growing.

NBSs were a focal point of the discussions in COP28, Dubai, held in November–December 2023. Some of the key developments as summarised by PwC's specialists present at the summit were:

- The international community committed USD 186 million to conserve mangroves, forests, land and oceans. A new global ocean treaty will also be rolled out to tackle challenges such as pollution and overfishing to protect marine biodiversity.
- Cities pledged to become 'nature-positive' and make concerted efforts to enhance biodiversity. Some key actions they are poised to take include:
  - developing urban forests,
  - conserving and restoring natural ecosystems,
  - implementing sustainable urban planning practices, and
  - engaging with citizens on NBSs.
- Significant progress was made on finalising the Kunming-Montreal Global Biodiversity Framework with a post-2020 global biodiversity plan aimed at halting and reversing biodiversity loss. Key elements of the framework include:
  - protecting at least 30% of the planet's land and oceans by 2030 (30x30 goal)
  - mobilising USD 700 billion per year for biodiversity conservation and restoration
  - mainstreaming biodiversity into all sectors of the economy.
- The global community reaffirmed its commitment to use NBSs to address climate change, focusing on the following:
  - forest restoration projects for carbon sequestration and climate-resilient communities
  - wetland restoration for flood control and water purification
  - sustainable agriculture practices for soil health and biodiversity.
- The critical role that indigenous communities play in protecting and managing biodiversity is increasingly being recognised. Actions that will be taken in this regard include:
  - supporting indigenous land rights
  - ensuring that indigenous communities are involved in decision-making processes related to nature conservation
  - investing in indigenous knowledge and practices.

NBSs are key to achieving India's climate goals

In the Indian context, the adoption of NBS-specific climate change mitigation activities is crucial to achieve the country's climate goals and to facilitate sustainable growth. Being one of the largest emitters of GHGs globally, India has set ambitious climate targets as a part of its Nationally Determined Contributions (NDCs) under the Paris Agreement (2015).

A prominent goal under India's NDCs is LiFE (Lifestyle for Environment)[28] which aims to propagate a healthy and sustainable way of living for every citizen of the country. Furthermore, India is committed to bringing down the intensity of the emissions of its gross domestic product (GDP) by 45% by 2030 (compared to 2005 levels)[29] and achieve net zero emissions by 2070. This includes the targeted creation of an additional carbon sink of 2.5 to 3 billion tonnes of CO2 equivalent by enhancing forest and tree cover.[30]

NBS projects are a viable option for India to offset its GHG emissions and contribute to climate change mitigation and adaptation. For instance, research shows that if the country were to adopt NBS projects in just three agricultural activities – zero-tillage, fertiliser use and rice-water management – it could provide over 50% of the total

21 Cohen-Shacham, E., Walters, G., Janzen, C. and Maginnis, S. (eds.) (2016). Nature-based Solutions to address global societal challenges. Gland, Switzerland: IUCN. xiii + 97pp.

22 IUCN, Guidance for using the IUCN global standard for nature-based solutions

23 Ibid.

24 https://www.ipbes.net/sites/default/files/inline/files/ipbes_global_assessment_report_summary_for_policymakers.pdf

25 United Nations Environment Programme (2022). Nature-based Solutions: Opportunities and Challenges for Scaling Up. https://wedocs.unep.org/20.500.11822/40783.

26 https://registry.verra.org/, as on 15 Dec 2023

27 https://registry.verra.org/, As on 15 Dec 2023.

28 Press Information Bureau, 2022. Retrieved from https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1847812

29 Ibid.

30 Ibid.

climate mitigation potential of the agriculture sector.[31] NBS-specific projects are already gaining traction in India. For instance, India's Mangrove Initiative for Shoreline Habitats and Tangible Incomes (MISHTI) demonstrates the benefits of NBSs by protecting mangroves for flood control, climate adaptation and community well-being. The five-year scheme covers an area of 540 km^2 across India.[32]

Among land-based interventions, sustainable forest management and reducing emissions from deforestation and forest degradation (REDD+), in particular, those that avoid planned deforestation (i.e. instances where forests legally earmarked for logging are conserved) are prominent. This is because these interventions target issues such as deforestation, and forest and land degradation.

These could potentially curtail AFOLU emissions by 0.4 to 5.8 gigatonnes CO2-eq/year.[33] Conserving ecosystems using this approach offers dual benefits of mitigating climate change and providing climate finance for adaptation-based approaches. This approach helps combat climate change, restores vital ecosystems and brings substantial benefits to the communities that subsist on the same ecosystems for their various needs.[34] India's national REDD+ strategy incentivises forest conservation to achieve climate change mitigation.

Ecological restoration is also a key nature-based solution. Nearly 205 gigatonnes of CO2 – two thirds of human-generated emissions since the industrial revolution – can be captured over the next 100 years by planting native species and restoring degraded landscapes.[35]

This demonstrates the potential NBSs hold for carbon sequestration. Transparency, however, is crucial when investing in land-based interventions under carbon market mechanisms. For instance, there should be transparency on metrics such as baseline – the GHG emissions projected to occur in the absence of the proposed action[36] – and the reduction of emissions above those that would have occurred in the baseline.

As part of its efforts to mainstream NBSs for climate action, India launched The India Forum for Nature-based Solutions – a national coalition platform – in 2022. The purpose of the platform is to encourage the use of urban nature-based solutions by bringing together government bodies, entrepreneurs and organisations in the NBS space with an aim to:

- drive investment and collaboration
- establish a common language and guide local action[37]
- mainstream urban ecosystem-based services and nature-based solutions through policy interventions.[38]

Public-private partnerships to meet climate targets

The private sector in India can play a significant role by investing in NBS-specific projects and generating carbon credits either for internal offsetting or for transactions in compliance or voluntary or compliance carbon markets, providing revenue and encouraging further NBS investments. Article 6 of the Paris Agreement provides for voluntary cooperation between two countries to achieve emission reduction targets. Furthermore, while Article 6.2 allows bilateral arrangement, the yet-to-be-finalised Article 6.4 aims to improve upon the erstwhile clean development mechanism of the Kyoto Protocol.[39] Therefore, Indian entities can participate in the international carbon market under various provisions of Article 6 of the Paris Agreement by selling verified credits arising from NBSs. Moreover, the Energy Conservation (Amendment) Bill, 2022, empowers India to establish a carbon credit trading scheme. Such a framework will foster a domestic carbon market which leverages the country's biodiversity[40] and will provide financing avenues for sustainable development.

Active participation of industries is integral to the success of India's carbon market and private players are increasingly recognising the need to address environmental concerns and fulfill investor expectations in this regard. Businesses are adopting frameworks such as the Taskforce on Climate-related Financial Disclosures (TCFD) and the Taskforce on Nature-related Financial Disclosures (TNFD) that help companies assess and disclose their climate-related risks, and take targeted action. TCFD's recommendations are popular among investors who want to measure climate risks. A PwC analysis of 19 large stock exchanges revealed that:

- In 10 of the 19 large stock exchanges, over 50% market value of listed entities was dependent on natural processes, leaving them exposed to nature-related risks, including physical risks such as weather-related events.[41]
- **63%** of the supply chain gross value added (GVA) of the construction industry – the largest industry considered in the study – was highly dependent on nature.
- **77%** of the supply chain GVA of agriculture exhibited dependence on nature while the figure stood at 73% for the food, beverages and tobacco industry.
- **85%** of the supply chain GVA of the forestry sector and 88% of the supply chain GVA of the fisheries and aquaculture were highly nature dependent.[42]

The economic value generated by direct operations from these sectors relies heavily on nature. The recent supply chain disruptions due to droughts in the Panama Canal are an example of nature-related dependencies and risks that may have economic impacts at the global level, even for industries that may have a lower proportion of their operations directly dependent on nature.

As the need to accelerate climate action grows, guidelines and frameworks for nature-based carbon credits are constantly evolving. Robust additionality, baseline, and monitoring, reporting, and verification (MRV) frameworks are crucial for the success of NBS-specific carbon credits and to instill confidence in domestic and international markets.

Addressing challenges in NBS implementation

Widespread implementation of NBS projects would require addressing challenges such as:

- lack of awareness and knowledge gaps
- lack of financing for nature-based projects, and
- land ownership and usage issues.

Encouraging stakeholder engagement and community participation as well as ensuring that the benefits are transferred to local communities can help overcome these challenges. Nature evidently has its inherent complexities and, therefore, using NBSs – be they sourced, derived or inspired – entails figuring out a way to intervene in harmony with the overall ecosystem.

Carbon credits, for one, can incentivise projects that sequester carbon. Developing and implementing supportive regulatory frameworks, providing tax incentives, involving local communities in the planning and execution, and establishing a national carbon market are some of the ways and means of ensuring the success of NBS credits. Therefore, a multidisciplinary approach, effective stakeholder collaboration and management, and adaptive business strategies can ensure the long-term success of nature-based solutions.

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31 Nature-based Solutions. A review of key issues in India

32 https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1914421

33 UNFCCC. (n.d.). REDD+. United Nations Framework Convention on Climate Change. Retrieved from https://unfccc.int/topics/land-use/workstreams/reddplus

34 Ibid.

35 Fischetti, M. (2019, July 4). Massive Forest Restoration Could Greatly Slow Global Warming. Scientific American. https://www.scientificamerican.com/article/massive-forest-restoration-could-greatly-slow-global-warming/

36 Carbon Neutral Protocol

37 https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1838002

38 Ibid.

39 What You Need to Know About Article 6 of the Paris Agreement

40 Arun Venkatraman, (2023), Your Story, Can nature-based solutions help conserve biodiversity in India?

41 https://www.pwc.com/gx/en/issues/esg/nature-and-biodiversity/managing-nature-risks-from-understanding-to-action.html

42 Ibid.