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Nature-based Solutions towards Circular Economy

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The concept of 3R (Reduce, Reuse, Recycle) and circular economy is seen as enablers for improving resource efficiency, sustainable use of resources, sustainable economic growth, and social benefits. Circular economy strategies are believed to hold the key to a resource-efficient, low-carbon, and inclusive future. Essentially, these strategies aim to improve the way we meet our current needs but through the use of lesser resources (particularly natural) and by reducing the environmental impacts, including greenhouse gas (GHG) emissions.

The Climate Crisis Calls for Innovative Comprehensive Solutions

With the climate crisis intensifying, natural disasters are becoming more frequent worldwide. According to the sixth assessment report of the IPCC (2021)¹, the world is likely to be warmer and wetter, with an increase in the frequency and intensity of hot extremes, agricultural and ecological droughts in certain regions, reduction in sea ice and snow cover and permafrost. In South Asia, while summer monsoon precipitation and interannual variability are projected to increase, heatwaves and humid heat stress are projected to be more intense and frequent during the 21st century¹. Never ever than before, it is time we paused, pondered, and learnt from nature, which offers solutions to many of our emergent problems.

Nature-based solutions (NbS) offer an innovative tool in a new circular economy model—and can provide comprehensive solutions for addressing climate change—both mitigation and adaptation. The concept builds on the ecosystem approach, which aims to holistically manage land, water, and other natural resources so as to synergistically promote conservation, restoration, and sustainable use in an equitable manner. NbS provide multiple benefits and can be applied to diverse challenges, including carbon emissions, food and water insecurity, and improving human health and well-being. For instance, pro-nature management of ecosystems can help prevent the emergence of pathogens like COVID-19 as the destruction of biodiversity, habitat and domestication of wild species increases the probability of dangerous pathogens transmitting from wild animals to human beings.

NbS takes various forms, including green and blue infrastructure initiatives like forest and wetland restoration, climate-smart agriculture, agroforestry, and urban forestry. They provide an opportunity to combine the ‘grey’ (built) solutions with ‘green’ in hybrid initiatives. NbS provide a broad spectrum of applications—while they can be used to complement existent grey infrastructures, they are a means to establish ecosystems in the urban environment, forests, coastal wetlands and support the economy and

¹https://www.ipcc.ch/report/ar6/wg1/downloads/factsheets/IPCC_AR6_WGI_Regional_Fact_Sheet_Asia.pdf

livelihoods of people—by provisioning fuel and food creating critical habitats for biodiversity, nurturing better health, creating jobs and providing recreation benefits. This makes NbS a vehicle to facilitate a transition to a circular economy that can support the sustainable management of the environment with a reduced carbon footprint.

NbS in International Agreements

NbS are relevant for multiple Sustainable Development Goals—the most obvious being those that directly address climate and ecosystems issues. They are also relevant for the Sendai Framework, wherein integrating NbS into disaster risk reduction strategies helps alignment with the framework goals. Importantly, NbS have profound relevance for the United Nations Framework Convention on Climate Change—both in terms of climate change mitigation and adaptation. An example of a formal mechanism relying on NbS for climate mitigation under the Climate Change Convention is REDD+ (Reducing Emissions from Deforestation and Forest Degradation)—a climate change mitigation measure. NbS also informs national adaptation plans and the Nationally Determined Contributions, drawn up under the Paris Agreement. Of the 189 intended NDCs submitted to the United Nations, 109 include ecosystem considerations, and 23 countries explicitly refer to ecosystem-based adaptation. While these are the main international Conventions that include decisions on both ecosystem-based adaptation and disaster risk reduction, there are others as well. For example, the Convention on Biological Diversity contains several decisions and a set of voluntary guidelines for the implementation of relevant measures. Further, the United Nations Decade of Ecosystem Restoration² that comes in the wake of the Bonn Challenge calls for restoring 350 million hectares of the world’s deforested and degraded land by 2030. Finally, the United

Nations Convention to Combat Desertification includes elements related to sustainable land management³, a prime example of NbS.

The Paris Agreement addresses both climate change mitigation and adaptation by establishing targets for reducing harmful emissions on the one hand and increasing human well-being on the other. A good example of an initiative designed to support those targets is Europe’s Green Deal⁴, which promotes green jobs covering a range of activities, including recycling, green construction and the development, installation and maintenance of renewable energy sources, and restoration of ecosystems such as wetlands and forests. Indonesia is another country that announced a mid-term development plan⁵ for 2020–2024, aimed at improving the environment, increasing disaster and climate change resilience, and promoting low-carbon emission development. Another example is from Colombia, which has developed an ecosystem-based disaster risk reduction roadmap⁶.

Achieving Multiple Goals with NbS

Including NbS in national plans, strategies and policies can undoubtedly help countries align with and achieve the goals set out in multiple international framework agreements. However, enabling conditions that permit optimal implementation of NbS need to be created. This begins with ensuring that different focal points and departments within the government coordinate to take advantage of synergies. Alternatively, NbS could be facilitated through the introduction of regulatory and financial instruments like in Switzerland⁷, where the federal government incentivises implementation of NbS at the local level and includes laws relating to flood protection and water resource management, as well as avalanche and landslide protection through forest services and biodiversity management.

By integrating NbS into national policies

²<https://www.iucn.org/theme/nature-based-solutions/initiatives/decade-ecosystem-restoration>

³https://wedocs.unep.org/bitstream/handle/20.500.11822/29988/Compendium_NBS.pdf?sequence=1&isAllowed=y

⁴<https://bit.ly/3BqSSmx>

⁵https://www.unescap.org/sites/default/d8files/knowledge-products/WP-20-06_final.pdf

⁶https://www.gfdrr.org/sites/default/files/publication/Analysis_of_Disaster_Risk_Management_in_Colombia.pdf

⁷<https://www.mdpi.com/2079-9276/8/3/121/htm#B52-resources-08-00121>

and programmes, governments can advance their national Sustainable Development Goal agendas and meet multiple international reporting requirements. All of these could be achieved with multiple co-benefits as reported by the World Economic Forum's New Nature Economy Report—an estimated USD 10 trillion of business opportunities and about 395 million

jobs by 2030. NbS thus offers an opportunity to evaluate present growth trajectories holistically so as to balance and regenerate the embedded natural and human capital. The circular economy approach provides the necessary framework and conditions that could be leveraged to attract investments for NbS.

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