



Nature-Based Solutions

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This article is based on **“A climate-resilient future”** which was published in The Indian Express on 20/02/2021. It talks about the concept of Nature-based solutions (NbS) that can help in climate resilience building and resource management.

Five years after the adoption of the Paris Agreement, the signatories are again in the process of revising their nationally determined contributions as they prepare for COP26 that is scheduled for later this year.

Also, with the beginning of the United Nations Decade of Ecosystem Restoration in 2021, an even wider scale of discussions of Nature-based solutions (NbS) for climate change adaptation strategy at COP26 is envisaged.

In this context, the concept of Nature-based solutions (NbS) can help in climate resilience building and resource management.

What Are Nature-Based Solutions?

- Nature-based solutions (NBS) refer to the sustainable management and use of nature for tackling socio-environmental challenges.
- The International Union for Conservation of Nature (IUCN) defines NbS as actions to protect, sustainably manage and restore natural and modified ecosystems that address societal challenges effectively and adaptively, while simultaneously providing human well-being and biodiversity benefits.
- It is further associated with other sector-specific terms like green infrastructure, natural infrastructure, ecological engineering, ecosystem-based mitigation, ecosystem-based adaptation, and ecosystem-based disaster risk reduction.
- NbS creates harmony between people and nature, enables ecological development, and represents a holistic, people-centered response to climate change.

- Also, NbS are an essential component of the overall global effort to achieve the goals of the Paris Agreement on Climate Change.
 - In its essence, Article 5.2 of the Paris Agreement recognizes the importance of natural resources in climate change mitigation and adaptation strategies.
 - Article 7 further promotes the idea of building the resilience of socioeconomic and ecological systems through economic diversification and sustainable management of natural resources.

Example of Nature-Based Solutions

- **Helping Local People:** NbS has been very successful in helping local people to deal with the impacts of climate change, improving ecosystem services, and storing carbon. For example, the restoration project in the Lake District National Park, United Kingdom was successful in improving not just the local biodiversity but also brought with it revenue generation by way of increased tourism.
- **NbS for Disaster Reduction:** Restoration or protection of mangroves along coastlines utilizes a nature-based solution to accomplish several things.
 - Mangroves moderate the impact of waves and wind on coastal settlements or cities and sequester CO₂.
 - They also provide safe nurseries for marine life that can be the basis for sustaining populations of fish that local populations depend on.
 - Additionally, the mangrove forests can help control coastal erosion resulting from sea-level rise.
- **Addressing Urban Issues:** In addition to NbS being used for restoring ecosystems, it can also be used in combination with man-made infrastructure in cities to benefit human health and urban biodiversity.
 - Similarly, in cities, green roofs or walls are nature-based solutions that can be used to moderate the impact of high temperatures, capture stormwater, abate pollution, and act as carbon sinks, while enhancing biodiversity.
 - Creating permeable lesser concrete areas to help replenish groundwater in regions facing water scarcity.
 - Large hotels and resorts can effectively pioneer solutions such as artificial wetlands for water recycling, which would also add to the local landscape's aesthetics.

Need For NbS

Climate change presents one of the greatest challenges to mankind today. Both cities and natural ecosystems have the most to lose as far as climate change impacts are concerned.

- **Growing Vulnerabilities of Cities:** The vulnerability of cities, in particular, is further aggravated by added complexities of land-use change, the density of population, increased concretization, social inequalities, poor air quality, and several other associated issues.

This poses a serious challenge to human health, social well-being, and quality of life, especially for the underprivileged classes of society.

- **Risk to Natural Ecosystem:** Natural ecosystem losses such as loss of biodiversity, depletion of water resources, etc. have similarly been well documented.

To overcome or minimize the impacts of climate change, the idea of local-led adaptation has been widely discussed, which directs us to NbS.

Local-led Adaptation

- Local-led adaptation refers to local communities, local governments acting strong in taking effective decisions to tackle climate change.
- Local-led adaptation is often characterized by indigenous solutions, which are often associated with nature.
- Given that the most vulnerable populations are the ones that are more dependent on natural resources, it is, therefore, to be expected that coping solutions also often germinate from the same source.

Challenge to NBs

- **Highly Context-Specific:** NbS are highly contexted specific, and their effectiveness is also uncertain under changing climatic conditions. While natural ecosystems are affected by changing climate, their effectiveness in future climate scenarios is questionable.
- **Need For Huge Finances:** Apart from the uncertainties revolving around the NbS, securing a continuous flow of investments is an added challenge.

According to a report by United Nations Environment Programme (2020), an investment of \$140 billion to \$300 billion annually by 2030, rising to between \$280 billion and \$500 billion by 2050 might be required to finance NbS globally.

Implementing NbS

IUCN released a global standard including a set of criteria and associated indicators for implementing NbS, addressing sustainable development goals and resilient project management.

To illustrate these criteria for decision-making prior to implementation, we take the example of the restoration of a hilly area using NbS. This area once mined excessively for mineral resources; is now susceptible to soil erosion, landslides, and increased climate risk.

- Restoring such an area would address more than one societal challenge.

- The scale of the design of the restoration program needs to be estimated.
- Further, whether or not the planned restoration will improve the biodiversity of the region and is economically workable needs to be checked as well.
- For inclusive governance, the plantation of plant species must be carried out in consultation with local stakeholders as they are the ultimate caretakers of the plantation.
- While we're restoring the area, it might cause an improvement in the region's biodiversity, it may also result in the loss of playgrounds for children.
- However, such trade-offs must be thought of in advance, mutually agreed upon and maintained throughout the time. To meet the seventh criterion, the restored area must be maintained, studied, and effectively documented to support future decision-making.
- The global NbS standards should highlight the importance of replicating workable solutions in similar environments.

Conclusion

If we can address the complexities revolving around NbS along with securing sustainable investment, we might develop a climate-resilient future in addition to protecting, conserving, and restoring our natural environment.

Drishti Mains Question

Nature-based solutions can help in protecting, conserving, and restoring our natural environment. Discuss.
