Enhancing Synergies through Nature-based Solutions

Philippines-Japan Environment Week

Innovative financial solutions for nature

January 2025

Climate Change Adaptation

Climate change adaptation refers to the process of adjusting to the actual or expected impacts of climate change in ways that minimize harm or exploit beneficial opportunities.

Key Objectives of Climate Adaptation:

1. **Reduce Vulnerability**: Minimize exposure to climate-related hazards.
2. **Enhance Resilience**: Strengthen the capacity of systems to absorb and recover from climate shocks.
3. **Sustain Ecosystems and Livelihoods**: Protect biodiversity and support human well-being in the face of changing conditions.
4. **Foster Long-Term Sustainability**: Align adaptation efforts with broader sustainability and development goals.

Biodiversity Conservation

The main underlying cause of the biodiversity crisis is our highly extractive, wasteful, and polluting economy

Land and sea use change	Overexploitation	Climate change	Pollution	Invasive alien species
Human actions have significantly altered 77% of land and 87% of the area of the ocean. The loss of 83% of wild mammal biomass, and half that of plants, are linked to these vast changes.	In 2019, humanity was using nature and its resources at rates 1.75 times faster than the planet's ecosystems can regenerate.	Human actions have warmed the globe by more than 1°C compared to pre-industrial levels, and climate change has negatively affected nearly half of threatened terrestrial mammals and a quarter of threatened birds.	Approximately 11 million tonnes of plastic are dumped into the world's oceans each year . Other pollutants, such as those from industrial, mining and agricultural activities, have strong negative impacts on soil, freshwater, and marine water quality, disrupting vital habitats.	Since 1980, cumulative records of alien species have increased by 40%, with plant and animal invasions posing a risk to nearly a fifth of the Earth's surface, impacting native species and ecosystem functions.

Source: Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) / Ellen Macarthur Foundation

Climate Adaptation Linked to Circular Economy

Climate adaptation strategies and the circular economy are interlinked, as both aim to build resilience, reduce resource dependency, and minimize waste.

- **Resource efficiency:** Water recycling systems.
- **Waste to resources innovation:** Biogas, insect protein.
- **Incentivising sustainable design:** Incorporating circular principles in nature based solutions.
- **Ecosystem based adaptation practices:** Mangrove restoration.
- **Promoting renewable energy systems:** including recycling renewable energy assets.
- **Sustainable agricultural practices:** Biochar.
- **Multi-stakeholder collaboration:** Co-operatives, public-private partnerships.

Circular Economy

REDUCE REUSE RECYCLE

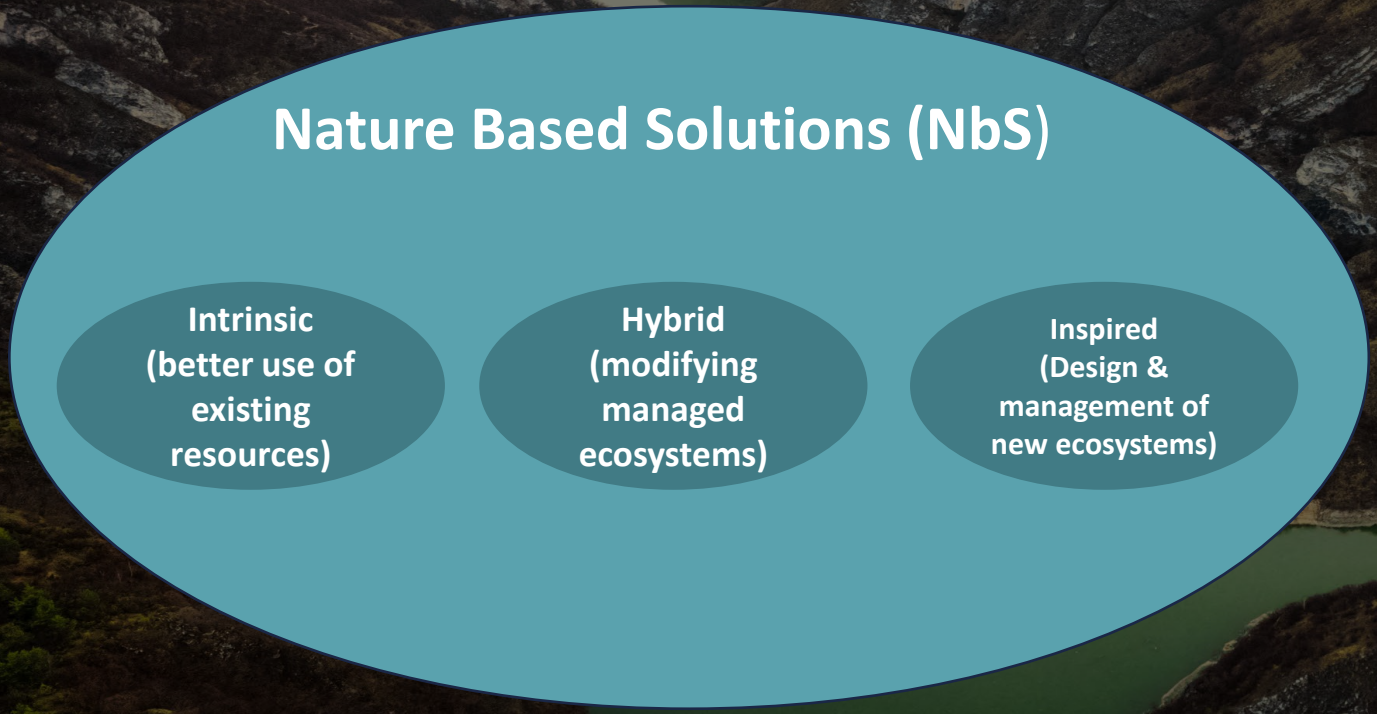
The circular economy tackles the five key direct drivers of biodiversity loss:

- It reduces the amount of land needed to provide resources to the economy **(addressing changes in land and sea use)**
- It manages renewable resources such as fish stocks for the long term **(addressing direct exploitation of organisms and natural resources)**
- It reduces greenhouse gas emissions across the economy **(addressing climate change)**
- It designs out pollution at every stage of a product's life cycle **(addressing pollution)**
- It designs out the waste on which invasive alien species can be transported to new ecosystems **(addressing invasive alien species)**

Source: Ellen Macarthur Foundation

Nature-based Solutions (NbS)

NbS incorporates the principles of circular economy in its design phase and aims to address the drivers of biodiversity change and enhance climate adaptation.



Make better use of existing nature: no or minimal intervention in existing ecosystems

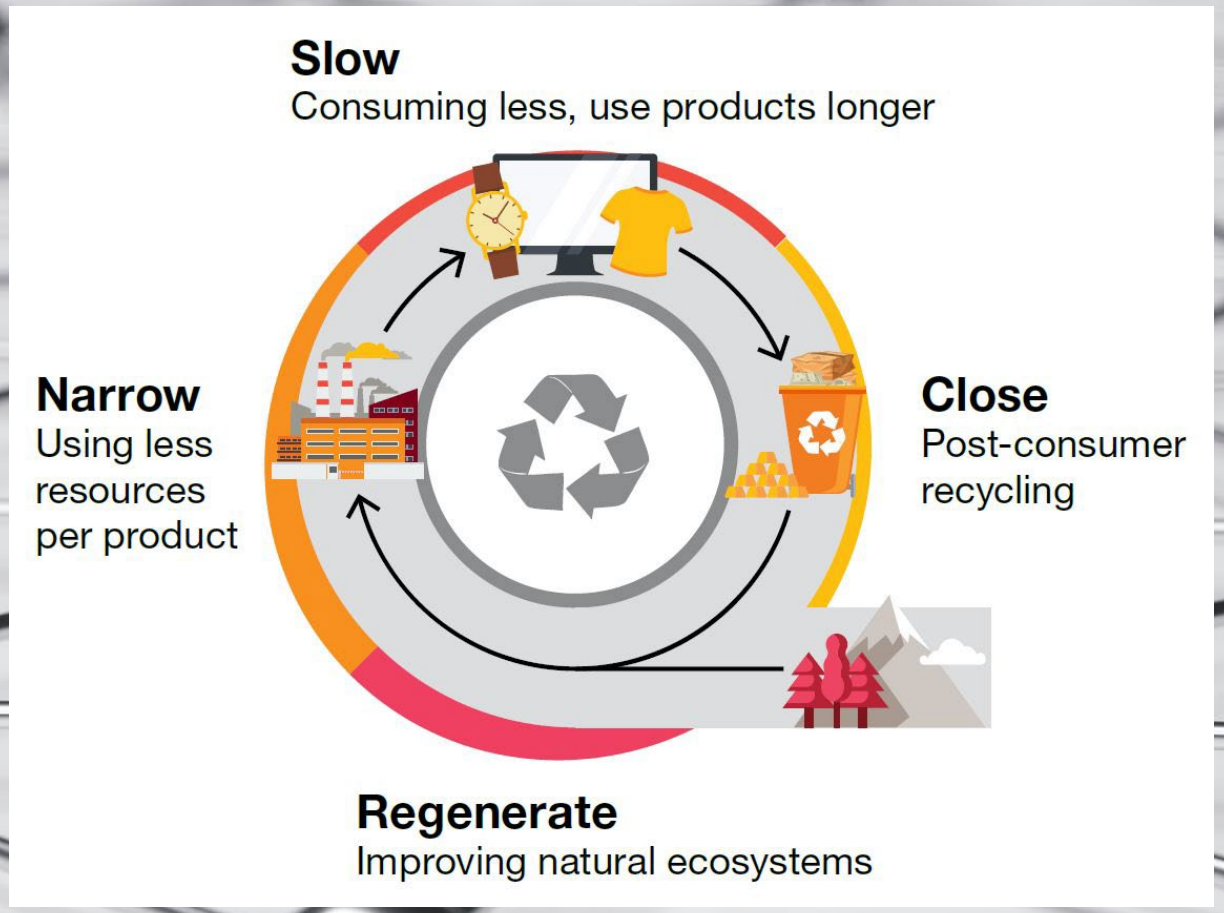
Modifying existing ecosystems: moderate intervention

Learning from nature: modifying managed or restored ecosystems: high intervention

Source: Wageningen University

NbS Business Models

Four Adaptation Strategies and Related Business Models



Source: Bocken, N., Stahel, W., Dobrauz, G., Koumbarakis, A., Obst, M., & Matzdorf, P. (2021)

IUCN Global Standard for NbS

The IUCN Global Standard 'aims to equip users with a robust framework for designing and verifying NbS that yield the outcomes desired, in solving one or several societal challenge(s)'

It recommends eight criteria for NbS:

- NbS effectively address societal challenges.
- Design of NbS is informed by scale.
- NbS result in a net gain to biodiversity and ecosystem integrity.
- NbS are economically viable.
- NbS are based on inclusive, transparent and empowering governance processes.
- NbS equitably balance trade-offs between achievement of their primary goal(s) and the continued provision of multiple benefits.
- NbS are managed adaptively, based on evidence.
- NbS are sustainable and mainstreamed within an appropriate jurisdictional context.

Source: IUCN

NbS Best Practice Guidelines

Guidelines for sustainable, successful NbS were developed in February 2020 by a consortium of 20 UK-based organisations, as a letter to the then incoming President of CoP26, Alok Sharma, to encourage adoption of the guidelines by other Parties to the UN Framework Convention on Climate Change. In May 2020, the guidelines were adopted by the Together With Nature campaign, a call to corporate leaders to commit to four principles for investing in nature-based solutions. They are complementary to the IUCN standard.

- NbS are not a substitute for the rapid phase-out of fossil fuels and must not delay urgent action to decarbonize our economies.
- NbS involve the protection, restoration or management of a wide range of natural and semi-natural ecosystems; the sustainable management of aquatic systems and working lands; or the creation of novel ecosystems in and around cities or across the wider landscape.
- NbS are designed, implemented, managed and monitored by or in partnership with Indigenous peoples and local communities through a process that fully respects and champions local rights and knowledge, and generates local benefits.
- NbS support or enhance biodiversity, that is, the diversity of life from the level of the gene to the level of the ecosystem.

Source: University of Oxford – Nature Based Solutions Initiative

Black Soldier Fly/ Alternative Protein: Tanzania

LOCAL PROJECT OPERATOR

Chanzi[1]

PARTNERS

1. Dutch Fund for Climate and Development (DFCD) / WWF
2. UNDP
3. Private-sector investors

PROJECT SUMMARY

Chanzi, founded in Tanzania, uses Black Soldier Fly (BSF) larvae to convert food waste into nutritious protein for animal feed and organic fertiliser, reducing the dependence on overfishing and soya bean farming. Chanzi developed a homegrown technology, which is customised for the local situation and is very cost-competitive.

Currently operating in Tanzania and Kenya, it is planning to expand its operations across more countries and production sites.

It is using grant funds to invest in R&D, set up a Carbon Credit Methodology and develop biochar as a new product.

Chanzi covers multiple SDGs, with a core focus on deforestation and food security.

Key contributions to the national adaptation plan

- Food security
- Reducing deforestation for agriculture
- Circular economy
- Pollution and disease control
- Enhanced soil quality & resilience
- Socioeconomic adaptation

Key contributions to the SDGs

SDG indicators impacted	Project outcomes monitored and evaluated
Higher yields for small farmers	Number of farmers impacted
Unemployment rate	Jobs generated
Emissions avoided	Tonnes of methane and CO2 avoided
Land area under sustainable management	Area conserved due to sustainable management

(1): https://www.chanzi.co/

Locally-managed MPA and artificial coral reefs: Indonesia

LOCAL PROJECT OPERATOR

Pemuteran Bay Coral Protection Foundation, Bali[1]

PARTNERS

1. Pemuteran village
2. Global Coral Reef Alliance
3. UNDP and other NGOs

PROJECT SUMMARY

The Pemuteran Bay Coral Protection Foundation aims to address the collapse of local fish stocks by implementing artificial coral reefs and creating a locally-managed Marine Protected Area (MPA) to restore marine biodiversity.

Biorock corals have been shown to grow three to five times more quickly than natural coral and are also more resilient to the effects of temperature fluctuations, with coral survival rates between 16-50 times higher.

Biorock corals reduce beach erosion and disaster impact. Fish populations have been replenished along with the coral reefs leading to increased food security for the local population. Marine biodiversity has increased significantly leading to higher eco-tourism - increasing local incomes.

Key contributions to the national adaptation plan

- Food security
- Increased climate resilience
- Improved marine resources management
- Reduced marine pollution
- Increased biodiversity
- Socioeconomic adaptation

Key contributions to the SDGs

SDG indicators impacted	Project outcomes monitored and evaluated
Poverty ratio	Local community income
Food security	Improving fishing catch
Unemployment rate	Employment opportunities created
Rebuilding marine biodiversity	Area conserved as Marine Protected Area

(1): https://www.biorock-indonesia.com/en/

Sustainable Coffee Farming: Laos

LOCAL PROJECT OPERATOR

Slow Coffee [1]

PARTNERS

1. SystemIQ
2. P4G
3. Lombard Odier

PROJECT SUMMARY

Slow Coffee is working with 150+ smallholder coffee farmers in families in Laos since 2018 and has introduced shade-grown coffee species and agroforestry techniques to climate-vulnerable communities.

The Slow Forest farmers are supported by an on-the-ground team, consisting of coffee growing and community engagement experts and forestry experts. Slow guarantees a fixed minimum price, compatible with Fairtrade standards, and assists farmers in obtaining organic certification from the EU, which can lead to higher coffee prices. Roasting is done in Copenhagen and Helsinki. It is looking to expand this model into Vietnam.

A more recent part of Slow Coffee's business is Krakakoa Chocolate – which works with Indonesian cocoa farmers in a similar model.

Key contributions to the national adaptation plan

- Micro-climate control
- Biodiversity conservation
- Improved climate resilience
- Agri-based employment generation
- Enhanced soil quality
- Socioeconomic adaptation

Key contributions to the SDGs

SDG indicators impacted	Project outcomes monitored and evaluated
Reduced poverty	Increase in smallholder farmer income
Inclusive economic growth	Employment generation
Sustainable agriculture	Area under sustainable practices
Community and global partnerships	Number of farmer families impacted

(1): https://www.slowforest.com/

Coastal Mangrove Restoration: Bangladesh

LOCAL PROJECT OPERATOR

Community based organisations [1]

PARTNERS

1. UNDP
2. GEF
3. Swiss Agency for Development and Cooperation

PROJECT SUMMARY

The Community Based Adaptation to Climate Change through Coastal Afforestation (CBACC-CF) program is the first Bangladesh National Adaptation Programme of Action (NAPA) project under the GEF-UNDP portfolio, implemented by the Government of Bangladesh in four coastal districts.

The initiative primarily consists of reforesting the coastline with various species of mangroves, interspersed with timber and fruit trees, following the 'Forest, Fish, Fruit' (FFF) model.

9,650 hectares of new mangrove plantations made up of 10 key mangrove species were established to reduce the impact of cyclones, flooding, coastal erosion, saline intrusion and sea-level rise. It also supports innovative land management and livelihood diversification strategies for local stakeholders.

Key contributions to the national adaptation plan

- Reduced coastal erosion
- Biodiversity conservation
- Improved resilience for cyclones
- Food Security
- Better land management
- Socioeconomic adaptation

Key contributions to the SDGs

SDG indicators impacted	Project outcomes monitored and evaluated
Food security	Number of households affected
Gender equality	Number of women beneficiaries
Unemployment rate	Employment opportunities created
Community partnerships	Number of Community Management Committees

(1): https://unfccc.int/climate-action/momentum-for-change/activity-database/community-based-adaptation-to-climate-change-through-coastal-afforestation-cbacc-cf-project-in-bangladesh

Push-pull biological control for maize production: Kenya

LOCAL PROJECT OPERATOR

Community based organisations[1]

PARTNERS

1. Kenyan Government
2. FCDO/ SIDA/NORAD
3. International Centre of Insect Physiology and Ecology, several universities

PROJECT SUMMARY

The 'push-pull' system has been widely implemented in Kenya to reduce loss of maize to pests, leading to increase in yields and net income, and a concurrent reduction in the incidence of poverty.

It works by incorporating different native grasses and legume fodder species into the agro-ecosystem, alongside maize, to simultaneously deter and distract pests to reduce pest damage on maize. In addition to providing insect control, the push and pull plants can be fed to livestock.

Average yields of maize were 1573 kilograms per acre in the plots using the push-pull technique, compared with 930 kilograms per acre without. It also resulted in higher milk production from the cows and average income increases of 39%.

Key contributions to the national adaptation plan

- Food security
- Livestock management
- Improved crop yields
- Natural solutions for pest control
- Enhanced soil quality & resilience
- Socioeconomic adaptation

Key contributions to the SDGs

SDG indicators impacted	Project outcomes monitored and evaluated
Food security	Increase in crop yields
Better livelihoods	Rise in income levels
Sustainable Agriculture	Less use of pesticides
Partnerships	Number of partnerships with communities

(1): https://www.sciencedirect.com/science/article/pii/S0264837717312693?via%3Dihub