

Briefing · October 2024

Risks and opportunities for nature-based solutions in Latin America and the Caribbean

Key points

- Nature-based solutions (NbS) are actions that aim to address societal challenges through the protection, management and restoration of ecosystems, such as restoring wetlands, forest conservation and developing green infrastructure. NbS are seen as a way to simultaneously tackle climate change and biodiversity loss.
- 62% of governments had incorporated NbS into their Nationally Determined Contributions (NDCs) as of 2020, including countries in Latin American and the Caribbean.
- Studies estimate that NbS could mitigate around 10–12 billion tonnes of CO₂ equivalent per year – 27% of the current annual GHG emissions – but meeting this potential would mean reforestation, restoring and changing practices over huge areas of land, much of which would be located in the Global South.
- NbS do not address the source of fossil fuel emissions and are not enough to limit global warming to below 2°C. The concept has been criticised for distracting from the need for action to reduce emissions.
- NbS is a broad term and some nature-based projects come with significant risks and trade-offs, including biodiversity loss and increasing risk of land grabs. Projects have disregarded the rights and knowledge of Indigenous and local communities and raised human rights concerns.
- To be successful, solutions should be based on local knowledge systems and address local concerns, seek the engagement and consent of local and Indigenous communities, and provide clear, measurable benefits for ecosystems.

What are Nature-based solutions?

In 2024, the World Economic Forum (WEF) rated biodiversity loss and ecosystem collapse as [one of the top five risks over the next 10 years](#), requiring urgent attention. One type of response has generated much attention: Nature-based solutions (NbS). The term [emerged during the late 2000s](#) – it was [used by the World Bank in 2008](#) and [adopted the same year](#) by the International Union for Conservation of Nature (IUCN). The IUCN defines NbS as [“actions addressing key societal challenges through the protection, sustainable management and restoration of both natural and modified ecosystems](#), benefiting both biodiversity and human well-being”.

The concept of NbS emerged as international institutions aimed to [address and mitigate the effects of climate change](#) by working with ecosystems, rather than through conventional engineering projects, enhance sustainable livelihoods and preserve ecosystems and biodiversity. The NbS framework was significant because it recognised that [people are not just passive beneficiaries of nature’s services](#) – they can actively engage in protecting, managing and restoring natural ecosystems to help overcome various challenges.

[Natural climate solutions](#) is a similar but narrower term, explicitly referring to NbS that focus on climate mitigation.

Some [examples of NbS](#) outlined by IUCN include:

- The restoration and sustainable management of wetlands and waterways, to help enhance fish stocks, support livelihoods, lower flood risks and support recreation and tourism.
- Forest conservation to protect biodiversity, help with climate adaptation and mitigation, improve food and energy security and support local incomes.
- Restoring drylands to improve water security, reinforce local livelihoods and climate resilience.
- Developing green infrastructure in urban areas¹ to enhance air quality, water quality and wastewater treatment, reduce stormwater runoff, and enhance the quality of urban life.
- Employing natural coastal defenses, like barrier islands, mangrove forests, and oyster reefs, to shield shorelines from flooding and mitigate the impacts of rising sea levels.

As of 2020, two-thirds of countries recognised in their Nationally Determined Contributions (NDCs) that [ecosystems are vulnerable to climate change](#) and [62% included ecosystem-based approaches to adaptation, or conservation actions](#). However, [measures to implement NbS](#) for climate change adaptation differed significantly based on economic development, region and habitat type.

Challenges with the definition of nature-based solutions

'Nature-based solutions' is a very broad concept. One of the main criticisms of the concept is that [its definition is too vague](#) and does not clarify which types of projects count as NbS, meaning nature-based actions that damage ecosystems and local communities can be labelled as NbS. For example, protected natural areas that encroach on the actions and land rights of local and Indigenous communities.

The concept does not make any reference to who and what are creating the problems that NbS seek to solve, while the focus on nature as a 'solution' suggests that [nature's value is solely based on its utility to humans](#) rather than acknowledging it for its own sake.

Implementing NbS with clear standards and evaluation criteria is essential to ensure their quality and integrity. [WWF advocates](#) using the [2020 IUCN Global Standard for Nature-based Solutions](#). The framework provides 28 indicators that guide the design and implementation of NbS, "in a way that allows nature to deliver its valuable ecosystem services," as well as measuring impact.

Nature-based solutions vs. ecosystem-based approaches

NbS is an [umbrella concept](#) encompassing a wide range of ecosystem-related actions that address societal challenges. The definition of NbS from the [Convention on Biological Diversity \(CBD\)](#), for example, indicates that NbS "are broader than ecosystem-based approaches and include benefits for biodiversity, water quality/quantity, sustainable land management, etc."

[Ecosystem-based approaches \(EbA\)](#), or [ecosystem-based adaptation](#), refers to when biodiversity and ecosystem services are used as part of a climate change adaptation

¹ For example, "[green walls, roof gardens, street trees, vegetated drainage basins](#)".

strategy. [EbA is a subset of NbS](#) focused specifically on using nature to adapt to climate change. According to CBD, EbA “may refer to a wide range of ecosystem management activities to [increase the resilience and reduce the vulnerability of people and the environment](#), including to climate change and disasters.”

According to the WWF, although NbS should be considered a broader tool than EbA and both have their own objectives, [they can be complementary and mutually supportive](#).

Nature-based solutions in Latin America and the Caribbean

Countries in Latin America and the Caribbean (LAC) are integrating NbS by [embedding ecosystems and their services into their revised NDCs](#). As of 2022, 10 of the 16 EUROCLIMA+ programme countries in LAC² explicitly adopt an NbS or EbA approach,³ highlighting the growing prevalence of these strategies in climate targets. A smaller group (6 out of 16)⁴ do not explicitly reference these approaches but still incorporate nature in their climate commitments.

Forest conservation and reforestation are NbS that facilitate carbon sequestration, reduce vulnerabilities to extreme weather events such as droughts and floods, and simultaneously protect biodiversity. [Costa Rica, Chile, Colombia, Mexico and Panama have widely highlighted forest actions in their updated NDCs](#), while Argentina, the Dominican Republic, Honduras and Nicaragua outline similar policies as EbA.

In addition to land-based solutions such as planting forests and changing agricultural practices, [NbS efforts in the region include](#) coral reef and mangrove restoration to strengthen coastal resilience, adding vegetation on slopes to prevent landslides, and encouraging permeable green spaces to recharge groundwater.

A 2016 projection⁵ estimated that restoring 20 million hectares of degraded lands in LAC – equivalent to around half the surface area of Paraguay⁶ – would generate USD 1,140 per hectare, or around USD 23 billion over a 50-year period. This amount is equivalent to the [climate finance received by the ten countries most affected by climate change](#) between 2000 and 2019. Gains would come from timber and non-timber forest products, ecotourism revenues, increased agricultural productivity, carbon capture, and the avoided losses from food insecurity.

A study [by the Inter-American Development Bank \(IDB\) and World Resources Institute \(WRI\)](#) looked at 156 NbS projects across LAC in 2020. Just under half of the NbS projects (47%) were operational, meaning they had moved beyond the initial pilot phase, with the other half (53%) in preparation and not yet implemented, implying they were still seeking funding or financing. Nearly 75% of these projects rely on grants as a key part of their funding, and 60% are actively seeking further investment or financing. Money provided as grants does not accumulate interest, so projects financed in this manner do not contribute to national debt.

² The [EUROCLIMA+ Programme](#) “supports countries in the formulation and implementation of their NDCs”. It is funded by the EU and other EU countries. This study analysed 16 countries: Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, the Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Paraguay and Peru.

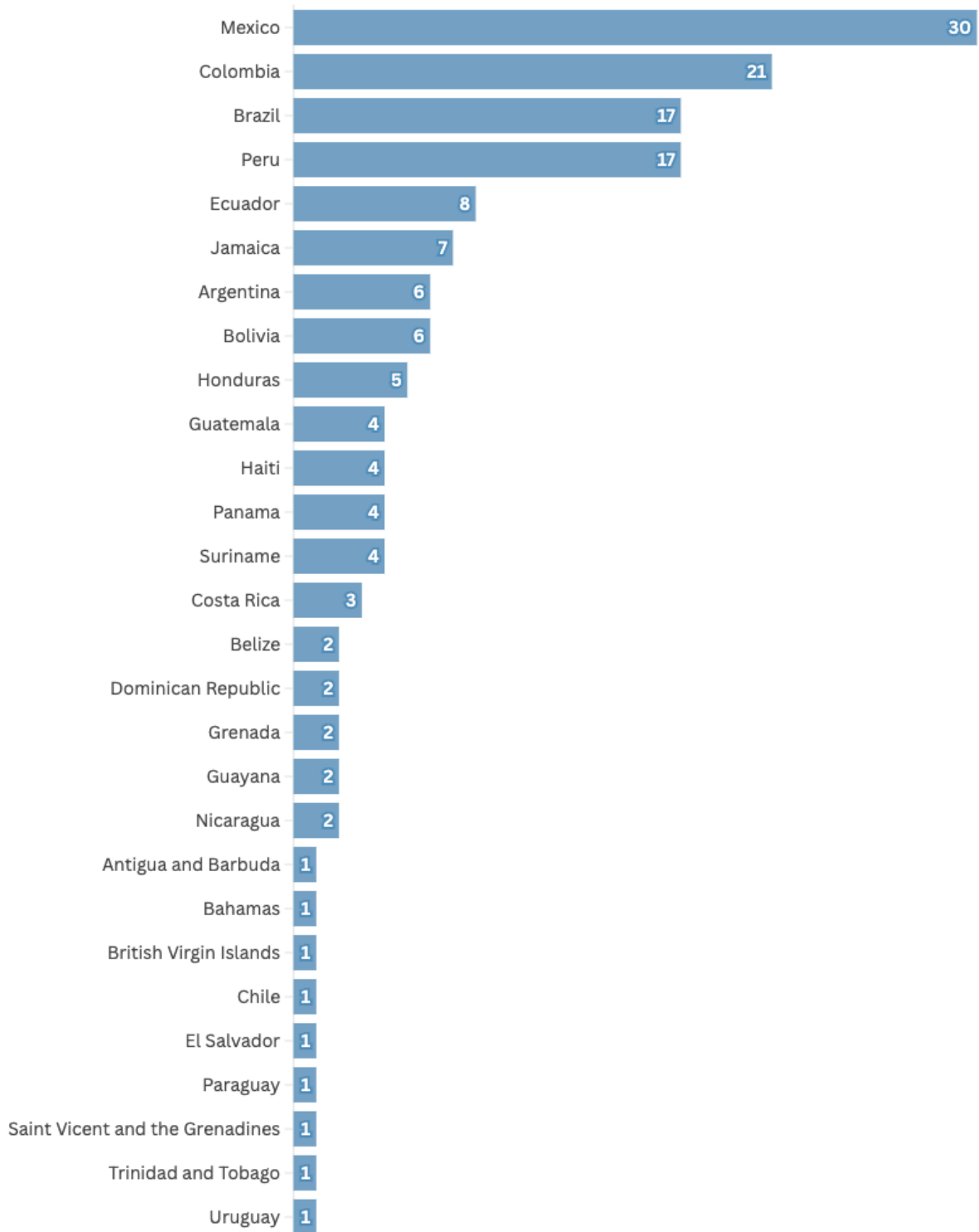
³ Argentina, Chile, Colombia, Costa Rica, Guatemala, Honduras, Mexico, Paraguay, Panama and the Dominican Republic.

⁴ Bolivia, Brazil, Cuba, El Salvador, Nicaragua and Peru.

⁵ Vergara, Walter, Luciana Gallardo Lomeli, Ana Ríos, Paul Isbell, Steven Prager, and Ronnie De Camino. ‘El Argumento Económico Para La Restauración de Paisajes En América Latina’. World Resources Institute (WRI), 2016, 5.

⁶ Estimated surface area of Paraguay is 40.7 [million hectares](#).

Fig. 1: Projects using NbS in Latin America and the Caribbean (2020)



Source: Zero Carbon Analytics Analysis, Inter-American Development Bank and World Resources Institute • The IDB and WRI's 2020 study identified a total of 156 projects that use NbS in LAC.



Nature-based solutions, decarbonisation and ecosystem protection

Several studies estimate that NbS could mitigate around [10–12 billion tonnes of CO₂ equivalent \(GtCO₂e\) per year](#) by 2050, potentially reducing peak global warming by [approximately 0.3°C](#). This means that NbS projects could mitigate up to [27% of global annual emissions](#) through the protection or restoration of different ecosystems, such as forests and oceans.

Despite this, a significant gap would remain between the approximately [40 GtCO₂ emitted annually](#) from fossil fuel combustion and land-use change and the amount of carbon that NbS can mitigate or capture. This highlights the need for broader climate action to reduce emissions alongside NbS. The timescales projected for most NbS [extend beyond the immediate need](#) for atmospheric CO₂ reductions and the UN Environment Programme (UNEP) recognises the limitations of the concept, stating that [the tool cannot “replace rapid, deep and sustained reductions in greenhouse gas emissions.”](#)

Nature can [contribute towards climate adaptation](#). For example, mangroves reduce annual flooding for [over 18 million people](#) worldwide, preventing up to [USD 82 billion in flood damage annually](#).

[Biodiversity-rich ecosystems](#) are more resilient, providing more robust protection against the impacts of a changing climate. Since [climate change and biodiversity loss share many underlying causes](#), some solutions could tackle both issues simultaneously. For example, preserving ecosystems that store carbon while supporting native species.

To promote NbS's ability to tackle the climate and biodiversity crises, [well-regulated financial markets](#) are key in mobilising funding for place-based NbS initiatives. However, in 2022, UNEP estimated that [annual finance flows to NbS amounted to USD 154 billion](#), less than half of the USD 384 billion annually required by 2025, and only a third of the USD 484 billion per year needed by 2030.

Potential benefits of nature-based solutions in LAC

Climate-related natural disasters in LAC have increased [threefold over the past 50 years](#), resulting in severe impacts on health, ecosystems and economies. In lower-income countries in the region, these disasters can diminish GDP by 0.9% and damage can reach up to 3.6% in the Caribbean.

The LAC region is one of the [most biodiverse areas in the world](#), but its natural resources are continually being exploited. Ecosystem degradation [increases vulnerability to natural disasters](#), drives up costs, disrupts essential services, raises the risk of infrastructure damage and endangers populations. NbS are being suggested as one way to help address the challenges imposed by climate change in LAC. For example:

- LAC lost more tropical primary forest than any other region globally in 2019, with [Brazil, Bolivia, Colombia and Peru](#) among the top 10 countries worldwide for primary forest loss. Between 2002 and 2022, deforestation in the Amazon resulted in the loss of [30.7 million hectares of primary forest](#), an area bigger than Italy. Deforestation in the Amazon is [altering hydrological patterns](#) and jeopardising water supplies.
- [Glaciers in the tropical Andes](#) have been retreating over the past several decades, temporarily boosting downstream water supply during the dry season. This retreat threatens ecosystem balance with a [reduction in water availability](#) that impacts sectors such as export-oriented agriculture, mining, hydropower, tourism, and

human consumption. NbS can enhance water security and build resilience to climate-related shocks, for example by [integrating them with traditional infrastructure projects](#).

- Approximately 11% of the world's coral reefs are located in this region, primarily along the Central American coastline and around the Caribbean islands.⁷ [70% of the world's coral reefs](#) experienced damaging levels of heat stress between 2014 and 2017. The degradation of the Mesoamerican Reef – the second-longest barrier reef in the world, located on the coast of Belize, Guatemala, Honduras and Mexico – could result in an average annual economic loss of [USD 3.1 billion](#) to the tourism, commercial fisheries and coastal development sectors.
- LAC hosts approximately [26% of the world's mangrove forests](#), but these ecosystems are in jeopardy due to habitat fragmentation and overexploitation. [Mangrove forests protect coastlines](#) by breaking waves and preventing coastal erosion and storm surges, protecting low-lying coastal communities that are particularly vulnerable to the effects of sea-level rise. Additionally, they help mitigate climate change, as one [hectare of mangroves can store up to 3,754 tons of carbon](#).

Drawbacks and trade-offs of nature-based solutions in LAC

Although NbS can contribute to climate mitigation and the protection of ecosystems, the potential impacts of such solutions are limited and must be implemented alongside other actions to swiftly and substantially reduce emissions.

Nature-based projects can also present significant risks and trade-offs for local ecosystems, and local and Indigenous communities.

Impacts on biodiversity and land security

The IPCC Special Report on Climate Change and Land (SRCCL) indicated that solutions for reducing land-use emissions, like new plantations, [may increase the demand for land](#), which could lead to “adverse side effects for adaptation, desertification, land degradation and food security.” For NbS to mitigate [10 billion tonnes of CO2 equivalent](#) per year, land use practices would need to change over huge areas: [Ecosystem destruction would need to be stopped globally](#), including preventing 270 million hectares of deforestation, 678 million hectares of ecosystems would need to be restored – an area more than twice the size of India – and the management of 2.5 billion hectares of land would need to be improved by mid-century.

The [majority of this land is expected to be in the Global South](#), including the land used for afforestation, soil carbon sequestration in croplands and grasslands, and bioenergy. This could mean [major disruptions to land and water](#), and to nitrogen and phosphorus stocks and flows resulting from extensive fertiliser use from new plantations.

[NbS could lead to the expansion of large monoculture plantations](#), impacting biodiversity. Establishing new tree plantations, instead of restoring primary vegetation, has [negative ecological consequences](#). A study has shown that [pressure against biodiversity is greater inside protected areas](#) compared to unprotected ones. These new forestations may sow [fast-growing and non-native species](#) that are more susceptible to fires, consume more water and are harvested in a few years, [quickly returning captured carbon back to the atmosphere](#).

⁷ It is estimated that [0.47% is based in Brazil](#), [10.17% in the Caribbean](#) and [0.3% in the Eastern Tropical Pacific](#). This last region includes part of the Gulf of California that is not considered LAC.

Friends of the Earth International warns that alongside an increase in monoculture plantations, [NbS could lead to extensive land grabs](#). NbS that involve forests (as with many other tools for mitigation of climate change) raise the risk of [a wave of land grabs](#) disguised as climate action and biodiversity protection. Land grabs [pose a significant threat to local food sovereignty, particularly for the small-scale producers](#) who provide [70% of the world's food](#).

Impacts on local and Indigenous communities and human rights

NbS are often criticised for [not aligning with the “wisdom, cosmology, traditional knowledge and sustainable livelihoods” of local communities and Indigenous Peoples](#), overlooking critical cultural and ecological perspectives held by these communities.

The expansion of plantations and land grabs [results in human rights violations](#), particularly for Indigenous Peoples, local communities and other rural populations. Survival International reports that, the creation of protected areas globally has [displaced Indigenous and local communities from their lands](#) and restricted their access to essential resources, food, and medicine they traditionally relied on from those areas. In turn, [undermining local and Indigenous land rights from protected areas can have a negative impact on biodiversity](#) by allowing for encroachment and disrupting sustainable practices.

Current safeguards are not enough. [Only a third of National Biodiversity Strategies and Action Plans \(NBSAPs\)](#) presented by each CBD party have provisions to enhance Indigenous Peoples and local communities' rights. The IUCN Standard for NbS includes a [human rights indicator](#) that establishes that “The rights, usage of and access to land and resources, along with the responsibilities of different stakeholders,” should be “acknowledged and respected.” However, these [safeguards are voluntary](#), and compliance can be self-assessed. As a result, adding these 'safeguards' to NbS offers little reassurance.

The [absence of Free, Prior, and Informed Consent \(FPIC\)⁸ and human rights references in the design of carbon market activities](#) has raised concerns that this could force already marginalised Indigenous communities to be evicted – communities who are also affected by the impacts of climate change.

Risk of greenwashing

As NbS gains popularity, it is crucial to critically evaluate its financing. Evidence suggests that risks are being [overlooked in the rush to scale up funding](#), which could have significant implications for natural ecosystems and the communities that depend on them.

For example, NbS can be a way for [polluting companies](#) – such as fossil fuel, large forestry and agribusiness corporations – to [claim green credentials without necessarily changing their business models or practices](#), shifting attention away from actions that reduce emissions at the source. Friends of the Earth International warns that NbS will lead to [“greenwashing and hiding growth in fossil fuel emissions from governments and private sector actors alike”](#).

⁸ According to [FAO](#), the FPIC is “a specific right granted to Indigenous Peoples recognised in the UN Declaration on the Rights of Indigenous Peoples (UNDRIP), which aligns with their universal right to self-determination.. It allows Indigenous Peoples to give, withhold, or withdraw consent at any time for projects that affect their lands and territories.

Global North–South power imbalances

Creating systems in international markets for natural resources – such as carbon markets – that require significant [technical expertise and financial resources](#), much of which is based in the Global North, is risky. The complex and costly legal frameworks needed to define rights to natural resources – similar to any financial asset – could reinforce structural inequalities between the Global North and South.

The financialisation of natural resources – or trading natural resources as commodities – may have similar effects, [prioritising the interests of those already benefiting from capital markets](#) and shifting focus away from addressing the underlying causes of the climate and biodiversity crises. This approach could reduce pressure on businesses and governments to confront these issues.

What is needed for NbS to provide sustainable benefits for nature and society?

In order to benefit nature and society, enable synergies and minimise the risks and trade-offs, nature-based solutions should:

- Not replace the urgent need to phase out fossil fuels.
- Encompass the [conservation and preservation of a wide variety of terrestrial and marine ecosystems](#) – not just forests.
- Recognise [land as a system of mutual relationships and responsibilities](#), a concept often deeply embedded in the cultural and spiritual values of many Indigenous Peoples and local communities. This approach calls for addressing the disconnect between distant financial actors' priorities and the placed human–nature interactions.
- Meet the needs of local communities, [seek the full engagement and consent of Indigenous Peoples and local communities](#) in the early stages and throughout, ensuring respect for their cultural and ecological rights.
- Be intentionally designed to [deliver clear, measurable benefits for biodiversity](#). Investing in robust monitoring and evaluation and sharing results is critical to proving the concepts behind NbS.

Financing mechanisms are [essential to boosting investment](#) in NbS. However, closing the climate and biodiversity funding gap will require diverse and complementary approaches to generating finance. For example, repurposing government subsidies or imposing taxes on environmentally damaging activities. [Unconditional cash transfers or debt relief programs could ease the financial burden on developing economies](#), enabling them to allocate more resources towards addressing environmental and social challenges.

Decentralised nature-based solutions can help overcome issues. These solutions are founded on “[ecological, autonomous management, traditional knowledge, and governance by Indigenous Peoples, local communities and peasants, of their own land and territories](#).” Examples of [decentralised NbS](#) include:

- Community Forest Management, which safeguards forests and ecosystems that store carbon naturally, [currently preserving 80%](#) of the remaining intact and semi-intact ecosystems.
- [Agroecology](#), which helps reduce fossil fuel consumption, enhance crop yields and store soil carbon.