

STG Policy Papers

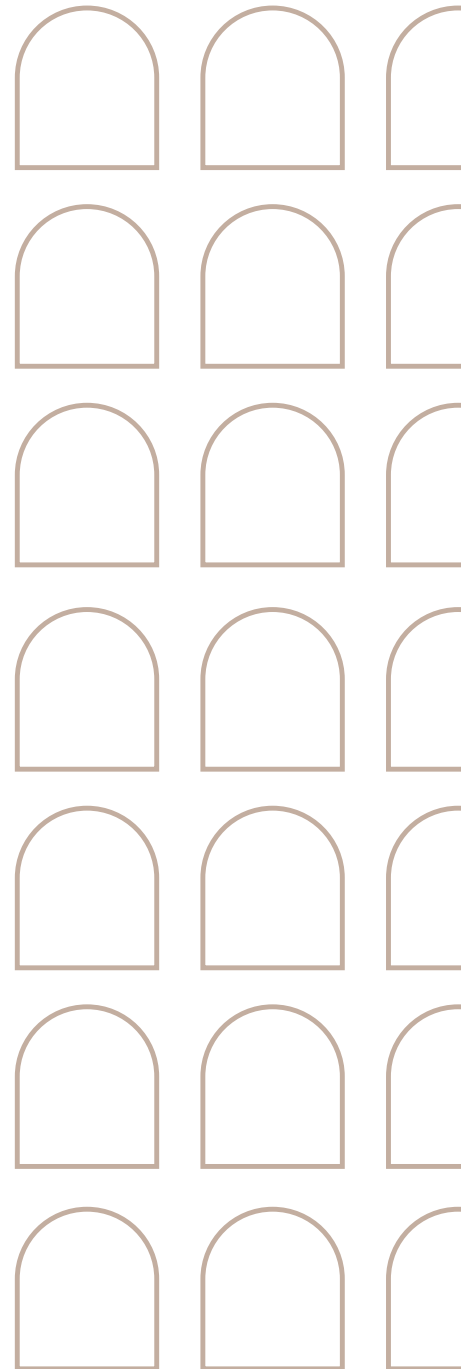
# POLICY BRIEF

**TIME TO FOCUS, RE-FOCUS ON  
NATURE-BASED SOLUTIONS:  
CAN NATURE-BASED SOLUTIONS  
PROVIDE BREAKTHROUGH FOR  
TACKLING CLIMATE CRISIS?**

**Authors:**

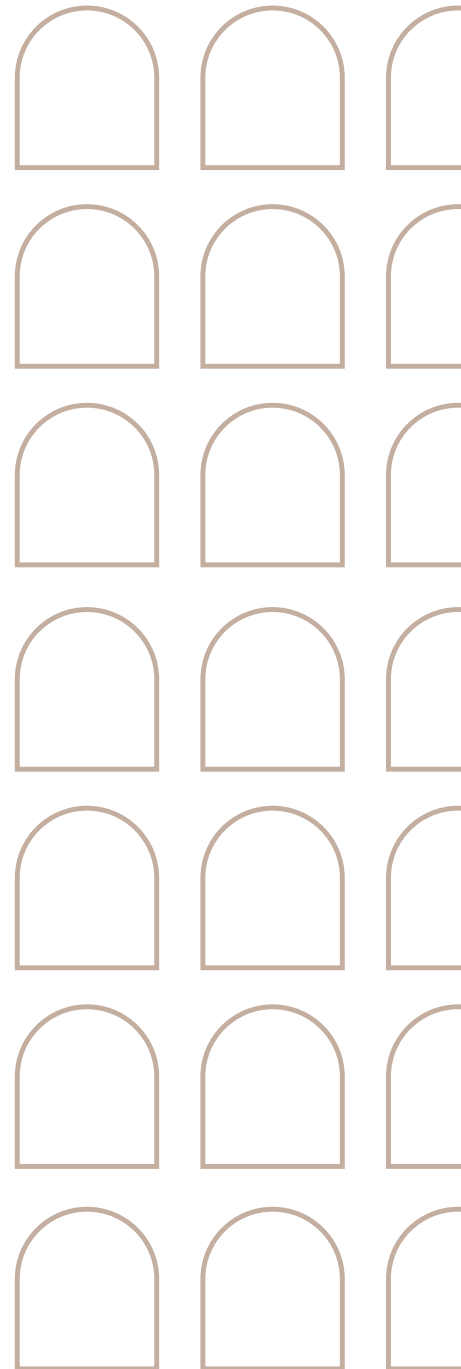
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## EXECUTIVE SUMMARY

Reviewing the main points of the Intergovernmental Panel on Climate Change's (IPCC) Sixth Assessment Report (AR6), which predicts an increase in climate change in all regions in the coming decades, including increasing heat waves, rising sea levels, longer warm and shorter cold seasons, changing precipitation patterns, as well as the United Nations' (UN) repeated warnings of increasing greenhouse gas emissions in the atmosphere with disastrous consequences for people and the planet, it is clear that climate change is intensifying in all regions. To address the problem of climate change, the policy brief describes a breakthrough approach to strengthening ecosystem resilience, protecting biodiversity, and reducing the risk of extreme weather events and climate-related disasters through the implementation of nature-based solutions (NbS). It also discusses existing NbS collaborations and partnerships for climate change adaptation around the world, as well as global policies that can help enforce NbS, particularly by private actors and companies. In addition, the authors aim to show how and in what ways NbS offer a way to address the climate and biodiversity crises in a synergistic and cost-effective way by enabling companies to scale up their actions, and evaluate the effectiveness of their actions. In this way, they also hope to generate ideas for future research and building multi-stakeholder partnerships for NbS.



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# 1. INTRODUCTION

Nature based solutions (NbS) are primarily about working with nature to address societal challenges, benefiting human well-being as well as biodiversity and various ecosystems as a whole. As the climate crisis accelerates at an unprecedented pace, leading to further increases in global temperatures that are causing devastating extreme weather conditions around the world, which in turn have devastating impacts on economies and societies, it is time to revisit and reinvigorate the discussion on NbS across all sectors. To counter the inexorable advance of climate change, NbS is considered a promising climate adaptation measure that can sustainably address various societal challenges while providing multiple climate benefits. NbS mainly covers three areas, namely climate change, health, and urban resilience, which put nature at the center of developing solutions that increase resilience to climate change and create sustainable economies. According to the International Union for Conservation of Nature (IUCN), NbS are actions to address societal challenges through the protection, sustainable management, and restoration of ecosystems, benefiting both biodiversity and human wellbeing. IUCN categorizes all NbS under five approaches<sup>1</sup>:

1. Ecosystem restoration
2. Issue-specific ecosystem-related
3. Infrastructure-related
4. Ecosystem based management
5. Ecosystem protection.

The IPCC emissions reduction scenarios state that we need to achieve net CO<sub>2</sub> emissions by 2050 to keep temperature rise below the 1.5°C target set in the Paris Agreement. The scenarios show that this will require a large contribution from land-based solutions, in addition to massive and rapid decarbonization. By conserving, restoring, and sustainably managing natural carbon sinks and reservoirs,

NbS offer the best opportunity to realise these land-based solutions. Coastal and marine environments also offer additional mitigation potential through natural approaches<sup>2</sup>.

Simple solutions such as using native vegetation instead of concrete to mitigate soil erosion and reduce water runoff along road embankments to restoring watersheds to improve water quality and availability all represent NbS. To address the twin global problems of biodiversity loss and climate change, NbS include actions to conserve, restore, and/or enhance land management to increase carbon storage and/or avoid greenhouse gas emissions in forests, wetlands, grasslands, and agricultural lands worldwide<sup>3</sup>.

From a city's perspective, its land use, spatial form, level of development, and degree of urbanisation affect the potential and sequencing of mitigation strategies to reduce GHG emissions. Strategies such as increasing energy efficiency, repurposing existing buildings, targeting redensification, and promoting non-motorised public transportation could help cities move more quickly to low-emission pathways.

NbS is also seen as a viable adaptation strategy that addresses a range of social problems in a sustainable manner, offers numerous benefits, and provides a resilient and sustainable method for minimising climate-related hazards on an international scale. Examples include reduced deforestation in tropical areas, improved and sustainable management of croplands and livestock, improved soil carbon management in croplands and grasslands, agroforestry and biochar, improved management and restoration of forests and other ecosystems (coastal mudflats, peatlands, savannas, and grasslands), and agricultural carbon storage<sup>4</sup>.

## 1.1 Multiple benefits of NbS

Unlike many technology-based solutions, NbS have the potential to address both climate change mitigation and adaptation challenges at relatively low cost, while providing numerous additional benefits to people and nature. NbS,

1 <https://portals.iucn.org/library/sites/library/files/documents/2020-020-En.pdf>

2 <https://wedocs.unep.org/xmlui/bitstream/handle/20.500.11822/37318/NBSCCM.pdf>

3 <https://www.cbd.int/climate/intro.shtml>

4 [https://www.ipcc.ch/report/ar6/wg3/downloads/report/IPCC\\_AR6\\_WGIII\\_SPM.pdf](https://www.ipcc.ch/report/ar6/wg3/downloads/report/IPCC_AR6_WGIII_SPM.pdf)

if properly designed and implemented, can help solve numerous societal challenges that require collaboration with nature as part of an integrated approach that can reduce trade-offs and promote synergies among socioeconomic sectors. The benefits are often interrelated and are as follows:

- **NbS to manage climate risks:** Unlike conventional measures, which are often capital intensive and can lead to biophysical degradation, NbS can help to effectively reduce flood risks while contributing to the conservation and sustainable management of natural resources<sup>5</sup>. Solutions such as sustainable agricultural practices and building local resilience of flood-prone populations, conservation of sand dunes along coasts, preservation of wetlands to buffer excess rainwater, reef and mangrove restoration, watershed management, climate-smart agriculture, and others can help reduce disaster and climate impacts<sup>6</sup>.
- **NbS to manage water scarcity and adapt to drought conditions:** Due to climate change, the world's population is suffering from water shortages, and droughts are becoming more frequent. However, a study has shown that with the help of NbS, an effective resource management plan has been created. A successful example is [United Utilities](#) in the United Kingdom, one of the largest water utilities, which owns 184 reservoirs and manages 56,000 hectares of land around Lake Vyrnwy, the River Dee and Haweswater reservoir. Water levels in the river and adjacent reservoir were declining and posed a major threat to customer supplies. In addition to using "systems thinking" to shape a climate-resilient future for the area, the utility pursued NbS approaches such as restoring marshes by blocking drainage ditches and gullies, restoring eroded and exposed marshes, restoring hay meadows, creating

new forests, stabilizing land by planting shrubs, improving agricultural facilities through better housing, and providing new waste disposal facilities to reduce pollution of waterways<sup>7</sup>.

- **NbS can help adapt to extreme heat:** Climate change is impacting the health of urban ecosystems due to the increased frequency, severity, and duration of extreme weather events such as heatwaves and droughts, and an enormous proportion of the world's population living there are facing multiple challenges (natural resource scarcity, human well-being, etc.). NbS have been identified as critical for regenerating and improving well-being in urban areas, coastal resilience, multifunctional watershed management and ecosystem restoration, increasing sustainability of material and energy use, improving the insurance value of urban ecosystems, and increasing carbon sequestration<sup>8</sup>.
- **NbS can protect urban lives, health and property from wildfire:** In 2015, about 98 million hectares of forest were affected by fire worldwide, which is about 4 percent of the total forest area, with two-thirds of the affected area in Africa and South America<sup>9</sup>. The Nature Conservancy, world's leading nonprofit organization, concluded that it is important to develop more equitable policies and funding for wildfire control, strengthen the leadership of indigenous firefighters, develop a skilled and diverse fire management workforce, and help communities find ways to live more safely with wildfires.

## 1.2 Sector analysis for NbS

Quantifying the value of NbS is limited by the availability of data for market-based valuation of the benefits of such approaches. The benefits of ecosystem-based NbS, such as climate regulation, gene pool protection, biodiversity

5 Pauleit, S., T. Zölch, R. Hansen, T.B. Randrup, and C. Konijnendijk van den Bosch. 2017. Nature-based solutions to climate change adaptation in urban areas: Linkages between science, policy and practice, ed.

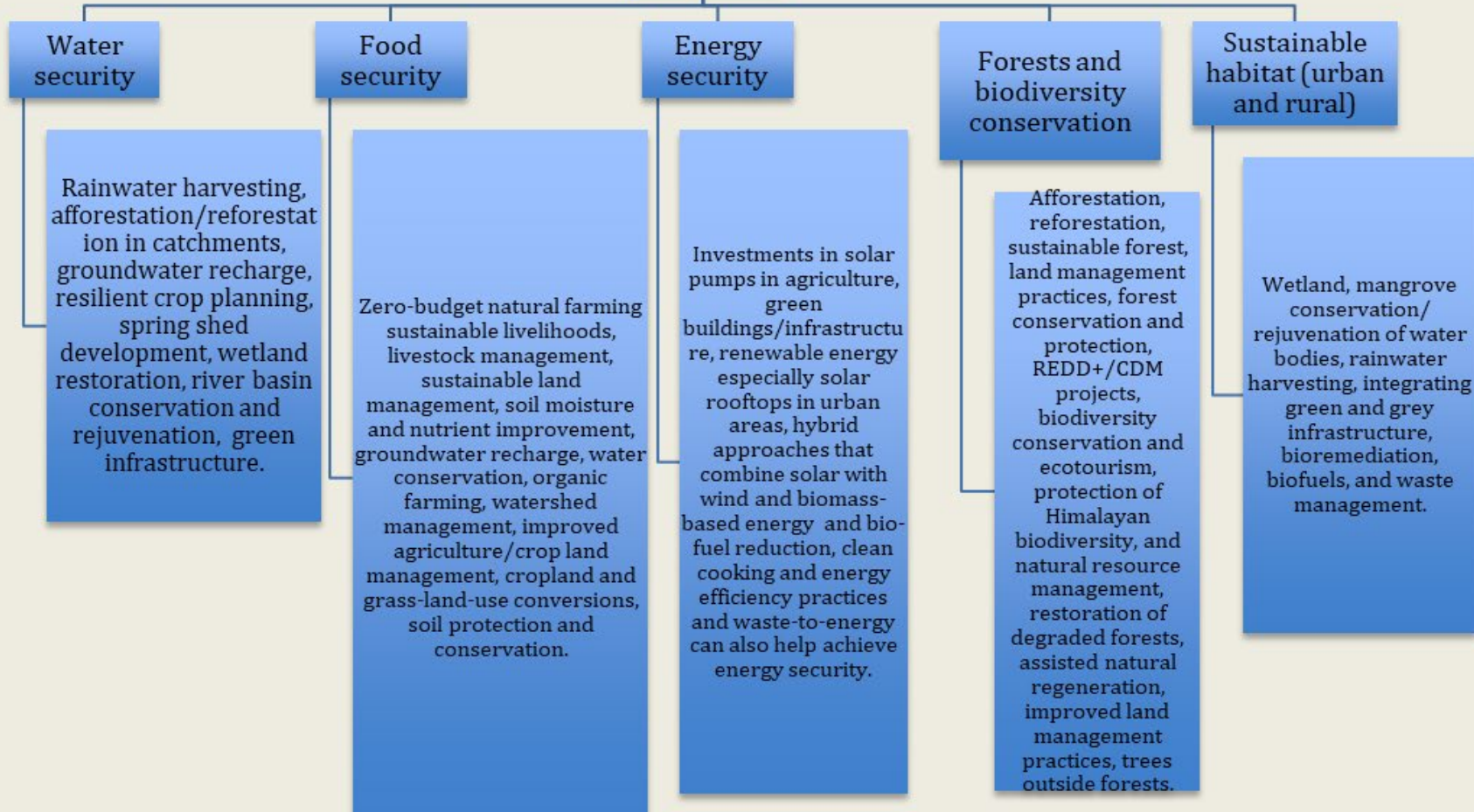
6 <https://portals.iucn.org/library/sites/library/files/documents/2020-020-En.pdf>

7 United Utilities. 2021. Planning for Climate Change, Adaptation Progress Report. Retrieved from: [https://www.unitedutilities.com/globalassets/z\\_corporate-site/responsibility-pdfs/united-utilities-climate-change-adaptation-report-2021.pdf](https://www.unitedutilities.com/globalassets/z_corporate-site/responsibility-pdfs/united-utilities-climate-change-adaptation-report-2021.pdf)

8 European Commission. 2015. Towards an EU research and innovation policy agenda for nature-based solutions & re-naturing cities (Final report of the Horizon 2020 expert group on 'Nature-based solutions and re-naturing cities'). Luxembourg: Publications Office of the European Union.

9 Food Agriculture Organization. 2020

# NbS



Source: Authors' own



conservation, etc., increase over time, and the unavailability of such data makes it difficult to calculate the monetary returns to society or the environment from such measures. NbS measures in certain key nature-related sectors that are closely linked to and overlap with other sectors are listed above.

## 2.0 PARTNERSHIPS FOR NbS

A number of collaborative initiatives have been established to promote NbS globally in different ways. Many of the proposed initiatives are innovative, actionable, measurable, replicable, and scalable. If fully implemented, they could make an important contribution to climate change mitigation and adaptation while contributing to 2030 Sustainable Development Goals. List of organisations provided in **Table 1.0** (see page 10) is indicative and non-exhaustive.

## 3.0 FINANCING STRATEGIES TO ADVANCE NbS

From an investment perspective, the instruments used to finance NbS can be based on debt, equity, or a combination thereof<sup>10</sup>. Debt instruments such as loans or bonds are assets that earn interest for the lender. Green loans are provided to finance eligible green projects.

Launched ten years ago at CBD COP 11 by the United Nations Development Programme and the European Commission, the Biodiversity Finance Initiative (BIOFIN) is a global partnership involving 41 countries and 150 financing solutions that promotes and catalyses investments in nature that help integrate community-centred, ecosystem-based approaches to forestry, agriculture, and tourism. BIOFIN was founded in response to the urgent global need to provide more funding from all possible sources for global and national biodiversity goals<sup>11</sup>. The initiative works with governments, civil-society, vulnerable communities, and the private sector to encourage investments that not only protect

biodiversity- but also enable it to thrive, create jobs and opportunities for communities suffering from the impacts of COVID-19, and secure a sustainable future for people and the planet.

At a time when there are fierce debates about the use of a range of financing solutions, from traditional mechanisms such as taxes, subsidies, payments for ecosystem services, and conservation trust funds, to more innovative tools such as green bonds and green lending, biodiversity offsets, impact investment, and crowd funding, initiatives like BIOFIN ensure more equitable and inclusive development by incorporating the knowledge of diverse stakeholders whose lives and livelihoods directly depend on natural resources and the policies that manage them<sup>12</sup>.

**Table 2.0** (see page 13) provides some examples from Latin America, North America, the Caribbean, and European countries of financing strategies to promote NbS.

## 4.0 POLICIES RELEVANT TO ACHIEVING NbS APPROACHES

Below listed are the key global, European Union, and Indian policies to improve implementation and scale of support for NbS and related approaches. The policies reviewed are outlined in the **Table 3.0** (see page 15).

## 5.0 NATURE-BASED SOLUTIONS AND SUSTAINABLE DEVELOPMENT GOALS (SDGs)

Below are the widely acknowledged benefits of NbS that can directly help to meet countries' commitments to the SDGs and the Paris Climate Agreement including the following objectives:

- **Securing water resources (SDGs 6,14):** A study of urban water supplies shows that by preserving and restoring upstream forests, water utilities in the world's 534 largest cities could better regulate water flows and save a total of USD 890 million in treatment

<sup>10</sup> European Investment Bank. 2019. Investing in nature: financing conservation and nature-based solutions. A practical guide for Europe.

<sup>11</sup> <https://www.biofin.org/india>

<sup>12</sup> The Biodiversity Finance Initiative (BIOFIN). 2019. Finance for nature, a commitment of the whole society to the sustainability of the planet. Available at <https://www.biofin.org/news-and-media/finance-nature-commitment-whole-society-sustainability-planet>

costs per year<sup>13</sup>.

- **Mitigating disaster risk (SDG 11):** NbS can also help mitigate the risk of disasters, including catastrophic wildfires, landslides, and coastal and riverine flooding<sup>14, 15</sup>. However, it is important to note that investing in ecosystems cannot be the only solution to disasters. NbS should be used in combination with other risk reduction measures, such as early warning systems and disaster preparedness<sup>16</sup>.
- **Creating jobs and alleviating poverty (SDGs 1, 8, 10):** NbS investments typically create low-skill, fast-turnover jobs. Properly designed, NbS can help poor communities develop more sustainable, productive economies and land use practices<sup>17</sup>. For example, green investments can be linked to SDG1 on poverty reduction. In India, the World Bank-funded flagship Integrated Coastal Zone Management project planted about 200 square kilometers of mangroves along the coast, ultimately enabling investments in biodiversity, conservation, and complementary livelihoods for fishermen in Gujarat, Odisha, and West Bengal that continue to support businesses today. The project benefited approximately [11.9 million people](#).
- **Acting on the climate crisis (SDG 13):** While about 8 percent of global carbon emissions are attributable to cement production, which forms the backbone of most cities, NbS contribute to important emission reduction goals. By capturing and storing carbon, NbS can provide up to one-third of the emission reductions needed by 2030<sup>18</sup>. The Global Commission

on Adaptation, co-managed by the WRI, has called for the expansion of NbS as an important way to adapt to climate change, highlighting these solutions for cities in particular<sup>19</sup>.

- **Enhancing human health (SDG 3):** NbS can provide clean water and air, reduce extreme urban heat, and promote mental health. A rapidly growing body of research suggests that contact with nature is important for psychological well-being. Preserving forests in biodiversity hotspots can also mitigate the risk of new zoonotic pathogens spreading from wildlife to humans<sup>20</sup>. In addition, NbS can, for example, improve air quality, which leads to a decrease in air pollution-related diseases, which in turn enables savings in health care.
- **Supporting sustainable cities and communities (SDGs 9 and 11):** Because well-planned NbS require community engagement and empowerment, NbS can promote inclusive urbanization and social justice and strengthen community resilience by helping to reduce the risk of severe damage from disasters such as floods, landslides, and sea level rise through the implementation of innovative, pragmatic, and workable solutions, such as focusing on public health and quality of life, water security and management, and ecosystem services within the existing urban fabric<sup>21</sup>.
- **Protecting biodiversity (SDGs 14 and 15):** By preserving and restoring natural and semi-natural ecosystems, NbS provide critical habitat for the nearly 1 million species at risk of extinction, including many species that could be used for pharmaceuticals

13 McDonald, R.I., and D. Shemie. 2014. "Urban Water Blueprint: Mapping Conservation Solutions to the Global Water Challenge." Washington, DC: The Nature Conservancy. Available at [https://www.nature.org/content/dam/tnc/nature/en/documents/Urban\\_Water\\_Blueprint.pdf](https://www.nature.org/content/dam/tnc/nature/en/documents/Urban_Water_Blueprint.pdf)

14 Browder, G., S. Ozment, I.R. Bescos, T. Gartner, and G.-M. Lange. 2019. "Integrating Green and Gray: Creating Next Generation Infrastructure." World Resources Institute. Available at <https://openknowledge.worldbank.org/handle/10986/31430>

15 WWAP (World Water Assessment Programme)/UN-Water. 2018. The United Nations World Water Development Report 2018: Nature-Based Solutions for Water. Paris: UNESCO. Available at <http://unes-doc.unesco.org/images/0026/002614/261424e.pdf>

16 Somarakis, G., Stagakis, S., & Chrysoulakis, N. (Eds.). 2019. ThinkNature Nature-Based Solutions Handbook. ThinkNature project funded by the EU Horizon 2020 research and innovation programme under grant agreement No. 730338. doi:10.26225/jerv-w202

17 UNEP (UN Environment Programme). 2016. "Restoring Natural Capital Can Help Reduce Extreme Poverty." Available at <https://www.unep.org/news-and-stories/story/restoring-natural-capital-can-help-reduce-extreme-poverty>

18 Griscom, B.W., J. Adams, P.W. Ellis, R.A. Houghton, G. Lomax, D.A. Miteva, W.H. Schlesinger, et al. 2017. "Natural Climate Solutions." Proceedings of the National Academy of Sciences 114 (44): 11645–50. doi:10.1073/pnas.1710465114.

19 GCA (Global Commission on Adaptation). 2019. Global Commission Report. <https://gca.org/reports/adapt-now-a-global-call-for-leadership-on-climate-resilience/>

20 Afelt, A., R. Frutos, and C. Devaux. 2018. "Bats, Coronaviruses, and Deforestation: Toward the Emergence of Novel Infectious Diseases?"

21 Bowler, D.E., L. Buyung-Ali, T.M. Knight, and A.S. Pullin. 2010. "Urban Greening to Cool Towns and Cities: A Systematic Review of the Empirical Evidence." Landscape and Urban Planning 97 (3): 147–55. doi:10.1016/j.landurbplan.2010.05.006

in the future. In this case, NbS not only enhance biodiversity and sustainability, but also help mitigate climate change by storing carbon and reducing heat stress and flood risks<sup>22</sup>.

## 6.0 UNLOCKING PUBLIC-PRIVATE PARTNERSHIPS (PPP) FOR IMPLEMENTING NbS

In order to deal with existing and accelerating climate crises, biodiversity loss, ecosystem degradation, and meeting the SDGs, working in tandem with both private and public sectors through Public-Private Partnerships is crucial. Role of such partnerships can be crucial in mainstreaming and scaling NbS to solve today's pressing environmental challenges. By engaging with diverse stakeholders, including companies, as well as governments and communities, NbS can help create a more livable planet for people and nature. PPP can help reduce the operation and maintenance costs, generate profit, or provide other benefits that are essential for public purposes and private for-profit activity. Such collaborations not only bring about new resources and ideas but also create bankable, innovative projects to help create a clean, inclusive, and prosperous future for economies through advancing global development gains and progress.

In this section, the authors aim to highlight the tremendous opportunities that NbS offers and to initiate a discussion on how we can ensure active and continuous participation of all stakeholders and economic sectors. Such partnerships help to develop an approach in which all stakeholders understand the value of nature as both an input and an output in the fight against climate change, particularly in recognizing the local benefits of climate change adaptation and the regional and global benefits of climate change mitigation. For this to develop in an efficient and effective manner, it is important to enable the participation of diverse stakeholders, networks, governments, and organizations, and to create opportunities for information sharing and collaborative learning.

The following policy recommendations need to be further researched and disaggregated in order to drive governance changes toward NbS.

### 1. Leverage policy instruments to promote NbS:

To create a policy environment that unlocks the potential of the NbS, the unified voice of business should be articulated and heard at the highest levels. The WBCSD, in collaboration with its key partners, aims to provide a platform for this discussion at key UN events and through continued engagement with governments in partnership with organizations such as Nature4Climate and the WEF. Central to this effort will be the Nature Climate Solutions Alliance, which was launched at New York Climate Week 2019.

### 2. Creating positive partnerships:

Fostering partnerships between public and private organisations for the joint design, development, and maintenance of NbS is critical to creating initial action on the ground and increasing support for mandatory multifunctionality. Volkswagen's involvement in the Puebla-Tlaxcala Valley in Mexico, where the company invested in restoring an illegally deforested area to provide fresh water to the nearby city of Puebla while ensuring a reliable water supply for the stability of the company's manufacturing plant in the region, is an apt example of prioritising NbS alongside economic and social benefits.

### 3. Facilitation of demonstration projects:

NbS pilot projects, which often involve research, can foster collaboration and knowledge dissemination and provide tangible examples of how NbS can be used in practice, giving partners greater confidence in technological solutions.

### 4. Mapping improved cost-effectiveness of NbS:

To support public and private investment decisions, it is necessary to produce and disseminate research showing the many benefits and costs of NbS. According to a report by the International Institute for Sustainable Development, USD 248 billion could be saved annually by using nature-based solutions in

<sup>22</sup> IPBES (Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services). 2019. "Summary for Policymakers of the Global Assessment Report on Biodiversity and Ecosystem Services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services".



infrastructure projects.

**5. Identify business benefits and co-benefits:** The main difficulty will be to interact with new stakeholders and form partnerships with other sectors to uncover additional benefits and co-benefits of NbS. This will be necessary to create an opportunity for NbS. Mapping and creating synergies between NbS and the SDGs would be critical for effective planning, research, evaluation, and ongoing monitoring.

**6. Providing scale for NbS:** Although there are numerous examples of innovative, effective ways to engage the private sector in promoting a green economy, green strategies still need to be expanded. Enabling access to finance for NbS, building capacity of stakeholders, catalysing technology solutions including encouragement for start-ups and entrepreneurs for NbS technologies and business models, and developing the ecosystem for NbS, including certification and standardization, would be crucial to build scale for NbS interventions.

## 7.0 CONCLUSION

To return to the original question: Can NbS bring a breakthrough in the fight against the climate crisis? The literature strongly demonstrates that NbS has an important role to play in climate action if we are to find a way to rapidly reduce GHG emissions. If sufficient action is not taken now and all available cost-effective technologies are deployed, humanity will likely be forced to resort to more expensive and sometimes unproven solutions. We now have a better understanding of various NbS approaches such as ecological restoration, ecological engineering, forest landscape appearance restoration, ecosystem-based adaptation, ecosystem-based mitigation, ecosystem-based disaster risk reduction, ecosystem-based management, and green infrastructure. However, integrating these approaches in climate action through enabling policies, financing, technological interventions, and capacity development will be of utmost priority for governments and businesses.

As a reminder, at the 26<sup>th</sup> Conference of the Parties (COP) to the UNFCCC in Glasgow in 2021, NbS was discussed as critical to strengthening livelihoods, ensuring food security, and protecting human lives. A session on the progress report on the work of the Standing Committee on Finance also discussed the definition of NbS, the potential of NbS, key actors in the field, and linkages with other processes. All of this clearly points to growing momentum in building resilience and addressing knowledge gaps in adapting to the impacts of climate change by creating NbS as a link between the climate and biodiversity agendas and providing the framework for managing risks associated with climate change. NbS was also discussed at the Koronivia Joint Workshop on Agriculture (KJWA). And now, in the run-up to the 27<sup>th</sup> COP to the UNFCCC in 2022, concerted action is needed to ensure that the concept of NbS is not only preserved in high-level documents and conservation discourse, but also understood and incorporated into policy decisions to address climate change. It is time to put NbS into practice.

**TABLE 1.0: GLOBAL COLLABORATIVE INITIATIVES FOR PROMOTING NBS**

Initiative	Supporting agency	Focus area	Source
The Natural Climate Solutions Alliance	World Economic Forum (WEF) and World Business Council for Sustainable Development (WBCSD)	Facilitating discussion between suppliers, buyers and other parties interested in carbon credits from nature-based solutions	<a href="https://www.wbcsd.org/Programs/Climate-and-Energy/Climate/Natural-Climate-Solutions/The-Natural-Climate-Solutions-Alliance">https://www.wbcsd.org/Programs/Climate-and-Energy/Climate/Natural-Climate-Solutions/The-Natural-Climate-Solutions-Alliance</a>
Nature4Climate Partnership	It comprises 16 conservation, multilateral and business organizations, including the UN Convention on Biological Diversity (CBD), International Union for Conservation of Nature (IUCN), UN-REDD+ Programme, UN Environment Programme (UNEP), United Nations Development Programme (UNDP), WBCSD, World Wide Fund for Nature (WWF) and the World Resources Institute (WRI)	Advocates and communicates the value of nature-based solutions for climate change.	<a href="https://nature4climate.org/">https://nature4climate.org/</a>
The Green Gigaton Challenge	Supported by the UNREDD+ Programme	Support governments in their efforts to halt deforestation, promote investment in nature, promoting minimum donor-funded prices for carbon results, and private sector demand at higher prices.	<a href="https://www.un-redd.org/projects/green-gigaton-challenge">https://www.un-redd.org/projects/green-gigaton-challenge</a>
The Lowering Emissions by Accelerating Forest Finance (LEAF) Coalition (2021)	Brings together governments (United States of America, United Kingdom and Norway)	Mobilize both private and public sector funds to protect tropical forests at scale.	<a href="https://leafcoalition.org/">https://leafcoalition.org/</a>

European Carbon+ Farming Coalition	WEF	Aims to promote regenerative and climate-smart practices to better manage Europe's farmlands, contributing to the decarbonization of the European food system, healthier soils and more resilient farms.	<a href="https://www.weforum.org/projects/eu-carbon-farming-coalition">https://www.weforum.org/projects/eu-carbon-farming-coalition</a>
Blue Natural Capital Financing Facility	Managed by IUCN funded by the Government of the Grand Duchy of Luxembourg	Protect, restore and manage marine ecosystems by financing climate change mitigation and adaptation efforts that meet its positive impacts framework, for example, generating carbon credits from seagrass ecosystems in Kenya's Vanga Bay.	<a href="https://bluenaturalcapital.org/">https://bluenaturalcapital.org/</a>
India Forum for Nature-Based Solutions	National Institute of Urban Affairs (NIUA) and WRI	Aims to create a collective of NbS entrepreneurs, government entities and like-minded organisations, to help scale urban nature-based solutions by defining a shared language and by communicating benefits that inform actions at the local level; driving investment and strengthening	
Nature Based Solutions for Climate Coalition	Co-leads China and New Zealand: Facilitation team UNEP, CBD, skills, systems and synergies for sustainable development (4SD)	Aims to support vital ecosystem services, biodiversity, access to fresh water, improved livelihoods, healthy diets and food security from sustainable food systems.	<a href="https://www.unep.org/nature-based-solutions-climate">https://www.unep.org/nature-based-solutions-climate</a>

UN-REDD+ Programme	UN Food and Agriculture Organization, UNDP, UNEP	Aims to halt and reverse deforestation and forest degradation.	<a href="https://www.un-redd.org/">https://www.un-redd.org/</a>
One Planet Business for Biodiversity (OP2B)	CBD	Committed to scaling-up regenerative agriculture practices, with an emphasis on soil health; increasing supply chain transparency while protecting biodiversity.	<a href="https://www.wbcsd.org/Projects/OP2B">https://www.wbcsd.org/Projects/OP2B</a>
Amazon Sacred Headwaters	Led by Amazonian indigenous federations CONFENIAE (Ecuador) and AIDASEP (Peru)	Seeks to build a shared vision among indigenous peoples, NGOs, the philanthropic community, social entrepreneurs and governments towards establishing a bi-national protected region - off-limits to industrial scale resource extraction.	<a href="https://sacredheadwaters.org/">https://sacredheadwaters.org/</a>
Architecture for REDD+ Transactions (ART)	Led by multiple governments, including Norway, with involvement of Winrock International, Climate and Land Use Alliance (CLUA), Environmental Defense Fund (EDF), Rockefeller Foundation and others.	Seeks to validate and market high-quality nature-based jurisdictional carbon credits to prospective private and public-sector purchases.	<a href="https://www.artredd.org/">https://www.artredd.org/</a>

Source: Authors' own research

**TABLE 2.0: SUMMARY CHARACTERISTICS OF FINANCING STRATEGIES TO ADVANCE NBS APPROACHES**

Financing strategy	Infrastructure sector	Case study (Country)	Financing instrument(s)	Funding payment mechanism	NbS or Green-gray components <sup>1</sup>
Debt finance	Water and sanitation	Dutch sovereign green bonds, Netherlands	Sovereign green bond	Taxpayers	Green-gray infrastructure to establish nature preserves and reinforce dikes as flood defence.
	Water and sanitation	Central Arkansas Water green bond, United States	Green bonds	Watershed protection fee	Green-grey approach to protect forests for water quality and improve water delivery through pipeline upgrades.
Blended finance	Energy; water and sanitation	Forest Resilience Bond, United States	Concessional and market-rate loans	Taxpayers	Forest restoration to reduce catastrophic wildfires.
Policy frameworks	Housing and urban development	SAV Tacubaya, Mexico city, Mexico	Land-based financing mechanisms	Developer fee	Green-gray infrastructure to reduce store water runoff through bioswales (etc.) and improve water delivery through pipeline upgrades
Financial risk mitigation	Housing and urban development	Quintana Roo's insurance for coral reefs, Quintana Roo, Mexico	Conservation trust fund+ insurance policy	Tourism operators' earmarked fees	Restored beach and coral reef as disaster risk mitigation

<sup>1</sup> Green infrastructure refers to natural systems including forests, floodplains, wetlands and soils that provide additional benefits for human well-being, such as flood protection and climate regulation. Gray infrastructure refers to structures such as dams, seawalls, roads, pipes or water treatment plants.



Funding diversification	Water and sanitation	Fondo para la Protección del Agua (FONAG Water Fund), Quito, Ecuador	Utility/company contributions + endowment	Utility/company income	Restored watershed to improve water quality
Blended finance	Urban development	Amsterdam, Netherlands	Amsterdam Investment Fund	Land lease fee + ratepayer fees	Created an integrated public transport network, high quality urban planning, and investment in recreational green spaces, water and renewable energies.
Blended finance	Sustainable urban regeneration and water management	Bari, Italy	Private investment+ European Regional Development Fund	Watershed protection fee	Provided a natural network for drainage, which has been interrupted by urbanisation processes to decrease geomorphologic and flooding risks.
Policy frameworks	Urban green connectivity and biodiversity	Berlin, Germany	Co-financed by European Union's ERDF funding	Municipal budgets	Greening of rooftops, facades, streets and courtyards transformation of impervious surfaces into green surfaces.
Policy frameworks	Human health, water management and sustainability	Edinburgh, Scotland	Third party funding. Funded by CEC and Scottish Enterprise	Grant-in-aid	Reduction of greenhouse emissions through renewable energy, recycling and sustainable transport and buildings while using the green network to capture and store carbon.

Source: Collated from excerpts from Marsters, L., G. Morales, S. Ozment, M. Silva, G. Watson, M. Netto, and G.L. Frisari. 2021. Nature-Based Solutions in Latin America and the Caribbean: Financing Mechanisms for Regional Replication

**TABLE 3.0: RELEVANT GLOBAL POLICY FRAMEWORKS THAT CAN BE USED FOR PROMOTING INITIATIVES/ACTIVITIES UNDER NBS**

Policy area	Global policy	EU policy	Indian policy
Cross-cutting	<ul style="list-style-type: none"> <li>• 2030 Agenda for sustainable development, Sustainable Development Goals (2015)</li> <li>• United Nations (UN) Convention to Combat Desertification (1996)</li> </ul>	<ul style="list-style-type: none"> <li>• European Green Deal (2019)</li> <li>• Bioeconomy strategy (2012) and its update (2018)</li> </ul>	<ul style="list-style-type: none"> <li>• National Action Plan on Climate Change (NAPCC) 2008</li> <li>• Swachh Bharat Mission (2014)</li> <li>• Atal Mission for Rejuvenation and Urban Transformation (2015)</li> </ul>
Biodiversity (including forestry)	<ul style="list-style-type: none"> <li>• Ramsar Convention (1975)</li> <li>• UN Convention on Biological Diversity (1993)</li> </ul>	<ul style="list-style-type: none"> <li>• Birds Directive (1979/2009)</li> <li>• Habitats Directive (1992)</li> <li>• EU forest strategy (2013)</li> <li>• Green infrastructure strategy (2013)</li> <li>• LULUCF Regulation (2018)</li> <li>• Biodiversity strategy for 2030 (2020)</li> </ul>	<ul style="list-style-type: none"> <li>• The Biological Diversity Act, 2002</li> <li>• The Forest (Conservation) Act, 1980</li> <li>• National Forest Policy, 1988</li> <li>• The Compensatory Afforestation Fund Act 2016</li> <li>• National Green</li> <li>• Highways Mission (2015)</li> <li>• National Policy on Marine Fisheries, 2017</li> <li>• National Mission for Green India</li> </ul>

Climate	<ul style="list-style-type: none"> <li>• Sendai Framework for Disaster Risk Reduction 2015-2030 (2015)</li> <li>• United Nations Framework Convention on Climate Change (1994), Paris Agreement (2015)</li> </ul>	<ul style="list-style-type: none"> <li>• Action plan on the Sendai Framework for Disaster Risk Reduction (2016)</li> <li>• Strategy on adaptation to climate change (2013,2021)</li> </ul>	<ul style="list-style-type: none"> <li>• National Action Plan on Climate Change (2008)</li> <li>• National Policy on Disaster Management 2009</li> <li>• National Policy on Renewable Energy policy and Action Plan (2009)</li> </ul>
Water and agriculture		<ul style="list-style-type: none"> <li>• Nirates Directive (1991)</li> <li>• Water Framework Directive (2000)</li> <li>• Floods Directive (2007)</li> <li>• Common agricultural policy (2013)</li> <li>• Farm-to-fork strategy (2020)</li> </ul>	<ul style="list-style-type: none"> <li>• National Water Mission</li> <li>• National Mission on Sustainable Agriculture</li> <li>• National Agroforestry Policy, 2014</li> <li>• National Policy on Marine Fisheries, 2017</li> <li>• Model Bill for the Conservation, Protection, Regulation, and Management of Groundwater, 2016</li> <li>• Hydro-meteorological Data Dissemination Policy, 2018</li> </ul>

Urban	New urban agenda - Habitat III (2016)	<ul style="list-style-type: none"> <li>• Urban agenda for the EU (i.e. Pact of Amsterdam, 2016)</li> </ul>	<ul style="list-style-type: none"> <li>• Emission Standards and Auto Fuel Policy 2003</li> <li>• Jawaharlal Nehru National Urban Renewal Mission (2005)</li> <li>• Swachh Bharat Mission (2014)</li> <li>• Green National Highways Policy (2015)</li> <li>• National Policy on Biofuels (2018)</li> <li>• National Urban Policy Framework (2018)</li> <li>• The National Clean Air Programme (2019)</li> <li>• Smart Cities Mission</li> <li>• National Urban Livelihoods Mission</li> <li>• Atal Mission for Rejuvenation and Urban Transformation (2015)</li> </ul>
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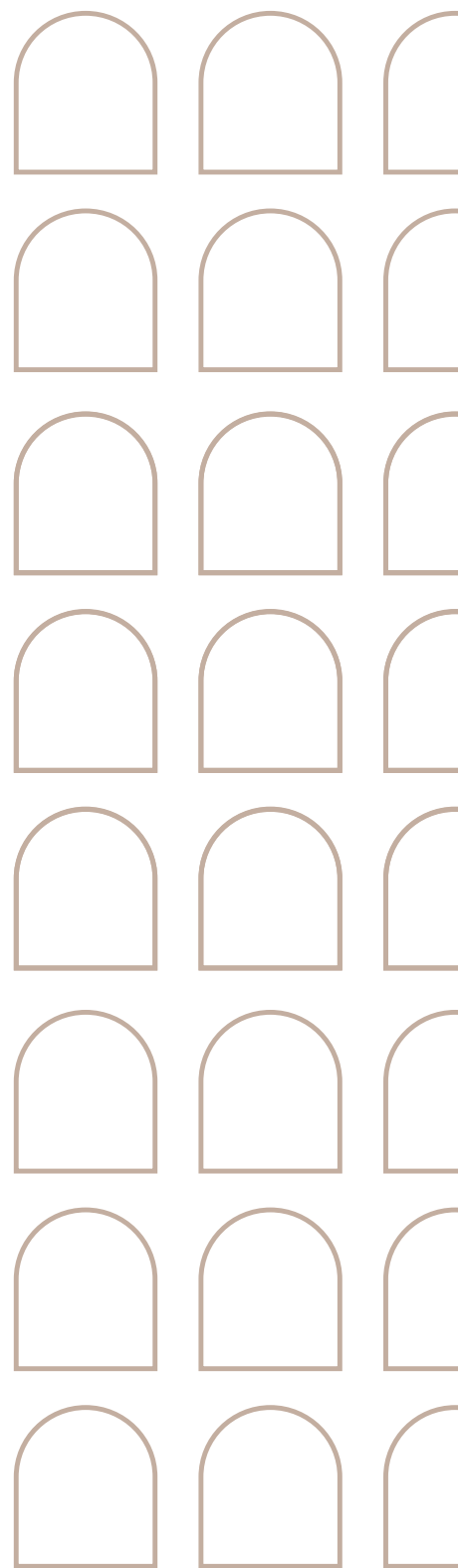
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