

Nature-based Resilience Outlook

8-12 March 2021

Enabling Resilience for All
The Critical Decade
to Scale-up Action

Acknowledgments

This outlook was written by Kathryn Bimson (IUCN) and Anna Kilponen (UNEP) and has benefitted significantly from inputs and review by Mozaharul Alam (UNEP), Stephanie Austin (UNDP), Elisabeth Bernhardt (UNEP), Rajashi Dasgupta (IGES), Tashi Dorji (UNDP), Nathalie Doswald (UNEP), Raphael Glemet (IUCN), Lisa Guppy (UNEP), Gabriel Jaramillo (UNDP), Brian Johnson (IGES), Ulrich Kindermann (GIZ), Animesh Kumar (UNDRR), Pankaj Kumar (IGES), Osamu Mizuno (IGES), Yuki Ohashi (IGES), Albert Salamanca (SEI), Binaya Raj Shivakoti (IGES), Moon Shrestha (UNEP), Krib Sitathani (UNDP), Yusuke Taishi (UNDP), Suyeon Yang (UNEP), Sara Libera Zanetti (UNEP).

We would like to thank the panellists and participants of the webinar held under this stream for sharing their ideas and examples, which have been included in this outlook.

Suggested Citation

Bimson K., Kilponen A., (2021). Nature-based Resilience Outlook. Prepared for the 7th Asia-Pacific Climate Change Adaptation Forum, 8-12 March 2021. Bangkok: Asia Pacific Adaptation Network



February 2021, APAN Secretariat

Authors contact: kathryn.bimson@iucn.org; anna.kilponen@un.org;
Layout: Invisible Ink Co., Ltd.

This publication may be reproduced in whole or in part and in any form for educational or non-profit purposes, without special permission, provided acknowledgement of the source is made. No use of this publication may be made for resale or other commercial purpose.





Summary

The Asia and the Pacific is extremely vulnerable to the impacts of climate change. In 2020, the region faced a record number of climate-related disasters coupled with the COVID-19 pandemic, affecting tens of millions of vulnerable people. The need to address climate change threats and build resilience has never been more urgent than now.

This background document focuses on how Nature-based Solutions (NbS) can build resilience and help protect communities from climate change while simultaneously delivering a variety of benefits crucial for human wellbeing, such as supporting food security, improving water availability, and strengthening livelihoods, all of which can contribute to climate resilience. In this outlook, NbS for resilience is examined through the five key enablers that will guide the discussions at 7th Asia-Pacific Climate Change Adaptation Network (APAN) Forum: policy and climate governance; planning and processes; science and assessment; technologies and practices; and finance and investment, while looking at the challenges, promising innovations and best practices in the Asia-Pacific region.

Moving forward, several key actions are needed. For instance, NbS should be integrated into the national frameworks such as National Adaptation Plans (NAPs) and Nationally Determined Contributions (NDCs) of all countries in the region with specific and quantifiable targets. Further, there is a need to support capacity building on NbS, and a need for targeted research and collection of scientific data to provide evidence to quantify NbS benefits and support the integration of NbS within climate change policy frameworks. Finally, innovative financing mechanisms and investments are needed to strengthen and diversify the finance base for NbS as well as better understanding of the benefits NbS can deliver.



I. Nature-based Solutions for Resilience

For most of the 20th century, decision-makers treated the protection, restoration and conservation of nature and biodiversity as peripheral to national and global agendas. At best, it was considered a worthy interest, at worst, an obstacle to development. However, growing scientific consensus indicates that nature is essential for human existence and a good quality of life. In 2005, the Millennium Ecosystem Assessment provided a state-of-the-art scientific appraisal of the conditions and trends in the world's ecosystems and the services they provide, as well as a scientific basis for action to conserve and use them sustainably. Furthermore, in 2015, the Sustainable Development Goals (SDGs) brought the traditional development agenda together with the environmental dimension at the same level for the first time, acknowledging that all three dimensions of sustainable development are interdependent and indivisible.

Ecosystem services are defined as the benefits people obtain from ecosystems, including provisioning (e.g. food, water); regulating (e.g. flood and disease control, climate regulation); cultural (e.g. spiritual, recreational); and supporting services (e.g. nutrient cycling). Through these services, ecosystems can offer a powerful defence against the impacts of climate change: the conservation, restoration, and management of ecosystems have the potential to provide up to 30 per cent of mitigation needed to stabilize warming below 2°C.¹ This is only possible with large-scale ecosystem restoration efforts. Finding ways to work with ecosystems, rather than relying solely on conventional engineered solutions, can help communities adapt to climate change impacts. Failure to recognise this fact not only results in an economic path that significantly contributes to the loss of biodiversity and risking over half of world's gross domestic product (GDP) dependent on ecosystem services², but it also misses the opportunity to effectively deploy nature to address major challenges such as climate change, food insecurity, loss of livelihoods, and disaster risks.

In 2016, members of the International Union for Conservation of Nature (IUCN) adopted the first official definition of Nature-based Solutions (NbS) as "actions to protect, sustainably manage, and restore natural or modified ecosystems, that address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits."³ This definition has been commonly used since then by IUCN members, including governments and the United Nations system. NbS is an umbrella term for solutions focusing on the benefits or ecosystem services, provided by nature (Table 1).

Nature-based Solutions for resilience is protection and restoration of all ecosystem services to increase resilience of people and ecosystems⁴ and can be divided in several specific approaches or strategies, including Ecosystem-based Adaptation (EbA), which is a central part of the mandate of many UN Agencies, such as the United Nations Environment Programme (UNEP) that is working to enhance the technical capacity of countries to integrate EbA approaches into National Adaptation Plans (NAPs) and support countries around the world to plan and implement on-the-ground EbA practices. Other components of NbS include Ecosystem-based Disaster Risk Reduction (Eco-DRR) and Forest Landscape Restoration (FLR) (Table 1).

¹ Griscom, B.W., Adams, J., Ellis, P.W., Houghton, R.A., Lomax, G., Miteva, D.A., Schlesinger, W.H., Shoch, D., Siikamäki, J.V., Smith, P., Woodbury, P., Zganjar, C., Blackman, A., Campari, J., Conant, R.T., Delgado, C., Elias, P., Gopalakrishna, T., Hamsik, M.R., Herrero, M., Kiesecker, J., Landis, E., Laestadius, L., Leavitt, S.M., Minnemeyer, S., Polasky, S., Potapov, P., Putz, F.E., Sanderman, J., Silvius, M., Wollenberg, E. and Fargione, J. (2017). *PNAS*.

² World Economic Forum. (2020). *Nature Risk Rising: Why the Crisis Engulfing Nature Matters for Business and the Economy*.

³ IUCN. *Defining Nature-based Solutions*.

⁴ UNEP. (2019). *Global Environment Outlook – GEO-6: Healthy Planet, Healthy People*. Nairobi. DOI 10.1017/9781108627146.

Nature-based Solutions (NbS): actions to protect, sustainably manage, and restore natural or modified ecosystems, that address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits (IUCN official definition).

Ecosystem-based Adaptation (EbA): use of biodiversity and ecosystem services as part of an overall adaptation strategy to help people to adapt to the adverse effects of climate change (definition by the Convention on Biological Diversity)⁵.

Ecosystem-based disaster risk reduction (Eco-DRR): sustainable management, conservation, and restoration of ecosystems to reduce risk of disasters that often are exacerbated by climate change.

Forest Landscape Restoration (FLR): a process that aims to regain ecological functionality and enhance human well-being in deforested or degraded landscapes.

Table 1. Key definitions.

A significant obstacle in implementing NbS is that solutions are often mislabelled as NbS when they do not actually provide any benefits to the surrounding ecosystem and society. To define clear parameters for NbS, IUCN published the Global Standard for Nature-based Solutions⁷, in July 2020. The Standard provides a set of eight criteria⁸ against which to evaluate a given NbS intervention. The tool is intended to assist governments, companies, non-governmental organisations (NGOs), and others in assessing their interventions and designing NbS projects that are ambitious in scale and sustainability, creating a shared language and framework for stakeholders.

There is a strong global policy framework to support the upscaling of NbS with the UN Framework Convention on Climate Change (UNFCCC) providing the structure and processes for global climate governance and it houses programs such as the Nairobi Work Programme (NWP), which functions as a mechanism to integrate adaptation knowledge into policies and practices. The UNFCCC and NDCs provide a framework to strengthen climate ambition through the incorporation of NbS in national commitments. Although a review of the NDCs found that over 60 percent⁹ of them include some form of NbS in their adaptation component, more concrete, evidence-based targets are urgently needed¹⁰. NbS approaches are also playing a key part in the Post-2020 Global Biodiversity Framework that is to be adopted at the 15th meeting of the Parties (COP15) to the Convention on Biological Diversity (CBD). Further, intergovernmental organizations such as UNEP and the United Nations Development Programme (UNDP) support countries to access climate finance, implement NbS practices and advance NAPs and NDCs processes and planning, such as integrating EbA into national planning.

⁵ SCBD. (2009). Connecting biodiversity and climate change mitigation and adaptation: Report of the second ad hoc technical expert group on biodiversity and climate change. Technical Series No. 41. Montreal: Secretariat of the Convention on Biological Diversity.

⁶ Besseau, P., S. Graham, and T. Christophersen, editors. (2018). Restoring forests and landscapes: The key to a sustainable future. IUFRO on behalf of the Global Partnership on Forest and Landscape Restoration, Vienna, Austria.

⁷ IUCN Global Standard for Nature-based Solutions.

⁸ 1) societal challenges, 2) design at scale, 3) biodiversity net gain, 4) economic feasibility, 5) inclusive governance, 6) balancing trade-offs, 7) adaptive management, 8) mainstreaming and sustainability.

UNEP. 2021. The Adaptation Gap Report 2020. United Nations Environment Programme (UNEP), Nairobi, Kenya.

⁹ UNEP. 2021. The Adaptation Gap Report 2020. United Nations Environment Programme (UNEP), Nairobi, Kenya.

¹⁰ Seddon, N., Daniels, E., Davis, R., Chausson, A., Harris, R., Hou-Jones, X., Huq, S., Kapos, V., Mace, G., Rizvi, A.R., Reid, H., Roe, D., Turner, B. and Wicander, S. (2020). Global recognition of the importance of nature-based solutions to the impacts of climate change. Global Sustainability 3, e15.



Figure 1. Ecosystem-based approaches address societal challenges while also providing benefits to biodiversity and human well-being. IUCN 2016.

One of the main strengths of implementing NbS is that they can promote coherent implementation of different frameworks agreements, such as the CBD, UN Convention to Combat Desertification (UNCCD), the Sendai Framework for Disaster and Risk Reduction and Ramsar Convention on Wetlands of International Importance as NbS can address multiple societal challenges at a time. The growing global recognition of the connections between climate resilience, biodiversity agendas and the SDGs is reflected in the UN Decade on Ecosystem Restoration (2021-2030)¹¹ and in the Leaders' Pledge for Nature signed by the Heads of State of 83 countries to reverse biodiversity loss by 2030¹².

2. Nature-based Solutions for Resilience in Asia-Pacific

Although countries across the Asia-Pacific region differ widely, the confluence of poverty and inequality, dependence on natural resources, rapidly growing populations, and governance challenges¹³ make the region particularly vulnerable to the impacts of climate change. Rising sea level and saline intrusion threaten Pacific Islands, Asian river deltas and coastal areas, and increased temperatures are leading to glacier lake outburst resulting in floods and landslides in the Himalayas, and coral bleaching in the Pacific. Droughts and floods in the river basins are increasing erosion, affecting water supplies, and impacting fisheries and agricultural productivity, and megacities are exposed to increasing flood risk and effects of urban heat. Further, unsustainable development compounds the impacts of climate change and increasing and megacities are exposed to increasing flood risk and effects of urban heat. Further, unsustainable development compounds the impacts of climate change and increasing

disaster risk. The impacts of climate change are directly leading to loss of life and negatively affecting food and water supplies and livelihoods. Climate impacts are also predicted to lead to increased numbers of climate refugees in the region¹⁴ and globally.

In 2020, the Asia-Pacific region faced a record number of climate-related disasters coupled with the COVID-19 pandemic, affecting tens of millions of vulnerable people across the region. A green recovery focused on NbS can play a key role in advancing a climate-smart recovery that could strengthen social, economic, and ecological resilience¹⁵.

¹¹ www.decadeonrestoration.org

¹² www.leaderspledgeformature.org

¹³ www.adb.org/sectors/governance/issues

¹⁴ ActionAid. (2020). Costs of Climate Inaction: Displacement & Distress Migration.

¹⁵ UNEP (2020). The United Nations Decade on Ecosystem Restoration Strategy.



2.1 Governance for Nature-based Solutions for Resilience

Strong governance systems and institutions play a key role in accelerating climate change adaptation. A strength of the Asia-Pacific region is that most national governments have a ministry or agency that is directly responsible for climate change action, and a majority of them have ratified the UNFCCC. This provides a focal group of government experts and leaders who are developing policies and regulatory frameworks to design, implement and monitor NbS for resilience. However, these agencies often work in silos, limiting their ability to address the many facets and cross-cutting dimensions of NbS. There is a need to increase awareness of the benefits that NbS can deliver for climate resilience, while also promoting cross-sectoral collaboration and policy coherence on climate change adaptation, engaging all relevant ministries, including transportation, construction, finance, investment and disaster risk management, among others.

The uptake of NbS at the regional and transboundary levels is essential for scaling-up lessons learned at the community and national scales. Regional platforms such as the Association of Southeast Asian Nations (ASEAN), the Bangladesh, Bhutan, India, Nepal Initiative (BBIN), and the South Asian Association for Regional Cooperation (SAARC) can be leveraged to raise awareness and promote NbS for resilience throughout the region. Regional frameworks like the Framework for Resilient Development in the Pacific¹⁶, Regional Framework for Disaster Risk Reduction of the Economic Cooperation Organization and the Asia Regional Plan for Implementation of the Sendai Framework call for nature-based solutions for resilience. These platforms can amplify the local knowledge of indigenous people, who have practiced these approaches for generations. Organizations including UNEP and UNDP also provide support to regional initiatives and work directly with governments at the national level through programmes like the National Adaptation Plan Global Support Programme (NAP-GSP)¹⁷.

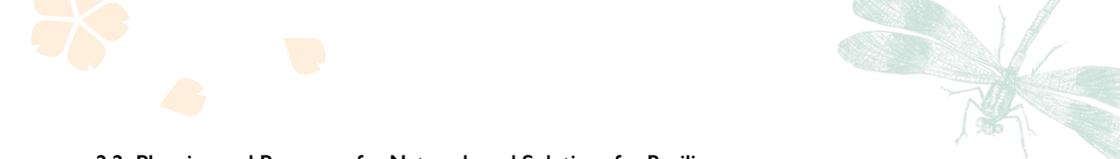


Global climate adaptation governance efforts are expanding, and positively impacting regional and national governance. The Global Commission on Adaptation (GCA), launched in 2018, brings together actors across sectors seeking to elevate the political visibility of climate change adaptation and catalyse action. By focusing on concrete solutions through the eight action tracks,¹⁸ many of which have EbA/NbS as a key approach, it aims to raise the level of ambition and accelerate adaptation action among governments and other actors including the private sector. Despite several challenges, there is an increasing level of political momentum and commitments among governments to promote climate action in the region. On a national level, countries like Fiji are building risk-informed governance systems and to integrate climate change adaptation into development through the NAP-GSP by developing climate change policies, realigning government structures, implementing NbS, raising awareness, and conducting vulnerability assessments to strengthen resilience and advance climate change adaptation.

¹⁶ Pacific Community, Framework for Resilient Development in the Pacific: An Integrated Approach to Address Climate Change and Disaster Risk Management (2017-2030).

¹⁷ www.globalsupportprogramme.org/nap-gsp

¹⁸ <https://gca.org/gca-programs/>



2.2 Planning and Processes for Nature-based Solutions for Resilience

Appropriate planning and processes are crucial to address the complex and long-term implications of climate change. NAPs help countries to integrate climate adaptation into national decision-making and reduce vulnerability to the impacts of climate change by building adaptive resilience. Of the Asia-Pacific countries, Fiji, Kiribati and Sri Lanka have developed a NAP, and five other countries have undertaken activities to integrate climate change adaptation into local government planning and budgeting systems¹⁹. Integrating the concept of EbA into NAPs can deliver multiple benefits, such as supporting people's health, protecting biodiversity and improving livelihoods, all of which can contribute to climate resilience.

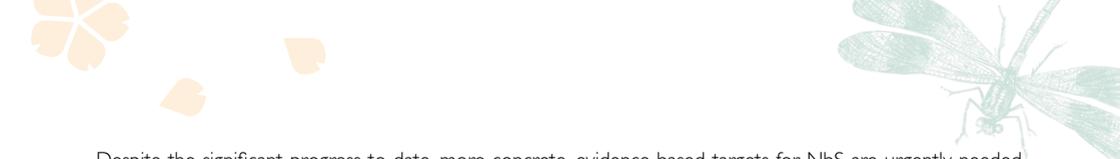
In Asia-Pacific most countries included EbA measures to reduce the threats to ecosystems they identified in their NAPs²⁰. For instance, Fiji's NAP includes a conceptual framework for EbA, Indonesia's NAP recognises the importance of mangrove conservation for climate change adaptation, and Nepal's NAP process is specifically looking to integrate EbA. Further, member states of the GCA, including Bangladesh, China, India, Indonesia, Marshall Islands, Republic of Korea, United Arab Emirates, Uzbekistan and Viet Nam, have made commitments to promote the application of NbS at scale by 2030, with a detailed action plan.



NbS also has a role to play in climate change mitigation. All countries from the Asia-Pacific region have submitted their NDCs in the context of the Paris Agreement. More than 70 per cent of NDCs to date include agricultural, land use change and forestry options to reduce greenhouse gases (GHG) emissions. NDCs also address the adverse impacts of climate-induced disasters; flooding, higher temperatures and heatwaves, sea level rise, drought and storms are the top five climatic hazards identified in NDCs. Proposed measures to mitigate these disasters include the protection and restoration of forests, mangroves and wetlands, improved conservation of species, and protecting and enhancing coastal and marine ecosystems. The NDCs of coastal nations in the Asia-Pacific region place particular importance on adaptation and the role of nature in supporting adaptation. Of these coastal nation NDCs, 69 per cent state an intention to protect ecosystems and/or biodiversity. 79 coastal nations declare vulnerable coastal ecosystems and fisheries, while 65 follow this up with appropriate adaptation actions: 58 per cent commit to NbS, such as mangrove restoration, compared to 48 per cent pledging engineered actions such as seawalls; 72 per cent commit to approaches such as Integrated Coastal Zone Management (ICZM).

¹⁹ UNFCCC. More Countries Formulating National Adaptation Plans, Support to LDCs Strengthened. News. December 2020.

²⁰ NAP Global Network Secretariat. (2020). Building Resilience with Nature: Ecosystem-based Adaptation in National Adaptation Plan Processes. An Analysis.



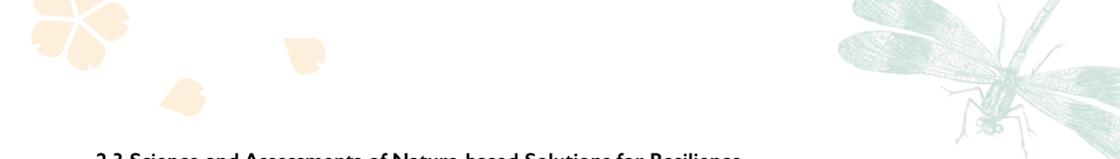
Despite the significant progress to date, more concrete, evidence-based targets for NbS are urgently needed. The prominence of NbS in NDCs generally does not translate into specific targets as only around 17 per cent of NDCs that include NbS also set quantifiable and robust targets. This suggests that considerable potential remains for countries to strengthen the role and monitoring of NbS in future NDCs. The aforementioned IUCN Global Standard for Nature-based Solutions provides a common framework to help benchmark progress that can feed into countries' planning around NbS implementation. The output of the self-assessment provides a percentage match compared against good practices, with a traffic light system to identify areas for further work and adherence to the IUCN Global Standard.

NbS are inherently cross-cutting, therefore their planning requires a collaborative approach. For example, through the Bonn Challenge, the Asia-Pacific Forestry Commission and their partners developed the Regional Strategy and Action Plan for Forest and Landscape Restoration in Asia-Pacific. This blueprint focuses on developing projects, sourcing financing and raising awareness of FLR throughout Asia-Pacific. The first private sector Bonn Challenge pledge was made by Asia Pulp & Paper (Indonesia), demonstrating the potential to further engage the private sector in NbS for resilience.

Given the tight links between climate change adaptation and disaster risk reduction (DRR), it is also important to ensure that National Disaster Risk Reduction Strategies include NbS. This will ensure not only efficient and cost-effective risk reduction, but also a coherent approach with climate change adaptation. A recent analysis of DRR guidance documents in Asia-Pacific countries reveals most countries do not explicitly refer to actions on Eco-DRR/EbA in their national DRR strategies, although some do refer to ecosystem approaches including ecosystem protection²¹. A new guidance document²² by the United Nations Office for Disaster Risk Reduction (UNDRR) aims to give practical, how-to-do information on planning and implementing NbS practices, both for DRR and climate change adaptation (CCA). It is designed to help implement the Sendai Framework, with a focus on its environmental components.

²¹ UNDRR. (2020). Ecosystem-Based Disaster Risk Reduction: Implementing Nature-based Solutions for Resilience, United Nations Office for Disaster Risk Reduction – Regional Office for Asia and the Pacific, Bangkok, Thailand. UNDRR. (2020). Words into Action: Nature-based solutions for disaster risk reduction.

²² UNDRR. (2020). Words into Action: Nature-based solutions for disaster risk reduction.



2.3 Science and Assessments of Nature-based Solutions for Resilience

It is essential that decisions about climate change are based on the best available scientific evidence and data. A number of tools have been developed to understand and measure the vulnerability of ecosystems, species and livelihoods to climate change threats in the region. Asia-Pacific also hosts various centres of excellence for environmental research, including the International Centre for Integrated Mountain Development (ICIMOD), the Mekong River Commission (MRC), and the Secretariat of the Pacific Regional Environment Programme (SPREP). These organisations can support the research and knowledge exchange needed to develop long-lasting and sustainable NbS for climate change.

Despite the tools and technical capacity available, not many countries in the region have officially endorsed frameworks to conduct Vulnerability Assessments or NbS design at national scale. This is likely due to a range of factors, including limited government knowledge of the benefits NbS can deliver; the long gestation period of the benefits and a lack understanding of the tools available. In addition, there is a need to generate further evidence of transboundary application of NbS to support regional planning and assessments and share the evidence widely. While the Asia-Pacific Adaptation Network (APAN) is currently among the few regional adaptation knowledge platforms through which to share regional and local knowledge in Asia-Pacific, organizations like IUCN, UNEP and SPREP provide platforms for knowledge exchange on NbS.



Another opportunity for Asia-Pacific is the Lima Adaptation Knowledge Initiative (LAKI), an adaptation knowledge sharing initiative, jointly implemented by UNFCCC and UNEP through the Global Adaptation Network (GAN) under the NWP, which addresses knowledge barriers hindering the implementation and scaling-up of adaptation action. Through a multi-stakeholder approach, LAKI aims to identify, categorize and prioritize knowledge gaps in a particular subregion and through collaborative actions, close these gaps many of which are directly linked to NbS. For instance, the lack of actionable knowledge on the impacts of climate change on ecosystems and biodiversity, and the lack of methodologies and tools to quantify the impact of climate change on ecosystem services were identified as priority gaps during the phase I of LAKI in the Hindu-Kush-Himalayan subregion.²³ The LAKI process has been initiated for the Pacific Small Islands Developing States (SIDS) in collaboration with UNFCCC, APAN, and SPREP to prioritize and close knowledge gaps for the target knowledge users.

Further, other innovative approaches in the region, such as the EPIC (Educational Partnerships for Innovation in Communities) Network²⁴ that helps link knowledge to practice by connecting universities with municipalities to work on sustainability issues in a specific community, can support advancing climate resilience in cities.

²³ UNFCCC. (2018). Lima Adaptation Knowledge Initiative. Closing knowledge gaps to scale up adaptation.

²⁴ <https://www.epicn.org/>



2.4 Technologies and Practices for Nature-based Solutions for Resilience

Technologies and practices are key components in implementing adaptation action and building climate resilience. It is essential to consider the local context when determining the appropriate technologies to use, and such technologies must be climate-resilient and adaptive. Many technological applications, such as geographic information systems (GIS), early warning systems, remote sensing and hydrological modelling, among others can help to gather evidence on the potential benefits of NbS approaches. NbS can also be used as part of a hybrid technology solution, where ecological principles are merged with 'hard' technology or infrastructure to increase the advantages or reduce the limitations derived from using one approach as a stand-alone-strategy.²⁵ An example of such a model is the hybrid coastal protection-system, pioneered by the government of Fiji, which combines natural solutions, such as mangroves and Vetiver plants with boulders to protect the coastline and communities from storm surges.

As with technologies, effective adaptation practices must consider the processes specific to a particular ecosystem as well as the climatic and non-climatic drivers and socio-ecological factors.²⁶ One of the best examples in the Asia-Pacific region is the restoration of the Loess Plateau in China. Plagued by years of overuse and overgrazing, the region suffered from one of the highest erosion rates in the world. The project, funded by the World Bank, supported the restoration of the grasslands, trees and shrubs on the slopes of the plateau. The grazing of livestock was limited, allowing plants to grow back, and sustainable farming practices were introduced to the farmers, leading to the doubling their income, employment diversification and the revitalisation of the ecosystem.²⁷

Other examples include an ecosystem restoration project in Cambodia that was completed by planting multi-use native trees that prevent erosion, enhance soil productivity and regulate soil water flow while also providing food, timber, medicine and fruit for communities.²⁸ In Nepal, an EbA project is restoring forests and rangelands by using indigenous tree and grass species that are climate-resilient and will provide benefits to indigenous and local communities. In Bangladesh's Barind Tract and Haor Area, the reforestation of degraded dryland forests will help promote topsoil conservation and reduce erosion, and the restoration of swamp forests, important areas for fish nurseries, will help sustain local fisheries and agriculture activities and regulate water flows. In the Mekong Delta, farmers are restoring mangrove forests that were previously cut down for shrimp farming. New certification schemes promote organic shrimp farming, alongside mangrove replantation, reversing the loss of the mangroves in the project area.

However, often, NbS are implemented in small to medium scale projects. New technologies that are developed in the region must be scalable for integration into national policy and strategy. Governments in the Asia-Pacific region still understand NbS mainly as reforestation and mangrove planting, unaware of the diversity of options. For instance, only a small percentage of projects focus on building the resilience of urban environments through NbS, and while urban NbS is slowly gaining traction in the region, there is a need for more widespread application in megacities.

²⁵ UNEP-WCMC. (2019). Selecting complementary adaptation measures. EbA Briefing Note 4.

²⁶ UNEP-WCMC. (2019). EbA in different ecosystems: placing measures in context. EbA Briefing Note 3.

²⁷ www.worldbank.org/en/news/feature/2007/03/15/restoring-chinas-loess-plateau

²⁸ UNEP-Adaptation Fund: Enhancing climate change resilience of rural communities living in protected areas of Cambodia. Project factsheet.



China has invested more than USD 12 billion in its Sponge City Initiative, which aims to build water-absorbent infrastructure in 30 cities throughout the country, by building wetlands for rainwater storage, installing rooftop gardens, and developing permeable roads. In Lao PDR, an urban EbA project²⁹ aims to strengthen climate resilience of four major cities by restoring 1,500 ha of urban wetland and stream ecosystems and implementing integrated flood management solutions, and a regional Urban EbA Asia project³⁰ is using EbA approaches to reduce the climate change vulnerability of poor urban communities in Bhutan, Cambodia, Lao PDR and Myanmar:

2.5 Finance and investments on NbS for resilience

The global adaptation costs have estimated to be USD 140-300 billion per year by 2030 and USD 280-500 billion per year by 2050³¹. To effectively implement climate adaptation activities and strengthen resilience, there is an urgent need to scale-up finance and investments as well as build economic evidence base on benefits generated by NbS. Investments in NbS can deliver environmental and social benefits and go hand-in-hand with COVID-19 recovery, and studies have also shown they can deliver significant economic benefits³². For example, the restoration and rehabilitation of grasslands and woodlands have been shown to have benefit to cost ratios of up to 35 and internal rates of return of 20–60 percent³³. Another study found that in Viet Nam the restoration of 12,000 ha of mangroves has been estimated to save USD7.3 million/year in dyke maintenance³⁴, and in Fiji, an assessment showed that watershed management options are at least twice as cost-effective compared to 'hard' engineering options³⁵.

There is high investment in climate action from global funds and donors throughout the region. The Green Climate Fund (GCF) has provided USD 2.2 billion in funding in the Asia-Pacific for climate change adaptation and mitigation, with an additional USD 6 billion in co-funding.³⁶ The Global Environment Facility (GEF) has supported USD 76 million in regional projects in Asia-Pacific, with an additional USD 256 million specifically for small island developing states,³⁷ and billions more provided at the national level. However, only a fraction of funding dedicated to climate change adaptation actually goes towards financing NbS³⁸, despite the fact that they can deliver high rates of economic return in addition to creating social and environmental benefits.³⁹

²⁹ UNEP. Major new project to use nature-based solutions to help Laos adapt to climate change. Press release. November 2019.

³⁰ UNEP. Urban Ecosystem-based Adaptation in Asia-Pacific. Project webpage.

³¹ UNEP. (2016). Adaptation Finance Gap Report 2016. United Nations Environment Programme (UNEP), Nairobi, Kenya.

³² Sinha Roy A., (2021). Economic Resilience Outlook. Prepared for the 7th Asia-Pacific Climate Change Adaptation Forum, 8-12 March 2021. Bangkok: Asia Pacific Adaptation Network

³³ De Groot, R.S., Blignaut, J., Van Der Ploeg, S., Aronson, J., Elmqvist, T. and Farley, J. (2013). Benefits of investing in ecosystem restoration. *Conservation Biology* 27: 1286-1293.

³⁴ Powell, N., Osbeck, M., Tan, S.B., and Toan, V.C. (2011). World Resources Report Case Study: Mangrove restoration and rehabilitation for climate change adaptation in Vietnam. Washington, D.C. World Resources Report.

³⁵ Rao, N.S., Carruthers, T.J.B., Anderson, P., Sivo, L., Saxby, T., Durbin, T., Jungblut, V., Hills, T., and Chape, S. (2013). An economic analysis of ecosystem-based adaptation and engineering options for climate change adaptation in Lami Town, Republic of the Fiji Islands. A technical report by SPREP

³⁶ GCF Spotlight Asia-Pacific. August 2020

³⁷ GEF. The GEF announces strong support for Small Island Developing States by committing US \$ 256 million. Press release. September 2014.

³⁸ UNEP. (2021). The Adaptation Gap Report 2020. United Nations Environment Programme (UNEP), Nairobi, Kenya.

³⁹ GCA. 2020. State and Trends in Adaptation 2020.



The newly launched Adaptation Fund Climate Innovation Accelerator, a USD 10 million small grant programme to foster innovation in adaptation, hosted by the Adaptation Fund and co-implemented by UNEP, the Climate Technology Centre and Network (CTCN) and UNDP, provides an additional opportunity for NbS project funding in the region. UNEP and IUCN also recently launched the Global Fund for Ecosystem-based Adaptation (2020-2024), which aims to identify and remove barriers to up-scaling EbA and provide targeted support for innovative approaches to implement and scale-up EbA solutions, supported by the Federal Environment Ministry of Germany. Such funding avenues are key in financing and catalysing the uptake of NbS, and contribute to addressing challenges related to policy, planning and practices through combined efforts in supporting and strengthening the work of existing adaptation networks and NbS knowledge production and dissemination.

Despite strong investment from international organisations and donors in climate action, there are still very few national schemes for funding NbS for resilience in the Asia-Pacific region, limiting the scaling up of NbS implementation⁴⁰ and its long-term sustainability. There is a need to strengthen the national and regional mechanisms for funding NbS, including exploring private sector funding and partnerships beyond corporate social responsibility. To address these gaps, the GCA is calling for innovative financing models to scale up adaptation, resilience and NbS investments. This involves building coalitions across sectors to unlock financial resources, integrating climate risks into national decision-making processes and financial planning, and making funds available to local actors to strengthen climate resilience.

One example of a national NbS best practice in the region can be seen in the government of Pakistan's response to the COVID-19 pandemic. Pakistan developed a green economic stimulus package, employing 65,000 individuals who lost their jobs during the pandemic to plant trees, as part of their ambitious 10 Billion Tree Tsunami Programme. This investment provides employment opportunities that will also benefit biodiversity conservation by protecting natural habitats and helping to address climate change through increased protection of natural vegetation and carbon storage.

3. Building Resilience in the Context of COVID-19

The COVID-19 pandemic has demonstrated the urgent need to recognise the prevalence of illegal wildlife trade, biodiversity loss and ecosystem degradation, which increase the likelihood of zoonotic virus spill over events and future pandemics, and develop stronger policies to address these issues. Without appropriate action, climate change is likely to exacerbate climate-sensitive infectious diseases.⁴² The pandemic highlights the connection between healthy nature and human health and livelihoods, and has provided the global community with an opportunity to address climate change and biodiversity loss, with a focus on protected areas.

⁴⁰ Cooper, R., and Matthews, J.H. (2020). Water Finance and Nature-based solutions. K4D Helpdesk Report 857. Brighton, UK: Institute of Development Studies.

⁴¹ UNEP. Four Principles to Reduce the Risks of zoonotic diseases. News and Stories. October 2020.

⁴² UNEP. (2018). The Adaptation Gap Report 2018. United Nations Environment Programme (UNEP), Nairobi, Kenya.



Recognizing that human health is interconnected with the health of nature, the World Health Organization's One Health framework⁴³ aims to design and implement programmes and policies with actors across sectors to better understand public health issues and strengthen resilience. The case for mainstreaming sustainability and climate-proof solutions has never been more important. The pandemic highlighted the need to improve the resilience of societies, to be prepared for future uncertainties, with countries integrating sustainability into their recovery plans, as seen in Pakistan's Green Stimulus, which aims to protect nature and create jobs.

UNEP has proposed the following opportunities to link COVID-19 recovery plans with integrated climate solutions: (1) intensifying renewable energy and energy efficiency; (2) delivering clean air and better health through electric mobility; (3) reducing fossil fuel subsidies and tax emissions; (4) making ecosystems, food and rural livelihoods; and (5) cities resilient.⁴⁴ This recovery approach dovetails with the benefits of NbS and provides a unique opportunity to build NbS into recovery plans. It also highlights that recovery from COVID-19 must respond to the social and economic effects of the pandemic, simultaneously improve the resilience of societies to be better prepared in the future, and contribute to increase job opportunities for people and promote sustainable economic development.

4. Priorities for action

The priority actions presented here will be further updated by incorporating suggestions and action-oriented recommendations discussed and explored at the various Nature-based Resilience stream sessions of the 7th APAN Forum.

- **Capacity building on NbS for resilience.**

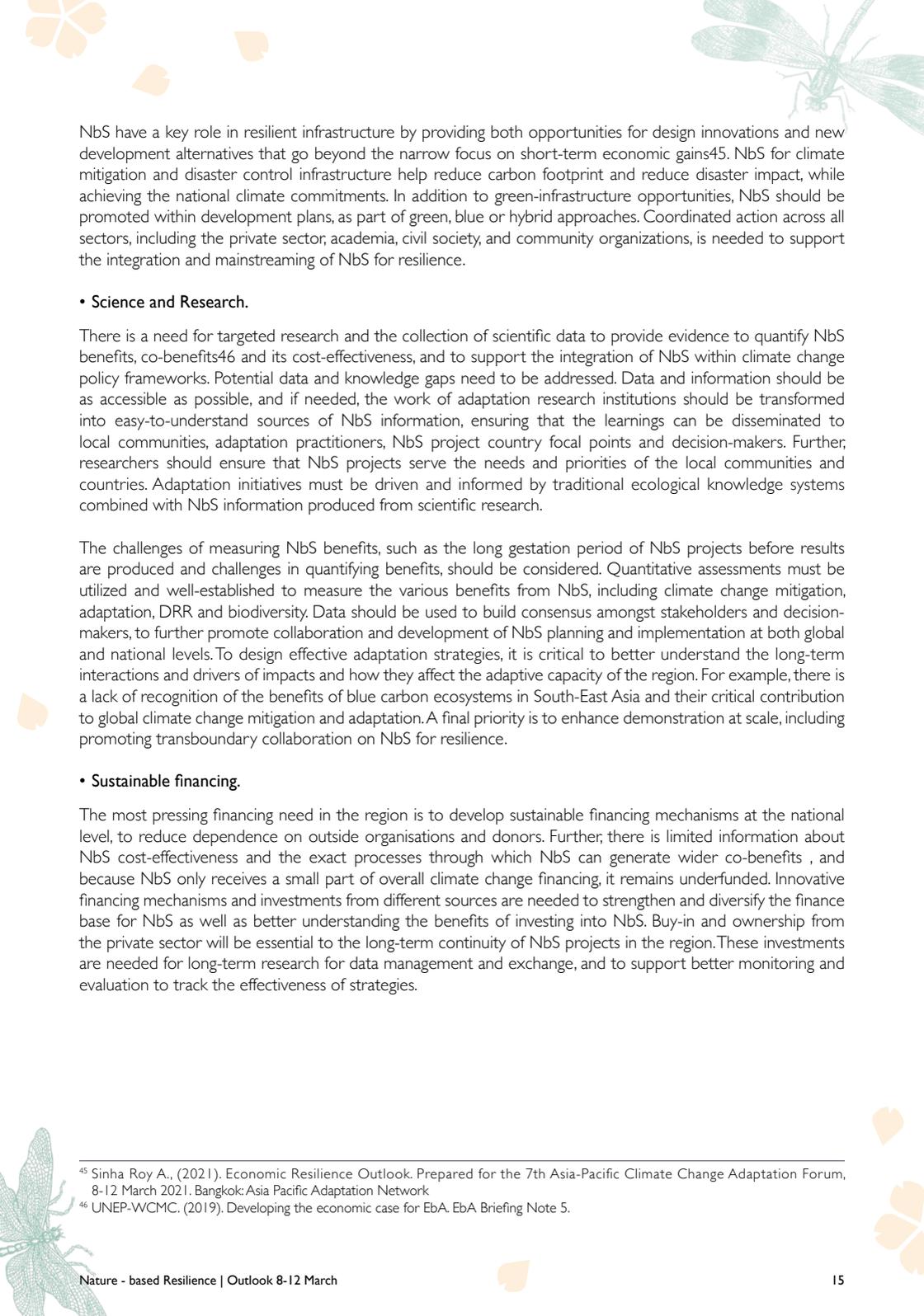
There is a significant need to support capacity building on NbS throughout the world, and particularly in the Asia-Pacific region. This can be accomplished through a multi-pronged approach. At the local and national scales, governments must support research and knowledge sharing, further developing local technical capacity to implement NbS for resilience and promoting the use of existing tools to carry out ecosystem services valuation at scale. The results must be integrated within national plans and policy, and the benefits of NbS approaches should be captured and communicated, and lessons learned should be shared with other countries in the region. This will help countries to learn about NbS practices that are effective in the regional context and would also help to identify adaptation priorities and gaps. To help raise awareness and impart knowledge about adaptation efforts, networks such as the regional APAN and the GAN help to disseminate adaptation knowledge, especially on NbS.

- **Integrating and mainstreaming NbS for resilience.**

There is a range of opportunities to further mainstream NbS. Within governments, more cross-sectoral collaboration is needed among ministries, for instance, through inter-ministerial committees, to promote and develop policies that strengthen the integration of NbS into national policies. NbS should be integrated into the NAPs and NDCs of all countries in the region, with specific, quantifiable targets. NbS should also be integrated into National Biodiversity Strategies and Action Plans (NBSAPs) under the CBD as well as other commitments (such as the SDG efforts, DRR and the Bonn Challenge). At the national and regional levels, the newly developed NbS Global Standard and indicators can be highlighted within strategic documents, as well as in national cross-sectoral platforms on climate change and regional cooperation. Incorporating activities that build evidence on the effectiveness of NbS and EbA in strengthening climate change resilience will help integrate adaptation into plans, budgets and policies across sectors and further support the uptake of the integration and mainstreaming of such approaches.

⁴³ WHO: One Health

⁴⁴ UNEP. (2020). The Post COVID-19 Recovery: How to articulate integrated responses to the health, economic and climate crises in Latin America & the Caribbean. Policy brief.



NbS have a key role in resilient infrastructure by providing both opportunities for design innovations and new development alternatives that go beyond the narrow focus on short-term economic gains⁴⁵. NbS for climate mitigation and disaster control infrastructure help reduce carbon footprint and reduce disaster impact, while achieving the national climate commitments. In addition to green-infrastructure opportunities, NbS should be promoted within development plans, as part of green, blue or hybrid approaches. Coordinated action across all sectors, including the private sector; academia, civil society, and community organizations, is needed to support the integration and mainstreaming of NbS for resilience.

- **Science and Research.**

There is a need for targeted research and the collection of scientific data to provide evidence to quantify NbS benefits, co-benefits⁴⁶ and its cost-effectiveness, and to support the integration of NbS within climate change policy frameworks. Potential data and knowledge gaps need to be addressed. Data and information should be as accessible as possible, and if needed, the work of adaptation research institutions should be transformed into easy-to-understand sources of NbS information, ensuring that the learnings can be disseminated to local communities, adaptation practitioners, NbS project country focal points and decision-makers. Further; researchers should ensure that NbS projects serve the needs and priorities of the local communities and countries. Adaptation initiatives must be driven and informed by traditional ecological knowledge systems combined with NbS information produced from scientific research.

The challenges of measuring NbS benefits, such as the long gestation period of NbS projects before results are produced and challenges in quantifying benefits, should be considered. Quantitative assessments must be utilized and well-established to measure the various benefits from NbS, including climate change mitigation, adaptation, DRR and biodiversity. Data should be used to build consensus amongst stakeholders and decision-makers, to further promote collaboration and development of NbS planning and implementation at both global and national levels. To design effective adaptation strategies, it is critical to better understand the long-term interactions and drivers of impacts and how they affect the adaptive capacity of the region. For example, there is a lack of recognition of the benefits of blue carbon ecosystems in South-East Asia and their critical contribution to global climate change mitigation and adaptation. A final priority is to enhance demonstration at scale, including promoting transboundary collaboration on NbS for resilience.

- **Sustainable financing.**

The most pressing financing need in the region is to develop sustainable financing mechanisms at the national level, to reduce dependence on outside organisations and donors. Further; there is limited information about NbS cost-effectiveness and the exact processes through which NbS can generate wider co-benefits, and because NbS only receives a small part of overall climate change financing, it remains underfunded. Innovative financing mechanisms and investments from different sources are needed to strengthen and diversify the finance base for NbS as well as better understanding the benefits of investing into NbS. Buy-in and ownership from the private sector will be essential to the long-term continuity of NbS projects in the region. These investments are needed for long-term research for data management and exchange, and to support better monitoring and evaluation to track the effectiveness of strategies.

⁴⁵ Sinha Roy A., (2021). Economic Resilience Outlook. Prepared for the 7th Asia-Pacific Climate Change Adaptation Forum, 8-12 March 2021. Bangkok: Asia Pacific Adaptation Network

⁴⁶ UNEP-WCMC. (2019). Developing the economic case for EbA. EbA Briefing Note 5.