SYNTHESIS REPORT

Tracking Progress on the Integration of Nature-Based Solutions and Ecosystem-Based Adaptation in National Adaptation Plan Processes

NAP Global Network

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About the NAP Global Network

The NAP Global Network was created in 2014 to support developing countries in advancing their NAP processes, and help accelerate adaptation efforts around the world. To achieve this, the Network facilitates South-South peer learning and exchange, supports national-level action on NAP formulation and implementation, and generates, synthesizes, and shares knowledge. The Network's members include individual participants from more than 155 countries involved in developing and implementing National Adaptation Plans. Financial support for the Network has been provided by Austria, Canada, Germany, Ireland, the United Kingdom and the United States. The Secretariat is hosted by the International Institute for Sustainable Development (IISD). For more information, visit www.napglobalnetwork.org.

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Executive Summary

This is the second synthesis report developed by the National Adaptation Plan (NAP) Global Network that assesses the extent to which countries have integrated nature-based solutions (NbS), ecosystem-based adaptation (EbA), and biodiversity considerations into their NAP documents. The report provides a larger sample size than the first review and comes at a time when countries are in the process of renewing their respective biodiversity and conservation commitments under the Convention on Biological Diversity (CBD), providing important opportunities to leverage EbA and/or NbS to enhance synergies in the aim of advancing actions on climate change and nature.

The review findings are largely based on a desk-based review of 57 multi-sector NAP documents that were submitted to the United Nations Framework Convention on Climate Change (UNFCCC) as of July 31, 2024. The review focused on the following key aspects:

- References to EbA, NbS, ecosystem-based approaches, ecosystem-based disaster risk reduction, ecosystem management and natural infrastructure.
- The inclusion of ecosystems and biodiversity within climate risk assessment sections and the inclusion of types of ecosystems identified as vulnerable.
- References to ecosystem-based guiding principles and the inclusion of ecosystems as a stand-alone priority sector within the NAP.
- References to the country's National Biodiversity Strategy and Action Plan (NBSAP), developed under the CBD, and to synergies and alignment opportunities between the NAP and NBSAP.
- Types of EbA/NbS measures identified in NAPs.

Key findings related to the uptake and integration of EbA and/or NbS in NAPs are:

- **The terms "ecosystem-based adaptation" or "nature-based solutions" are present in most NAP documents (44 out of 57).** While EbA is a subset of NbS, the use of the term "EbA" was more prominent among NAP documents. However, more recent NAP documents have a higher likelihood of mentioning NbS. This suggests that NbS have gained traction in NAP processes in the years since the 2019 Climate Action Summit emphasized their importance.
- **Most NAP documents (49 out of 57) mention ecosystems, biodiversity, and the environment as a priority sector.** The vast majority of NAPs identify at least one priority sector related to ecosystems, biodiversity, or the environment. The prioritization of these sectors demonstrates the value that countries place on ecosystems, biodiversity, and the environment in climate change adaptation efforts.
- **Most countries provide information and data about the climate risks and vulnerabilities that their ecosystems face due to climate change.** Almost three quarters of NAPs mention ecosystems as a standalone segment in their climate risk assessment chapter and discuss climate risks to multiple ecosystems in a broader sense. Forests, marine and coastal, freshwater (lakes, rivers, wetlands), and agricultural

ecosystems are among the ecosystems identified most often as vulnerable to climate change.

- **Fewer than half of the countries (27 out of 57) refer to their NBSAP in their NAP documents.** Even though all countries reviewed have an NBSAP in place, fewer than half of the countries reference their NBSAP in their NAP document, indicating a potential disconnect between national climate change adaptation and biodiversity planning processes.
- **Most countries (49 out of 57) refer to the links between climate change and biodiversity loss in their NAPs.** This provides evidence that there is growing recognition, among policy-makers and practitioners, of the linkages between the twin crises of climate change and biodiversity loss, which aligns with acknowledgement from decision-makers at international forums, such as the UNFCCC and the CBD, that integrated approaches are crucial to tackling the two crises.
- **Some countries (25 out of 57 NAPs) have chosen to include ecosystem-based or environmentally friendly approaches to climate change adaptation as a guiding principle.** Including ecosystem-based or environmentally friendly approaches to climate change adaptation as a guiding principle provides countries with an important mandate to prioritize EbA solutions across sectors and emphasizes the role of ecosystems in vulnerability reduction for people and their livelihoods.
- **All countries included one or more actions related to protecting, conserving, restoring, sustainably using, and managing natural ecosystems in their NAP documents.** The review showed that the majority of EbA and/or NbS actions focus on the sustainable management of ecosystems and natural resources, followed by efforts to restore and conserve ecosystems. The strong focus on sustainable management actions may be reflective of countries trying to balance the preservation of ecosystems and resources with human needs, seeking to promote human prosperity alongside the flourishing of nature.

The findings highlight good awareness among governments that ecosystems and the services they provide are significantly compromised by accelerating climate change, and that this threatens their long-term viability and functionality. Simultaneously, the analysis showed that countries recognize the significant role ecosystems can play in adaptation to build climate resilience. EbA and/or NbS actions emerged as an essential approach to adaptation that countries consider to be effective in building ecological, social, and economic resilience; these actions were present across all NAPs. However, despite the extent of EbA and/or NbS actions included in NAPs, further analysis is needed to understand the extent to which these measures are being implemented.

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Glossary

Ecosystem-based adaptation	"The use of biodiversity and ecosystem services as part of an overall adaptation strategy to help people adapt to the adverse effects of climate change" (Convention on Biological Diversity, 2009). Ecosystem-based adaptation is a type of nature-based solution.
Ecosystem-based approaches	Integrated strategies to sustainably and equitably manage, use, and conserve natural resources with consideration for the complexity of ecosystems (adapted from Convention on Biological Diversity, 2000).
Ecosystem-based disaster risk reduction	The use of ecosystem-based approaches alongside disaster risk reduction strategies to enhance disaster prevention measures, minimize impacts on communities and ecosystems, and assist in recovery efforts (United Nations Office for Disaster Risk Reduction, 2020; Sudmeier-Rieux et al., 2019). Ecosystem-based disaster risk reduction is a type of nature-based solution.
Ecosystem management	An integrated approach to sustainable management that seeks to improve the health and functioning of ecosystems in order to provide ecosystem services for people (United Nations Environment Programme, 2009). Ecosystem management is a type of nature-based solution.
Ecosystem services	The benefits that nature can provide to people (Millennium Ecosystem Assessment, 2005). They are divided into four categories: provisioning, regulating, supporting, and cultural services.
Natural infrastructure	The strategic use of ecosystem components, such as water and native vegetation, to address infrastructure needs, while also providing environmental, socioeconomic, and health benefits (Canadian Council of Ministers of the Environment, 2021). Natural infrastructure is also known as green infrastructure and is a type of nature-based solution.
Nature-based solutions	"Actions to protect, conserve, restore, sustainably use and manage natural or modified terrestrial, freshwater, coastal and marine ecosystems which address social, economic and environmental challenges effectively and adaptively, while simultaneously providing human well-being, ecosystem services, resilience and biodiversity benefits" (United Nations Environment Assembly, 2022).
Productive sector	In the context of this review, the term "productive sector" encompasses the primary production elements of the agricultural (crops, livestock), forestry, and fisheries sectors. Many productive sectors rely on natural resources to produce goods.

1
Introduction

Countries and adaptation practitioners have increasingly championed nature-based solutions (NbS), including ecosystem-based adaptation (EbA), as an approach that can help strengthen resilience, tackle climate change, and protect biodiversity (German Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection, 2023; Nature4Climate, 2023). The Intergovernmental Panel on Climate Change (IPCC) Sixth Assessment Report has concluded with high confidence that "nature-based solutions provide adaptation and mitigation benefits for climate change, as well as contributing to other sustainable development goals" and that "ecosystem-based adaptation can deliver climate change adaptation for people, with multiple additional benefits including those for biodiversity" (IPCC, 2022, p. 203).

In 2020, the NAP Global Network released an analysis of EbA integration in countries' National Adaptation Plans (NAPs). Based on a review of the 19 NAP documents submitted to the United Nations Framework Convention on Climate Change's (UNFCCC) NAP Central at the time, the analysis noted that the NAP process[1] presents "a strategic opportunity to raise the profile of EbA approaches, providing a framework … for implementation at scale" (Terton & Greenwalt, 2020). Four years later, as of July 31, 2024, 57 developing countries have submitted multi-sector NAP documents to the UNFCCC. With a larger sample size for the review and the opportunity to leverage the outcomes of the first Global Stocktake under the Paris Agreement, as well as the renewal of countries' biodiversity and conservation commitments under the Convention on Biological Diversity (CBD), the NAP Global Network is updating the analysis on NbS and/or EbA integration in NAPs with new methodologies for review and renewed insights for the NAP process.

This updated analysis seeks to understand the extent to which countries have integrated NbS, EbA, and biodiversity considerations into their NAP documents. It identifies gaps, trends, and opportunities in countries' approaches to integrating NbS and/or EbA and draws out lessons for future adaptation planning that promotes synergies and alignment between climate change adaptation and biodiversity conservation. Additionally, we hope to contribute to the global policy conversations around NbS and/or EbA and provide the evidence base for the importance and relevance of NbS and/or EbA in climate action and biodiversity conservation, as well as offering a way forward and resources for scaling up the integration of NbS and/or EbA in adaptation planning and implementation.

[1] The concise term "NAP process" refers to the "process to formulate and implement national adaptation plans" as contained in Decision 1/CP.16 and the subsequent decisions under the UNFCCC. It is a means for developing countries to assess and identify medium- and long-term adaptation needs and to develop and implement strategies and programs to address those needs. See section 2.1 for more information on the NAP process.

Following this introduction, section 2 provides an overview of the NAP process, the concepts of NbS and EbA, and a summary of the NbS and/or EbA discussion in international policy processes, including the UNFCCC and the CBD. Section 3 describes the methodology for this review and analysis. Section 4 outlines the results and key findings of this analysis, and section 5 provides reflections and suggested resources for a way forward. This report will be of interest to governments, adaptation and biodiversity conservation practitioners and policy-makers, researchers on NbS and EbA, and negotiators working on adaptation, biodiversity, and NbS negotiations.

2
Integrating Ecosystems into NAP Processes

This section introduces the NAP process, as well as key elements and concepts related to ecosystems and biodiversity considerations in adaptation planning and implementation.

2.1 What Is the NAP Process?

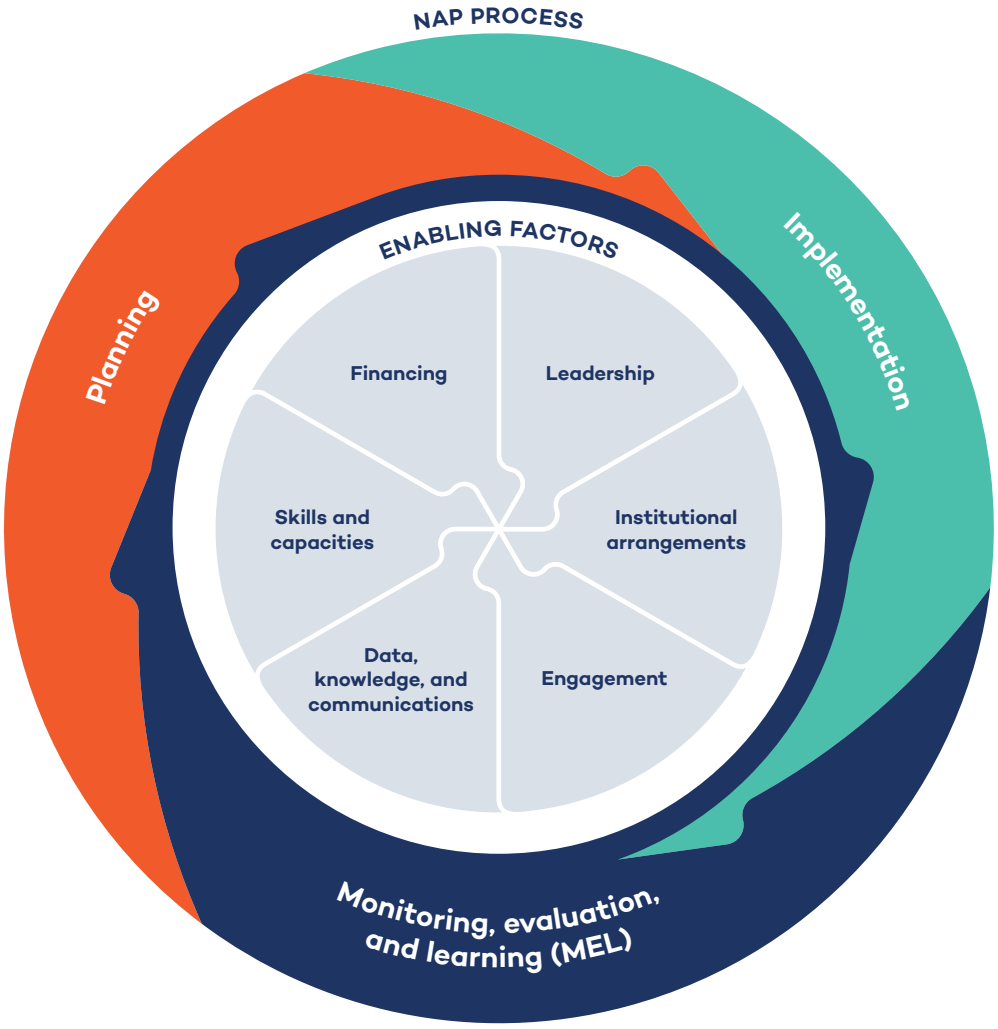
The NAP process is a continuous, progressive, and iterative strategic process led by national governments that "enables countries to identify and address their medium- and long-term priorities for adapting to climate change" (Hammill et al., 2019). It was established in 2010 under the Cancun Adaptation Framework. Its objectives are to:

- "reduce vulnerability to the impacts of climate change, by building adaptive capacity and resilience, [and]
- "facilitate the integration of climate change adaptation, in a coherent manner, into relevant new and existing policies, programmes and activities, in particular development planning processes and strategies, within all relevant sectors and at different levels, as appropriate" (UNFCCC, 2011, p. 80).

The official technical guidelines for the NAP process were developed by the Least Developed Countries Expert Group (LEG) (2012). In simple terms, the NAP process can be summarized with three broad overlapping phases: planning; implementation; and monitoring, evaluation, and learning (MEL) (NAP Global Network, 2023).[2] NAP processes are guided by principles of participation, transparency, gender-responsiveness, and consideration of vulnerable groups, communities, and ecosystems (UNFCCC, 2011). The NAP Global Network has emphasized six key enabling factors that support effective, inclusive NAP processes: leadership; institutional arrangements; engagement; data, knowledge, and communications; skills and capacities; and financing (see Figure 1) (NAP Global Network, 2023).

[2] The official technical guidelines for the NAP process developed by the LEG (2012) have four elements: lay the groundwork and address gaps; preparatory elements; implementation strategies; and reporting, monitoring and review.

Figure 1. Phases and enabling factors in the NAP process



Source: NAP Global Network, 2023.

While the national ministry responsible for climate change and the environment is typically responsible for leading the NAP process, this ministry must also engage a wide range of other governmental and non-governmental actors. These actors include government institutions across sectors and levels, as well as civil society organizations, the private sector, academia, and communities.

As of July 31, 2024, 58 developing country parties have submitted NAP documents (multi-sectoral and sector-specific) to the UNFCCC.[3] Over 140 developing countries currently have a NAP process underway (UNFCCC, 2023c).

[3] NAP documents submitted to the UNFCCC can be accessed via NAP Central at https://napcentral.org/. The list of NAPs on NAP Central includes sector-specific NAPs from Uruguay, which are not included in the analysis as we are focusing on multi-sector NAP documents.

2.2 Nature-based Solutions and Ecosystem-based Adaptation

In the past 2 decades, the concepts of NbS and/or EbA have gained prominence in policy, practice, and the literature. The development of NbS and/or EbA were informed by earlier concepts: the Ecosystem Approach, endorsed by the CBD in 2000, which promotes the sustainable and equitable management of natural resources with consideration for the complexity of ecosystems (CBD, 2000), and ecosystem services, which refers to the benefits that nature can provide to people, as outlined by the Millennium Ecosystem Assessment (2005).

While EbA and/or NbS are often used in similar contexts, it is important to distinguish between the two. NbS is broader in scope and serves as an umbrella concept for ecosystem-based approaches that address a range of societal challenges, including climate change adaptation and mitigation, disaster risk reduction, biodiversity loss, and food and water security, among others (IUCN, 2020). In contrast, EbA specifically focuses on societal adaptation to climate change, making it a subset of NbS. Therefore, while all EbA measures are NbS, not all NbS actions are considered EbA.

EbA was the first of the two concepts to be established. Defined by the CBD's Second Ad Hoc Technical Expert Group on Biodiversity and Climate Change in 2009, EbA is "the use of biodiversity and ecosystem services as part of an overall adaptation strategy to help people adapt to the adverse effects of climate change" (CBD, 2009). It includes measures to sustainably manage, conserve, and restore ecosystems, and aims to build resilience to climate change, generate societal benefits, and protect biodiversity. Since its introduction, EbA has gained widespread recognition and support in both climate and biodiversity forums.

The concept of NbS emerged more recently. The definition this report uses is from the United Nations Environment Assembly (UNEA, 2022): "actions to protect, conserve, restore, sustainably use and manage natural or modified terrestrial, freshwater, coastal and marine ecosystems which address social, economic and environmental challenges effectively and adaptively, while simultaneously providing human well-being, ecosystem services, resilience and biodiversity benefits." This definition was adopted by UNEA through Resolution 5/5 in March 2022 (UNEA, 2022). It builds on an earlier definition of NbS that was introduced by the International Union for Conservation of Nature (IUCN) in 2016.[4]

2.3 NbS and/or EbA in International Policy Processes

With its recent emergence, the concept of NbS has quickly captured the attention of climate- and biodiversity-related policy processes. The United Nations Climate Action Summit in 2019 brought further political attention to the potential of NbS to help countries address the climate and biodiversity crises while contributing to the achievement of the Sustainable Development Goals (UNEP, 2019).

[4] "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, 2016).

In the 2 years following the Climate Action Summit, momentum for the concept's mainstreaming continued to build. In March 2022, UNEA adopted Resolution 5/5 to provide an internationally recognized definition for NbS. Later that year, the CBD's COP15 adopted the new Kunming-Montreal Global Biodiversity Framework, which sets the global 2030 targets on biodiversity conservation for countries. Targets 8 and 11 of the new Global Biodiversity Framework explicitly mention NbS as a means to help countries minimize the impacts of climate change on biodiversity and increase the resilience of ecosystems while restoring, maintaining, and enhancing "nature's contributions to people, including ecosystem functions and services … for the benefit of all people and nature" (CBD, 2022, p. 10).

Various decisions under the UNFCCC process acknowledge the role and importance of ecosystems in managing climate risks. The Cancun Adaptation Framework affirmed that adaptation actions should take into consideration, inter alia, terrestrial, freshwater, and marine ecosystems, and that such actions should be undertaken "consistent with the objective of environmental integrity and take into account the multiple functions of forests and other ecosystems" (UNFCCC, 2010). The first Global Stocktake[5] under the Paris Agreement and the UAE Framework for Global Climate Resilience also urge countries to accelerate the use of EbA and/or NbS to "[reduce] climate impacts on ecosystems and biodiversity … including through their management, enhancement, restoration and conservation and the protection of terrestrial, inland water, mountain, marine and coastal ecosystems" (UNFCCC, 2023c, para. 63(d)).

Similarly, the concept of EbA has been practiced and actively discussed in the CBD processes for almost 15 years. It was first defined by the CBD's Second Ad Hoc Technical Expert Group on Biodiversity and Climate Change (Secretariat of the CBD, 2009), which recognized EbA's potential to contribute jointly to biodiversity and climate action. Over the next decade, as awareness of the interconnection between the climate and biodiversity crises grew, so did the call for integrated or joint solutions to address these risks. EbA gained prominence in the international policy landscape as a cost-effective approach to reducing vulnerability and increasing resilience when integrated as a part of an overall adaptation strategy. In 2018, through decision 14/5 (CBD, 2018, para. 1), Parties to the CBD adopted the Voluntary Guidelines for the Design and Effective Implementation of Ecosystem-based Approaches to Climate Change Adaptation and Disaster Risk Reduction (CBD, 2019). The Voluntary Guideline provides step-by-step guidance on how to design and implement EbA and ecosystem-based disaster risk reduction (Eco-DRR), primarily for its integration into countries' National Biodiversity Strategy and Action Plans (NBSAPs)—which provide national-level strategic direction on the protection and management of biodiversity and is the main policy instrument countries are mandated to submit under the CBD (CBD, 2023).

[5] The Global Stocktake is a review mechanism under the Paris Agreement that, every 5 years starting in 2023, takes stock of countries' collective progress towards achieving the long-term goals of the Paris Agreement. See Qi (2022).

2.4 NbS and/or EbA in NAP Processes

According to Terton and Greenwalt (2021), if countries want to fully maximize the benefits and uptake of NbS and/or EbA and scale up beyond small projects, these approaches must be integrated into overall adaptation strategies. They explain:

> The NAP is a strategic process that ultimately aims to make people, places, ecosystems, and economies more resilient to the impacts of climate change. It involves analyzing current and future climatic change and assessing vulnerability to its impacts, looking at who and what are vulnerable to which impacts. This provides a basis for identifying and prioritizing adaptation options, such as NbS/EbA. (Terton & Greenwalt, 2021)

If used deliberately, the NAP process can play an essential role in strengthening and scaling up NbS and/or EbA in the following ways (Terton & Greenwalt, 2021):

- NAPs provide a strategic framework for mainstreaming, mandating, and scaling up EbA and/or NbS. They offer an opportunity to link ecosystems and adaptation planning and prioritize ecosystem-based solutions across sectors as part of a comprehensive strategy to help people adapt to climate.
- Given the importance of ecosystems in other global agendas, positioning NbS and/or EbA and their co-benefits as a vital part of the NAP process provides opportunities to link adaptation explicitly to these agendas, including through climate mitigation and biodiversity.
- The NAP process is nationally driven but aims to establish and maintain linkages with the subnational level, as implementing adaptation actions will inevitably involve actors such as local authorities. This provides an important opportunity to raise awareness about NbS and/or EbA and integrate them into subnational and local planning scales.

3
Methodology

The following analysis aims to understand how countries are integrating ecosystem considerations, including the uptake of NbS and/or EbA, into their NAP processes.

This report's findings, presented in section 4, are largely based on a desk-based review of 57 multi-sector NAP documents that were submitted to the UNFCCC as of July 31, 2024, and available on the online NAP Central platform (UNFCCC, n.d.).[6] The review included 10 countries from Latin America, 23 from Africa and the Middle East, five from Eastern Europe and the Caucasus, five from the Pacific, nine from Asia, and five from the Caribbean. The time of submission ranges from 2014 to 2024. The review focused on the following key aspects:

- References to EbA, NbS, ecosystem-based approaches, ecosystem-based disaster risk reduction, ecosystem management and natural infrastructure.
- The inclusion of ecosystems and biodiversity within climate risk assessment sections and types of ecosystems identified as vulnerable.
- References to ecosystem-based guiding principles and the inclusion of ecosystems as a stand-alone priority sector within the NAP.
- References to the country's NBSAP, developed under the CBD, and to synergies and alignment opportunities between the NAP and NBSAP.
- Types of EbA and/or NbS measures identified in NAPs.

The analysis focused on identifying trends in NAP documents in relation to the items listed. It also sought to identify illustrative examples to enrich the analysis.

In addition, a qualitative data analysis software, MAXQDA, was used to search keywords related to specific NbS and/or EbA actions across the 57 NAP documents. The keywords were assembled based on the definitions of NbS contained in UNEA Resolution 5/5 (UNEA, 2022) and the definition of EbA developed by the CBD Second Ad Hoc Technical Expert Group on Biodiversity and Climate Change (CBD, 2009). These specific NbS and/or EbA actions are categorized into seven groups:

- sustainable management (e.g., ecosystem management, forest management)
- protection (e.g., wetland protection, coral reef protection)
- restoration (e.g., forest restoration, mangrove restoration)
- conservation (e.g., soil conservation, watershed conservation)

[6] For methodological consistency, this analysis reviewed only multi-sector NAP documents and does not include the four single-sector NAP documents from Uruguay.

- natural infrastructure (e.g., green infrastructure, hybrid infrastructure)
- climate-smart agriculture (e.g., climate-smart agriculture, gardens)
- other NbS and/or EbA actions (e.g., payment for ecosystem services, introduction of native species)

The results of searches via MAXQDA were then reviewed manually to ascertain the contexts in which the keywords were used, and then compiled into a master sheet for further data analysis. It is important to note that there may be limitations to these findings, as the software may have missed NbS and/or EbA actions that were not associated with the list of keywords used in the search. For example, the software may have missed NbS and/or EbA actions in French or Spanish NAPs due to differences in phrasing or in the use of other terms to describe such actions.

Countries' NAP documents differ in length, language, format, and level of detail. Despite this variability, a country's NAP is an important source of information on its adaptation context and priorities and provides an overview of its efforts to adapt to climate change. It is important to note the distinctions between NAP processes and NAP documents. Though only 58 countries have communicated NAP documents to the UNFCCC (including the sector-specific NAPs from Uruguay), over 140 countries have NAP processes underway (UNFCCC, 2023c). Moreover, the NAP document is one milestone in the broader NAP process of planning, implementation, and MEL.

This analysis utilized information available in the submitted NAP documents, which may not be comprehensive in addressing all aspects of the processes that have been undertaken so far or the details of the planned next steps. Consequently, findings are based on available evidence, recognizing that some aspects of countries' NAP processes may not be captured in the documents reviewed and that the documents are only a snapshot of the efforts that countries are making to advance their NAP processes.

4
Findings

This section summarizes the key findings from the review of NAP documents.

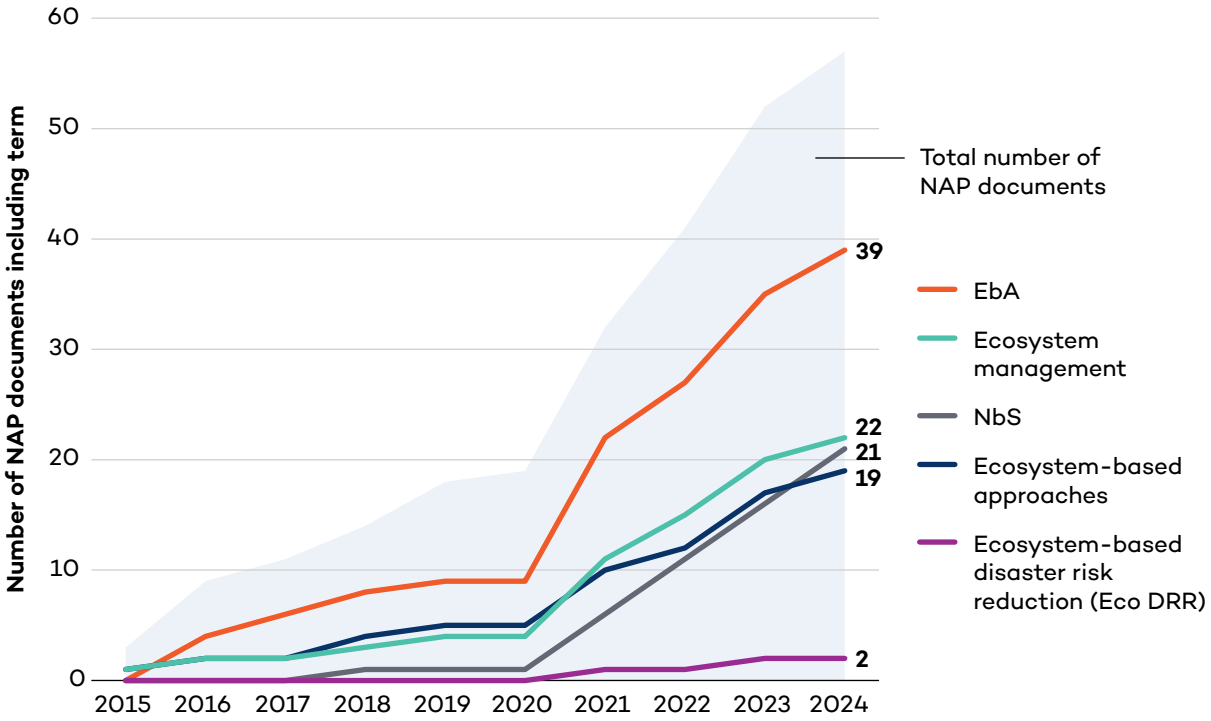
4.1 Presence of the Terms "Ecosystem-based Adaptation" and "Nature-based Solutions" in NAPs

Many NAP documents (44 out of 57) include at least one mention of the terms "ecosystem-based adaptation" or "nature-based solutions." While EbA is a subset of NbS, the use of EbA is more prominent, with 39 NAP documents mentioning EbA. Sixteen countries mention both EbA and/or NbS in their NAP documents and five mention NbS only. Additionally, five NAP documents do not mention the terms EbA or NbS explicitly but do mention the related terms "ecosystem-based approaches" or "ecosystem management." These terms often appear in NAP documents that mention EbA and/or NbS as well, with 22 NAP documents referencing "ecosystem management" and 19 referencing "ecosystem-based approaches." Moreover, two NAPs—Timor-Leste and Trinidad and Tobago—mention "ecosystem-based disaster risk reduction (eco-DRR)," another type of NbS. Eight NAP documents do not mention any of the above terms.

It is interesting to note that NAP documents submitted more recently to the UNFCCC have a higher likelihood of mentioning NbS. As shown in Figure 2, several NAP documents published after 2021 include mentions of NbS. This suggests that NbS has gained traction in NAP processes in the years since the 2019 Climate Action Summit emphasized their importance.

A number of documents (14 NAPs) provide a definition when mentioning NbS and EbA. They are generally aligned with the widely accepted definitions of both terms. For example, Fiji directly references the CBD's definition for EbA in its "selection of adaptation measures" chapter, where it highlights the importance of EbA in adaptation planning (Government of the Republic of Fiji, 2018). Madagascar uses IUCN's definition for NbS when outlining its priorities for biodiversity and forestry, indicating that EbA is a related term. The country also identifies the conservation, sustainable management, and restoration of ecosystems as types of NbS actions (Ministry of Environment and Sustainable Development of Madagascar, 2021, p. 64).

Figure 2. Terms related to EbA and/or NbS in NAP documents



Source: Authors.

4.2 "Ecosystems," "Biodiversity" or "Environment" As a Priority Sector in NAPs

NAP documents generally identify a number of priority sectors for adaptation, ranging from seven to 10, although the number varies across countries. Most NAP documents prioritize sectors related to ecosystems, biodiversity, and the environment. Out of 57 NAPs, 49 identify at least one priority sector related to ecosystems, biodiversity, or the environment, while eight NAPs do not. The prioritization of these sectors demonstrates the value that countries place on ecosystems, biodiversity, and the environment in climate change adaptation efforts.

Figure 3 shows the frequency of mentions of the terms "ecosystems," "biodiversity," and "environment" in priority sector titles. "Biodiversity" is the most prevalent term, appearing in priority sector titles in NAPs from 26 countries, with "ecosystems" following closely behind, appearing in priority sector titles in 23 NAP documents. There is much overlap in the use of "biodiversity" and "ecosystems" in NAP priority sector titles, with 21 countries mentioning both terms. In some cases, the priority sector is simply titled "Ecosystems and Biodiversity," such as in the NAPs of Cabo Verde, Paraguay, Sri Lanka, and the Philippines.

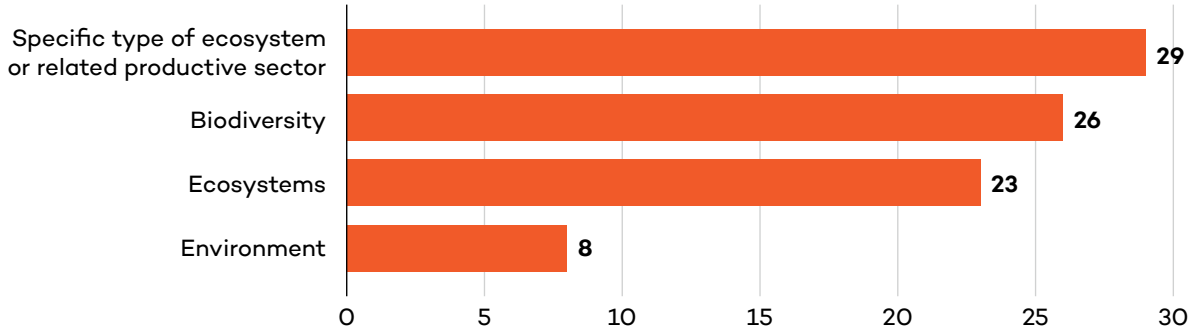
"Environment" is the least used term, appearing in the priority sector titles of eight NAP documents. This term is typically mentioned alone in priority sector titles (i.e., without the mention of biodiversity or ecosystems), except in Fiji's NAP, where the title "Biodiversity and the Natural Environment" is used for a priority sector (Government of the Republic of Fiji, 2018, p. 85). Moreover, only one country—South Sudan—mentions all three terms, with a

priority sector titled "Ecosystems, Environment and Biodiversity Conservation" (South Sudan Ministry of Environment and Forestry, 2021, p. 93). The only country to not use these terms but still refer to the natural environment is Ecuador, which instead titles one priority sector "Natural Heritage" (Ministry of Environment, Water and Ecological Transition of Ecuador, 2023, p. 37).

In addition, 29 NAPs identify a specific type of ecosystem or productive sector linked to a particular ecosystem in their priority sector titles. For example, Cambodia's NAP prioritizes the resilience of key ecosystems in the country, such as the Tonle Sap Lake and the Mekong River ecosystems (Royal Government of Cambodia, 2013, p. 15), while Cameroon's NAP has priority sectors focused more on productive sectors, such as "Fisheries and aquaculture" and "Forestry, silviculture and wildlife" (Ministry of Environment, Protection of Nature and Sustainable Development of Cameroon, 2015, p. 5). This choice likely reflects the economic importance of the ecosystem and the services it provides to the overall economy. Furthermore, when a productive sector is mentioned (e.g., forestry) instead of the ecosystem itself (e.g., forests), it may indicate that the country has an extractive view of the ecosystem. Nonetheless, this finding demonstrates that governments acknowledge the role of healthy and functioning ecosystems in supporting resilient livelihoods, and they underscore the need for actions and measures to protect ecosystems and ensure their longevity.

Most common in priority sector titles focused on one ecosystem are mentions of forests or forestry (15 NAPs) and coastal and marine ecosystems or fisheries (15 NAPs). NAPs from African countries tend to mention forests or forestry (nine out of 15 NAPs) more often compared to NAPs from other regions. Examples include Mozambique, which has prioritized "more resilient forests" (Ministry of Land and Environment of Mozambique, 2023, p. 359), and the Democratic Republic of Congo, which has a priority sector focused on the "conservation of forest ecosystems and biodiversity" (Democratic Republic of the Congo, 2022, p. 46). This can likely be attributed to the extensive amount of forest cover in these African countries.

Figure 3. Terms used in relevant priority sector titles in NAPs

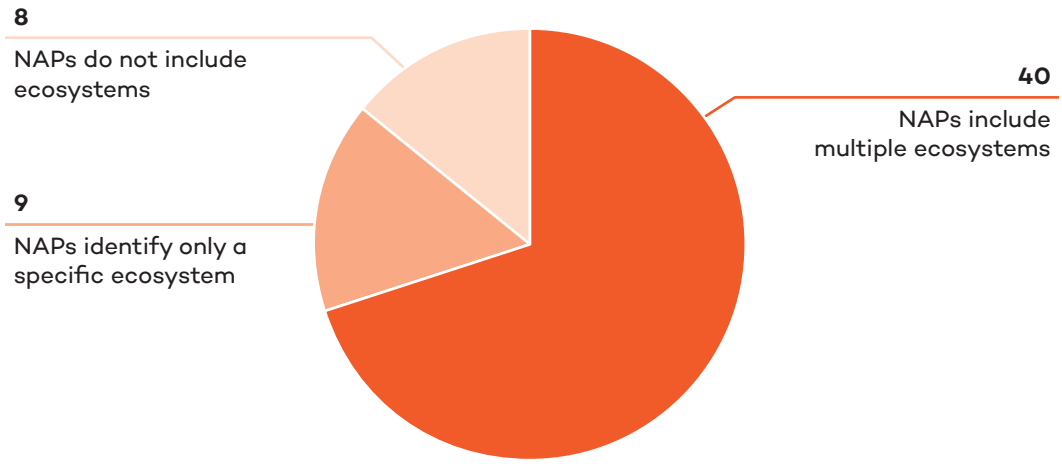


Source: Authors.

4.3 Inclusion of Ecosystems in Climate Risk Assessment Chapters in NAPs

Most countries include information and data about the climate risks and vulnerabilities that their ecosystems face from climate change. Figure 4 shows that out of 57 NAPs, 40 include ecosystems as a standalone segment in their climate risk assessment chapter and discuss climate risks to multiple ecosystems in a broader sense. They often include "biodiversity" as part of the label and cover how climate risks impact key species. Nine NAPs identified only a specific ecosystem. These are almost exclusively focused on forest ecosystems, sometimes in combination with wetland, aquatic, and freshwater ecosystems. This is likely emphasized due to the economic importance of the single ecosystem and its services, as well as its vulnerability to climate change. The remaining nine documents do not reference ecosystems at all in their climate risk assessment.

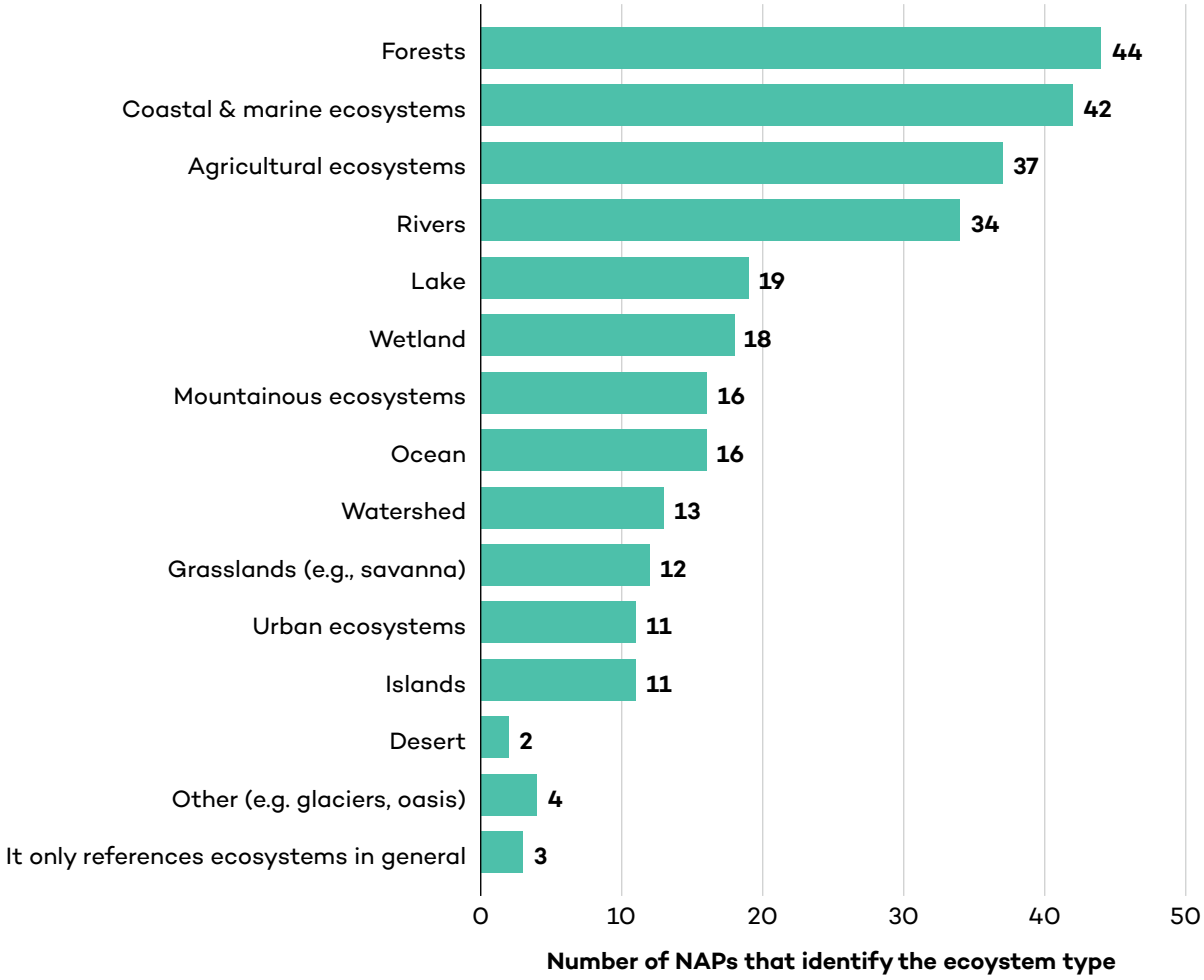
Figure 4. Ecosystems included in the climate risk assessment chapters of NAPs



Source: Authors.

An analysis of the types of ecosystems included in the climate risk assessment chapters across NAPs revealed that forest, marine and coastal, freshwater (lakes, rivers, wetlands), and agricultural ecosystems are among those identified most often as vulnerable to climate change (see Figure 5). Less mention is made of grassland (12 NAPs), mountainous (16 NAPs) and urban ecosystems (11 NAPs), while only two NAPs mention desert ecosystems. These correspond with many countries' adaptation priority sectors (e.g., agriculture, water resources, forestry) outlined in later sections of the NAPs. Forest, agricultural, freshwater, and coastal ecosystems and the goods and services they deliver are the basis for key economic sectors which provide livelihood support to millions of people globally, particularly in rural communities.

Figure 5. Types of ecosystems identified as vulnerable in the climate risk assessment chapters of NAPs



Source: Authors.

It is noteworthy that out of the 43 coastal countries that have submitted NAPs, all NAPs identified ocean, marine, or coastal ecosystems as highly vulnerable to climate change impacts, yet only 11 of these countries (mostly in Latin America) protect more than 10% of their marine ecosystems.[7] Ecuador, Brazil, Costa Rica, Colombia, and Chile have declared between 19 and 41% of their marine and coastal ecosystems as protected areas. On the other hand, 28 countries out of 46 which identify marine and coastal ecosystems as vulnerable to climate change currently protect less than 3% of their marine ecosystems. Domestic and international funding remains a common challenge for establishing Marine Protected Areas, which are underfunded globally (Bohorquez et al., 2023). Challenges in establishing MPAs may also be linked to obstacles that developing countries have faced more broadly in the transition from planning to implementation (UNFCCC, 2023a; UNFCCC, 2024).

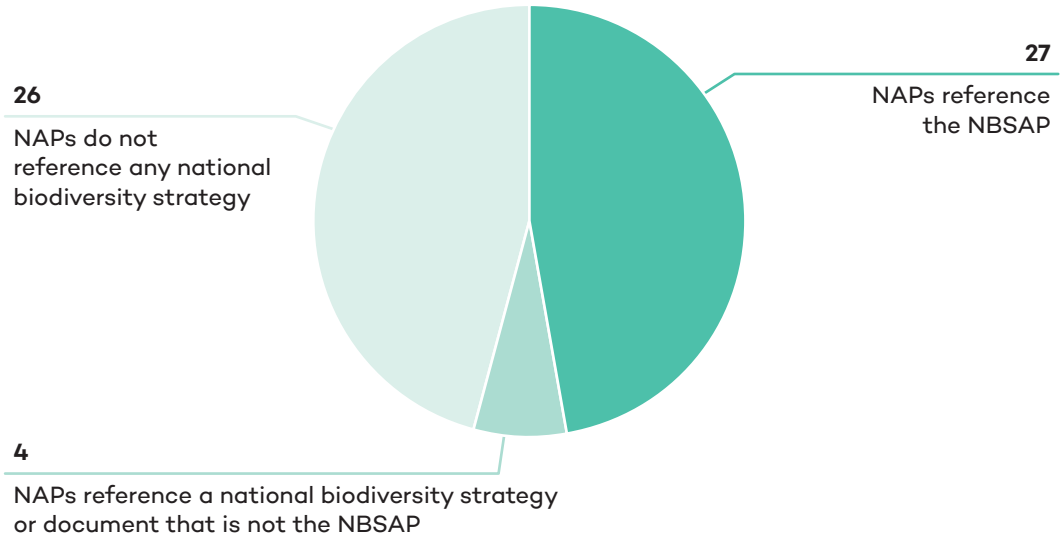
[7] Marine and terrestrial protected area data for each country has been sourced from the Protected Planet initiative (Protected Planet, n.d.). Protected Planet is the authoritative source of data on protected areas and other effective area-based conservation measures (OECMs).

4.4 References to the NBSAP in NAPs

Less than half of the countries refer to their NBSAP in their NAP documents. Figure 6 shows that 27 countries reference their NBSAP within their NAP documents, while 26 countries do not. Additionally, four NAPs reference another national biodiversity strategy or document in their NAP, such as a national report to the CBD.

Among the countries that referenced their NBSAP, Chad highlights that many of its adaptation actions, especially the NbS, "are in perfect synergy with commitments made by Chad under the three Rio Conventions" and the 2030 Agenda for Sustainable Development (Republic of Chad, 2022, p. 64). Similarly, Bhutan notes the "highly synergistic approach" it plans to take for the country's forests and biodiversity, in which its adaptation efforts will also support biodiversity targets in its NBSAP, contribute to mitigation goals in its National REDD+ Strategy, and enhance disaster risk reduction across the country (Royal Government of Bhutan, 2023, p. 61).

Figure 6. Number of NAPs that referenced NBSAPs



Source: Authors.

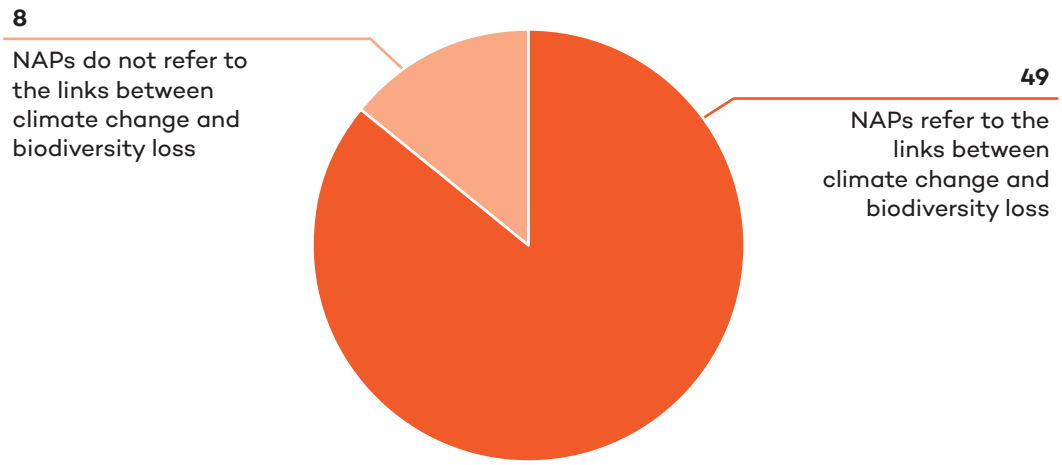
It is interesting to note that all 57 countries that have submitted NAPs are Parties to the CBD and have submitted at least one NBSAP, except for the State of Palestine which has only submitted a national report to the CBD. This means that a NBSAP was likely available at the time of publication for all but one of the countries. While some countries may have had slightly outdated NBSAPs when their NAPs were authored (e.g., the Marshall Islands' latest NBSAP was submitted in 2003 and their NAP was submitted in 2023), most countries had NBSAPs from 2016 or later. Despite this availability, fewer than half of the countries (27 out of 57) reference their NBSAP in their NAP document, indicating a potential disconnect between national climate change adaptation and biodiversity planning processes.

4.5 The Links Between Climate Change and Biodiversity Loss in NAPs

Most countries refer to the links between climate change and biodiversity loss in their NAPs. Out of the 57 NAP documents reviewed, 49 documents mention these links, while 8 documents do not. This provides evidence that there is growing recognition of the linkages between the twin crises of climate change and biodiversity loss among policy-makers and practitioners. This recognition aligns with acknowledgement from decision-makers at international forums, such as the UNFCCC and the CBD, that integrated approaches are crucial to tackling the two crises.

When discussing the links, most countries highlight how climate change impacts biodiversity loss, such as in Pakistan, which states that "climate change has far-reaching impacts on land, forests, and biodiversity" and refers to the impacts of climate hazards on forest biodiversity (Ministry of Climate Change and Environmental Coordination of Pakistan, 2023, p. 43). A few countries also highlight the synergies between biodiversity and climate change adaptation, including Thailand, which recognizes that "the interactions between natural resources, biodiversity, and climate change could occur in both directions" (Kingdom of Thailand, 2023, p. 45). Thailand acknowledges that while climate change is a driver of biodiversity loss, protecting biodiversity and sustainably managing natural resources can also help to build climate resilience.

Figure 7. Number of NAPs that refer to the links between climate change and biodiversity loss



Source: Authors.

Interestingly, among the eight countries that do not refer to the links between climate change and biodiversity loss, three—Timor-Leste, the Democratic Republic of the Congo, and Saint Vincent and the Grenadines—reference a national biodiversity strategy in their NAP. This may suggest a general awareness of the relationship between climate change and biodiversity loss by these countries, though it is not explicitly stated.

Moreover, it is important to note the discrepancy between the percentage of NAPs that refer to the links between climate change and biodiversity and the percentage of NAPs that reference a NBSAP or other national biodiversity strategy within their documents. While the majority of countries (49 NAPs) acknowledge the links between climate change and biodiversity loss, only 31 countries refer to their NBSAP or some type of national biodiversity strategy within their NAPs. This gap may stem from a general understanding of the interconnectedness of the two crises, but a lack of coordination between climate change and biodiversity planning divisions.

4.6 Recognizing the Role of Ecosystems in Helping People to Adapt

Most of the NAP documents identify the role of ecosystems in helping people adapt to climate change. Out of the 57 NAP documents, 45 discuss ways in which ecosystems or ecosystem services support adaptation or enhance adaptive capacity or resilience for people. For instance, South Sudan recognizes that "ecosystems and biodiversity are crucial resources for resilience building and climate change adaptation" (South Sudan Ministry of Environment and Forestry, 2021, p. 63), while Saint Vincent and the Grenadines places an emphasis on "maintaining and enhancing ecosystem functions and services" as part of its strategic adaptation options to increase resilience and address the identified risks (Government of Saint Vincent and the Grenadines, 2019, p. 57). This demonstrates that most countries show a clear understanding of how ecosystem health and ecosystem services underpin people's livelihoods, as well as their role in mitigating climate hazards and building resilience.

Box 1. Importance of integrating gender equality and social inclusion (GESI) considerations into NAPs

When considering the role that ecosystems play in helping people to adapt, it is important to recognize the gender and social inequalities that exist. Various identity factors, including gender, socio-economic status, age, race, Indigeneity, and ability, influence how individuals are impacted by climate change, participate in adaptation decision making, access natural resources, and benefit from adaptation actions differently (Adaptation Fund, 2022; Dazé & Church, 2019; IPCC, 2022).

Healthy ecosystems are vital for people who depend on natural resources for their livelihoods. Indigenous Peoples, for example, maintain strong ties with their ancestral lands, waters, and resources, which provide the basis for many of their livelihoods, cultures, and traditional practices (Forest Peoples Programme et al., 2020). Women may also be more reliant on natural resources due to gendered roles and responsibilities, as well as barriers to accessing other economic opportunities (UNEP & IUCN, 2018). While these groups are more vulnerable to the impacts of climate change and biodiversity loss on ecosystems, they also possess valuable knowledge and experience in adaptation that should be valued and integrated into NAP processes (Forest Peoples Programme et al., 2020; UNEP, 2022). Therefore, it is important to meaningfully engage with them

and integrate GESI considerations into NAP processes so that NbS and/or EbA actions reflect their needs and priorities (Dazé & Church, 2019).

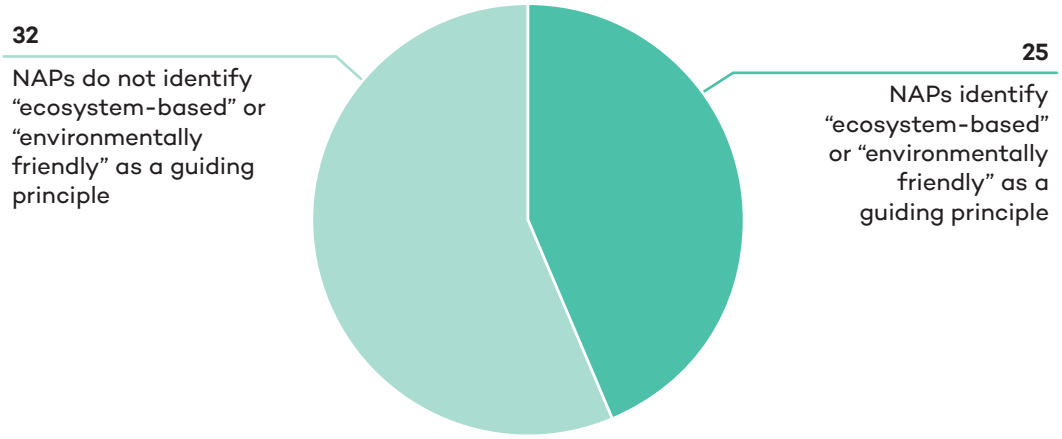
For example, Nepal's NAP outlines how gender and social differences influence climate vulnerability, resource access, and the adaptive capacity of different groups. To address these inequalities, Nepal plans to create training opportunities for women and other marginalized groups to strengthen their adaptive capacity and implement actions that enhance women's livelihoods. Furthermore, the country's MEL system will gather sex-disaggregated data, monitor the participation rates of women and marginalized groups, and identify areas for improving equitable access to resources and the distribution of benefits (Government of Nepal, 2021). These efforts will help to ensure that NbS and/or EbA actions that are implemented through the NAP process are inclusive and generate equitable benefits.

4.7 "Ecosystem-based" and "Environmentally Sustainable" as a Guiding Principle in NAPs

Some countries (25 out of 57 NAPs) have chosen to include ecosystem-based or environmentally friendly approaches to climate change adaptation as a guiding principle of their NAPs, emphasizing that healthy and functioning ecosystems are the foundation of society and economic growth. Including ecosystem-based or environmentally friendly approaches to climate change adaptation as a guiding principle provides countries with an important mandate to prioritize EbA solutions across sectors and emphasizes the role of ecosystems in vulnerability reduction for people and their livelihoods. However, it is important to note that while 49 out of 57 NAP documents include guiding principles, not all of them do.

Of the 25 NAPs that identify "ecosystem-based" or "environmentally sustainable" as a guiding principle, 14 NAPs only use the term "environmentally sustainable," 10 NAPs only use the term "ecosystem-based," and only one NAP—Cambodia—includes both "environmentally sustainable" and "ecosystem-based" in its guiding principles. Cambodia uses a "combination of science-based, ecosystem-based and community-based approaches" to guide its NAP processes, while also aligning with the aims of sustainable development (Royal Government of Cambodia, 2013, p. 4).

Figure 8. Number of NAPs that identify "ecosystem-based" or "environmentally friendly" as a guiding principle



Source: Authors.

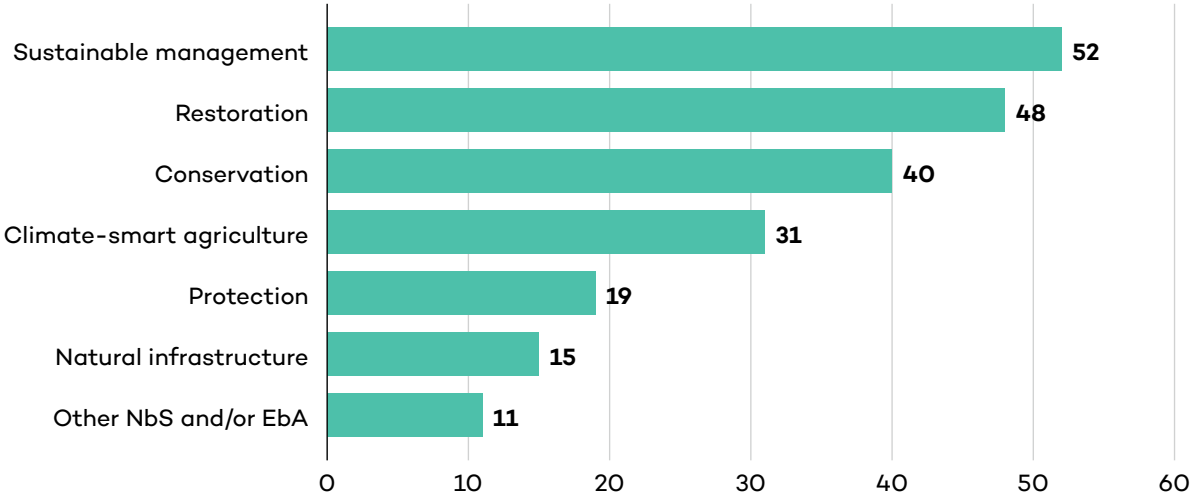
Additionally, South Africa identifies "environmental support for climate adaptation" as a guiding principle, noting that its NAP will promote the protection of ecosystems and biological diversity because of the role they play in supporting South Africa's adaptation to climate change (Republic of South Africa, 2020, p. 22). Similarly, Timor-Leste identifies an "ecosystem-based adaptation approach" as a guiding principle to "identify implementation pathways that build the resilience of biodiversity and ecosystem resources and will adopt a systems approach to adaptation with respect to natural capital" (Democratic Republic of Timor-Leste, 2021, p. 3). Looking at another Small Island Developing States (SIDS), Fiji's NAP places people, livelihoods, and socioeconomic development at the centre of its rationale for using the EbA approach. Seven out of 12 SIDS included "ecosystem-based" or "environmentally friendly" approaches to climate change adaptation as a guiding principle in their NAP, suggesting there is significant recognition of the importance of healthy ecosystems and key economic sectors among SIDS.

4.8 Types of EbA and/or NbS Actions in NAPs

For the purpose of this analysis, NbS and/or EbA actions have been classified as actions to protect, conserve, restore, sustainably use, and manage natural ecosystems (UNEA, 2022). In addition, NAP documents have been scanned for climate-smart agriculture actions, as these are often promoted as NbS or EbA, including activities such as changing seed varieties, adjusting irrigation and drainage practices, and increasing soil biodiversity.

This analysis found that all countries include one or more actions related to protecting, conserving, restoring, sustainably using, and managing natural ecosystems in their NAP documents. Most countries (55 out of 57) include more than one type of NbS and/or EbA action.

Figure 9. Number of NAPs including different types of NbS and/or EbA actions



Source: Authors.

Figure 9 shows that most countries (52 NAPs) include actions related to sustainable management, with many actions focused on water resources management. For example, in its NAP document, the Philippines outlines the integrated approach the country will take to managing its watersheds and river basins (Climate Change Commission and the Department of Environment and Natural Resources of the Philippines, 2023). The second most common sustainable management action is forest management, which is mentioned in Mozambique's NAP as a key strategy for its priority sector titled "more resilient forests" (Ministry of Land and Environment of Mozambique, 2023, p. 359).

Most countries (48 NAPs) refer to restoration-related actions, with a focus on forest restoration, including mangroves and agroforestry. Trinidad and Tobago's NAP identifies mangrove restoration as one of many EbA actions the country plans to implement to help its coastal ecosystems adapt to climate change (Government of the Republic of Trinidad and Tobago, 2021). Conservation-themed actions, which are included in 40 NAPs, are primarily focused on water and soil conservation activities. In Brazil's NAP document, soil conservation is listed as an adaptation measure for various sectors, including agriculture, water resources, and disaster risk management (Ministry of Environment of Brazil, 2016). Climate-smart agriculture, including gardens, is also quite common, appearing in more than half of the documents (31 NAPs). For instance, Kiribati's NAP includes measures to strengthen farmers' capacity to implement climate-smart agricultural practices, thereby promoting their use and ensuring food security in communities (Government of Kiribati, 2019).

Several NAPs (19 documents) refer to protection-type actions, of which coastal zone and shoreline protection are among the most common. Bangladesh highlights the use of oyster reefs to protect shorelines from erosion on Kutubdia Island as a case study in its NAP (Government of the People's Republic of Bangladesh, 2022). Other NbS and/or EbA actions are the least common, appearing in only 11 NAPs. These actions include measures such as payments for ecosystem services or the reintroduction of Indigenous and native species. For example, in Moldova's NAP, the country emphasizes the crucial role of native species in helping its forests adapt to climate change (Republic of Moldova, 2024).

Some countries (15 NAPs) refer to green or natural infrastructure, primarily focused on urban greening. For instance, Serbia's NAP document highlights urban green infrastructure's role in "mitigating climate hazards, improving the environment and population health and quality of life in urban areas" (Republic of Serbia, 2024, p. 57). It is also interesting to note that Serbia commissioned a study, "Nature-based Solutions for Climate Change and the Potential for their Implementation," in 2021 that detailed how NbS could be adopted and implemented in Serbia, which guided the planning and prioritization of NbS and/or EbA actions in its NAP (Republic of Serbia, 2024, p. 123; Vuković et al. 2021).

Overall, the highlighting of EbA and/or NbS actions across countries' NAP documents aligns with the types of ecosystems considered highly vulnerable and impacted by climate change (forests, freshwater, coastal zones, agricultural ecosystems) and the importance of these ecosystems to local livelihoods and food security. The strong focus on sustainable management actions may be reflective of countries trying to balance the preservation of ecosystems and resources with human needs, seeking to promote human prosperity alongside the flourishing of nature.

5
Reflections

This review of 57 NAPs takes stock of how countries are integrating ecosystem considerations, including the uptake of NbS and EbA, into their NAP processes. The findings highlight the awareness among governments that ecosystems and the services they provide are significantly compromised by accelerating climate change, and that this threatens their long-term viability and functionality. Simultaneously, the analysis shows that countries recognize the significant role ecosystems can play in adaptation to build climate resilience. In our analysis, EbA and/or NbS actions emerged as an essential approach to adaptation that countries consider to be effective in building ecological, social, and economic resilience; such actions are present across all NAPs. This demonstrates important progress towards delivering EbA and/or NbS at scale and aligns with the increased traction that EbA and, in particular, NbS have gained among adaptation decision-makers and the adaptation community as a whole over the last few years. However, despite the extent of EbA and/or NbS actions included in NAPs, further analysis is needed to understand the extent to which these measures are being implemented.

The review shows a common focus on those ecosystems that are important for productive sectors of the economy (e.g., forestry, fisheries, agriculture). It was observed that these ecosystems were the most likely to be included in climate risk assessments and subsequent adaptation actions. This is presumably due to their importance as a source of employment and GDP in many developing countries. The same trend emerged in the review of types of EbA and/or NbS actions, with measures primarily focused on ecosystems that support livelihoods and provide important services to people. Perhaps not surprisingly, a large portion of EbA and/or NbS actions focus on the sustainable management of those ecosystems and natural resources, followed by efforts to restore and protect ecosystems. Our findings also confirm a well-known gap in relation to mountain, grassland, and urban ecosystems, which aligns with an analysis of mountains in NAPs, revealing that only 40% of NAPs identify adaptation actions targeting mountainous ecosystems (Zwahlen, 2023). These ecosystems remain underrepresented in NAP documents.

While the majority of countries refer to the links between climate change and biodiversity loss in their NAPs, fewer than half reference their NBSAP. This may point to the need for more coordination between actors involved in climate and biodiversity planning processes and a gap in moving from planning to implementation.

The findings of the review are of relevance to a range of actors and offer some considerations:

NAP Teams

The review highlights the importance that NAP teams place on EbA and/or NbS as a tool to address medium- and long-term climate risks and as an opportunity to achieve multiple

objectives by emphasizing the links between biodiversity loss and climate change. To build on this progress, NAP teams should focus on enhanced coordination and collaboration with relevant colleagues (biodiversity and environmental teams) to build closer synergies with newly updated NBSAPs (under the new Kunming-Montreal Global Biodiversity Framework) and ensure that the NAP informs the upcoming update of the NBSAPs to advance the implementation of EbA and/or NbS. While all the assessed NAPs include a variety of EbA and/or NbS actions, the strong emphasis on sustainable management leaves room for NAP teams to expand protection and conservation measures, such as establishing and expanding protected areas.

Bilateral and Multilateral Funds and Funders

The review highlighted a shared focus on ecosystems that are important for productive sectors (e.g. forestry, fisheries, agriculture), with many types of EbA and/or NbS actions aimed at sustainable management and restoration measures that primarily target forest ecosystems. This focus is perhaps unsurprising given the climate sensitivity of these ecosystems, and of governments' desires to meet the food and livelihood security needs of their people. These priorities could influence funder countries which are aiming to strengthen the integration of NbS and/or EbA into their strategies. While considerable needs remain in these sectors and related ecosystems, bilateral and multilateral funders should also consider investing at scale in less traditional ecosystems (e.g., urban ecosystems, mountain ecosystems, grasslands) that remain underrepresented in countries' NAPs, taking into consideration country priorities. Similarly, funders should emphasize building synergies with biodiversity planning processes and financing EbA and/or NbS actions that contribute to achieving multiple objectives that countries have set out for themselves. Given the importance of marine ecosystems in NAPs and the current lack of protection, support should also focus on scaling up efforts to implement marine and coastal zone protected areas.

UNFCCC

At the UNFCCC COP29, countries will conclude the assessment of progress in the NAP process. This assessment is designed to "evaluate the extent to which the NAP process has contributed to enhancing adaptive capacity, strengthening resilience, and reducing vulnerability to climate change" and offers an opportunity for countries to share experiences, best practices, and lessons learned, as well as identify gaps and enhancement needs in their NAP processes (Grey & Qi, 2024). This review contributes to the assessment by providing relevant information on biodiversity and on NbS and/or EbA mainstreaming in countries' NAP processes. Further, the findings of the review provide insightful information to inform the upcoming update of the UNFCCC NAP Technical Guidelines. This update could include highlighting the benefits of NbS and/or EbA actions in advancing multiple environmental objectives and encourage countries to actively build synergies to related environmental processes, such as NBSAPs under the new Kunming-Montreal Global Biodiversity Framework.

Box 2. Recommended resources on building resilience with nature

- *Building Resilience with Nature: Maximizing ecosystem-based adaptation through National Adaptation Plan processes* (guidance note)
- *Promoting Synergies Between Climate Change Adaptation and Biodiversity Through the National Adaptation Plan and National Biodiversity Strategy and Action Plan Processes* (technical brief)
- *Synergies Between Biodiversity and Climate Policy Frameworks – A Series of Thematic Papers*
- *Mainstreaming Gender Equality and Social Inclusion in Nature-Based Solutions for Climate Change Adaptation* (technical report)
- *Toward Gender-Responsive Ecosystem-based Adaptation: Why it's needed and how to get there*
- *How Fiji Is Using the NAP Process to Scale Up EbA* (case study)
- *How Timor Leste Is Using the NAP Process to Scale Up EbA* (case study)

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