



A GUIDE FOR INCLUDING NATURE IN NATIONALLY DETERMINED CONTRIBUTIONS

Edition 2



WITH NATURE

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Acronyms List

AFOLU – Agriculture, Forestry, and Other Land Use

BTR – Biennial Transparency Reports

BAU – Business-as-usual

CBD – Convention on Biological Diversity

CBIT – Capacity-Building Initiative for Transparency

DRM – Disaster Risk Management

EbA – Ecosystem-based Adaptation

FGCR – UAE Framework for Global Climate Resilience

FREL/FRL – Forest Reference Emission Level/Forest Reference Level

FPIC – Free, Prior and Informed Consent

GBF – Global Biodiversity Framework

GGI – Green-Grey Infrastructure

GHG – Greenhouse Gas

GST – Global Stocktake

HWP – Harvested Wood Products

ICTU – Information to Promote Clarity, Transparency, and Understanding

INDC – Intended Nationally Determined Contribution

IPCC – Intergovernmental Panel on Climate Change

IPs – Indigenous Peoples

IPLCs – Indigenous Peoples and Local Communities

ITMOs – Internationally Transferred Mitigation Outcomes

IUCN – International Union for Conservation of Nature

LCs – Local Communities

L&D – Loss and Damage

LDCs – Least Developed Countries

LLA – Locally Led Adaptation

LULUCF – Land Use, Land-Use Change, and Forestry

LT-LEDS – Long-Term Low Emission Development Strategies

MEA – Multilateral Environmental Agreements

MEL – Monitoring, Evaluation, and Learning

MOI – Means of Implementation

MRV – Monitoring, Reporting, and Verification

NAP – National Adaptation Plans

NBSAP – National Biodiversity Strategy and Action Plans

NbS – Nature-based Solutions

N4C – Nature for Climate

NCS – Natural Climate Solutions

NDC – Nationally Determined Contributions

NMA – Non-market Approaches

OMGE – Overall Mitigation of Global Emissions

OECMs – Other Effective Area-Based Conservation Measures

PDP – Physical Development Plan

R2RP – Roofs 2 Reefs Programme

RBPs – Results-based Payments

REDD+ – Reducing Emissions from Deforestation and Forest Degradation

SDG – Sustainable Development Goals

SIDS – Small Island Developing States

TEK – Traditional Ecological Knowledge

UNCCD – United Nations Convention to Combat Desertification

UNEA – United Nations Environment Assembly

UNFCCC – United Nations Framework Convention on Climate Change

VCM – Voluntary Carbon Market

Executive Summary

The third five-year cycle of Nationally Determined Contributions (NDCs), due in 2025, presents a crucial opportunity to scale up global emissions reductions and strengthen the resilience of communities and ecosystems by integrating environmental integrity considerations and Nature-based Solutions (NbS) more prominently into NDCs. The second edition of the Nature4Climate Coalition's Guide for Including Nature in NDCs has been developed to assist national policymakers and technical experts involved in the revision and implementation of 2025 NDCs. It includes 15 recommendations to effectively advance in this direction, along with additional resources and case studies related to each of these:

Preparing to Enhance the Inclusion of Nature in 2025 NDCs

- 1** Develop whole-of-government processes and frameworks to mainstream inclusive, nature-based climate action across all sectors, maximizing synergies between climate, biodiversity, and human well-being from the outset of the NDC enhancement process.
- 2** Develop a whole-of-society approach for the NDC enhancement process to ensure it incorporates local and traditional knowledge and fosters collective understanding, buy-in, and commitment to implementation in a gender-responsive, transparent manner.
- 3** Assess NDC implementation progress and relevant changes in international and national priorities, circumstances, and regulatory instruments.
- 4** Identify the most suitable entry points for enhancing the inclusion of nature in NDC targets.
- 5** Gather and refine information to inform the enhancement of nature-related NDC targets, prioritizing the best-available science and ensuring to include Indigenous, traditional, and local knowledge.

Strengthening the Inclusion of Nature in NDC Target-setting for Mitigation, Adaptation, and Loss & Damage

- 6 Elevate the country's economy-wide GHG target to the highest possible ambition, in line with Article 4.3 of the Paris Agreement, including by maximizing the use of nature-based solutions.
- 7 Develop or strengthen sectoral GHG and non-GHG targets, policies, and/or measures to incentivize more ambitious mitigation in Agriculture, Forestry and Other Land Uses (AFOLU), including in wetlands and coastal areas.
- 8 Integrate or strengthen adaptation targets to maximize the potential of NbS and ecosystem-based approaches in reducing climate risks and enhancing resilience across all sectors and ecosystems, aligning with and contributing to the UAE Framework for Global Climate Resilience to achieve the Global Goal on Adaptation.
- 9 Integrate nature as an essential component in addressing loss and damage from climate impacts, while recognizing and documenting nature's vulnerability to such impacts.
- 10 Integrate nature-based solutions, ecosystem-based adaptation, and nature-positive approaches into mitigation and adaptation targets related to non-AFOLU sectors.

Image: Mangroves, Cocó municipal park in Fortaleza, Ceará, Brazil.

Cross-cutting Considerations

- 11 Maximize synergies between NDC targets and other related agendas (e.g., biodiversity, development, health) to amplify win-win outcomes for climate, biodiversity, and people.
- 12 Enhance consistency and coherence between adaptation and mitigation targets related to nature.
- 13 Apply climate justice and equitable approaches to ensure inclusivity across NDC targets.

Advancing Towards NDC Implementation and Financing for Nature

- 14 Ensure the NDC communicates the means of implementation and support required for the effective implementation of NbS targets across mitigation, adaptation, and loss and damage.
- 15 Develop clear roadmaps for establishing and/or enhancing the structures and policies needed for effective implementation of NbS targets included in the NDC, whether through the NDC itself, existing domestic instruments, and/or a separate NDC Implementation Roadmap or Strategy.

While these points are structured in a way that could be followed as a step-by-step process, given the diverse opportunities to enhance nature's inclusion in NDCs, along with the varying national capacities, contexts, and data availability across countries, the checklists and additional information provided are intended to be advisory rather than prescriptive. Policymakers and experts have the flexibility to follow all 15 guiding points and apply all checklist considerations, or they may choose to focus on only some, depending on their specific needs and priorities.



Introduction

The third five-year cycle of Nationally Determined Contributions (NDCs), due in 2025, presents a crucial opportunity to scale up global emissions reductions and strengthen the resilience of communities and ecosystems by integrating **Nature-based Solutions (NbS)** more prominently into NDCs and ensuring that social and environmental integrity is a core element across all targets.

To meet the long-term goals of the UNFCCC Paris Agreement, climate action must become increasingly ambitious, and **NbS must play a critical role**. Article 5 of the Paris Agreement and subsequent COP decisions underscore the importance of forests and NbS, which can provide up to a third of the cost-effective mitigation efforts needed by 2030. Halting and reversing nature loss and degradation by 2030, while rapidly phasing out fossil fuels and decarbonizing our economy, are essential steps. In addition to the absorption and storage of greenhouse gases, NbS offer multiple benefits for climate adaptation, addressing climate impacts, conserving biodiversity, and community livelihoods.

Image: Wetlands, Doñana National Park, Huelva, Anadalucia, Spain.



What are Nature-Based Solutions?

The United Nations Environment Assembly (UNEA)¹ defines NbS as:

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 wellbeing, ecosystem services and resilience and biodiversity benefits.

NbS encompass a range of interventions, such as protecting natural terrestrial and ocean-based carbon sinks from loss and degradation, restoring deforested and degraded lands, and managing working lands more sustainably.

By capturing and storing carbon, **NbS play a key role in mitigation.**² According to the IPCC's Sixth Assessment Report (AR6), pathways that limit global warming to 1.5°C rely heavily on enhanced mitigation from the AFOLU sector, which includes forests, wetlands, and agricultural systems. **Enhanced mitigation efforts in the AFOLU sector could provide up to a third of the cost-effective mitigation efforts needed by 2030 to keep global warming below 2°C, ideally limiting it to 1.5 °C to significantly reduce the risks and impacts of climate change.**³ By 2030, NbS implemented across all ecosystems could provide up to 11.7 GtCO_{2e} emission reductions and removals per year. Options with the largest potential include avoided forest conversion and natural forest management,⁴ but other significant opportunities include peatland restoration and rewetting^{5,6}, as well as mangrove conservation and restoration.

In addition to their mitigation potential, **NbS help conserve biodiversity and strengthen the ability of ecosystems and communities to adapt to climate impacts. They also contribute to efforts to avert, minimize, and address loss and damage, and could generate an estimated 20 million new jobs.**⁷ For instance, coastal ecosystems like mangroves act as natural barriers against storm surges and flooding, protecting communities and infrastructure. Beyond these protective functions, mangroves also provide a variety of ecological and socio-economic benefits, such as supporting food security and sustainable livelihoods. Research indicates that mangroves alone contribute an estimated US\$ 65 billion annually in flood protection benefits, safeguarding approximately 15 million people.⁸

While the benefits of NbS are immense, **emissions from Land Use, Land-Use Change, and Forestry must reach net-zero faster than any other sector – by or shortly after 2030.** This is essential to ensure that NbS can continue enhancing ecosystem and community resilience, while helping to avert, minimize, and address loss and damage. Therefore, the upcoming NDCs present a critical moment to maximize their use to accelerate climate action.

Enhancing Nature in Upcoming NDCs

Despite growing recognition of nature's role in climate action, with 96 out of 101 NDC Partnership country members incorporating NbS in their latest NDCs,⁹ opportunities remain to strengthen the inclusion of nature in upcoming enhancement cycles. For instance, NbS pathways in current NDCs are predominantly focused on forests (92%) and agriculture (75%), with less emphasis on oceans and coasts (57%), and even less on key ecosystems like mangroves, wetlands, and peatlands (46%, 45%, and 4% respectively).¹⁰ To fully harness the potential of NbS, future NDCs must expand across a wider range of ecosystems and maximize all NbS pathways.

Furthermore, the importance of aligning NDCs with commitments under the Rio Conventions on biodiversity and desertification has been emphasized in recent global decisions, pledges and dialogues, such as in the outcomes of the first [Global Stocktake](#)¹¹ and the [COP28 Joint Statement on Climate, Nature, and People](#)¹².

Nature in the first Global Stocktake¹³

In 2023, countries concluded the first Global Stocktake (GST), a key component of the Paris Agreement designed to assess collective progress toward achieving global climate goals and to inform the next round of NDCs. The GST found that current NDC commitments are insufficient and underscored the urgent need to increase ambition, highlighting that:

- **Current emissions trajectories are not aligned with the temperature goal** of the Paris Agreement, and the window for raising ambition is closing rapidly.
- **Countries must submit more ambitious, economy-wide emission reduction targets in their next NDCs**, covering all greenhouse gases, sectors and categories and aligned with limiting global warming to 1.5 °C, as informed by the latest science.
- **Climate action must address the interlinked crises of biodiversity loss and climate change** in line with Kunming-Montreal the Global Biodiversity Framework.

- **Halting and reversing deforestation and forest degradation by 2030 is essential.**
- The **integrity of all ecosystems**, including oceans, mountains, and the cryosphere, **must be protected.**
- **Integrated, multi-sectoral solutions**—such as land use management, sustainable agriculture, resilient food systems, nature-based solutions and ecosystem-based approaches, and protecting, conserving, and restoring nature and ecosystems, including forests, mountains and other terrestrial and marine and coastal ecosystems—**may offer benefits such as improved resilience and well-being.**

From Commitments to Implementation

Recent decisions and pledges have also called on all countries to establish or strengthen existing domestic frameworks for preparing and implementing their successive NDCs, with an emphasis on encouraging country-driven gender-responsive and participatory approaches to climate action.¹⁴ This need is especially pronounced in nature-related sectors, which often lack the necessary plans, regulatory frameworks, and financing.

In 2022, the **total annual finance flows to NbS were roughly US\$200 billion – only one-third of the NbS finance needed by 2030 to meet Rio Convention targets.** According to N4C's 2024 NbS Policy Tracker, **just one-third¹⁵ of more than 1,300 nature-related policies published since the Paris Agreement have dedicated budgets. Furthermore, fewer than 20% mention Indigenous peoples, and only 2% reference gender equity.**¹⁶ Concurrently, annual finance flows from public and private sources that negatively impact nature are estimated at almost **\$7 trillion.**¹⁷ To meet the targets of the Rio Conventions, investments into nature must almost triple to \$542 billion annually by 2030.¹⁸

Beyond merely strengthening targets, enhanced NDCs represent a key opportunity for countries to clarify the means of implementation and support they need to successfully address barriers, better safeguard nature, and ensure effective and timely NbS implementation.

In this context, **the Guide has been developed to support national policymakers and technical experts in the upcoming design and implementation processes of NDCs. It provides information and resources related to 15 guiding points aimed at enhancing the inclusion of nature in NDCs.**

How to Use this Guide

This Guide is specifically designed to highlight opportunities and considerations related to nature-based solutions for climate change along the NDC enhancement cycle. It is not meant to be a general guide for NDC development. Before navigating it and engaging with its 15 points, we encourage readers to first review broader guidance on NDC development and enhancement. This includes the Paris Rulebook, which offers direction on the necessary information to promote clarity, transparency, and understanding (ICTU), as well as fully reviewing the outcomes of the first GST. Please also see the [NDC Partnership's NDC 3.0 Navigator tool](#) for a comprehensive, interactive resource to support enhanced NDC ambition and accelerated implementation.

The main content of this Guide is organized into 15 guiding points organized from the NDC readiness phase, through target-setting, and finishing with considerations for NDC implementation. For each point, checklists are provided to offer more detailed suggestions for advancing it. While these points are structured in a way that could be followed as a step-by-step process, given the diverse opportunities to enhance nature's inclusion in NDCs, along with the varying national capacities, contexts, and data availability across countries, the checklists and additional information provided are intended to be advisory rather than prescriptive. Policymakers and experts may choose to follow all 15 guiding points and apply all checklist considerations, or focus on only some, depending on their specific needs and priorities.

More detailed information on each point, along with additional resources and case studies, can be found in the following sections. See the Decision Tree on page 10 to help identify the best entry points for using the Guide.

DECISION TREE

Are you committed to enhancing the inclusion of nature in your upcoming NDC?

Yes! How do I start?

I'm unsure

Develop whole-of-government processes and frameworks to mainstream inclusive, nature-based climate action across all sectors, maximizing synergies between climate, biodiversity, and human well-being from the outset of the NDC enhancement process. Go to [Guiding Point 1](#) of this guide for further guidance.

Go back to the [Introduction Section](#) of this guide to get convinced on why you should do so!

Develop a whole-of-society approach for the NDC enhancement process to ensure it incorporates local and traditional knowledge and fosters collective understanding, buy-in, and commitment to implementation in a gender-responsive, transparent manner. See [Guiding Point 2](#) for detailed recommendations.

Assess NDC implementation progress and relevant changes in international and national priorities, circumstances, and regulatory instruments. See [Guiding Point 3](#) for detailed recommendations.

Gather and refine information to inform the enhancement of nature-related NDC targets, prioritizing the best-available science and ensuring to include Indigenous, traditional, and local knowledge. See [Guiding Point 5](#) for detailed recommendations.

Identify the most suitable entry points for enhancing the inclusion of nature in NDC targets. See [Guiding Point 4](#) for detailed recommendations.

Decide which of the following entry points will be used for adding or strengthening targets in the 2025 NDC:

Elevate the country's economy-wide GHG target to the highest possible ambition, in line with Article 4.3 of the Paris Agreement, including by maximizing the use of nature-based solutions.

Develop or strengthen sectoral GHG and non-GHG targets, policies, and/or measures to incentivize more ambitious mitigation in Agriculture, Forestry and Other Land Uses (AFOLU), including in wetlands and coastal areas.

Integrate or strengthen adaptation targets to maximize the potential of NbS and ecosystem-based approaches in reducing climate risks and enhancing resilience across all sectors and ecosystems, aligning with and contributing to the UAE Framework for Global Climate Resilience to achieve the Global Goal on Adaptation.

Integrate nature as an essential component in addressing loss and damage from climate impacts, while recognizing and documenting nature's vulnerability to such impacts.

Integrate nature-based solutions, ecosystem-based adaptation, and nature-positive approaches into mitigation and adaptation targets related to non-AFOLU sectors.

See [Guiding Point 6](#) for detailed recommendations

See [Guiding Point 7](#) for detailed recommendations

See [Guiding Point 8](#) for detailed recommendations

See [Guiding Point 9](#) for detailed recommendations

See [Guiding Point 10](#) for detailed recommendations

When pursuing any of the entry points mentioned above, consider all cross-cutting considerations mentioned in [Guiding Points 11, 12, 13](#) of this guide:

- [Guiding Point 11](#): Maximize synergies between NDC targets and other related agendas (e.g., biodiversity, development, health) to amplify win-win outcomes for climate, biodiversity, and people.
- [Guiding Point 12](#): Enhance consistency and coherence between adaptation and mitigation targets related to nature.
- [Guiding Point 13](#): Apply just, equitable, and rights-based approaches to ensure inclusivity across NDC targets.

Ensure the NDC communicates the means of implementation and support required for the effective implementation of NbS targets across mitigation, adaptation, and loss and damage. See [Guiding Point 14](#) for detailed recommendations.

Develop clear roadmaps for establishing and/or enhancing the structures and policies needed for effective implementation of NbS targets included in the NDC. See [Guiding Point 15](#) for detailed recommendations.

Prepare to Enhance the Inclusion of Nature in 2025 NDCs

Strengthen the Inclusion of Nature in NDC Target-setting for Mitigation, Adaptation, and Loss & Damage

Cross-cutting Considerations

Advancing Towards NDC Implementation and Financing for Nature

Preparing to Enhance the Inclusion of Nature in 2025 NDCs

1 **Develop whole-of-government processes and frameworks to mainstream inclusive, nature-based climate action across all sectors, maximizing synergies between climate, biodiversity, and human well-being from the outset of the NDC enhancement process. Consider the following:**

Identify core government institutions that will be involved and consulted throughout the NDC update process. These may include a variety of national ministries, departments, and coordinating bodies (e.g., Ministries of Climate Change, Environment, Forests/Wildlife, Agriculture/Livestock/Fisheries, Water, Health, Planning, Economy/Finance), as well as Tribal nations and Indigenous governments, sub-national and local governments, public-private platforms, and legislative and judicial bodies.

Clarify the roles and responsibilities of core government institutions and establish processes to facilitate coordination across national and subnational actors during NDC development and implementation.

Create institutional structures that support mutually reinforcing planning processes, policies, and actions between climate, development, and biodiversity agendas. This may include regularly convening meetings between government offices and focal points leading commitments across other Rio Conventions (the Convention on Biological Diversity and the Convention to Combat Desertification) and other Multilateral Environmental Agreements (e.g., Ramsar Convention on Wetlands, Sendai Framework for Disaster Risk Reduction, Sustainable Development Goals) to align different planning processes and instruments, and to identify opportunities for cross-mapping targets and for data synchronization (e.g. updating national greenhouse gas inventories to incorporate data for wetlands in accordance to Ramsar Resolution XIII.14).

Develop overarching principles for establishing and implementing targets across different planning instruments in ways that secure the integrity and lead to no harm to ecosystems and human well-being. *See Case Study 1.1 for an example of this approach.*

Case Study 1.1

Principles Guiding Colombia's NDC

The cross-cutting section of Colombia's NDC includes guiding principles related to the protection of water, ecosystems and biodiversity, with special attention to protected areas and the conservation and restoration of strategic ecosystems such as Páramos, mangroves and other wetlands, coral reefs, glaciers, oceans and tropical forests. These principles also recognize the intrinsic value of these ecosystems and the environmental services they provide for Colombia and the world. The NDC also emphasizes intergenerational equity, territorial inclusion, human rights, and explicitly acknowledges the value provided by NbS and the bioeconomy. Through intentional consideration of these overarching principles, Colombia's NDC is better situated to mainstream inclusive NbS approaches and to maximize the synergies between climate, biodiversity, and well-being.

2 **Develop a whole-of-society approach for the NDC enhancement process to ensure it incorporates local and traditional knowledge and fosters collective understanding, buy-in, and commitment to implementation in a gender-responsive, transparent manner.** Consider the following:

Identify and engage interested stakeholders and rights holders, such as academic and research institutions, private sector platforms, sector-specific platforms (e.g., REDD+), civil society organizations, non-governmental organizations, smallholder farmers, and nature-dependent communities. Special attention should be given to vulnerable and historically marginalized populations, such as women, youth, Indigenous peoples, and local communities on the frontlines of climate change. Include representatives from hard-to-abate sectors like agriculture, industry, and oil and gas, to ensure their buy-in and support for ambitious implementation and that no communities are left behind.

Develop methodological approaches and communication processes that are transparent, clear, gender-responsive, and lead to meaningful, intergenerational, and effective social dialogue. This may include holding training and awareness-raising sessions to explain the NDC and clarify basic concepts at initial stages of engagement, thereby enabling more effective participation in the process.

Adopt a rights-based approach to consultation to ensure the participation of Indigenous peoples (IP) and local communities (LC) in decision making and that their traditional knowledge,¹⁹ values, rights, and customary practices are embedded throughout the NDC enhancement process. Follow best practices and national legislation for consultation, including Convention 169 of the International Labor Organization, as applicable. *See Box 2.1 for some best practices to consider.*

Case Study 2.1

The NDC Partnership’s Best Practice Brief: Whole-of-Society Approaches to Inclusive Stakeholder Engagement draws on extensive experience from across the Partnership to offer guidance and recommendations for countries seeking to foster comprehensive partnerships with all national stakeholders engaged in climate action and NDC implementation. It includes country examples of meaningful stakeholder engagement. In Peru, for instance, non-state actors like universities and Indigenous peoples’ organizations have actively participated in climate initiatives, with their contributions integrated into the government’s coordination mechanism for climate action. Similarly in Georgia, public comments gathered during climate policy consultations were actively and transparently captured for consideration through online engagement.

Box 2.1: Best practices when adopting a rights-based approach to consultation²⁰

- Recognize the principle of Free, Prior and Informed Consent (FPIC), which affirms the rights of Indigenous peoples to give or withhold their consent for any action that would affect their lands, territories, or rights.²¹
- Establish mechanisms to ensure the full and effective participation of IPLCs in decision-making, such as governmental working groups and other self-governance bodies that can address matters related to IPLCs’ rights, knowledge, and relationship to nature. These entities should be well-integrated within other parts of the government; a single Indigenous policymaker is not sufficient and cannot represent all Indigenous communities.
- Adhere to a human rights-based approach that respects and protects the human rights of IPLCs, and the right of all people to a clean, healthy, and sustainable environment.²²

3 Assess NDC implementation progress and relevant changes in international and national priorities, circumstances, and regulatory instruments. Consider taking the following steps:

Review relevant advances in international agreements and commitments related to advancing nature-based solutions for climate action. This includes reviewing the first GST, recent decisions under multilateral environmental and development agreements, and other country or civil society-led initiatives (e.g., [Glasgow Leaders' Declaration on Forests](#), [The Climate Champions' 2030 Climate Solutions](#), [Freshwater Challenge](#)). Determine their applicability to the country setting.

Take stock of nature-related targets, policies and measures, regulatory frameworks and plans, which may be included in the country's current NDC or other national policies (e.g., Long-term Low-Emissions Development Strategies, National Adaptation Plans, National Biodiversity Strategies and Action Plans, UNCCD targets on Land Degradation Neutrality, national development plans, subnational and sectoral plans). Compare their scope with progress achieved to date and identify successes that can be built upon to raise ambition, along with areas of opportunity to bolster commitments. This may include:

- Identifying which ecosystem types are present in the country and assessing the extent to which they have already been included in the previous NDC.
- Assessing whether ecosystems are considered both as a solution to address climate change (through NbS) and as assets that are facing impacts from climate change.
- Analyzing the robustness of current nature-related targets, including assessing whether targets are SMART (specific, measurable, achievable, relevant, and time bound).
- Using the Biennial Transparency Report process, among other implementation monitoring and evaluation tools, to identify progress and/or any challenges faced in implementing NbS targets within the current NDC period.
- Identifying opportunities and challenges for maximizing synergies between the NDC and other national targets, policies, or plans.

See Box 3.1 for tools that can be useful during this step.

Box 3.1: Useful tools for stocktaking progress

- **Climate Watch:** offers open data, visualizations and analysis to help policymakers, researchers and other stakeholders gather insights on countries' climate progress.
- **Global Mangrove Watch:** provides national status reports on integration of mangroves into international policy commitments.
- **Climate Scope:** evaluates individual markets' readiness to put energy transition investment to work.
- **NDC Equity Tracker:** highlights country pledges for climate action, especially on gender justice, intergenerational equity, and civil society inclusion.
- **NDC Partnership Climate Toolbox:** designed to aid government officials, implementing partners, and any other parties working on NDC planning and implementation.
- **Climate Action Tracker:** tracks government climate action and measures it against the globally agreed Paris Agreement aim of "holding warming well below 2°C, and pursuing efforts to limit warming to 1.5°C."
- **Nature4Climate:** continuously develops tools such as its [Nature-based Solutions Policy Tracker](#), and NbS commitment tracker, that allows Parties to identify opportunities for increasing their NbS ambition.

Examine changes in institutional, political, regulatory, economic, and environmental priorities or circumstances, along with shifts in production and consumption, as these factors can influence acceptance and effectiveness of NbS. This may include identifying gaps in resources, tracking the contributions and progress achieved by various actors and sectors – including private and civil society contributions – in NDC implementation, and analyzing social, economic, and environmental costs or benefits that may hinder or enable broad support for climate action.

Analyze relevant changes in the country’s technical, scientific, financial, and institutional resources and capacities. This may include taking stock of new scientific findings related to climate change and action, advancements and improvements in data sources and/or quality, and any other improvements in the country’s resources or capacities (e.g., new categories added to the GHG inventory, expansion in the scope of information on climate risks that can be utilized to inform adaptation planning processes, and/or new data that expands the understanding of the mitigation or adaptation potential of different climate measures).

Identify opportunities and potential approaches to incorporate long-term visions as part of the NDC enhancement process. This could include increased availability of data on future scenarios, modeling exercises, and/or undertaking of whole of society dialogues.

See Case Study 3.1 for an example.

Image: Geoffroy’s spider monkey Costa Rica.



Case Study 3.1

Costa Rica’s use of exploratory future scenarios to update its NDC

In 2020, to support the updating of its Nationally Determined Contribution, Costa Rica used a participatory approach to create exploratory future scenarios. Over 150 experts from multiple sectors participated in identifying uncertainties that could impact the country’s landscape by 2050, and developing future socioeconomic and environmental scenarios based on different contextual factors of change that could be faced across different key systems: agriculture, forestry, oceans, water, industry, construction, integrated waste management, transport, urban development, energy, infrastructure, and tourism. Once scenarios were developed, Costa Rica undertook extensive consultation processes with different groups, including Indigenous populations and local communities, to identify concrete opportunities for strengthening proposed NDC targets, policies and measures, in response to the potential changes under each of the exploratory scenarios.

4 Identify the most suitable entry points for enhancing the inclusion of nature in NDC targets.

For doing so:

Review all the information analyzed through the stocktaking completed under Guiding Point 3 to select the entry points that are best suited to each national context (presented in the Decision Tree on page 10).

Review the Paris Rulebook guidance on communicating NDCs with the information necessary to promote information for clarity, transparency, and understanding (ICTU), including accounting approaches for NDCs across all sectors, including actions from NbS (*summarized in Box 4.1*). All countries must follow this guidance in their 2025 NDCs.

Determine which types of NbS mitigation and adaptation targets the NDC will include. Types of NDC targets may include:²³

- Reduction relative to business as usual (also: baseline scenario target)
- Base year GHG emissions
- Fixed level or absolute
- Intensity
- Trajectory or Peaking
- Area-based
- Policies and measures

Consider potential approaches for including NbS with implementation time frames that may be longer than the NDC implementation period to maintain or reach their full climate benefit (e.g., investments in conservation or restoration). Countries can note how these long-term efforts are also considered in the greenhouse gas inventory.²⁴

Decide if conditionality will be used to increase ambition or signal support needed. Developing countries may consider using conditional targets to increase the ambition of their NDC, to signal readiness, or to indicate support needed for nature-based solutions. Conditionality is not explicitly defined in the Paris Agreement, but some countries elect to utilize this approach. For example, some countries have indicated that higher ambition from REDD+ would be possible if financial or technical support is provided.

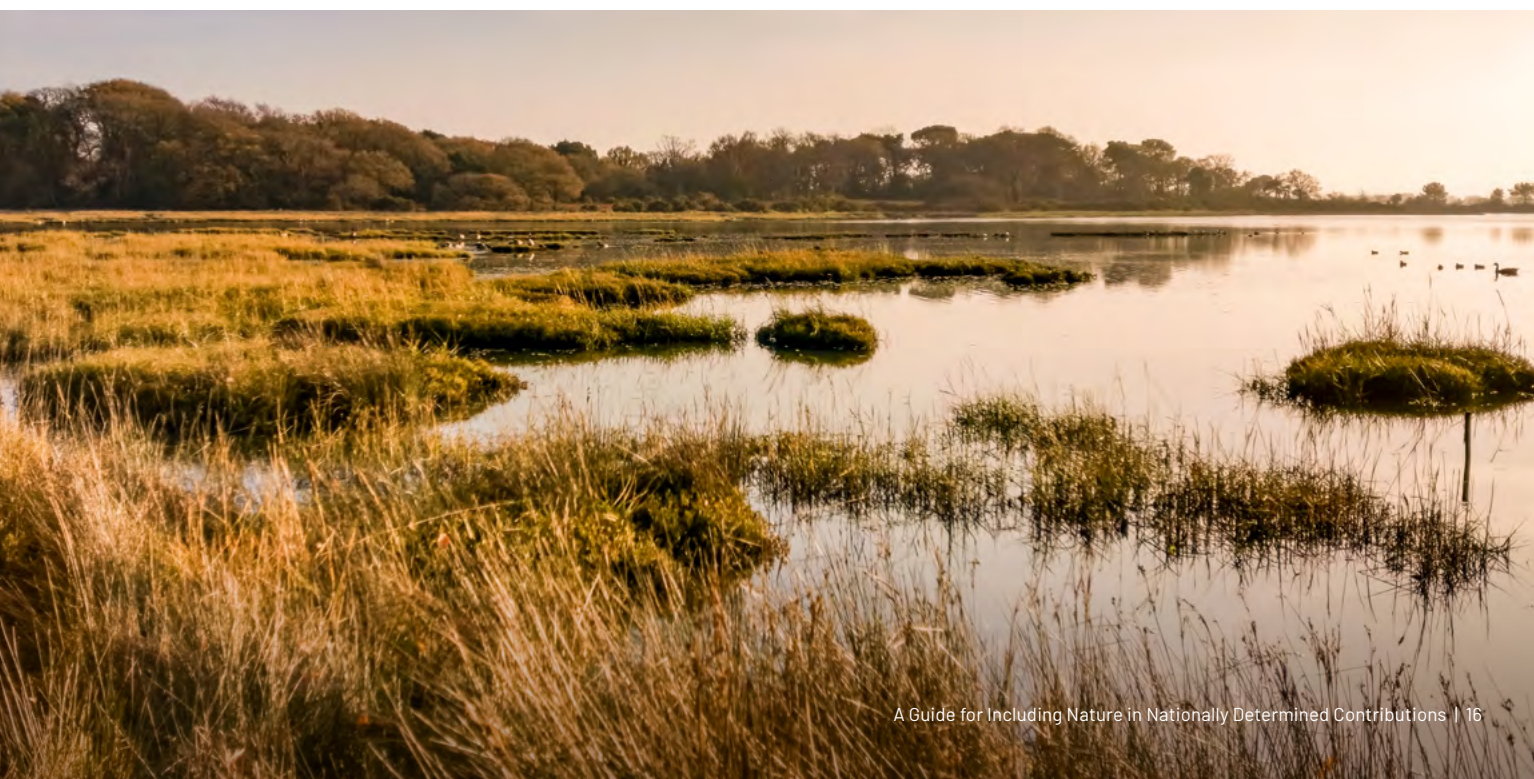
Image: Blackbuck Antelope, La Pampa province, Argentina.



Box 4.1: Information and accounting guidance agreed by the UNFCCC²⁵

- **Information:** Countries should include information on their reference point; period of implementation; scope and coverage; planning processes; assumptions and methodologies; ambition; and the NDC's expected contribution towards global goals of the Paris Agreement.
- **Accounting Approaches & Metrics:** The most recent guidance from the IPCC, the 2006 Guidelines on National Greenhouse Gas Inventories, along with the updates and improvements in methodologies provided in the IPCC 2013 Supplement to the 2006 Guidelines on Wetlands, and the 2019 Refinement to these guidelines, can be used to support policy goals for NbS in NDCs in a way that is consistent with their historical inventory reporting.
- **Consistency between NDC communication & implementation:** It is recommended that countries use the NDC to explain any inconsistencies in estimating sources and sinks from NbS between the NDC, greenhouse gas inventory, and NDC implementation. Note accounting approaches used for any specific category of emissions, especially if they differ from the IPCC guidelines.
- **Inclusion of all categories of emissions and removals:** Parties should consider the full set of Natural Climate Solutions (NCS), defined as 20 conservation, restoration, and/or improved land management actions that increase carbon storage and/or avoid greenhouse gas emissions across global forests, wetlands, grasslands, and agricultural lands,²⁶ as well as the several land-use types already used in Parties' emissions inventories and national communications to the UNFCCC – forests, croplands, grasslands, wetlands, and others – to ensure NDCs maximize the climate mitigation potential of nature. Countries can incorporate NCS activities in their NDCs while still using the traditional categories and guidance that have been developed for the UNFCCC.²⁷ This ensures that countries can maintain consistency with past reporting and policy efforts without needing to create new systems or request additional guidance from the IPCC.
- **Inclusion of all sectors from previous NDCs.** Once a sector or activity is included, it should remain in future NDCs. Countries should also provide explanations of any excluded emissions.

Image: Holes Bay Wetland, in Poole Harbour, United Kingdom.



5 Gather and refine information to inform the enhancement of nature-related NDC targets, prioritizing the best-available science and ensuring to include Indigenous, traditional, and local knowledge.

Depending on the entry points selected under Guiding Point 4, consider the following actions:

Collect information from new or updated sources, such as any new scientific findings on the mitigation or adaptation potential of different NbS, recent developments in sector-specific technologies, GHG inventories, emissions scenarios, risk and needs assessments, Biennial Transparency Reports (BTRs) and/or National Communications, social, economic, institutional, environmental data that can be used as an input to conduct vulnerability and climate risk assessments for ecosystems and communities (e.g., information on ecosystem services, including non-carbon benefits of ecosystems, national accounts or natural capital accounts, data used to report on other Ministries of Environment), among others.

See Box 5.1 for examples of global sources to consider.

Collect and integrate local, traditional, and Indigenous knowledge.

See Case Study 5.1 for an example, and the Additional Resources section for a compilation of good practices, tools and available data collection initiatives.

Create an updated national mapping of the extent and geographic scope of major land and sea use activities and ecosystems. This is an important precursor for updating the GHG inventory, utilizing the IPCC Wetlands Supplement, and setting coherent mitigation and adaptation targets with an area-based dimension. When doing so:

- Consider whether mangroves are included within the national forest definition or whether they need to be mapped separately.
- Identify if any ecosystems require initial, improved, or additional mapping.
- Utilize scientific advances and new mapping methodologies to understand the overlap of high carbon and high biodiversity areas to prioritize action for maximum impact to address both biodiversity and climate.
- Consider the extent of land required for commitments related to renewable energy development, urbanization, and agricultural expansion.
- Ensure that Indigenous territories are clearly reflected in analyses.

Strengthen the accuracy and completeness of the national GHG inventory report of anthropogenic emissions by sources and removals by sinks, particularly for Agriculture, Forestry, and Other Land Use, including by adding categories that may not have been previously accounted for, such as peatlands, other inland wetlands, coastal and marine ecosystems, utilizing the most up-to-date IPCC guidance and methodologies, whenever feasible. *See Case Study 5.2 for an example and refer to Box 5.2 for different entry points for doing so.*

Box 5.1: Global platforms that can help inform the enhancement of the NDC

- **Interactive Resilience Atlas**: can be used to explore irrecoverable carbon concentrations (tonnes/hectare) in any area. Additional layers on protected areas, forest loss since 2000, and the irrecoverable carbon–biodiversity overlay are available to layer into mapping efforts. These maps are available at 30-meter resolution, allowing users to easily zoom in to areas of interest, and are compatible with other widely used satellite imagery.
- **Irrecoverable Carbon and Biodiversity Explorer**: can be used to estimate the carbon and biodiversity values for any area by selecting a country, drawing a polygon, or uploading a shapefile. To use the tool, indicate the area of interest and the app will automatically calculate carbon and biodiversity statistics.
- Conservation International also offers specific **country profiles** with irrecoverable carbon maps along with statistics on protection, recent loss, and the overlap of carbon and biodiversity, and a full report on irrecoverable carbon publicly available on their website. Additional country-level data and maps are available upon request.
- **Restor** and **Naturebase** platforms provide open access to a large number of global maps that describe various carbon, biodiversity, and environmental characteristics for terrestrial ecosystems. Users can upload or draw polygons around sites of interest (of any size) and get a summary of these metrics across those areas. Countries can use these tools to: a) determine the carbon sequestration potential of different NbS actions within user-defined areas, national and subnational jurisdictions, or watersheds; b) access various biodiversity datasets for the area of interest and surrounding regions to assess the potential impacts of NbS actions; and c) transparently monitor the outcomes of the NbS actions on carbon, biodiversity, and other environmental characteristics such as water evapotranspiration, retention, and storage.
- **Global Mangrove Watch**: provides the most complete and up-to-date mangrove monitoring platform that gives universal access to near real-time remote sensing data on the location, extent and status of mangroves across the world, as well as data highlighting why they are valuable, supporting countries in the process of implementing, updating or revising their NDCs.

Case Study 5.1

Engaging with Indigenous Peoples and local communities during NDC development

Guatemala's NDC draws attention to the importance of rights-based approaches to climate action, with a specific discussion on how IPLCs were engaged in the NDC development process. Guatemala's proposed NDC goals were reviewed and provided feedback in a meeting with the Guatemalan Indigenous Roundtable on Climate Change (MICCG), a representative platform of the Indigenous Peoples of Guatemala and linked to climate change. The country placed an emphasis on engaging with these communities in NDC creation (although they had challenges due to COVID). In addition, many of Guatemala's adaptation actions note the need to implement the action in partnership with IPLC and women. For example, the adaptation component includes a target that at least 40 percent of forests under management are attended by Indigenous and non-Indigenous women.

Case Study 5.2

Indonesia's efforts to update seagrass data for its NDC and coastal conservation

Image: Seagrass Meadow Grows in Indonesia



Indonesia is home to approximately 11.5% of the world's seagrass meadows. Therefore, the country has prioritized completing an inventory of seagrass meadows within the exclusive economic zone to accurately measure its mitigation and blue carbon storage potential. Indonesia plans to launch an updated national map of seagrass meadows by 2024 to recalculate the GHG inventory of seagrasses and reflect this data in the mitigation section of the next iteration of their NDC. In tandem, the government is working to establish Ministerial regulations related to seagrasses to best account for the impact of planned and unplanned activities in the ecosystem. These efforts around seagrass ecosystems contribute to a larger conservation strategy of blue carbon ecosystems in Indonesia, with accurate data and monitoring at the core of the initiative.

Box 5.2: Opportunities to strengthen the accuracy and completeness of the AFOLU sectors of the national GHG inventory report

- **Utilize the 2006 IPCC Guidelines for National Greenhouse Gas Inventories along with the IPCC 2013 Wetlands Supplement to the 2006 Guidelines, and the updates and improvements in methodologies provided in the 2019 Refinement to the 2006 Guidelines.** This wetlands supplement provides guidance for countries to include wetlands, including coastal blue carbon ecosystems, in national GHG inventories.
- **Increase its accuracy and/or completeness, such as by updating Tier estimates and/or including new sectors, categories, and/or gasses.**
- **Integrate soil carbon where possible.** Particularly for grasslands, wetlands and coastal ecosystems, carbon stored in soils is a vital component of the overall carbon sink. Peatlands contain approximately twice the carbon stock of the total biomass of the world's forests in their soils.²⁸ Over 90% of the total carbon in salt marshes and seagrasses and approximately 50-90% of the total carbon in mangroves is stored in the soil.²⁹
- **Include information on harvested wood products and natural disturbances.** Countries are encouraged to account for natural disturbances, and where relevant, account for harvested wood products (HWP) following the most-recent IPCC guidelines. This accounting is important to fully understand the overall impact of HWP on emissions and sinks in this category.
- **Follow IPCC accounting approaches for bioenergy, and report emissions clearly.** For countries opting to include energy derived from the use of biological feedstocks (i.e., bioenergy), a variety of accounting approaches have been assessed by the IPCC and should be referenced in the national GHG inventory. Transparency will be key to understanding whether countries are accurately accounting for the overall change in emissions to the atmosphere. Importing countries should report on the accounting methodology utilized by the exporting country for biomass-based emissions. If the exporting country does not account or utilize a projected baseline that incorporates biomass energy demand, the importing country will need to fully account for the emissions. If domestic feedstock is used, countries should reconcile their energy and land-sector accounting approaches, using identical reference points (e.g., historical reference year or period, or BAU) to avoid inter-sectoral leakage, or simply opt to account for these emissions in the energy sector to increase transparency.

Develop and/or enhance reference points and any projected scenarios to be used in NDC targets, also known as baseline or “business-as-usual” (BAU scenarios). These scenarios can be set as a reference point for both mitigation and adaptation targets for any indicator that has an upward trajectory, e.g., rate of GHG emissions, rate of deforestation, or number of people vulnerable to climate change. Since the ambition of NDC targets based on projection scenarios can be affected by the robustness and accuracy of the scenario, countries wishing to set NDC targets in this manner should consider:

- Using resources and tools to understand and begin developing robust projection scenarios. For example, the Partnership on Transparency in the Paris Agreement has published [the Projections of Greenhouse Gas Emissions and Removals: An Introductory Guide for Practitioners](#).
- Building internal capacities to develop better projections, as well as to begin transparently reporting the approach, methodology and other relevant information.
- Communicating needs related to building projection scenarios and apply for funding through the UNFCCC Capacity-Building mechanisms and initiatives, such as the Capacity-Building Initiative for Transparency (CBIT).
- Analyzing where NDC targets need to be updated along with any revised projection scenarios or availability of significant, updated data sources relevant to a projection scenario.

Enhance climate risk or vulnerability assessments of people and ecosystems, and/or any other information that can be used as a starting point to develop or strengthen adaptation targets, policies and measures (e.g., information of anticipated impacts, adaptive capacities, sensitivities, exposures, and/or levels of resilience of specific people or ecosystems; information on the effectiveness, adequacy and fairness of different potential adaptation measures, including comprehensive cost-benefit analysis of ecosystem-based and other solutions).

Conduct risk-mapping, modelling, and/or cost-benefit analyses to understand the co-benefits of mitigation and adaptation actions, as well as exploring synergies and trade-offs between mitigation and adaptation solutions and their impacts on biodiversity.

Collect the most updated information available on biodiversity and ecosystem losses, including potential losses including potential losses of cultural practices and traditional knowledge related to nature use.

Identify, assess, quantify, and document ecosystems and ecosystem services that people, including vulnerable populations, depend on, including how biodiversity loss and the degradation of ecosystem services exacerbates vulnerabilities and inequities.

Assess practical solutions to address barriers in adopting and/or implementing NbS targets. This should build upon the previous steps, but may require additional social, policy, and/or economic analyses, e.g., to understand options for harmonizing sectoral and related policies, developing positive economic incentives for NbS and phasing down any that drive nature loss and degradation, supporting a just transition to green jobs, etc.

Strengthening the Inclusion of Nature in NDC Target-setting for Mitigation, Adaptation, and Loss & Damage

6 Elevate the country's economy-wide GHG target to the highest possible ambition, in line with Article 4.3 of the Paris Agreement, including by maximizing the use of nature-based solutions. Consider the following:

While the Paris Rulebook says that all countries should move towards an economy-wide target over time, some developing countries, especially LDCs and SIDS, may not yet be able to do so. In such cases, refer to [Guiding Points 7](#) and [10](#) for guidance on enhancing the integration of nature into sector-specific mitigation targets.

Align target with 1.5°C modeled domestic pathways, using the latest scientific insights to determine the relative contribution from the AFOLU sector and NbS in achieving global 1.5°C scenarios, as well as recognizing the urgent timeline for action in the AFOLU sector to avoid tipping points.³⁰

Include all greenhouse gases, sectors, and categories of ecological sources and sinks, ensuring the maintenance of previously included categories and consistency with the GHG inventory. Countries should account for emissions reductions and removals from NbS in alignment with IPCC guidelines,³¹ and independently account for anthropogenic emissions and removals of all relevant greenhouse gases for NbS: carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O).

Adopt more ambitious abatement options for agriculture, land use, land use change, and forestry, including accounting for emission reductions or carbon removals achieved through the protection, sustainable management, and restoration of all ecosystems. This should include natural ecosystems, especially those currently underrepresented in NDCs, but also managed landscapes, such as agricultural areas, fisheries, agroforestry systems and production forests.

Image: Silvo-pastoral systems, Thailand.



7 Develop or strengthen sectoral GHG and non GHG targets, policies, and/or measures to incentivize more ambitious mitigation in Agriculture, Forestry, and Other Land-Uses (AFOLU), including in wetland and coastal areas. In doing so:

Set targets, policies, or measures to achieve emissions reductions, enhancement of carbon sinks, and/or carbon removal through the following pathways: protection, sustainable management, and restoration of key ecosystems and working lands.

Utilize the natural climate solutions hierarchy:³² protect, then manage, then restore, to help ensure NDCs can make the greatest impact, even when resources are limited. The hierarchy is based on four criteria: 1) scale of mitigation potential; 2) cost-effectiveness; 3) immediacy of benefits; and 4) co-benefits. All of these actions are important, and they can be undertaken simultaneously in different ecosystems. See Box 7.1 for more details on each of these pathways and the mitigation hierarchy.

Ensure targets, policies, or measures are set for each of the country's key ecosystems and working lands, especially in those that have not yet been included in previous NDCs or where mitigation ambition can be increased. See Box 7.2 for examples.

Include area-based targets that conserve biodiversity values and associated ecosystem services, when possible (e.g., using length-based targets such as kilometers for rivers). See Box 7.2 for examples.

Image: Great Blue Heron, Ambergris Caye mangroves, Belize.



Case Study 7.1

Belize's inclusion of seagrasses and mangroves

Belize has an overarching target to reduce GHG emissions and increase GHG removals related to land use change totaling 2,053 KtCO₂e cumulative over the period from 2021 to 2030, noting that Belize's mangrove ecosystems have a total carbon stock of approximately 92,963 Kt CO₂e, and annually sequester around 432 Kt CO₂e per year. The NDC also includes policies to maintain and enhance the country's mangroves and seagrasses to function as a carbon sink by 2030, such as:

- Establishing new and/or improving existing public conservation measures to cover 100% of publicly owned areas identified within the 2018 Protection of Mangrove regulation.
- Partnerships with landlords of privately owned mangroves, local communities, bilateral and multilateral agencies and the continued enforcement of the 2018 mangrove regulations.
- Restore at least 2,000 hectares of mangroves, including within local communities, by 2025, with an additional 2,000 hectares by 2030.

Belize also includes targets to increase resilience to climate impacts for coastal communities and habitats by reversing net coastal habitat and land loss by 2025, through the above actions, as well as building capacity in fisheries and the aquaculture sector to support livelihoods while protecting ecosystems.

Box 7.1: Detailed explanations of NbS pathways and their place in the mitigation hierarchy

Protection refers to actions that reduce GHG emissions from clearance or degradation of carbon-rich ecosystems, or from other changes that affect how these ecosystems store carbon (e.g., changing wetland hydrology). Over time, protection of intact ecosystems can also enhance carbon stores within these areas. Protection is first in the mitigation hierarchy because this pathway offers elevated levels of mitigation that can be realized quickly. It is often the most cost-effective NbS pathway or can be deployed at comparatively low cost, typically with many co-benefits. Globally, protection actions are estimated to deliver 4,245 megatons of cost-effective (\leq US\$100) reductions of carbon dioxide equivalent per year in 2030, making them the most efficient NbS pathway for mitigating climate change.³³ Conserving natural ecosystems can keep large amounts of carbon stored in ecosystems while providing crucial benefits to people and wildlife.

Sustainable or improved management refers to actions within working landscapes and seascapes, such as forestry concessions, agricultural, grazing, fishing and coastal areas that can both reduce emissions and sequester additional carbon. This pathway is second, as it is often more cost-effective than restoration, and actions to shift toward more sustainable management of ecosystems can enable countries to reduce emissions without changing land use patterns, helping them to avoid “leakage” into other natural areas. Benefits can accrue in the near term, and communities can enjoy co-benefits – including improved resilience of agricultural lands or forests against climate stressors. Sustainable management targets can include introducing regenerative agricultural practices that reduce fertilizer inputs, expanding agroforestry and silvo-pastoral systems, climate-smart forestry, paludiculture, reduced wood fuel harvest, and savanna fire management. Improved sustainable management actions are estimated to deliver up to 2,884 megatons of cost-effective reductions of carbon dioxide equivalent per year in 2030.³⁴

Restoration refers to actions undertaken to remediate or recover ecosystems that have been damaged, degraded, or even converted to attempt to restore ecosystem function, structure, or composition. Restoration can occur in virtually any type of area or ecosystem. Restoration actions can sequester additional carbon within these areas, prevent further carbon emissions, enhance resilience against climate change, enhance wildlife habitats and populations, or restore other critical ecosystem services. Restoration is third in the hierarchy because, while it has the largest potential for climate mitigation, the benefits do not appear immediately. Restoration can gradually increase carbon uptake, but it is no substitute for protecting intact ecosystems from conversion, which can lead to emissions that might not be balanced for decades or centuries. Restoration can involve land use change, which can cause problems related to leakage, and it is often the most expensive and technically demanding of the three sets of actions. When restoration is done well, it can restore valuable ecosystem services and support biodiversity goals. Restoration actions are estimated to deliver 3,153 megatons of cost-effective reductions of carbon dioxide equivalent per year in 2030.³⁵

Image: Peatland, Belarus.



Case Study 7.2

Peatland restoration in Belarus

The Republic of Belarus sets an NDC target of, *from 2015–2030, ensuring the rehabilitation of at least 10,000 ha of damaged bogs, thereby increasing the total area of restored peatlands to at least 60,000 ha by 2030.*

Case Study 7.3

Incorporating REDD+ in Ecuador

Ecuador's NDC is informed by the country's national REDD+ Action Plan, setting the same quantified GHG emissions reduction target. Alignment with, and implementation, of the REDD+ plan is reinforced, by stating its intent to *link national efforts to reduce GHG emissions with the country's priority agenda to reduce the causes and agents of deforestation.*

Image: Andean Choco region, northwestern Ecuador.

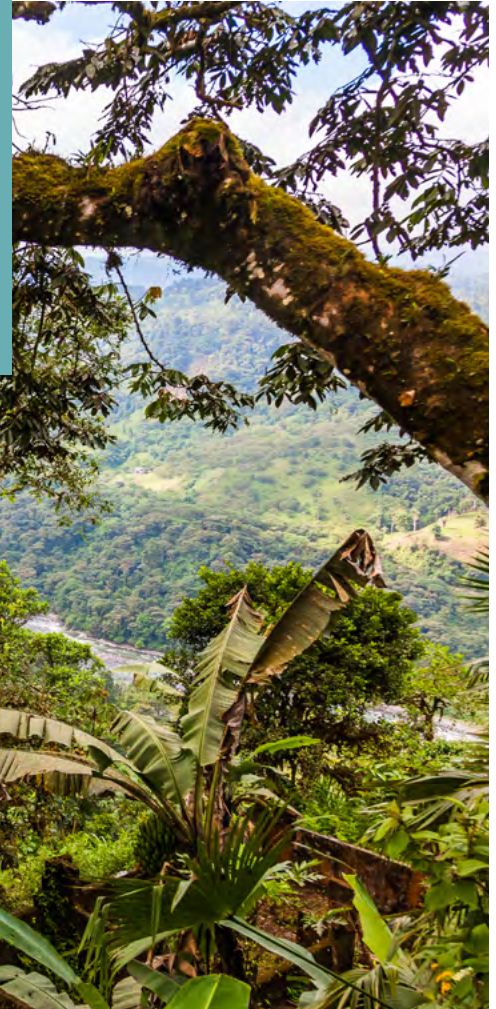


Image: Eucalyptus seedlings ready for use in reforestation.



Case Study 7.4

Agriculture and Grasslands in Uruguay's NDC

The agricultural component of Uruguay's NDC encompasses a range of different management practices to promote mitigation, such as:

- *By 2030, 100% of the effective area under forest plantation management for the year 2020 (1,053,693 ha) has been maintained, following the Forest Policy and, when appropriate, the Forest Environmental Management Guidelines.*
- *By 2030, 100% of the area of plantations destined for shade and shelter in 2018 has been maintained, including silvopastoral systems.*
- *By 2030, crop production systems have been implemented that include rotations with sown pastures that occupy more than 30% of the duration of the rotation in at least 30% of the agricultural area that is under Soil Use and Management Plans in the year 2030.*

Image: Flamingos in the Atacama Desert Oasis, Chile.



Case Study 7.5

Forest management and restoration in Chile

Chile's NDC includes SMART GHG targets for both forest management and restoration. Relevant targets include:

- By 2030, reduce emissions in the forestry sector associated with degradation and deforestation of the native forest by 25%, with respect to average emissions in the period 2001-2013.
- Chile commits to the sustainable management and recovery of 200,000 hectares of native forests, representing GHG captures of around 0.9 to 1.2 Mt CO₂e annually by 2030.

The NDC goes into more detail on afforestation targets, with Chile committing to afforest 200,000 hectares, of which at least 100,000 hectares will comprise permanent forest cover, with at least 70,000 hectares of native species. Recovery and afforestation will be undertaken primarily in land suitable for forest growth and/or priority areas for conservation and will represent captures of between 3.0 and 3.4 Mt CO₂e annually by 2030.

Chile lays out the following actions to help implement its LULUCF goals:

- Strengthen management models in forest wildfire prevention and restoration of burned areas.
- Strengthen sustainable management models on the use of natural resources.
- Apply management models to reconcile livestock with conservation forest.
- Strengthen phytosanitary protection in native plant resources.
- Adaptive vegetation resource management to climate change, desertification, land degradation and drought.
- Regulatory adjustment and agricultural development compatible with plant resources

Box 7.2: Examples of Targets, Policies, and Measures for Mitigation³⁶

Ecosystems	Protect	Manage	Restore
Forests	<p>Targets</p> <ul style="list-style-type: none"> Reduce X CO₂e by reducing deforestation and forest degradation by X year. Increase the total forest area under legal protection to account for X% of the national territory. Reduce gross deforestation rate or total hectares of forest loss by X%, disaggregating hectares lost to deforestation and hectares gained through reforestation and restoration.³⁷ <p>Policies and measures</p> <ul style="list-style-type: none"> Enhance monitoring systems and law enforcement to prevent illegal logging and forest degradation by X year. Develop fiscal and market mechanisms to allocate financial resources for protecting and enhancing forest ecosystem services, including payments for ecosystem services by X year. Explicitly include specific REDD+ targets and provide information about FREL/FRL, if applicable. 	<p>Targets</p> <ul style="list-style-type: none"> Secure land tenure for Indigenous peoples or local communities on X hectares of forest land by X year. Increase the area of forest under sustainable management by X% by X year. <p>Policies and measures</p> <ul style="list-style-type: none"> Implement policies by X year to promote sustainable forest management practices, including fire prevention regulations, establish community fire brigades, selective logging, forest certification schemes for sustainable harvesting and market access. 	<p>Targets</p> <ul style="list-style-type: none"> Restore X hectares of degraded forest land by X year through reforestation and natural regeneration programs with monitored outcomes. <p>Policies and measures</p> <ul style="list-style-type: none"> Enhance technical capacity and support for forest restoration efforts by X year, including training programs for local communities and forest managers. Promote understory and herbaceous species establishment to restore ecological functionality (e.g., biodiversity, ability to contain erosion and floods, etc.). Develop forest restoration measures that prevent monoculture tree plantations. Develop policies that address the underlying causes of forest degradation to improve long term success of forest restoration efforts.³⁸ Develop fiscal or market mechanisms to allocate financial resources to restoration.
Coastal and Marine Ecosystems	<p>Targets</p> <ul style="list-style-type: none"> Reduce X CO₂e from mangrove conversion by protecting X hectares of mangroves by X year. By X year, map X% of coastal blue carbon ecosystems for carbon stocks to be incorporated into a national GHG inventory. Increase the total marine and coastal area under protection to X% of national territory by X year. Halt and reverse the loss of blue carbon ecosystems by X year. <p>Policies and measures</p> <ul style="list-style-type: none"> Establish coastal management and coastal zone planning policies. Develop a national blue carbon strategy to coordinate protection and management of coastal ecosystems. Partner with local communities, private landowners and other key stakeholders, to halt and reverse mangrove loss by X year. 	<p>Targets</p> <ul style="list-style-type: none"> Increase the climate resilience of X% of coastline/X% of population through nature-based solutions by X year. <p>Policies and measures</p> <ul style="list-style-type: none"> Implement policies by X year to sustainably manage coastal and marine ecosystems, such as sustainable fisheries and natural resource use plans, coastal resilience strategies, and climate change plans. Implement coastal and marine ecosystem monitoring systems by X year to track health and biodiversity. Improve governance and community management of coastal ecosystems through community-led management committees, integrating traditional knowledge from Indigenous peoples and local communities. 	<p>Targets</p> <ul style="list-style-type: none"> Implement restoration programs to restore X hectares of degraded coastal habitat, which are designed to include community participation and management. Enhance the carbon sequestration capacity of mangrove, salt marsh, and seagrass ecosystems by X tons of CO₂e annually by X year through restoration practices. <p>Policies and measures</p> <ul style="list-style-type: none"> Evaluate sources of ecosystem degradation such as pollution or coastal development and implement X policies to mitigate these impacts. Establish science-based best practices for coastal ecosystem restoration, such as assisted natural mangrove regeneration.

Ecosystems	Protect	Manage	Restore
Coastal and Marine Ecosystems	<ul style="list-style-type: none"> Establish Marine Protected Areas (MPAs) and/or improve their management to conserve coastal and marine ecosystems. Incorporate protected area designations and existing policies into climate mitigation and adaptation actions. 		<ul style="list-style-type: none"> Enhance technical capacity for coastal ecosystem restoration by X year, including through training programs for local communities and restoration managers. Establish policies that incentivize the restoration of coastal ecosystems and deter their destruction.
Freshwater ecosystems, including inland wetlands	<p>Targets</p> <ul style="list-style-type: none"> Expand protected and conserved peatlands and other wetlands areas to X% by X year, especially in areas with high stores of threatened irrecoverable carbon. Reduce the conversion of natural wetlands to X hectares/year net to X year. <p>Policies and measures</p> <ul style="list-style-type: none"> Develop incentives for landowners to conserve wetlands, such as fiscal or market mechanisms to allocate financial resources to protect wetland ecosystem services. Develop and/or improve wetland monitoring systems and law enforcement programs to combat illegal wetland conversion by X year. Identify harmful incentives in other sectors that lead to drainage of wetlands and transform into nature positive incentives by X year. 	<p>Targets</p> <ul style="list-style-type: none"> Achieve an X% reduction in water extraction from freshwater ecosystems by X year through the implementation of sustainable water use practices. <p>Policies and measures</p> <ul style="list-style-type: none"> Implement policy reforms by X year to improve governance and community management of freshwater ecosystems, such as inland wetlands, including through community-led management committees, integrating traditional knowledge from Indigenous peoples and local communities. By X year, peatland areas and any other types of wetlands will be mapped and identified under a national inventory. Transition X hectares of drainage-based agriculture lands to paludiculture. 	<p>Targets</p> <ul style="list-style-type: none"> Implement integrated water resource management, to reduce emissions from the water sector by X CO₂e by 2030. Reduction in emissions by X CO₂e /yr by 2030 as a result of peat rewetting on croplands Rewet XX hectares of drained peatlands by X year. Restore a total of X hectares of wetlands by X year, including the construction of X hectares of wetlands designed to provide co-benefits for carbon capture and storage. <p>Policies and measures</p> <ul style="list-style-type: none"> Develop fiscal or market mechanisms to allocate financial resources to protect/enhance water-related ecosystem services. Establish and disseminate best practices for wetland restoration, including guidelines for plant selection, hydrology management, and invasive species control.
Grasslands and other non-forest ecosystems	<p>Targets</p> <ul style="list-style-type: none"> Reduce X CO₂e by reducing conversion of natural grasslands, shrublands, and savannas by X% or X hectares per year. <p>Policies and measures</p> <ul style="list-style-type: none"> By X year, identify and address drivers of grassland degradation through cross-sectoral dialogue and planning. Educate local communities to prevent livestock overgrazing. Implement policies to reduce anthropogenic nitrogen deposition, such as crop rotation and organic farming. 	<p>Targets</p> <ul style="list-style-type: none"> Implement fire management strategies on X hectares of grasslands to prevent woody encroachment and the spread of non-native invasive species by X year. <p>Policies and measures</p> <ul style="list-style-type: none"> Develop and implement grazing management practices by X year to maintain grassland health and prevent overgrazing, such as using tilling to break the crust in semi-arid grasslands, facilitating species establishment, and establishing species-rich grasslands through tilling or topsoil removal. 	<p>Targets</p> <ul style="list-style-type: none"> Implement fire management strategies on X hectares of grasslands to prevent woody encroachment and the spread of non-native invasive species by X year. <p>Policies and measures</p> <ul style="list-style-type: none"> Implement a comprehensive restoration program by X year that includes reintroducing keystone species to promote ecosystem balance and biodiversity, such as grazers, which can enhance seed dispersal.

Ecosystems	Protect	Manage	Restore
Agriculture and Food Systems	<p>Targets</p> <ul style="list-style-type: none"> • Conserve X hectares of ecologically sensitive areas within agricultural landscapes by X year. • Reduce commodity-driven deforestation and/or peatland drainage by X% by X year. <p>Policies and measures</p> <ul style="list-style-type: none"> • Redirect \$X amount of agriculture and forestry subsidies that drive GHG emissions into positive incentives for innovative regenerative production models by X year. • Develop metrics and set targets to protect ecosystems against clearing for permanent agriculture and commodity production by X year. • Implement local land planning for agriculture to avoid forest land conversion by X year. 	<p>Targets</p> <ul style="list-style-type: none"> • Increase the number of farms and ranches implementing climate-smart and regenerative management practices by X% by X year. • Transition X hectares of agricultural land into regenerative agriculture landscapes by X year. <p>Policies and measures</p> <ul style="list-style-type: none"> • Introduce and expand sustainable agricultural techniques such as no-till agriculture, paludiculture, rotational grazing, silvopasture, agrosilvopasture and agroforestry. • Extend services for farmers by improving access to tools, methods, and technology, implementing policy changes, and establishing incentive programs. • Provide technical capacity and financial support for low-carbon approaches in shifting cultivation systems by X year. 	<p>Targets</p> <ul style="list-style-type: none"> • Support the restoration of X hectares of riparian areas alongside agricultural production by X year. • Regenerate X hectares of abandoned agricultural lands by X year. <p>Policies and measures</p> <ul style="list-style-type: none"> • Establish financial and technical support programs for farmers to adopt regenerative agricultural practices by X year. • Promote the use of cover crops and crop rotation to improve soil health and restore degraded agricultural lands by X year.

Image: Cover cropping (wheat) as a regenerative agricultural practice.



8 Integrate or strengthen adaptation targets to maximize the potential of NbS and ecosystem-based approaches in reducing climate risks and enhancing resilience across all sectors and ecosystems, aligning with and contributing to the UAE Framework for Global Climate Resilience to achieve the Global Goal on Adaptation.

Consider the following:

Establish holistic and time-bound targets using best available science, evidence, local, traditional, and Indigenous knowledge as well as country-specific data in all stages. Targets should address all phases of the adaptation cycle (See Figure 8.1) to integrate considerations of ecosystems, biodiversity, and nature-based solutions/ecosystem-based approaches and include participatory and equitable approaches. Further, they should align as relevant across both thematic and dimensional targets.

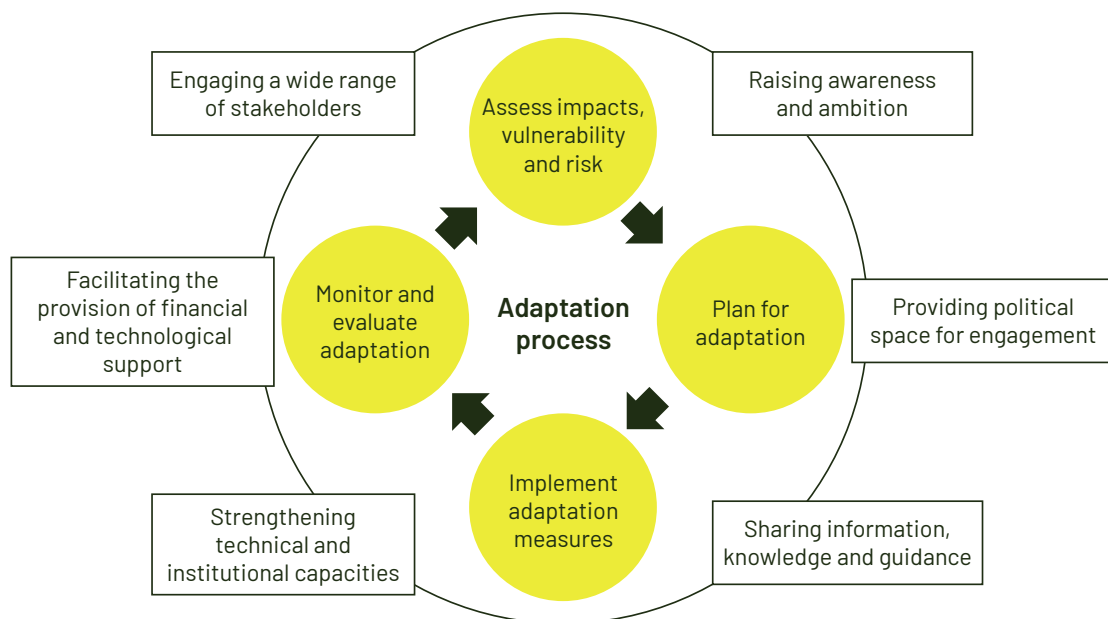
Promote contextually relevant, locally specific, integrated, multi-sectoral solutions, tailored to national circumstances, including land use management, sustainable agriculture, climate resilient food systems, and protecting, conserving, and restoring nature and ecosystems.

Set adaptation targets for different ecosystem types, as needed, ensuring inclusion of those that have been underrepresented in previous NDCs.

Center locally led adaptation principles into all stages of the adaptation cycle and consider interventions at appropriate scales³⁹ (e.g., catchments, landscapes, seascapes) and across interlinked ecosystems.

- Engage subnational governments and community stakeholders through meaningful and inclusive decision-making processes, aiming to co-develop climate action with communities and local actors as the drivers, as indicated in **Guiding Point 2**.
- Embed opportunities for local institutions and communities to directly access finance and have increased decision-making authority over how adaptation actions, including nature-based solutions, are designed and implemented, and invest in strengthening local capacities and capabilities.

Figure 8.1: Adaptation cycle under the UN climate change regime



Source: UN Climate Change (2019). [What does climate adaptation and resilience look like?](#)

Adopt appropriate types of adaptation actions and implementation planning to account for near-term events (heatwaves, intense storms) **as well as slow-onset changes** (sea level rise, shifting rainfall patterns, and desertification) through anticipatory, incremental, and transformative measures.

Promote no-regret actions and carefully consider benefits and trade-offs of adaptation options to avoid maladaptation⁴⁰, including solutions that are iterative to allow for adjustments over time to better respond to impacts and new vulnerabilities. Most adaptation options have some potential to lead to maladaptation, i.e., trade-offs, which can be identified and pre-empted with ex-ante assessment of where options fall on the continuum, followed by planning that:

- Minimizes trade-offs in the long term (to avoid increasing vulnerability/hindering adaptation options of people and ecosystems in the long term).
- Minimizes trade-offs with adaptation of other groups (to avoid increasing vulnerability of other people or places).
- Minimizes trade-offs with climate mitigation (to avoid increasing carbon emissions).

Image: Marine conservation, Cabo Verde.



Case Study 8.1:

Nature as an integral part of Cabo Verde's adaptation

Nature is well embedded in Cabo Verde's flagship NDC contributions that include – inter alia:

- A 2030 commitment to *reverse the trend of habitat degradation, substantially improve biodiversity, water retention, strengthen soils and restore forests and coastal wetlands;*
- A 2030 commitment to *design and develop its ocean-based economy in a low-carbon way-covering transport, fishing, coastal infrastructure and coastal energy, tourism – enhancing NbS, conserving and restoring natural habitats;*

The Adaptation Contributions section includes detailed sectoral plans on water, agriculture, ocean and coastal zones, spatial planning, disaster risk reduction and health, including time-bound, specific targets, measures and implementing institutions. Ecosystems and biodiversity play an integral part in the planned measures to achieve their adaptation contributions. Building on the detailed overview of climate vulnerabilities, the NDC sets out clear pathways for adaptation action to enhance resilience of communities, using inclusive and gender-sensitive strategies and linking adaptation action to Cabo Verde's Disaster Risk Reduction Strategy. They also recognize that there is often no clear boundary between adaptation and mitigation, which can overlap, and should be ideally mutually beneficial. This is why Cabo Verde favors, where possible, "green" nature-based solutions (NbS) over "grey" traditional infrastructure solutions.

Box 8.1: Examples of Adaptation Targets, Policies & Measures

Ecosystems	Targets, Policies & Measures
Forests	<ul style="list-style-type: none"> • Reduce deforestation by X hectares by X year, especially in areas with extreme temperatures, degraded soils, vulnerable populations. • Reduce clear-cutting for timber by X% by X year in favor of more sustainable methods that protect the forest's ecosystem services critical for adaptation. • Effectively manage X hectares of protected areas and/or Other Effective Area-based Conservation Measures (OECMs) in priority areas for climate adaptation and increased resilience. • Strategically plant X hectares of trees to maximize adaptation benefits in restoration efforts and policies. <i>Strategic considerations include: (1) Species: natives, ability to thrive under expected temperature/ water regime, temperature regulation ability, potential co-benefits (e.g., edible fruits, spiritual value) and (2) Location: Maximal heat reduction where needed, vulnerable populations, accessibility, maximal stormwater control.</i> • Develop a forest restoration strategy that maximizes adaptation benefits (including choice of species and location) based on best available science and local knowledge, with an implementation and financing plan by X year. • Place X hectares of land area under restoration for climate adaptation and increased resilience. • Develop a fire management strategy taking into consideration current and future climate risks, with an adequately resourced implementation plan, by X year. • Reduce climate-induced water scarcity by X% through improved protection/management of ecosystems and integrated water resource management.
Coastal and Marine Ecosystems	<ul style="list-style-type: none"> • Protect X hectares of coastal ecosystems (mangrove, seagrass, salt marsh) ecosystems by X year. • Establish X hectares of Marine Protected Areas and/or develop improved management plans integrating climate adaptation considerations with implementation and financing plans by X year. • Slow or halt degradation of mangroves over X hectares by X year. • Restore X hectares of degraded mangrove areas following scientific best practices including naturally assisted regeneration by X year. • Develop implementation and financing plans hybrid – or "green-gray" – infrastructure approaches that employ ecosystem restoration combined with traditional "gray" infrastructure to increase coastal resilience by X year. • Map the full extent of blue carbon ecosystems within national boundaries to assess coastal resilience and vulnerability by X year. • Increase the number of fisher households using sustainable fishing practices by % percentage per year. • Develop a National Coastal and Marine Adaptation Strategy that incorporates nature-based solutions and ecosystem-based approaches, along with the implementation and financing plan in coordination with the implementation of coastal management and coastal zone planning policies by X year. • Increase the number of people/communities with access to early warning systems for floods and droughts and other water-related hazards to X amount.
Freshwater Ecosystems including Inland Wetlands	<ul style="list-style-type: none"> • Protect X km/hectares of inland water areas important for biodiversity and adaptation by X year. • Invest \$X amount to restore and enhance peatland resilience and improve land management practices that have an impact on wetlands. • Restore and/or enhance sustainable management of X hectares of riparian zones through ecosystem-based approaches, such as by removing impediments to species migration and sediment distribution, to maximize adaptation benefits by X year. • Identify water scarcity and effectively manage X% of ecosystems and populations particularly vulnerable to drought and desertification. • Reduce climate-induced water scarcity by X% through improved protection/management of ecosystems and integrated water resource management by X year. • Enhance water supply and quality through improved protection/management/restoration of X hectares of wetlands by X, leveraging from ecosystem-based water resilience approaches. • Map the full extent of the inland water ecosystems within national boundaries to enhance their management, conservation, and restoration as well as connectivity.
Agriculture and Food Systems	<ul style="list-style-type: none"> • Prioritize management of existing agricultural land and minimize land conversion by X year. • Increase proportion of agricultural area under productive and sustainable management by X% by X year. • Implement agroecological practices to maintain and enhance soil health in X hectares/proportion of land by X year. • Increase the number of farms applying climate-smart, regenerative, agroecological practices (such as paludiculture), by X number per year through increasing extension and farmer capacity building programs. • Increase the number of farms that use climate-resilient crops and/or livestock breeds by X number per year. • Enhance water availability and management for agriculture and food security through ecosystem-based water resilience approaches by X year. • Increase the number of sustainable aquaculture farms applying climate-smart and biodiversity friendly practices and integrating mangrove restoration by X number per year.

Cross-Cutting

- Develop an adequately resourced action plan to enhance level of participation of subnational actors and local community stakeholders (including women, youth, Indigenous Peoples, local communities, and the most vulnerable and traditionally marginalized people) in natural resources and climate adaptation related decision making by X year.
- Increase the proportion of population and/or ecosystems covered by climate vulnerability and risk assessments by X% per year.
- Increase proportion of population and/or ecosystems most vulnerable to climate change that have reduced climate vulnerability and enhanced long-term resilience and adaptive capacity by X% per year.

Image: Worthing, Christ Church Parish, Barbados.

**Case Study 8.2:****Locally led and nature-based approaches to adaptation in Barbados**

The NDC of Barbados considers nature-based solutions and locally led adaptation as key approaches to their adaptation contributions. These are underpinned by data on climate vulnerability and linked to concrete policy frameworks and programmes. The country's overarching adaptation goal is to *ensure a protected environment, a stable society, and a sustainable and resilient economy*.

The 2021 Physical Development Plan (PDP) underwent wide consultation and includes climate change considerations for the first time. The Roofs 2 Reefs Programme (R2RP) operationalizes the PDP and provides the vehicle through which public investment will be directed to achieve the country's resilience goal by 2030. Acknowledging the need for locally-led adaptation, especially building a robust understanding of risks and uncertainties and addressing structural inequities faced by women, young people, and those socially and economically disadvantaged, Barbados through its R2RP is seeking to establish a sufficient and stable funding mechanism and the accompanying programme management framework that enables finance to be accessed when and where the need arises. Its objectives are:

- to make low- and middle-income homes more resilient to extreme weather events and their impacts, such as possible loss of access to electricity and potable water distribution systems;
- to increase freshwater storage capacity and water use efficiency and reduce emissions through the deployment of distributed renewable energy generation;
- to decrease land-based sources of marine pollution through more sustainable land use practices;
- to make critical utility, water, sanitation, and road infrastructure climate resilient; and,
- to restore vulnerable coral reef ecosystems, particularly on the west and south coasts of the island.

In pursuit of climate-resilient development, the government ensures alignment between its implementation policies concerning the Sendai Framework on Disaster Risk Reduction, the 2030 SDGs, and climate action under the Paris Agreement. Under the Means of Implementation section, they detail their needs and explore a wide range of finance mechanisms, including innovative financial instruments and clauses for adaptation.

9 **Integrate nature as an essential component of solutions in addressing loss and damage from climate impacts, while recognizing and documenting nature’s vulnerability to such impacts.** Consider the following steps in sections of the NDC on adaptation and resilience, and/or loss and damage:

Include targets, policies, or measures that maximize the contributions of nature-based solutions to prevent, minimize, and address loss and damage from climate change impacts. This could include the protection, sustainable management, and restoration of terrestrial, wetland, and coastal ecosystems to:

- Address climate impacts from both rapid-onset events like natural disasters and slow-onset events that occur over multi-year periods, such as desertification, coastal erosion, loss of coral reefs or forest degradation.
- Avoid, maintain, or restore non-economic losses like loss of biodiversity and ecosystem services, cultural heritage, livelihoods, and traditional ecological knowledge (TEK).
- Incorporate targets and planning tools that value nature and natural systems in economic terms, and account for diminishing returns of natural landscapes for provision of goods and services (including tourism, fisheries, crop yields, water quality and availability, and nature dependent livelihoods).

Develop targets to address the impacts of climate change on ecosystems in ways that support vulnerable communities. This could include:

- Protecting areas that will become important habitats for vulnerable species at risk of extinction.
- Restoring areas with considerable damage to an ecosystem state with comparable or alternative social or ecological values under the new conditions.
- Integrating traditional knowledge and management practices of Indigenous peoples and local communities.

Create measures for adaptive management planning to account for likely or unavoidable climate impacts and the resulting social and environmental conditions, which may include:

- Developing incentives and policies needed to transition productive landscapes and seascapes over time as they experience impacts, such as decreased water availability or coral bleaching.
- Implementing NbS that can mitigate impacts to ecosystems as habitable zones shift, and migration occurs, while maintaining connectivity and increasing the resilience of people and wildlife.
- Ensuring restoration initiatives support natural recovery (where possible) while accounting for altered environmental conditions or changes to natural feedback mechanisms that may constrain restoration initiatives.
- Restoring and conserving ecosystem functions (e.g., erosion control, water cycling) instead of conserving specific species that might not be adapted to future conditions (especially less mobile species like plants).

Case Study 9.1:

Myanmar's Assessment of Loss and Damage

Myanmar's NDC includes an Adaptation, and Loss and Damage section that identifies five priority sectors for adaptation action: (1) climate-smart agriculture, fisheries, and livestock for food security; (2) sustainable management of natural resources for healthy ecosystems; (3) resilient, inclusive, and sustainable cities and towns where people can live and thrive; (4) climate risk management for people's health and well-being; (5) and education, science, and technology for a resilient society.

Myanmar includes an assessment of loss and damage under each of these priorities, where studies exist to estimate current annual economic damage to the sector. The NDC frames adaptation as a priority both to promote resilience and minimize loss and damage once adaptation action fails. Finally, the NDC calls for both financial and technical support to address current and anticipated climate change related hazards and loss and damage, foreseeing the country's active participation in the Santiago Network.

Image: Floating gardens of Inle Lake, Myanmar.



10 Integrate nature-based solutions, ecosystem-based adaptation, and nature-positive approaches into mitigation and adaptation targets related to non-AFOLU sectors. Consider the following:

Increase mitigation ambition in the energy sector concurrently with a transition to nature-positive economies. A rapid, just, and sustainable phase-out of fossil fuels is key to ensuring NbS can fully contribute their mitigation and adaptation potential. NbS are not a substitute for ambitious emissions reductions in other sectors.

Promoting the acceleration and deployment of renewable energy projects to meet the global target to triple renewable energy, ensuring these are well-sited and sustainably designed, constructed, and operated, and preserve the integrity and connectivity of all ecosystems. Renewable energy development should avoid impacts to ecosystems whenever possible, minimize unavoidable harms, and restore or compensate for harms when they cannot be avoided. In setting renewable energy targets, consider:

- Accounting for emissions and environmental impacts of renewable energy supply chains, including those related to sourcing of critical minerals.
- Using spatial planning tools that enable a nature-positive approach by siting in low-impact areas, reducing negative land-use trade-offs, and enhancing biodiversity, where possible. A focus on the protection and restoration of the integrity and connectivity of all applicable ecosystems will enable the use of complementary measures.
- Deploying NbS at development sites (e.g., restoring or planting native pollinator-friendly plants under large-scale solar power installations; or preserving the integrity and connectivity of free-flowing rivers and river/lake systems for hydropower dam siting, management and construction).

Set measures to ensure targets in the energy sector related to biopower or biofuels are consistent with maintaining the integrity of stable carbon stocks (such as forests and peatlands), biodiversity conservation efforts, and achieving net-zero emissions from the AFOLU sector, while upholding social safeguards to protect vulnerable communities reliant on these resources.

- Consider minimizing overall dependence on biofuels and biopower, as large-scale cultivation and harvest of biomass poses risks to water security, fertilizer use, food security, and biodiversity. Bioenergy generation is also associated with significant emissions of health-harming pollutants in addition to GHGs. The net carbon impacts of bioenergy are highly variable, depending upon biomass or crop source, local climate, land management approaches, fossil fuel substitution efficiency, and other methodological assumptions. Even excessive removals of “waste” biomass from agricultural lands and natural ecosystems can have negative impacts on ecosystem services.

Promote ecosystem-based adaptation approaches in targets associated with the urban environment, infrastructure, waste, sanitation, and other sectors. These approaches can utilize UAE FGCR thematic targets that also reference adaptation in relevant sectors.

- Consider setting targets to increase the deployment of green-gray infrastructure, a hybrid approach of NbS and engineered solutions, which combines the cost-effectiveness of ecosystem-based adaptation measures with the rapid temporal benefits of gray infrastructure to maximize resilience.⁴¹ See *Case Studies 10.1 and 10.2*.

Set targets to address emissions from food systems beyond the production stage and enhance the resilience of food-systems to climate impacts (e.g., measures related to food consumption, transport, loss and waste, healthy diets, and food security).

Image: Urban water treatment plant, Malaysia.



Case Study 10.1:

Urban Water Systems in Malaysia

As part of its efforts to ensure water security, Malaysia's NDC considers the role of urban environments in the water system and calls for enhancing urban scale rainwater harvesting system to promote groundwater, recycled and reclaimed water for conjunctive use. The NDC also considers the role of urban ecosystems in planning for waste and wastewater infrastructure, noting the need to avoid areas that are environmentally sensitive, flood-prone and categorized as water catchments.

Image: Green infrastructure, Monaco.



Case Study 10.2:

Monaco's Use of Nature-based Urban Infrastructure as an Adaptation Response

In addition to increasing the number of trees in the urban nation by 20% by 2030, Monaco's NDC calls for enhancing the role of green infrastructure in the built environment, emphasizing the need to incorporate intensive roofs and modular green walls and to "wild" the city by enhancing urban plant biodiversity to promote adaptation.

Box 10.1: Examples of Targets, Policies & Measures to Integrate Nature into Non-AFOLU Sectors

Sectors	Targets, Policies & Measures
Energy	<ul style="list-style-type: none"> • Deploy X number/X watts of renewable energy projects that are sited, designed, constructed, and operate in a manner that preserves the integrity and connectivity of relevant ecosystems. • Conduct environmental and social assessments to ensure that X% of clean energy projects contribute to a biodiversity net gain or nature positive approach through the integration of NbS. • Reduce energy-related greenhouse gas emissions by X CO₂e/X% from the processing, storage and distribution of fish and other ocean-based products. • Promote well-sited, environmentally responsible ocean-based renewable energy projects via the establishment of financial incentives by X year. • Improve and/or preserve the integrity and connectivity of free-flowing rivers and other priority river/lake/wetlands systems associated with hydropower projects by X year. • Protect forest cover within X km of hydropower projects. • Introduce and/or implement land-use regulations and policies to minimize large-scale bioenergy crop production and the intensification of harvests in natural forests to ensure that such activities do not compromise ecological integrity⁴², increase life-cycle carbon emissions from land-use change, and/or reduce the carbon storage capacity of forest ecosystems. • Restore grasslands or protect native pollinator habitat under/near renewable energy infrastructure, such as solar panels and transmission lines, by X year. • Introduce and/or implement land-use regulations and policies that minimize the environmental and climate impacts of mining operations, including lithium extraction, and guarantee the restoration and conservation any affected ecosystems by X year.
Infrastructure	<ul style="list-style-type: none"> • Conduct an analysis of existing policy to determine opportunities to limit impacts or strengthen benefits of infrastructure development on nature by X year. • Undertake a comprehensive national assessment for integrating nature-friendly design into infrastructure development, including green-gray infrastructure, by X year. • Incorporate hybrid green-gray infrastructure solutions in X% of new development projects by X year. • Integrate green infrastructure in city planning to enhance climate resilience and a more sustainable urban development by X year. • Replace or update X% of traditional gray engineering with hybrid green-gray infrastructure solutions to increase the resiliency of urban areas and coastlines to storms, sea level rise and flooding by X year. • Improve drainage to reduce flooding using affordable NbS in X hectares of vulnerable areas by X year.
Transportation	<ul style="list-style-type: none"> • Reduce emissions from transport associated with oceanic and coastal fisheries by X CO₂e by X year. (e.g., green shipping, fishing-related fuel consumption or marine transport). • Reduce emissions by X CO₂e from transport associated with the food supply chain by X year. • Introduce and/or implement land-use regulations and policies that require consideration of alternate routes through natural ecosystems and high biodiversity areas, as well as an environmental impact mitigation and management plan to reduce emissions from land-use change and damage to ecosystems.
Waste Management	<ul style="list-style-type: none"> • Reduce emissions by X CO₂e from food loss and waste and develop measures to incentivize sustainable food production and consumption, by X year. • Implement NbS across X hectares for wastewater treatment (e.g., treatment wetlands, bioswales, rain gardens) by X year.

Image: Solar panels alongside pollinators, England.



Cross-Cutting Considerations

11 Maximize synergies between NDC targets and other related agendas (e.g., biodiversity, development, health) to amplify win-win outcomes for climate, biodiversity, and people. Consider the following:

Review previously collected information on global and national commitments, identify opportunities to increase alignment and coherence, and minimize trade-offs between these and the NDC. In doing so:

- Consider information collected through Guiding Points 3 and 4 (reviewing targets within existing policies and/or planning instruments) to identify specific possibilities to align target setting of NDCs with existing instruments, when possible. *See Box 11.1 for guidance on opportunities for building synergies between NDCs and NBSAPs.*
- Analyze the potential impacts of existing climate targets and measures on areas such as health or employment to assess opportunities for maximizing co-benefits.
- Consider setting policies and measures targets that incentivize creation and/or improvement of institutional structures to facilitate effective coordination across sectors, thematic areas (e.g., climate, biodiversity, and development), across scales (subnational and national levels) and facilitate resource mobilization.

Deploy a mitigation hierarchy when establishing mitigation targets, policies, and measures through to minimize negative impacts/trade-offs on the environment or human well-being, while maximizing positive outcomes and synergies between mitigation and biodiversity protection and restoration. To do so, it may be useful to deploy principles for establishing and implementing NDC targets in ways that preserve ecosystem integrity, reduce vulnerability, and enhance resilience to climate change.

Include robust measures and safeguards to ensure ecological integrity and promote ecosystem connectivity, especially for any targets involving nature-based carbon dioxide removal.

Ensure that nature-related targets across sectors do not conflict and enhance integrated approaches that reduce trade-offs between potentially competing uses. This includes checking that all NDC targets with a land or sea footprint:

- do not present targets that would result in conflicting uses within the same area;
- consider how land/sea uses will need to shift over time to meet multiple priorities, as well likely climate impacts;
- would not require a larger area than is feasible within the country;
- have clear environmental and social safeguards;
- protect or enhance ecosystem services provided within each landscape or seascape.

Consider potential trade-offs between immediate gains and longer-term benefits when prioritizing NbS measures and/or considering climate solutions that may harm natural ecosystems.

Consider potential negative transboundary impacts on biodiversity and communities in neighboring countries or areas beyond national jurisdiction.

Case Study 11.1:

Alignment of Vanuatu's NDC with Sectoral Policies and the SDGs

Vanuatu established a National Advisory Board on Climate Change and Disaster Risk Reduction to develop its NDC. This board aims to integrate resources to address both climate and non-climate disasters within a single institutional framework, providing a unified entry point for climate change policy and governance that encompasses a range of ministries, sectors, and stakeholders. The NDC was also built upon existing processes, data collection, policies, initiatives, and commitments to leverage updated inventories, robust data, and crosscutting expertise, thereby strengthening sectoral ownership and implementation.

Given that sector agencies and stakeholders had already prioritized and codified key climate-related actions into their endorsed and gazetted sectoral policies, plans, and strategies, the NDC incorporated many of these to avoid duplicating work or causing consultation fatigue. The NDC clearly references the connection of each target with other sectoral plans or policies, including national policies and/or plans on the environment, health, tourism, forest, agriculture, energy, biodiversity, livestock, fisheries, education, ocean, infrastructure, disaster risk reduction, biosecurity, climate services, recovery, disaster-induced displacement, national waste management and pollution control, disability and inclusive development, and gender equality, among others. Additionally, Vanuatu clearly identifies each NDC target's contribution to the Sustainable Development Goals.

Box 11.1: Building Synergies across NDCs and NBSAPs

The COP 28 Joint Statement on Climate, Nature and People signaled an increased commitment for countries to coordinate and simultaneously implement nature and climate plans. The signatories – the UNFCCC COP28 and COP30 Presidencies, CBD COP15 and COP16 Presidencies, UNCCD COP15 Presidency, and 18 countries who lead 11 biodiversity and climate partnerships across forests, mangroves and the ocean – will strengthen their respective and shared efforts to work collaboratively and expeditiously to:

- Foster stronger synergies, integration and alignment in the planning and implementation of national climate, biodiversity and land restoration plans and strategies.
- Scale finance and investments for climate and nature from all sources.
- Ensure the full, equitable, inclusive, and effective representation and participation of indigenous Peoples, local communities, women, girls, youth, and other vulnerable communities.
- Promote a whole-of-society approach in the synergetic planning and implementation of national climate, biodiversity and land restoration plans and strategies.
- Encourage coherence and interoperability across data sources and data collection, metrics and methodologies, and voluntary reporting frameworks for climate change, biodiversity, and sustainable land management efforts.

The increased interest at the international level has been accompanied by momentum on building synergies between enhanced NDCs and NBSAPs. As countries update their NBSAPs to align them with the GBF, there is a unique opportunity for Parties to consider their NBSAPs when setting their updated NDCs, to promote efficient and synergistic policies, ensuring efforts on biodiversity and climate are mutually reinforcing, especially given scarce natural resources.

Box 11.1: Building Synergies across NDCs and NBSAPs (Continued)

There is clear scientific evidence that biodiversity loss and climate change are interconnected, and nature-based solutions and/or ecosystem-based adaptation to protect, restore, and sustainably manage nature can address both crises. High carbon terrestrial, coastal, and marine ecosystems are often the same places essential for maintaining biodiversity. Similarly, higher biodiversity and species richness can enhance the ability of ecosystems to mitigate climate change and make areas more resilient. Prioritizing action in areas with high carbon and high biodiversity is critical for climate change mitigation, adaptation, resilience and for conserving biodiversity.

GBF targets most relevant to consider for the NDC update and how their implementation can contribute to NDCs include:

Target 1 – 100% Spatial Planning

Prioritization of spatial planning that integrates biodiversity and climate goals, ensuring that land-use decisions contribute to both conservation and carbon sequestration.

Target 2 – Restore 30% of all Degraded Ecosystems

Prioritization of restoration in the degraded areas that provide climate and biodiversity benefits, and on productive lands with low productivity.

Target 3 – Conserve 30% of Land, Waters and Seas

Prioritization of conservation in areas important for ecosystem services and climate outcomes to enhance protection of critical ecosystems and species.

Target 4 – Halt Species Extinction, Protect Genetic Diversity, and Manage Human-Wildlife Conflicts

Prioritization of conservation of key species – the component parts of ecosystems, not just the places – that maintain and enhance the ability of these ecosystems to capture and store carbon.⁴³

Target 8 – Minimize the Impacts of Climate Change on Biodiversity and Build Resilience

Prioritization of nature-based solutions and/or ecosystem-based approaches in areas important for climate services.

Target 10 – Enhance Biodiversity and Sustainability in Agriculture, Aquaculture, Fisheries, and Forestry

Prioritization of sustainable management in the places providing ecosystem services that productive systems rely on, including climate services.

Target 11 – Restore, Maintain and Enhance Nature's Contributions to People

Prioritization of nature-based solutions and/or ecosystem-based approaches in areas important for climate services.

Target 12 – Urban NbS

Prioritization of actions that enhance nature's contributions to people, focusing on urban areas where ecosystem services can simultaneously support biodiversity, climate adaptation, and community resilience.

Useful Resources:

- [Promoting Synergies Between Climate Change Adaptation and Biodiversity – Through the National Adaptation Plan and National Biodiversity Strategy and Action Plan Processes](#)
- [Effectively delivering on Climate and Nature: NDCs, NAPs and NBSAPs Synergies – A checklist for national policymakers](#)
- [Swimming the talk: How to strengthen synergies between the Climate and Biodiversity Conventions?](#)
- [Blue Thread: Aligning National Climate and Biodiversity Strategies](#)
- [Breaking Silos: Enhancing synergies across NDCs and NBSAPs](#)
- [Opportunities to Strengthen Links Between National Action on Biodiversity and Climate Change](#)
- [Advancing Priorities Through the Global Biodiversity Framework: Irrecoverable Carbon Ecosystems](#)
- [TNC UNSW Briefing Note Biodiversity Climate Change May 2024 – Google Docs \(nature.org\)](#)

12 Enhance consistency and coherence between adaptation and mitigation targets related to nature. Consider the following steps when considering the NDC as a whole:

Prioritize NbS and ecosystem-based approaches that can offer dual benefits for climate change mitigation and adaptation.

When establishing mitigation targets or measures, consider whether these are resilient to the effects of climate change and ensure they do not exacerbate climate vulnerabilities and risks nor exacerbate existing inequities and injustices.

When establishing adaptation actions, prioritize those that reduce or minimize increases in emissions (e.g., installing green infrastructure in urban areas, such as green roofs and rain gardens, preserving natural areas and connectivity between areas to preserve biodiversity, and/or facilitating the movement of species, while also sequestering carbon).

Image: Penguin colony, Magdalena and Marta Island, Chile.

Case Study 12.1:

Mitigation and Adaptation as Complementary Strategies in Chile

Chile's NDC considers co-benefits in two ways. First, every mitigation and adaptation action in the NDC is accompanied by the SDGs with which the action will help to tackle. Second, the "Integration Component" follows the mitigation and adaptation chapters, with the purpose of recognizing that adaptation and mitigation should be considered complementary strategies to reduce and manage climate change risks in the development of public policies. As a result, the integration component addresses three thematic areas that support both adaptation and mitigation objectives and as a result, merit an integrated approach. These three areas – circular economy, AFOLU, and oceans – are separated into the integration component with the goal to highlight the synergies and co-benefits of acting in these areas.



13 Apply climate justice and equitable approaches to ensure inclusivity across NDC targets. This may include the following steps:

Set targets that acknowledge and advance the critical roles, rights, knowledge, and contributions of Indigenous peoples, local communities, marginalized people, women, and youth as custodians of natural carbon stores and biodiversity, and as partners in conservation, restoration, and sustainable use. This includes:

- Integrating Indigenous and traditional knowledge and technologies into NDC targets, ensuring to appropriately recognize the authorship and ownership of traditional knowledge holders.
- Aligning targets with the United Nations Declaration on the Rights of Indigenous peoples.
- Ensuring targets respect the rights of Indigenous Peoples and incorporate gender-responsive approaches to spatial planning, including land tenure, agency, and governance. This means ensuring that spatial planning includes the lands and territories of Indigenous Peoples, incorporates traditional knowledge and respects customary sustainable use.⁴⁴ Consider including explicit financial and technical support to IPs and LCs, especially to women, in mapping areas for production, cultivation, biodiversity conservation areas, medicine collection areas, and sacred sites.
- Obtaining or planning to obtain the Free, Prior and Informed Consent of Indigenous Peoples where any targets relate to use or inclusion of their lands, territories and resources, traditional knowledge or impact their rights to customary uses.
- Consider policy and measures targets to increase the recognition and facilitate the contribution of IPs and LCs to the stewardship of high carbon ecosystems.⁴⁵
- Including social safeguard measures to minimize harm and ensure implementation does not diminish or extinguish the existing or prospective rights of IPs and LCs.

Set targets that prioritize measures to protect the people, livelihoods, biodiversity, and ecosystems that are most vulnerable to climate change. Various parts of society are vulnerable to climate change in diverse ways.

Disaggregate targets by gender and by other relevant variables, such as by vulnerable group and ecosystem (e.g., age, ability/disability, ecosystem type, etc.) emphasizing support for the most vulnerable groups such as women, youth, children, Indigenous peoples, and local communities.

Case Study 13.1:

Indigenous Forest Stewardship, Just Workforce Transition and Gender Mainstreaming in Colombia's NDC

Colombia's NDC recognizes the *fundamental role that Indigenous and Afro-Colombian communities play in the protection and sustainable use of forests in Indigenous Reservations and Collective Territories of Black Communities, which cover a very significant portion of the country's natural forests, particularly in the Amazon and the Pacific Coast.* The NDC also mentions efforts led by the Ministry of Labor to develop a Strategy for the just transition of the workforce towards a resilient and low-carbon economy, as well as the country's commitment to strengthen the National Public Policy on Gender Equality by explicitly including climate change considerations.

Advancing Towards NDC Implementation and Financing for Nature

14 Ensure the NDC communicates the means of implementation and support required for the effective implementation of NbS targets across mitigation, adaptation, and loss and damage. Consider these steps when developing NDC elements related to financing and implementation:

Communicate conditional and unconditional finance needs for NbS targets. Clearly defined actions and commitments across sectors for adaptation, mitigation, and loss and damage may help inform future multilateral or international funding opportunities and decisions.

Communicate needs for technology transfer and capacity-building support for NbS targets. Utilize examples to integrate technology solutions for nature-based solutions.⁴⁶

Communicate whether Article 6 will be used to raise NDC ambition and attract international cooperative support for implementation of nature-based solutions. In doing so:

- Be clear about the intention to use Article 6 mechanisms and for which sectors, identify which Article 6 mechanisms (market and/or non-market mechanisms). Communicate the relationship between any conditional targets and intention to use Article 6.
- When setting the NDC targets, be sure to account for Article 6 transfers that will require corresponding adjustments in national GHG inventories and reporting to UNFCCC, to avoid double counting.
- Assess the cost of the mitigation activities to achieve the NDC to then decide which ones could be generated and internationally transferred with corresponding adjustments and at what price, as to avoid risks of overselling the mitigation outcome and not meeting the NDC effectively⁴⁷.
- Ensure that targets are set in a way that ensures Article 6.2 ITMOs derived from nature-based solutions can be generated according to Article 6 guidance, that they meet high quality criteria, and are designed to avoid any negative environmental and social impacts (including meeting the Article 6 requirements, the Warsaw Framework and the Cancún Safeguards for REDD+, where appropriate.)

Image: Mangrove forest, Thailand.



Set implementation targets, policies or measures within the NDC to complement sectoral and economy-wide targets by detailing how they will be achieved.

This may include:

- Setting targets and/or timelines to develop and/or improve management plans for key ecosystems to ensure implementation targets related to climate change mitigation, adaptation, and sustainable use are met.
- Measures to improve land-use planning, marine spatial planning, and area-based conservation to reduce pressure on places with high carbon and high biodiversity.
- Measures to provide patient and predictable funding that can be accessed easily by Indigenous people and local communities.
- Measures to support long-term development of local governance processes, capacity, and institutions to ensure that communities can effectively implement climate actions.
- Measures to enhance collaboration across sectors and levels to ensure that different initiatives and sources of funding (humanitarian assistance, development, disaster risk reduction, green recovery funds, etc.) support one another, and their activities avoid duplication, enhance efficiencies, and share good practice.

Ensure high-integrity implementation of nature-based solutions through the consistent application of the IUCN Global Standard for NbS. See Box 14.1 for further details.

Box 14.1: IUCN Global Standard for NbS

The [IUCN Global Standard for NbS](#) establishes a common basis for understanding what NbS are and provides a robust operational framework to design, verify and implement effective NbS interventions at scale. Developed through an extensive two-year long process of public consultation, the Standard, which was launched in July 2020 and endorsed by IUCN's 1500+ State and NGO members at the IUCN World Conservation Congress in Marseille, France in 2021 ([WCC-2020-Res-060-EN](#)), consists of 8 criteria and 28 indicators that cover the most important aspects to take into consideration while planning and implementing NbS interventions. It is also accompanied by a [guidance document](#) and an [online self-assessment tool](#). The Standard offers an essential tool to increase the scale and impact of the NbS approach, avoid unanticipated negative outcomes or misuse, and support funding agencies, policy makers and other stakeholders to assess the effectiveness of interventions.

Case Study 14.1:

Angola's Estimate of Funding and Support Needs

Angola's NDC is separated into conditional and unconditional contributions, accompanying each specific mitigation action or policy with a cost estimate, a CO₂e reduction potential, and percentage contribution to the overall mitigation target. For example, the NDC sets an unconditional target of reforesting 227,000 hectares, and includes a conditional target of 189,000 additional hectares at an estimated additional cost of 208 million USD to achieve this larger reforestation target. The adaptation section estimates the cost of each action and notes which climate impact(s) this action will help address, including several targets seeking to address loss of biodiversity, and calculating the additional funding necessary to meet conditional targets. The Means of Implementation section analyzes current implementation barriers and outlines in detail the institutional arrangements necessary for effective NDC implementation, bringing in public institutions, as well as the private sector and civil society. It identifies actions for capacity building in public institutions, schools, and universities, and discusses technology transfer needs. Angola also discusses different funding options, including national climate finance, international climate finance funds, and the role of carbon markets. Finally, the NDC commits Angola to a Monitoring, Verification, and Reporting (MRV) system as the country begins NDC implementation.

15 **Develop clear roadmaps for establishing and/or enhancing the structures and policies needed for effective implementation of NbS targets included in the NDC, whether through the NDC itself, existing domestic instruments, and/or a separate NDC Implementation Roadmap or Strategy.**

Clear guidance on next steps to successfully deploy and access the necessary climate finance for implementing NbS targets, including:

- The mechanisms to be used to scale up climate finance from both public and private sources to implement all nature-related targets included in the NDC, such as policy and regulatory measures to attract private capital, implementation of sectoral strategies, fiscal incentives to mitigate investment risks and repurposing of fossil fuel or environmentally harmful subsidies towards climate action.
- The steps that will be undertaken for ensuring alignment between domestic development finance flows with a trajectory towards low greenhouse gas emissions and climate-resilient development.
- Where international (public & private) finance flows, including trade, will be used to finance NbS implementation.
- The roles and responsibilities of different stakeholders (public entities, institutional investors, banks, private investors, international businesses, philanthropies, and insurers).
- Steps undertaken to enhance coordination and integration of national finance strategies on climate and biodiversity.

Clear guidance on the next steps to create a conducive enabling environment for boosting support for and investment in nature-related targets (e.g., strengthened policies, guidance, incentives, regulations, mechanisms such as Payment for Environmental Services or similar systems that integrate ecosystem services into national infrastructure, efforts for subsidy/incentive reform such as taxes and pricing fees to disincentivize production practices harmful to nature, de-risking mechanisms such as credit guarantees and first-loss capital, and/or national carbon pricing mechanisms and related policies.

Case Study 15.1:

Integrating Climate into Public Investment and Engaging with the Private Sector in the Dominican Republic

Following the completion of its revised NDC in 2021, the Dominican Republic developed an NDC Action Plan for 2022–2025 through a government-led and stakeholder-driven process. The government also designed a methodology to integrate climate change and disaster risk management (DRM) throughout public investment projects, including tools such as a Guide for Project Formulators and a Climate & DRM Expenditure Reporting Form for public planners. Additionally, climate tagging has been implemented to identify, quantify, and monitor spending on climate change activities within the national budget and the Financial Administration System at the National Directory of Budget. This approach connects projected planning in the public investment portfolio with transparent budget tracking, enhancing data on climate finance. These efforts have helped the Dominican Republic to evaluate and plan its broader climate goals and facilitated greater access to climate funding.

In addition, the Dominican Republic integrates consideration of the private sector throughout its NDC, both in its participation processes as well as the country's target-setting for both mitigation and adaptation. The NDC considers the existing gaps and barriers in involving the private sector in climate investment, and as a result notes that "a set of measures will be developed to provide capacity development and technical assistance to the country's private sector." Throughout the NDC, the Dominican Republic includes targets for private sector engagement, such as seeking to strengthen at least two public-private partnerships for the management of the water sector and protected area management. The NDC emphasizes the need to promote "long-term public-private cooperation in understanding and managing risks and opportunities associated with the private sector, for decision-making by local financial sector actors."

Measures needed to use international market mechanisms and voluntary carbon markets, including outlining actions to establish domestic legislation, new government bodies, authorization processes, processes to apply corresponding adjustments and avoid double counting, registries, and other norms for operationalizing Article 6. Consider if under existing national regulations carbon market transactions under the voluntary carbon market will be subject to Article 6 rules, as it could have implications on the accounting of emissions reductions and removals.

Consider non-market mechanisms, including REDD+ results-based payments, as financing pathways for adaptation and mitigation that may not be suitable for market approaches or when it better aligns with the goals of the NDC. For example, to access results-based payments (RBPs) for REDD+, countries must implement and develop the elements of the Warsaw Framework (National REDD+ strategy, Safeguards Information System, National MRV System, and a National Forest Reference Emission Level and/or Forest Reference Level) as well as the Cancun Safeguards. Furthermore, NDCs should describe how REDD+ RBP and/or other NMAs will be integrated into national climate and development strategies, ensuring these efforts contribute to NDC targets and sustainable development goals. Decision makers should also consider opportunities to create synergies between non-market and market-based mechanisms.

Image: Rice field, Ghana.



Case Study 15.2:

Operationalizing Article 6 in Ghana

Ghana is one of the most advanced countries when it comes to Article 6 implementation. Ghana plans to use international cooperation, including the carbon markets, to achieve its conditional NDC target to mitigate 39 million tonnes of GHG emissions, which will require an estimated investment of USD **4.9 billion**. In January 2023, Ghana published the **framework on the international carbon market and non-market approaches** for implementing voluntary cooperation under Article 6 of the Paris Agreement in Ghana. The country's framework under Article 6 outlines strategies to minimize the risk of overselling against its NDC targets. This includes applying corresponding adjustments only to credits from conditional targets and introducing a 1% fee to cover expenses related to Overall Mitigation of Global Emissions (OMGE) and reduce the risk of overselling. Additionally, the framework establishes processes for engaging with the Voluntary Carbon Market (VCM). Ghana is currently engaged in 5 bilateral agreements with Switzerland, Sweden, Singapore, South Korea, and Liechtenstein. Ghana and Switzerland have authorized two Article 6 projects in sustainable agriculture and waste to compost with a total investment of USD 100 million and a carbon value of USD 29 million.

Delineate efforts for strengthening inter-and intra-governmental coordination, policy coherence to, and alignment with other relevant instruments. This includes improving coherence among government levels, between government departments, among national sectoral plans, and across borders. Building capacity in subnational governments and non-state actors, can increase their ability to implement local level NDC actions and collaborate effectively with Indigenous organizations.

Propose clear steps for mainstreaming climate and biodiversity targets, policies, and measures into development planning and budgets in a synergistic manner, as well as into regional and transboundary climate and biodiversity plans.

Plan to develop and/or improve benefit-sharing mechanisms and land tenure or resource use rights arrangements, where relevant. This includes understanding where more formal or in-depth FPIC processes are needed, planning to expand titling and other rights/resources for IPs and LCs, along with other instruments to engage different non-governmental stakeholders in NDC implementation, including private sector and subnational governments. Ensure direct finance access to NbS resources for IPs and LCs, women, and other vulnerable communities.

Propose clear steps for developing or enhancing NDC monitoring, reporting, and verification, to underpin targets and ensure accurate tracking of data needed for monitoring implementation of NbS targets, in alignment with the Article 13 transparency framework of the Paris Agreement.⁴⁸ This could include:

- Developing a monitoring and evaluation framework associated with the NDC that tracks short- to medium-term delivery of adaptation actions and medium- to long-term delivery of adaptation outcomes (i.e., regarding changes in the components of climate vulnerabilities and risks).
- Developing plans, timelines, and entities responsible for establishing or strengthening and maintaining transparent MRV systems.
- Considering how to combine and/or increase synergies between monitoring and reporting on climate and biodiversity targets.
- Ensuring consistency with Enhanced Transparency Framework biennial reporting requirements and related processes in country and internationally.

Case Study 15.3

Brazil's Alignment of Climate Change Efforts Across Sectors⁴⁹

The government of Brazil is actively working to develop and update several policies to ensure alignment of climate change efforts across sectors. For example, the Implementation Plan for the recently signed ProManguezal Decree to protect and sustainably manage mangroves is being drafted in parallel with the Oceans Chapter of the National Climate Change Plan and the NDC update to ensure that the conservation of mangroves is recognized as a climate mitigation and adaptation tool in Brazil. Mangroves in Brazil are recognized by the government as a key ecosystem to sustain coastal communities' livelihoods, ensure climate justice, bolster food security, and provide natural defense as green infrastructure against extreme weather. Mangroves are therefore prioritized in climate change related policies in Brazil. The ProManguezal Implementation Plan and Oceans chapter of the National Climate Change Plan both aim to establish a sustainable blue economy for 500,000 people from coastal local communities. They also have a significant focus on gender, because women in Brazil represent almost 50% of the traditional fishers registered in the country, predominantly working in the mangroves. Together, these two policies will also inform Brazil's NDC update. The NDC will align closely with the National Climate Change Strategy, to ensure all the policies achieve the same climatic targets and prioritize cost-effective NbS.

Box 15.1: How NDC Partnership Supports Countries in Elaborating Implementation Plans

The NDC Partnership brings together more than 200 members, including more than 120 countries, developed and developing, and more than 80 institutions to create and deliver on ambitious climate action to achieve the Paris Agreement and the Sustainable Development Goals. Governments identify their NDC implementation priorities and the type of support that is needed to translate them into actionable policies and programs. Based on these support needs, the membership offers a tailored package of expertise, technical assistance, and funding. This collaborative response provides developing countries with efficient access to a wide range of resources to adapt to and mitigate climate change and foster more equitable and sustainable development. These support needs can take the form of a multi-year implementation framework, sometimes called a Partnership Plan, or individual requests to support urgent needs. Countries can access mitigation and adaptation support from the Partnership's wider network of expert partners, across a range of services including:

- Policy, Strategy and Legislation.
- Budgeting and Investment.
- Monitoring and Evaluation.
- Capacity Building and Knowledge Products.

Several examples exist of country requests for support to integrate nature-based solutions within a country's NDC implementation efforts. For example:

- Tunisia requested support to design and implement an evaluation study to inform the Coastal Protection and Development Agency's (APAL) coastal adaptation action plan.
- Liberia requested support to set up the foundational structures and extension services needed to increase aquaculture production to reduce the impact on marine fisheries.
- Seychelles requested support to design projects and financial plans using NbS to 'protect communities and vulnerable sites from the impact of climate change'.

The NDC Partnership is also working closely with the NBSAP Accelerator Partnership, a country-led initiative to support the development and implementation of ambitious NBSAPs. The NBSAP Accelerator Partnership supports countries through a matchmaking service meant to enable countries to access existing technical and financial resources to elevate their NBSAP ambitions and is collaborating with the NDC Partnership on coordinated nature and climate action. This builds on the commitments made in the [COP28 Joint Statement for Climate, Nature, and People](#), of which the NDC Partnership and NBSAP Accelerator Partnership are both signatories.

For more information on the NDC Partnership and how to become a member, please visit www.ndcpartnership.org.

Image: Hammamet, Tunisia.



Additional Resources

For NDC Readiness Steps

- **Accounting of the land-use sector in nationally determined contributions (NDCs) under the Paris Agreement.** Herold, A., Böttcher, H. (2018). GIZ GmbH.
This Guide describes the specific challenges of the land-use sector related to the estimation of emissions and the accounting towards mitigation targets. It provides an overview of existing accounting modalities for the land-use sector and supplements those by possible new approaches in a way that readers will get an overview of the available options for the accounting of the land-use sector.
- **UNFCCC Accounting for Forests: What's in and what's out of NDCs and REDD+.** Lee, D., and Sanz, M.J. (2017). Climate and Land Use Alliance.
The UNFCCC Accounting for Forests manual provides guidelines for how nations should include greenhouse gas emissions and reductions from forests in their National Determined Contributions and REDD+ reference levels.
- **IPCC Good Practice Guidance for Land Use, Land-Use Change and Forestry. Penman, J., et. al. (eds). (2003). Japan: Institute for Global Environmental Strategies for the Intergovernmental Panel on Climate Change.**
This report provides guidance for nations on developing inventories of carbon stock and greenhouse gas emissions for the land use, land-use change, and forestry sector. Good practice refers to inventories that have reduced uncertainties as much as possible and neither over- nor under-estimate carbon stock.
- **Coastal Blue Carbon: Methods for assessing carbon stocks and emissions factors in mangroves, tidal salt marshes, and seagrass meadows.** Howard, J., et al. (eds.) (2014). Arlington, Virginia, USA: Conservation International, Intergovernmental Oceanographic Commission of UNESCO, International Union for Conservation of Nature.
The blue carbon manual was produced to provide methodological guidance and details for blue carbon ecosystems at a level beyond the IPCC aimed at practitioners who would benefit from additional detail on sampling methods, laboratory measures and an analysis of blue carbon stocks and fluxes in order to be able to accurately and completely account for these ecosystems.
- **Peatlands mapping and monitoring – Recommendations and technical overview.** FAO. (2020). Rome.
This report provides examples, tools, methodologies and solutions to peatland mapping and monitoring challenges, especially in developing countries. It helps identify mapping and monitoring needs and define suitable approaches and tools to ultimately reflect peatlands into national land use monitoring systems, and address soil carbon and emissions.
- **Environmental Research Letters: A global map of mangrove forest soil carbon at 30m spatial resolution.** Jonathan Sanderman et al. (2018). IOP Publishing, 13(5).
This article uses a model of mangrove soil carbon measurements, projected globally, to determine the loss of soil carbon due to mangrove loss between the years of 2000 and 2015. The resulting database of mangrove soil carbon data and estimates of soil carbon loss can be used to develop mangrove protection and restoration plans as part of a nation's climate plans.
- **World Atlas of Mangroves (version 3.0).** Spalding M, Kainuma M, Collins L. (2010). A collaborative project of ITTO, ISME, FAO, UNEP-WCMC, UNESCO-MAB, UNU-INWEH and TNC. London (UK): Earthscan, London. 319 pp.
This atlas contains a country-level assessment of mangrove ecosystems globally, as well as information on the ecology and health of those habitats and their interaction with humans. The interactive online tool maps the global distribution of mangrove ecosystems.

- **2013 IPCC Supplement to the 2006 Guidelines for National GHG Inventories: Wetlands.** Hiraishi, T., et. al. (eds). (2014). Switzerland: Intergovernmental Panel on Climate Change.
The 2013 Supplement improves the 2006 Guidelines by providing updated information based on new scientific knowledge, as well as extending the content of the Guidelines to cover coastal wetlands, tidal marshes, seagrass meadows, wetlands constructed for wastewater treatment, inland organic soils, and inland wetland mineral soils. Chapter 4: Coastal Wetlands, in particular, describes the blue carbon ecosystems and provides guidance on estimating and reporting anthropogenic GHG emissions and removals from managed coastal wetlands. The Wetlands Supplement has a tiered approach to address the different capacities of countries; thus all countries can utilize the guidance and build out an improved inventory over time.
- **2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Vol. 4.** Intergovernmental Panel on Climate Change. (2019).
The 2019 refinement process to the IPCC guidelines is intended to provide an updated view of the latest scientific and technological improvements for national GHG inventories. Volume 4 of the IPCC guidelines focuses on AFOLU. In the case of mangrove forests that meet the definition of forests, and other potential land uses, methodologies to account for GHG emissions from the land sector are included here.
- **EX-Ante Carbon Balance Tool (EX-ACT)** Food and Agriculture Organization of the United Nations. (2019).
The Ex-Ante Carbon Balance Tool is a land-based accounting system that provides estimates of greenhouse gas emissions and carbon stock changes due to agriculture and forestry projects.
- **Food and Agriculture Organization Statistics Data (FAOSTAT).** Food and Agriculture Organization of the United Nations. (2019).
FAOSTAT provides country-level data agriculture emissions data broken down by source, such rice cultivation, synthetic fertilizers, and energy use. The data spans from 1961 to the present day and allows for country-level comparisons over time.
- **World Bank Climate Change Knowledge Portal.** World Bank. (2021).
The Climate Change Knowledge Portal (CCKP) provides global data on historical and future climate, vulnerabilities, and impacts, explored via Country and Watershed views. Synthesized Country Profiles provide deeper insights into climate risks and adaptation actions.
- **FAO Climate Risk Toolbox.** Food and Agriculture Organization of the United Nations. (2022).
The Climate Risk Toolbox provides access to spatial data layers and tools that support climate risk assessment and management, offering insights into climate hazards, vulnerabilities, and impacts across various sectors to inform climate-resilient decision-making.
- **USAID Climate Risk profiles.** United States Agency for International Development. (n.d.).
The Climate Risk Profile series provides assessments of climate risks for specific countries and regions, offering guidance for integrating climate considerations into development planning and decision-making.

For NDC Target-Setting Steps

- **Nature-based solutions for climate change mitigation.** United Nations Environment Programme and International Union for Conservation of Nature. (2021). Nairobi and Gland.
This publication explores how nature-based solutions, such as ecosystem conservation, restoration, and sustainable management, contribute to climate change mitigation. It provides evidence, case studies, and guidelines for implementing these strategies effectively.
- **A compilation of good practices, tools and available data collection initiatives for the use of local, Indigenous and traditional knowledge and practices for adaptation.** UNFCCC SBSTA. (2016).
This resource outlines key practices and tools for integrating Indigenous and traditional knowledge into climate adaptation, enhancing community resilience.

- **Mobilisation of Indigenous and local knowledge as a source of useable evidence for conservation partnerships.** Chapter Six. University of Cambridge. (2020). In Conservation Research, Policy and Practice. *This chapter discusses the importance of integrating Indigenous and local knowledge into conservation efforts, emphasizing how such knowledge can inform partnerships and enhance the effectiveness of conservation policies.*
- **NDC Enhancement: Opportunities in the Forest and Land-use Sector.** World Resources Institute. (2019). *This report identifies opportunities to strengthen NDCs by leveraging forest and land-use strategies. It outlines practices to enhance climate mitigation and adaptation efforts, providing insights for integrating nature-based solutions into national climate plans.*
- **Blue Carbon in NDCs: Guidelines on Enhanced Action (Second Edition).** Hamilton, J., et al. (2023). Arlington, Virginia USA: Blue Carbon Initiative. *Updated in 2023, these guidelines support countries seeking to promote and preserve the climate benefits of blue carbon ecosystems by providing technical guidance on the multiple avenues for including these ecosystems within updated nationally determined contributions (NDCs) to the Paris Climate Agreement. Given the multiple justifications for including coastal blue carbon in NDCs and the varying levels of relevant national capacity, this guidance describes a range of options. The document recommends a “tiered approach”, similar to that employed by IPCC guidance, to demonstrate how a variety of motivations and starting points represent viable pathways for the inclusion of coastal blue carbon ecosystems in NDCs.*
- **Integrating Mangrove Ecosystems into NDCs with the Global Mangrove Watch.** The Global Mangrove Alliance. (2024). *This publication includes information on how to use Global Mangrove Watch and its data to integrate mangroves into NDCs. Global Mangrove Watch is an online platform that provides remote sensing data and tools for global monitoring of mangroves, with several layers relevant for adaptation, including coastal protection.*
- **Mangrove Restoration Potential: A global impact highlighting a critical opportunity.** Worthington, T. and Spalding, M. IUCN, The Nature Conservancy, and the University of Cambridge. *This report describes the process of mapping degraded mangrove ecosystems and the potential benefits from restoration, resulting in the Mangrove Restoration Potential Map. The map allows for a visual representation of global restoration potential for degraded mangroves that can be used in developing climate policy.*
- **Best Practice Guidelines for Mangrove Restoration.** Global Mangrove Alliance. (2023). *This guideline provides comprehensive strategies for effective mangrove restoration, emphasizing ecological principles, community involvement, and long-term sustainability. It serves as a key resource for practitioners seeking to enhance the resilience and biodiversity of mangrove ecosystems.*
- **‘Blueing’ the NDCs: An Updated Review of Ocean-based Nationally Determined Contributions of Commonwealth Countries.** The Commonwealth Blue Charter. (2023). *This review examines how ocean-based solutions are incorporated into NDCs across Commonwealth countries, highlighting advancements and areas for further integration to address climate challenges through marine ecosystems.*
- **Ocean-Based Climate Solutions in Nationally Determined Contributions.** Ocean Conservancy. (2023). *This report outlines how ocean-based strategies are being utilized within NDCs to combat climate change. It emphasizes the role of marine ecosystems in mitigation and adaptation efforts and provides recommendations for maximizing ocean-related climate actions.*
- **Mapping ocean wealth explorer.** The Nature Conservancy. (n.d.). *The Mapping Ocean Wealth Explorer tool is a global data source that provides estimates of benefits provided by mangroves and coral reefs in flood protection annually and from catastrophic storms.*

- Locking Carbon in Wetlands: Enhancing Climate Action by Including Wetlands in NDCs.** Anisha, N.F., et al., (2020). Corvallis, Oregon and Wageningen, The Netherlands: Alliance for Global Water Adaptation and Wetlands International.

This report is aimed at policymakers and aims to: 1) to illustrate the scientific rationale behind the use of wetlands as a climate mitigation and adaptation tool; 2) to demonstrate the prevalence and function of wetlands across landscapes and geographies; and 3) to provide a set of clear policy recommendations that will enable Parties to the UNFCCC to conserve, restore and wisely use wetlands by incorporating them into their NDCs.
- Wetlands and Methane Technical paper.** Evans, C., Gauci, V. (2023). Wetlands International

This report outlines the contribution of wetlands to global methane output; differences between natural versus anthropogenic methane emissions; wetlands management and restoration in the context of the ecosystem services they provide for the benefit of nature, climate, and people.
- Global guidelines for peatland rewetting and restoration.** Convention on Wetlands. (2021). Ramsar Technical Report No. 11. Gland, Switzerland: Secretariat of the Convention on Wetlands.

This report summarizes the state of knowledge and identifies principles for restoring drained peatlands. It provides methodological guidance for restoring drained peatlands, and a Policy Brief which provides information and recommendations for policy makers.
- NDC Enhancement: Opportunities Through Water.** World Resources Institute. (2022).

This report explores ways to strengthen NDCs by incorporating water management strategies, emphasizing the importance of water resources for climate adaptation and mitigation. It provides actionable insights on how integrating water considerations can enhance overall climate resilience and impact.
- Locally-led adaptation: moving from principles to practice in the water sector.** WeADAPT. (2024).

This report introduces an assessment framework to evaluate how water adaptation projects align with the LLA principles, supplemented with a principle on Nature-based Solutions.
- Water the NDCs: National Climate Planning for 2020 and Beyond.** Alliance for Global Water Adaptation. (2020).

This report highlights how integrating water management into NDCs can strengthen climate resilience and actions.
- The Carbon Farming Solution: A global toolkit of perennial crops and regenerative agriculture practices for climate change mitigation and food security.** Toensmeier, E. (2016). Chelsea Green Publishing. 512 pp.

The Carbon Farming Solution describes a wide range of farming techniques and approaches that can deliver climate and food security benefits, relevant to agricultural contexts around the world.
- The agriculture sectors in the Intended Nationally Determined Contributions: Analysis.** Strohmaier, R., et al., (2016). Environment and Natural Resources Management Working Paper No. 62. Rome: Food and Agriculture Organization of the United Nations.

This analysis describes the prominent role of agriculture in achieving Parties' Intended Nationally Determined Contributions, providing an overview of the inclusion of agriculture in the INDCs, as well as the importance of international support for developing countries.
- Role of Agriculture, Forestry, and Other Land Use Mitigation in INDCs and National Policy in Asia.** Zeleke, A., et al., (2016). Low Emissions Development Strategy Global Partnership Agriculture, Forestry, and Land Use Working Group.

This report describes the importance of including the AFOLU sector in Asian nations' INDCs and analyzes how various Asian nations have included AFOLU in their INDCs and national development plans. INDCs in these nations do not sufficiently include the AFOLU sector and would benefit from integrating Low Emission Development Strategies targeting the AFOLU sector in their revised INDCs.
- Untapped Opportunities for Climate Action: An Assessment of Food Systems in NDCs: A Practical Guide to Assessing Food Systems in NDCs** Global Alliance for the Future of Food. (2022).

This assessment examines the role of food systems in NDCs, identifying missed opportunities for climate action and recommending ways to better integrate food systems for stronger climate outcomes.

- **NDCs for Food Systems: Recommendations for Decision Makers.** WWF Germany & WWF Food Practice. (2020). *This document offers guidance on integrating food systems into NDCs, emphasizing strategies for enhancing food security while addressing climate change.*
- **NDC Opportunities in the Agriculture Sector.** World Resources Institute. (n.d.). *This resource outlines potential avenues for enhancing NDCs through agricultural practices, focusing on sustainable land management and climate-smart agriculture to improve resilience and reduce emissions.*
- **Policy Recommendations for Coastal Cities to Adapt to Climate Change.** Ocean & Climate Platform. (2023). *This document provides actionable policy recommendations for coastal cities to enhance their resilience to climate change impacts, focusing on adaptation strategies that integrate social, economic, and environmental considerations.*
- **WRI's Locally Led Adaptation: From Principles to Practice.** World Resources Institute. (2022). *This publication outlines principles and practical strategies for implementing locally led adaptation initiatives, emphasizing the importance of community involvement and empowerment in enhancing resilience to climate impacts.*
- **FEBA criteria system.** Friends of EbA. (2017). *This document introduces the FEBA criteria system, which provides a framework for assessing the effectiveness of Ecosystem-based Adaptation initiatives, focusing on principles that enhance climate resilience through biodiversity and ecosystem services.*
- **Advancing Priorities Through the Global Biodiversity Framework: Irrecoverable Carbon Ecosystems.** Conservation International. (2023). *This brief provides recommendations for integrating Irrecoverable Carbon and prioritization of high carbon ecosystems into NBSAPs and related policy processes, with the intended audience being members of government ministries involved in NBSAP/NDC development (environment, agriculture, foreign affairs, and others).*

For NDC Implementation Steps

- **NDC Partnership and Green Climate Fund draft guidance.** NDC Partnership and Green Climate Fund. (2023). *This draft guidance outlines collaborative approaches for integrating NDCs with climate financing strategies, providing recommendations for enhancing the effectiveness of climate investments and supporting countries in their climate goals.*
- **360-degree accountability: improving climate adaptation finance.** International Institute for Environment and Development (IIED). (2022). IIED's methodology for LLA. *This methodology enhances accountability in climate adaptation finance by assessing how effectively resources reach local communities. It aims to improve stakeholder engagement and transparency in the finance delivery chain through comprehensive scorecards that evaluate projects based on local needs and effectiveness.*
- **Overview of Carbon Markets under Article 6 of the Paris Agreement.** Conservation International (2024). *This brief reviews each of the market and non-market mechanisms under Article 6, including how they work, what the requirements are, who can buy/sell, and other costs and considerations.*
- **Article 6 Readiness Toolkit.** NDC Partnership and Perspectives Climate Research. *The toolkit is designed to help countries prioritize their implementation strategies and navigate the complexities of engaging in international carbon markets. It covers essential elements like policy frameworks, institutional structures, and stakeholder engagement that are crucial for effective participation in these markets.*
- **Article 6 Implementation: Emerging Trends for Countries' National Strategies.** The Nature Conservancy (TNC). (2024). *Explores early trends in Article 6 implementation by looking at examples of how 12 countries are choosing **sectors** and activities eligible for Article 6 trades, setting the right prices for ITMOs, using tools to reduce the risk of overselling, and creating national regulations to approach the VCM.*

- **REDD+ and Article 6: COP29 and Beyond.** The Nature Conservancy (TNC). (2024).
This guide answers common questions on the relationship between REDD+ and Article 6, such as if nature is included in Article 6, and what decisions at COP29 Azerbaijan will impact REDD+.
- **Article 6 Explainer.** The Nature Conservancy (TNC). (2024).
- **Guidance on Voluntary Use of Nature-based Solution Carbon Credits Through 2040.** WRI. (2022)
This document provides best practices and recommendations for utilizing carbon credits from nature-based solutions, aiming to enhance climate action and sustainability while ensuring accountability and effectiveness in carbon markets.
- **Policy Recommendations for REDD+ Nesting.** Conservation International (2024)
A set of recommendations to guide national governments in the process of “nesting,” which consists of aligning activities for reducing emissions from deforestation and forest degradation (REDD+) between national, subnational, and project scales. Although each country may approach nesting differently, this document provides key policy recommendations that should be considered in any national nesting process.
- **Nationally Determined Contributions and REDD+: demonstrating the potential of forests for NDC Enhancement and Implementation.** UN REDD+ Programme. (2022).
This document highlights how integrating REDD+ strategies into NDCs can enhance climate commitments and implementation, showcasing the critical role of forests in achieving climate goals and providing pathways for countries to maximize their forest-related contributions.
- **Guidelines for Designing, Implementing, and Monitoring NbS for Adaptation.** Conservation International. 2nd edition. (2021).
Guidance and good practices for the identification, design, implementation, monitoring, and evaluation of NbS for adaptation, especially for projects that already have financial resources for implementation. Also includes information on vulnerability assessments and stakeholder engagement. Divided into five stages of the adaptation project cycle, which can be used in a variety of ecosystems and socioecological contexts.
- **Guidebook for Monitoring and Evaluating Ecosystem based Adaptation Interventions** GIZ, UNEP-WCMC and FEBA. (2020).
This guidebook provides a comprehensive framework for monitoring and evaluating ecosystem-based adaptation (EbA) interventions, offering practical tools and methodologies to assess their effectiveness and impact in enhancing resilience to climate change.
- **The Nature Tech Collective:** *An alliance, accelerator and intelligence unit that is advancing the uptake of nature-based solutions to integrate nature protection into all sectors of society.*

Endnotes

- 1 United Nations Environment Programme (UNEP). 2022. [Resolution adopted by the United Nations Environment Assembly on 2 March 2022](#). The UNEA definition builds on and incorporates the previous IUCN definition of NbS adopted by its 1,400+ State and NGO Members at the 2016 IUCN World Conservation Congress in Hawaii, USA ([WCC-2016-Res-069-EN](#)).
- 2 Noon, M.L., Goldstein, A., Ledezma, J.C., et al. 2022. [Mapping the irrecoverable carbon in Earth's ecosystems](#). *Nat Sustain*, 5(37–46).
- 3 Nature Climate Change. 2023. [Nature-based solutions can pave the way to carbon-neutral cities in 2030](#). *Nat. Clim. Chang*, 13(774–775).
- 4 United Nations Environment Programme and International Union for Conservation of Nature. 2021. [Nature-based solutions for climate change mitigation](#).
- 5 Possible peaks of methane emissions after rewetting of wetlands can be prevented and minimized with appropriate management techniques (see for instance, Ramsar Convention on Wetlands 2021 Global guidelines for peatland rewetting and restoration). The longer-term climate benefits of restoration are much higher than maintaining the drained status quo (see [Wetlands and methane - Wetlands International](#)).
- 6 Florian Humpeñöder et al. 2020. [Peatland protection and restoration are key for climate change mitigation](#). *Environ. Res. Lett.* 15 104093.
- 7 ILO, UNEP and IUCN. 2022. [Decent Work in Nature-based Solutions 2022](#).
- 8 Menéndez, P., Losada, I.J., Torres-Ortega, S. et al. 2020. [The Global Flood Protection Benefits of Mangroves](#). *Sci Rep* 10, 4404.
- 9 NDC Partnership and GIZ. 2024. [Working with nature-based solutions to address climate change: trends in NDC Partnership support](#).
- 10 NDC Partnership and GIZ. 2024. [Working with nature-based solutions to address climate change: trends in NDC Partnership support](#).
- 11 Nature4Climate. 2023. [Essential Outcomes on Nature-based Solutions for the Global Stocktake](#).
- 12 UNFCCC. 2023. [COP28 Joint Statement on Climate, Nature and People](#).
- 13 UNFCCC. 2023. [Outcome of the first global stocktake](#).
- 14 UNFCCC. 2023. [Outcome of the first global stocktake](#).
- 15 Durkin, L., van Hilten, M., Lloyd, J., Da Matta Alves, P., and J. Zhang. 2024. [Nature-based Solutions Policy Tracker](#).
- 16 Durkin, L., Lloyd, J., Zhang, J., Chang, T., Nauseda, M., and Petra, R. 2024. [Nature-based Solutions Policy Tracker](#).
- 17 United Nations Environment Programme. 2023. [State of Finance for Nature 2023](#).
- 18 United Nations Environment Programme. 2021. [State of Finance for Nature 2021](#).
- 19 Refers to the knowledge, innovations, and practices of Indigenous peoples and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity. CBD. 2018. [14/13 Glossary of relevant key terms and concepts within the context of the Article 8\(j\) and related provisions. CBD/COP/DEC/14/13](#).
- 20 Figueroa, V. and Batzin, R. 2024. Conservation International, Inclusive Conservation Initiative and International Indigenous Forum on Biodiversity. [Achieving the Global Biodiversity Framework through Guaranteeing the Roles, Rights, and Contributions of Indigenous Peoples and Local Communities](#).
- 21 Conservation International. 2019. [Free, prior and informed consent in context](#).
- 22 UNGA. 2022. [The human right to a clean, healthy and sustainable environment. A/RES/76/300](#).
- 23 Each of these targets is further described in Levin, K., et al. 2015. WRI and UNDP. [Designing and preparing Intended Nationally Determined Contributions \(INDCs\)](#)
- 24 For example, countries may have efforts underway for restoration or forest management that occur over several decades. These long-term efforts in the land sector can still be reflected as ongoing efforts within a five-year NDC.
- 25 UNFCCC. 2019. [Report of the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement on the third part of its first session, held in Katowice from 2 to 15 December 2018](#).
- 26 Griscom et. al. 2017. [Natural Climate Solutions](#).
- 27 Some NCS activities from Griscom et al. address the conversion from one land-use category to another, such as the avoided conversion of forest or other native habitat to agricultural use. Other NCS activities can occur within a land-use category, via resource and production management, for example employing natural forest management and nutrient management in agriculture.
- 28 Turetsky, M., Benscoter, B., Page, S., Rein, G., Van der Werf, G.R. & Watts, A. 2015. [Global vulnerability of peatlands to fire and carbon loss](#). *Nature Geoscience*, 8, 11–14.
- 29 Zhang, G., Bai, J., Zhao, Q., Jia J., Wang, X., Wang, W., and Wang, X. 2021. [Soil carbon storage and carbon sources under different *Spartina alterniflora* invasion periods in a salt marsh ecosystem](#). *CATENA* Volume 196, 104831, ISSN 0341-8162.
- 30 International Energy Agency. 2023. [Net zero roadmap A Global Pathway to Keep the 1.5 °C Goal in Reach](#).
- 31 Countries may find it useful to prioritize their emissions categories using a Key Categories analysis. Detailed instructions for Key Categories analysis can be found in the [2006 IPCC Guidelines for National GHG Inventories, Vol. 1, Chapter 4](#).
- 32 Developed by Cook-Patton, S. et al. 2021. [Protect, manage and then restore lands for climate mitigation, Nature Climate Change, 11, 1027-1034](#).

- 33 Cook-Patton, S. et al. 2021. [Protect, manage and then restore lands for climate mitigation](#). Nature Climate Change, 11, 1027-1034.
- 34 Cook-Patton, S. et al. 2021. [Protect, manage and then restore lands for climate mitigation](#). Nature Climate Change, 11, 1027-1034.
- 35 Cook-Patton, S. et al. 2021. [Protect, manage and then restore lands for climate mitigation](#). Nature Climate Change, 11, 1027-1034.
- 36 The resources consulted as inspiration for the development of examples and content related to nature-based solutions, mitigation, adaptation, and target-setting in this document chart are detailed in the Additional Resources section.
- 37 United Nations Environment Programme. 2024. [Raising ambition, accelerating action: Towards enhanced Nationally Determined Contributions for forests](#).
- 38 FAO, IUCN CEM and SER. 2021. [Principles for Ecosystem Restoration 2021-2013](#).
- 39 International Institute for Environment and Development. (n.d). [Principles for locally led adaptation](#). Soanes et al. 2021. [Principles for locally led adaptation](#).
- 40 Any changes in natural or human systems that inadvertently increase vulnerability to climatic stimuli; an adaptation that does not succeed in reducing vulnerability but increases it instead (IPCC, 2018).
- 41 Various case examples of integration of NbS in water-related infrastructure such as flood defenses, sustainable port development are available [here](#), including a [pilot](#) in Indonesia where grey infrastructure failed to reduce coastal erosion and NbS integrating mangrove and river restoration, small-scale engineering and sustainable land use was successful.
- 42 An area with high ecological integrity is one which has a composition, structure, function and ecological process close to that of a natural ecosystem. CBD. (n.d). [Target 2 Restore 30% of all Degraded Ecosystem](#).
- 43 Schmitz, O.J., Sylvén, M., Atwood, T.B. et al. 2023. [Trophic rewilding can expand natural climate solutions](#). Nat. Clim. Chang. 13, 324-333 Y. Malhi, T. Lander, E. le Roux, N. Stevens, M. Macias-Fauria, L. Wedding, C. Girardin, J.Å. Kristensen, C.J. Sandom, T.D. Evans, et al. 2022. [The role of large wild animals in climate change mitigation and adaptation](#). Curr. Biol., 32, pp. R181-R196.
- 44 Uses of biological resources in accordance with traditional cultural practices that are compatible with conservation or sustainable use requirements. UNFCCC CBD/COP/DEC/14/13. 2018. [14/13 Glossary of relevant key terms and concepts within the context of the Article 8\(j\) and related provisions](#).
- 45 Noon, M.L., Goldstein, A., Ledezma, J.C. et al. 2022. [Mapping the irrecoverable carbon in Earth's ecosystems](#). Nat Sustain 5, 37-46.
- 46 UNFCCC and IUCN. 2022. [Innovative Approaches for Strengthening Coastal and Ocean Adaptation: Integrating Technology and Nature-based Solutions](#).
- 47 World Bank. 2023. [Corresponding Adjustment and Pricing of Mitigation Outcomes](#).
- 48 UNFCCC. (n.d). Transparency of support under the Paris Agreement.
- 49 Source: [Conservation International direct work with government of Brazil](#).