



PATHWAY FOR INCREASING NATURE-BASED SOLUTIONS IN NDCS

A Seven-Step Approach for Enhancing
Nationally Determined Contributions
through Nature-based Solutions

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INTRODUCTION

Climate change and biodiversity loss result in profound societal and economical risks. At the COP21 in Paris in December 2015, Parties to the UNFCCC decided to strengthen the global response to the threat of climate change through the adoption of the Paris Agreement. The Paris Agreement aims to accelerate action and investment to hold the increase in global average temperature to well below 2°C above pre-industrial levels, increase the ability to adapt to the adverse impacts of climate change and make financial flows consistent with a pathway towards low greenhouse gas (GHG) emissions and climate-resilient development. The Paris Agreement requests countries to undertake and communicate ambitious efforts in Nationally Determined Contribution (NDC), with the view to achieving the objectives of this Agreement. NDCs describe each country's self-determined plans for climate action typically until 2025 or 2030, and will represent a progression over time, recognizing the need to support developing countries for the effective implementation of these climate actions.

The Paris Agreement also invited countries to communicate mid-century, long-term low greenhouse gas emission development strategies (LTS) by 2020 that describe phase out pathways to low-carbon, and eventually, decarbonized futures. The NDCs can be seen as “stepping stones” to achieve these mid-century goals.¹ The LTS provides a country with direction and vision for increasing ambition in future NDCs.

THE GLOBAL CHALLENGE

As of September 2019, 184 countries have submitted their first NDCs and one country (Marshall Islands) has submitted their second NDC. Based on existing commitments, the full implementation of unconditional NDCs targets is consistent with staying below a 3.2°C temperature increase by 2100. Additional implementation of conditional NDCs lowers this increase to 3°C. Unless NDCs ambitions are increased before 2030, the Paris Agreement goals will not be achieved. Current NDCs emission reductions need to be tripled to hold the increase in global average temperature below 2°C above pre-industrial levels and “increased around fivefold” to hold the increase in global average temperature below 1.5°C.²

THE OPPORTUNITY

A range of opportunities exist for increasing the coverage and stringency of GHG emission reduction targets, policies and actions. According to the IPCC Special Report (2019)³ an estimated 23% of total net anthropogenic GHG emissions (2007-2016) derive from Agriculture, Forestry and Other Land Use (AFOLU). About 25% of emission reductions in current NDCs come from the land use sector, primarily forests⁴.

Eighty countries have signalled intent to increase the ambition in their NDCs climate pledges⁵. Scaling-up “Nature-Based Solutions” (NBS) within the AFOLU sector– the protection, restoration and sustainable use of forests, grasslands and wetlands – can represent a cost-effective opportunity for countries to enhance their NDC ambition. NBS alone can deliver approximately a third of the cost-effective CO₂ mitigation needed through 2030 while supporting more productive and resilient communities with social, economic and environmental returns. Within the suite of nature-based solution actions, reducing deforestation provides the single largest opportunity to generate emission reductions⁶. Increasing nature-based solutions in the NDCs is an opportunity to utilize an essential component of a comprehensive climate strategy and scale NDC ambition. Incorporating nature-based actions can contribute to improving livelihoods and reducing inequality, securing food and water, improved resilience and disaster risk reduction (and therefore directly relevant to climate adaptation), and biodiversity conservation, in addition to the established climate mitigation benefits.

BARRIERS

The critical role of carbon sinks and forests is recognized in the Paris Agreement through its inclusion in Article 5. The importance of NBS for climate change mitigation and adaptation is also made clear by its inclusion in approximately 77% of the NDCs.

Despite this, only about 26% of NDCs mentioned such actions as quantifiable mitigation commitments to be reported upon and measured.⁷ There are many likely reasons for this. Barriers that

1 NDC Outlook 2019 (DRAFT), UNDP and UNFCCC.

2 UNEP Emissions Gap Report 2018

3 IPCC Special Report on Climate Change, Desertification, Land Degradation, Sustainable Land Management, Food Security, and Greenhouse gas fluxes in Terrestrial Ecosystems

4 Grassi, G. et al. The key role of forests in meeting climate targets requires science for credible mitigation. *Nature Climate Change*, 7: 220 - 226 (2017).

5 Source: <https://www.nytimes.com/2019/05/28/climate/united-nations-climate-pledges.html>

6 Griscom et al. *Natural Climate Solutions*.

7 The Bonn Challenge and the Paris Agreement: How can forest landscape restoration advance Nationally Determined Contributions? IUCN and Climate Focus (2017); https://www.iucn.org/sites/dev/files/content/documents/20171213_ndcs_fbriief.pdf

need to be addressed include institutional, technological, and political factors, plus fundamental constraints on land availability and competing uses of land for food production, conservation, and carbon goals.⁸ The Paris Agreement does not guide countries to set explicit sectoral targets.⁹ Setting economy-wide targets gives countries the flexibility to adapt their implementation plans over time according to changing national circumstances. They may not be willing to commit to specific sectoral targets in the NDC itself, but rather choose to focus in setting these out in their NDC implementation plan and/or specific sectoral plans.

Another contributing factor for the limited explicit, quantified inclusion of NBS as part of mitigation targets or goals in NDCs is the higher level of uncertainty associated with estimating GHG emission reductions by sources and removals by sinks. Many countries, both developed and developing countries, also have gaps in their GHG inventories for land-use sectors with no information on trends of GHG emissions and removals for other land use categories apart from forest management. A country's primary focus, therefore, may be on improving the robustness of the data on which the current NDC is based before moving to consider enhancements. Another potential barrier is that NBS have a higher risk of reversals. The AFOLU sector, within which NBS are implemented, is highly dynamic, influenced by weather patterns and climate change, for example, so countries might be in a position where they could not achieve their targets, even if they implemented all measures included in their NDC strategy or action plan, due to such factors. At the time of preparing INDCs, the potential accounting guidance or rules to manage these risks and factors was not yet clear.

Finally, a key barrier for NDC enhancement is related to finance, the level of which has not been delivered to support achievement of current conditional NDC targets. Several countries assert that what they did include in the first NDCs, in terms of targets for land use, land-use change, and forestry (LULUCF) or forest sector, specifically, is already extremely ambitious. The focus in these countries is, therefore, on accessing the finance needed to support the existing targets. Countries in this case may be finding themselves in a challenging position to be considering enhanced ambition for this sector.

There are solutions to ameliorate the risks and overcome the barriers described above. It is nevertheless, important to recognize that these types of risks and barriers are playing a role in countries' decision-making processes related to NDCs, and therefore warrant attention to ensure these barriers do not stand in the way of realizing the full potential that NBS has to contribute to the global climate change challenge.

TARGET AUDIENCE

This Pathway is intended to provide support and guidance to national governments, including both developed and developing countries. It is anticipated that this guide will be used by a country's ministries related to climate change, environmental management, forests and land use sector, and/or inter-ministerial coordination committees, if existing. This NBS in NDCs Pathway also provides guidance relevant for sub-national governments aligning their commitments and actions with national commitments and actions. Finally, a coordinated effort is needed to integrate NBS into NDCs and this pathway captures opportunities for governments to work with companies, NGOs and indigenous peoples and local communities to strengthen and accelerate their nature-based actions.

HOW DOES THIS PATHWAY HELP GOVERNMENTS?

The objective is to assist governments to identify potential Nature-Based Solutions with the aim of enhancing their climate mitigation and adaptation action in a cost-effective manner and with multiple co-benefits. This Pathway may also be particularly helpful to assist countries in their efforts to strengthen the robustness of their existing NDC in cases where they may have limited data and resources to prepare for the implementation of their NDC strategies or action plans. This Pathway provides governments with a concise summary of specific actions to consider, organized in seven steps or stages:

Step 1 – Establish an understanding of the national greenhouse gas accounting context

Step 2 – Identify and review existing nature-based actions in national legal and institutional frameworks

Step 3 – Identify and review nature-based actions in the current NDC

Step 4 – Develop a rapid analysis for estimating the climate change mitigation and adaptation potential of the existing nature-based actions

Step 5 – Crosswalk nature-based solution pathways with existing measurable nature-based actions and identify opportunities for enhancing NDCs using spatial data

Step 6 – Integrate measurable nature-based actions into the NDC

Step 7 – Improve or create the enabling conditions to support integration of NBS into the NDC

⁸ Anderson et al. Natural climate solutions are not enough. Science, Mar 2019.

⁹ Article 4.4 of the Paris Agreement requests developed countries to continue to take the lead undertaking economy-wide absolute emission reduction targets while encouraging developing countries to also move over time to economy-wide targets.

Each step of the NBS in NDCs Pathway includes three components:

1. A brief description of the step;
2. A summary of specific actions governments can implement, if they haven't already, to make progress on the step, and the relevant tools to support each action, in some cases providing a country-specific examples for implementing one or multiple actions; and
3. A list of relevant resources for further information, tools, services and support.

HOW CAN THE NBS IN NDCS PATHWAY BE APPLIED?

Recognizing the diversity of country contexts and capacities and varying progress in addressing climate change mitigation and adaptation, as well as in implementing sustainable environmental management practices, this Pathway is intended to be relevant and needed by any given country, based on identified gaps in action and progress. Some countries may have advanced on some of the actions featured in the proposed seven steps; however, this progress has not necessarily been communicated through the initial NDCs or to other government sectors that are necessary for implementation, nor has it necessarily been translated into action on the ground yet. A country need not follow this pathway document as a rigid structure; it can be applied in a flexible way, i.e., a country may be starting at a later step, a re-sequencing may make more sense in the given country context, etc. Finally, the inclusion of tools and resources considered in this Pathway does not imply UNDP endorsement of one approach instead of another.



ESTABLISH AN UNDERSTANDING OF THE NATIONAL GREENHOUSE GAS ACCOUNTING CONTEXT

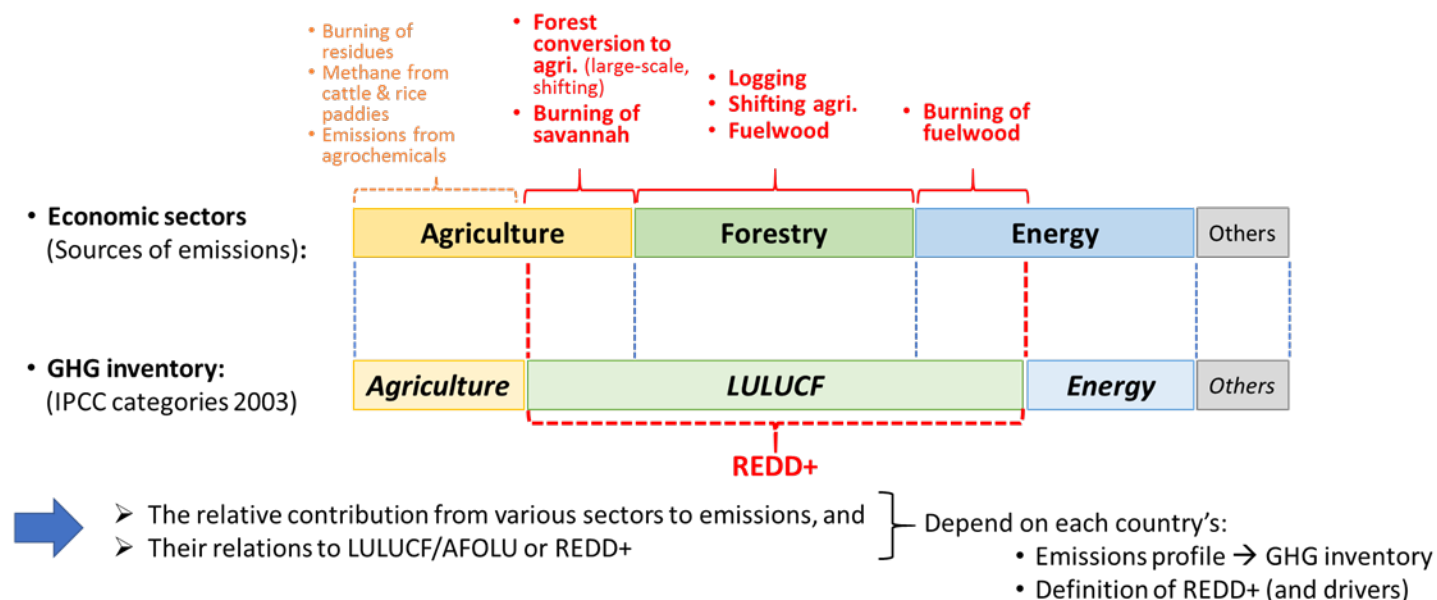
Description

Understanding the current context of greenhouse gas emissions by sources and removals by sinks is an essential exercise for countries' NDCs. National greenhouse gas inventories, as reported to the UNFCCC, provide the basis for measuring countries'

mitigation efforts. Information on GHG emissions and removals contained in national GHG inventories are also a critical foundation for GHG-based indicators and GHG projections in the context of NDC-related analysis.

This figure below illustrates how REDD+, an example of NBS, maps to the IPCC sectors for GHG inventory reporting.

Figure 1: AFOLU and REDD+



Coupled with the national GHG inventory reports submitted to the UNFCCC, countries also prepare and submit several other reports and documents in the climate change context, in alignment with various COP decisions, which are highly relevant for NDC-related analysis. In particular, there are those in the context of the UNFCCC Warsaw Framework for REDD+ (see Key Action #1 below).

Key Actions

- Gather reports and official data. Countries should first aim to gather all the official reports that were submitted to the UNFCCC.** Most countries (except for Cyprus, Equatorial Guinea and Libya) have presented at least one National Communication/ GHG Inventory. Many countries have also presented national GHG inventories through their Biennial Reports (BR) and Biennial Update Reports (BUR) to the UNFCCC. For forest-related NBS, other

key sources of information are the REDD+ submissions (forest reference emission levels/ forest reference levels, REDD+ technical annexes) from countries that are implementing the Warsaw Framework for REDD+.

a. **Tool:** [IPCC Guidelines and Good Practice Guidance](#)

- Collect all GHG-relevant studies done in the country.** In addition to official reports and submissions made to the UNFCCC, there are underlying data, modeling scenarios, and/or improved data not yet captured in an official submission. If the country does not have a national GHG inventory or if its information is outdated, countries can collect other climate-related official studies done by government agencies, potentially with the support from international donors and/or organizations. Countries can also collect any relevant information that has been produced by academic organizations and NGOs.

3. **Review this information to estimate the existing profile of emissions associated with NBS.** A comprehensive stock take is needed before moving through the process of evaluating mitigation potential and considering and deciding upon enhancements.

Case Study: Institutionalizing the National GHG Inventory System to support the NDC – Costa Rica

A good example of identifying NBS mitigation potential is to determine the AFOLU sectors' contribution. The GHG inventory system is the foundation for tracking NDC progress, and a sustainable, well-managed inventory system is key. Costa Rica, for instance, has significantly improved metrics to quantify emissions and fixation in these sectors, through its national GHG inventory system. The country decided to appoint the National Meteorological Institute (IMN) as the technical unit to create the GHG National Inventory. The IMN, with proved experience developing inventories, applied the IPCC Guidance to calculate the AFOLU mitigation contribution. As a result, Costa Rica was able to detect that forestry lands contributed an absorption of 7.438 CO₂ GTons in 2012, improving its NDC mitigation calculations and targets.

Resources

[National Communications and BR submissions from Annex I Parties](#)

[Review Reports of National Communications and BRs](#)

[National Communication submissions from Non-Annex I Parties](#)

[Biennial Update Report submissions from Non-Annex I Parties](#)

[REDD+ Web Platform](#)

[Lima REDD+ Information Hub](#)



STEP 1

STEP 2

STEP 3

STEP 4

STEP 5

STEP 6

STEP 7

IDENTIFY AND REVIEW EXISTING NATURE-BASED ACTIONS IN NATIONAL LEGAL AND INSTITUTIONAL FRAMEWORKS

Description

There are Nature-Based Solutions already included in countries' plans, policies, strategies, targets and commitments. This Pathway is intended to assist countries in the identification of NBS already in place as part of their legal and institutional frameworks. Some of these instruments are a result of the international commitments that countries assume, which are also relevant for this exercise.

The idea behind compiling existing NBS action in national legal and institutional frameworks is not only to make it evident to policymakers, but also to showcase the potential "low hanging fruits" available to countries to enhance their NDCs, which may not yet reflect the richness of the NBS goals that the country already has.

Key Actions

1. **Identify nature-based actions in existing policies, laws and regulations.** Analyze national plans, strategies, targets and commitments with nature-based actions. It is important to identify what are the specific NBS targets in these policies, what are the indicators used to assess progress and if there are any studies that may assist in estimating the climate impact of these actions. These national plans, strategies, targets and commitments include but are not limited to:
 - a. National Biodiversity Strategy and Action Plans (NBSAPs) to the Convention on Biological Diversity
 - b. National Land Degradation Neutrality (LDN) targets to the Convention to Combat Desertification
 - c. Bonn Challenge commitments
 - d. National REDD+ Strategies and Action Plans
 - e. Protected Area Plans
 - f. National Adaptation Plans
 - g. Disaster Risk Management Policies
 - h. other Climate Change Policies.
2. **Coordinate with the institutions that are responsible for its implementation.** These institutions should also be involved in the process of potentially creating synergies between these various plans, strategies and commitments, and the country's NDC. It is likely that these institutions will also be able to provide accurate information on how much

progress the country has already made in implementing these policies and what will be the actions that are going to be undertaken between 2020 and 2030.

3. **Map the relationship between the various instruments and the potential sources of finance available for its implementation.** Means of implementation are key components for a country's NDC. As part of their efforts to integrate more NBS into their NDCs, countries should always identify potential sources of finance, both national and international, to support its implementation. Action 2 of Step 7 addresses the financial cooperation needed to scale up NBS in the NDCs.

Case Study: Suriname – Integration of Forest-related national strategies and policies into the NDC

According to Nature 4 Climate's Natural Climate Solutions Carbon Mapper, Suriname has an indicative estimated total mitigation potential of 10 Mt CO₂e/year through selected NBS actions. However, Suriname has already considered some of this NBS potential in the country's plans, policies, strategies, targets, and commitments. Approximately 94% of the Republic of Suriname consists of forests covering nearly 15 million ha of the land surface, having one of the world's lowest rates of deforestation estimated at 0.02% annually. Suriname's REDD+ strategy already includes a line on NBS: 'continue being a High Forest cover and Low Deforestation (HFLD) country and receive compensation to invest in economic transition'. This REDD+ strategic line was also included in Suriname's NDC as a conditional commitment. Moreover, Suriname has internationally endorsed the Krutu Declaration to raise international recognition for the significant contribution HFLD developing countries provide to the global response to climate change by enabling our forests to serve as vital carbon sinks, through sustainable forest management including conservation, that mitigates climate change and increases the resilience of local communities.

Resources

[National Biodiversity Strategy and Action Plans \(NBSAPs\)](#)
[National REDD+ Strategies and Actions](#)
[National Land Degradation Neutrality \(LDN\) targets](#)
[The Bonn Challenge](#)

STEP 1

STEP 2

STEP 3

STEP 4

STEP 5

STEP 6

STEP 7

IDENTIFY AND REVIEW NATURE-BASED ACTIONS IN THE CURRENT NDC

Description

This step entails a review of the current nature-based actions present in the country's NDC or the enhanced NDC proposal, if under development. Many countries have introduced NBS goals as part of the mitigation or/and adaptation section of their NDC, or are working on incorporating NBS in the enhanced NDC proposal. The objective is to identify how much of the NDC is already relying on NBS, what is the existing mitigation and adaptation potential of these actions, and if there are areas for strengthening and/or enhancing it over time in successive NDCs.

Key Actions

1. **Identify current NBS actions and/or goals in the existing NDC.** Based on a selected categorization of NBS pathways or options, which serves as a list of activities to consider (see Step 5 for more details), countries can identify the NBS-related elements in their NDCs. It is important to determine whether that element is actually captured as part of a goal or if it is simply part of an explanation of context or a recognition of importance, without being part of a concrete commitment. It is also key to see the level of integration of the various NBS actions and goals, as well as whether there is any mention of a region or area in the territory where these would be implemented. Countries may aim to map the institutions and organizations that were involved in the process of proposing the existing measures and consider their roles in implementation. It is key to ensure there is an assessment made beyond the content in the NDC document itself, collecting information about the implementation plan(s) for these actions.

a. **Tool:** [NDC Partnership Knowledge Portal: NDC Content](#)

2. **Identify measurable NBS actions.** Are there nature-based actions present in both adaptation and mitigation sections? NDCs typically have been structured with different sections for mitigation and adaptation actions. In general, countries have introduced more NBS in the adaptation section than under mitigation. Are nature-based actions measurable indicators? Quantifiable indicators (i.e. tons of

CO₂, hectares, etc.) are crucial in tracking progress towards meeting their goals. Ideally, all the NBS should have at least one measurable indicator. Distinguishing NBS with indicators such as percentages and number of hectares in NBS goals is pertinent when the time comes to evaluate the scale and size of the new NBS targets. Countries may wish to prioritize the inclusion of measurable NBS actions into their NDCs.

3. **Understand the underlying data and assumptions used for including NBS actions and goals in the NDC.**

Many times, countries include the AFOLU sector, from which many NBS actions are drawn, as part of their targets or goals without offering a comprehensive explanation about the assumptions of what is included. Countries may wish to consider determining what type of NBS actions have been included in this process, and potentially list them as tacit NBS mitigation goals, which could be included in the NDC itself, or rather in the context of the implementation plan. This will assist countries in identifying potential risks associated with the implementation of their NDC. This will also be essential for the action below. This step is part of the "NDC update process", where countries clarify and revise underlying data and assumptions.

Case Study: NBS in Bolivia's NDC

Bolivia's NDC is a rich source of NBS. Even though Bolivia does not differentiate between mitigation and adaptation actions, the majority of them represent NBS actions. Moreover, plenty of the NBS actions include a measurable component, serving as indicators to track the success of their implementation. Examples include zero illegal deforestation by 2020 and an increase in net forest cover by more than 54 million hectares by 2030, compared to the 52.5 million of 2010.

Resources

[NDC Registry](#)



DEVELOP A RAPID ANALYSIS FOR ESTIMATING THE CLIMATE CHANGE MITIGATION AND ADAPTATION POTENTIAL OF THE EXISTING NATURE-BASED ACTIONS

Definition

This step builds upon the previous ones. By using the information, data and methods from Step 1, countries should assess the climate change mitigation and adaptation potential of their existing nature-based actions in national legal and institutional frameworks (collected in step 2) and in their proposed NDCs (identified in step 3). The objective is to quantify the various paths the country can follow. This assessment should also include considerations that go beyond the climate change impact of these actions. It should consider estimated costs associated with its implementation to understand what are the most cost-effective NBS actions. It should also consider potential risks and challenges associated with its implementation.

Key Actions

1. **Assess the mitigation and adaptation potential of existing NBS actions/ goals in their national legal and institutional frameworks.** Using the latest available data collated in Step 1, countries should be able to assess the potential climate impact of their existing policies, laws and initiatives. Countries should, to the extent possible, also aim to collect data on investments that were made up to now for the implementation of these initiatives and the additional resources that would be needed to fulfill all the commitments set. It is also important to consider the opportunity and transaction costs associated with implementation, as well as benefits that go beyond climate mitigation and adaptation.

a. Tools:

- i. [Nature4Climate Carbon Mapper](#)
- ii. [Initiative for Climate Action Transparency \(ICAT\) Guidance](#)
- iii. [WRI Policy and Action Standard](#)
- iv. [EX-ACT](#)
- v. [Agriculture and Land Use National GHG Inventory and Mitigation Analysis Software Tool \(ALU\)](#)

2. **Assess the mitigation and adaptation potential of existing NBS actions/ goals in their NDC.** Countries should assess the mitigation and adaptation potential of their proposed NBS actions in their NDCs. This should be done

consistent with the national data and methods compiled by the country in Step 1 of this Pathway. In cases where countries based their NDC in business as usual scenarios, this action is part of the action above. It is important to note that some actions may directly contribute to climate change mitigation while others may make only an indirect contribution. It is important to categorize and explore the potential links and synergies amongst the various NBS actions in the NDC. It is also important to assess potential risks associated with the implementation of these measures. These include, but are not limited to, uncertainty of the data, lack of data to create scenarios, risk of natural disturbance such as fires, risk of permanence and leakage. It is also key for countries to assess, as much as possible, what are the costs and benefits of undertaking these activities so they can define which ones to prioritize over time. These factors will also provide inputs into the prioritization of NBS to integrate into the enhanced NDC (See Step 5).

a. Tools:

- i. [Nature4Climate Carbon Mapper](#)
- ii. [Increasing ambition & action on NDCs through FLR](#)
- iii. [Initiative for Climate Action Transparency \(ICAT\) Guidance](#)
- iv. [WRI Policy and Action Standard](#)
- v. [EX-ACT](#)
- vi. [Agriculture and Land Use National GHG Inventory and Mitigation Analysis Software Tool \(ALU\)](#)
- vii. [Agriculture, Forestry, and Other Land Use \(AFOLU\) Carbon Calculator](#)

3. **Compare mitigation potential of existing initiatives with the goals of their NDC.** By doing so, countries will understand what pathway they will need to take in order to move the existing national initiatives towards the achievement of the NBS targets included in their NDC. In many cases, countries may conclude that they will need to include more NBS in order to achieve the existing targets. In other cases, countries could conclude that existing policies are enough to achieve their NDCs and there is room for undertaking more NBS targets going beyond the business and usual scenario.

Case Study: Brazil Mitigation Options Study

The [Mitigation Options for Greenhouse Gas Emissions in Key Sectors in Brazil](#) has been an ambitious effort from the Government of Brazil to estimate the potentials and costs of GHG emission abatement through an integrated economic-energy analysis for the period of 2012-2050 in different key sectors. It has estimated the potential of existing initiatives and the potential of the NDC considering various low-carbon scenarios. It is important to note that a limitation of this study is to consider, in the referential scenario, the full implementation of all current policies in the country, which are already very ambitious and will certainly require additional government efforts to be reached.

This study was undertaken with resources from the Global Environment Facility (GEF) and in partnership with the UN Environment. Its objective was to strengthen technical capacity and support decision-making for the implementation of Brazil's NDC by estimating the GHG mitigation potential of key sectors: industry, energy, transport, households and services, AFOLU (NBS actions), waste management and other intersectoral alternatives. It was the first time an integrated analysis of the different mitigation options was carried out in Brazil, in consideration of the consequent economic and social implications.

The purpose of this study was to point out the role that each economic sector can play, according to a cost-effectiveness approach to meeting the 2025 and 2030 GHG emissions targets. This study found that by 2030, the fulfillment of the commitment require an economic effort to internalize carbon prices in the \$10 / tCO₂e economy. Compliance with the NDC by 2030 would call for measures to be taken in more sectors, totaling a cost of \$11.1 billion.

In terms of NBS action, one cost-effective measure can be the expansion of commercial plantations. The measures that have the greatest potential for abatement are also those with the highest cost. Or that is, the intensification of livestock, with 47% of the abatement potential; reducing deforestation, with 32% of potential; and forest restoration, with 8% of the potential to reduce GHG emissions. However, it should be noted that, even though they require substantial investments, these measures have relatively low abatement costs compared to other sectors. The only exception is forest restoration, which, in addition to its lower felling potential, has a disadvantageous cost-effectiveness, which indicates the existence of substantial economic barriers for this measure. Given the different types of barriers and the potential for accumulated mitigation, intensifying livestock and reducing deforestation are central to government plans for medium- and long-term mitigation as part of its NDC.





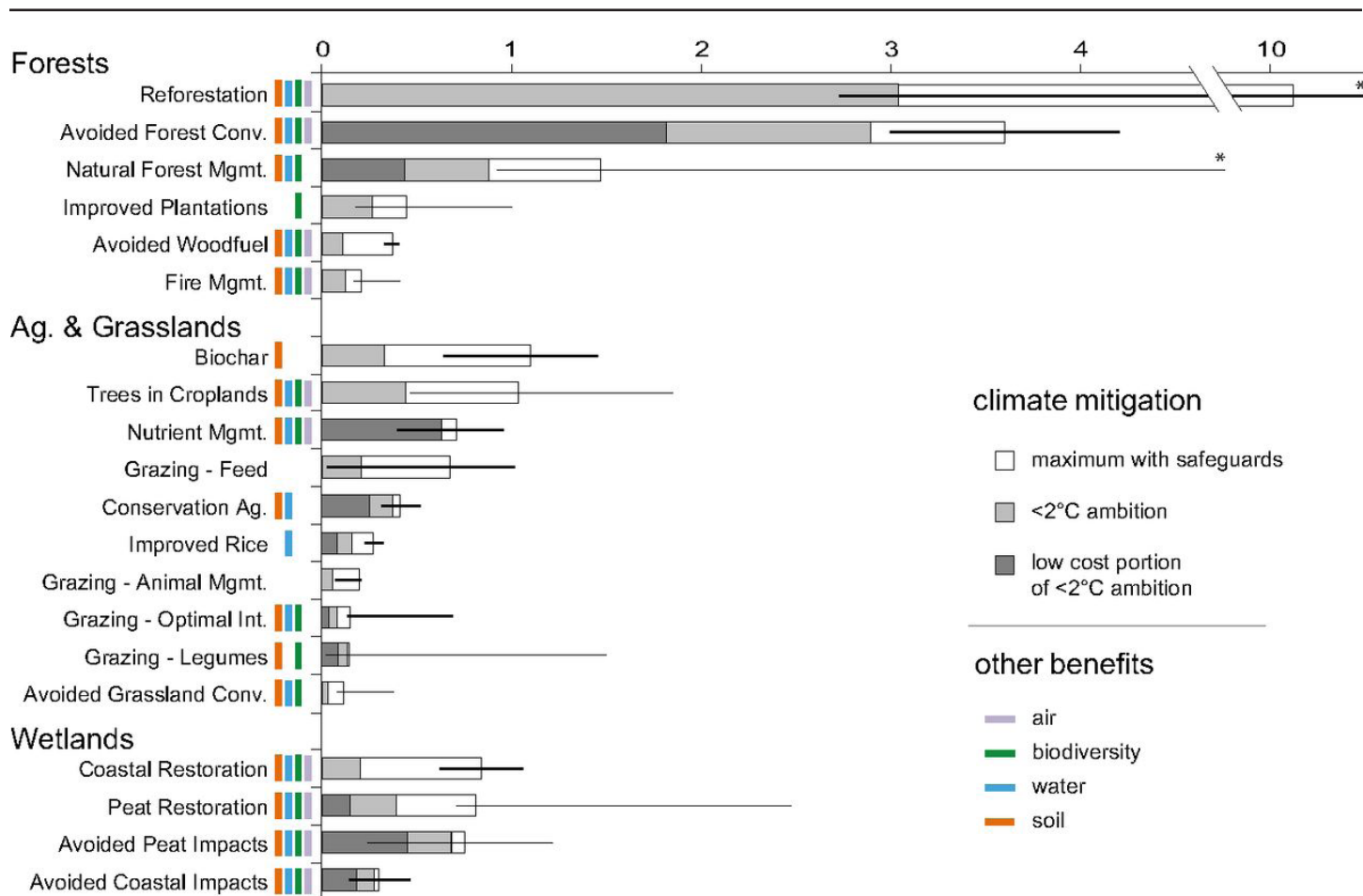
CROSSWALK NATURE-BASED SOLUTION PATHWAYS WITH EXISTING MEASURABLE NATURE-BASED ACTIONS AND IDENTIFY OPPORTUNITIES FOR ENHANCING NDCS USING SPATIAL DATA

Description

By this step, it's expected that countries will have a more solid understanding of their potential to mitigate and adapt to climate change through existing nature-based actions. The country will have identified the current NBS ambition present in the NDC, as well as in their various national policies, strategies, plans, and commitments. Step 5 compares these existing nature-based proposed actions with the NBS potential pathways to identify if further nature-based opportunities could be captured by the country's NDC.

The 2019 IPCC Special Report on Climate Change and Land, as well as academic papers such as Griscom et. al, have identified various NBS actions (Figures 2 and 3) with significant mitigation potential. Countries may wish to consider comparing these with their own actions to see where opportunities exist for strengthening their existing NDC and/or enhancing their targets. This process should reveal national nature-based actions that can be integrated into the NDC to enhance climate mitigation and adaptation potential.

Figure 2: Climate mitigation potential of 20 natural climate pathways



Source: Griscom, et. al. 2017

Figure 3: Potential global contribution of response options to mitigation, adaptation, combating desertification and land degradation, and enhancing food security

Response options based on land management		Mitigation	Adaptation	Desertification	Land Degradation	Food Security	Cost
Agriculture	Increased food productivity	L	M	L	M	H	—
	Agro-forestry	M	M	M	M	L	●
	Improved cropland management	M	L	L	L	L	●●
	Improved livestock management	M	L	L	L	L	●●●
	Agricultural diversification	L	L	L	M	L	●
	Improved grazing land management	M	L	L	L	L	—
	Integrated water management	L	L	L	L	L	●●
	Reduced grassland conversion to cropland	L	—	L	L	L	●
Forests	Forest management	M	L	L	L	L	●●
	Reduced deforestation and forest degradation	H	L	L	L	L	●●
Soils	Increased soil organic carbon content	H	L	M	M	L	●●
	Reduced soil erosion	↔ L	L	M	M	L	●●
	Reduced soil salinization	—	L	L	L	L	●●
	Reduced soil compaction	—	L	—	L	L	●
Other ecosystems	Fire management	M	M	M	M	L	●
	Reduced landslides and natural hazards	L	L	L	L	L	—
	Reduced pollution including acidification	↔ M	M	L	L	L	—
	Restoration & reduced conversion of coastal wetlands	M	L	M	M	↔ L	—
	Restoration & reduced conversion of peatlands	M	—	na	M	L	●

Source: IPCC Climate Change and Land, 2019

In order to prioritize areas and actions, there are several factors that should be considered for each potential action, such as cost, availability of finance, political priorities, co-benefits, and timeline. Based on various prioritization factors, spatial information is crucial for accurately defining and communicating the priority points of intervention to scale-up nature-based solutions. This step summarizes key actions to identify priority regions and nature-based actions to accelerate climate change mitigation and adaptation.

Key Actions

- Compare nature-based solutions pathways with NBS in NDCs and in other national policies.** For this, countries should consider comparing the results of the assessment from Step 4 with a selected menu of NBS actions, for example the NBS pathways identified by Griscom et al. 2017 (seen in Figure 2 above) and/or the 2019 IPCC Special Report on Climate Change and Land (seen in Figure 3 above). These reports present NBS pathways or response options based on land management with various mitigation potential that countries may wish to consider for the implementation of their existing NDC targets and to ideally go beyond those and assume new and more ambitious targets. The objective is to identify new NBS actions to be considered by the country.
- Use national data to estimate the potential of these newly identified NBS actions.** Countries should consider

using their own data, consistent with the methods implemented in previous steps, for estimating the national-level mitigation potential of the 20 pathways addressed by Griscom et al. and the 2019 IPCC Special Report on Climate Change. For each additional action, countries should consider not only the mitigation potential, but also cost, availability of finance, political priorities, co-benefits, and timeline for its implementation. Some of these estimates may have already been included in previous steps. Once the country generates this information, the next step would be to create a visualization of it, like the one offered by the Nature4Climate Carbon Mapper, which can help better inform decision-makers. The most impactful NBS with the greatest mitigation potential and cost-effectiveness can be integrated to enhance their NDC commitments.

a. Tool:

- Rapid analysis of the national NBS mitigation and adaptation potential (step 4)
- [Nature4Climate Carbon Mapper](#)

- Identify national nature-based solutions adaptation and co-benefits potential.** Ideally, countries should estimate their NBS potential for both mitigation and adaptation as well as other co-benefits like contributing to addressing desertification and food security. An in-depth mapping of these benefits would require developing economic valuation of the NBS pathways for

each of these co-benefits. While countries are encouraged to conduct such studies, starting by identifying the ecosystem and socio-economic co-benefits that relate to their country's NBS, then mapping the identified benefits in the country's National Adaptation Plans, Disaster Risk Management Policies and Climate Change Policies. This will allow visualizing the importance of the NBS for the implementation of national adaptation priorities. NBS provide ecosystem and socio-economic co-benefits that contribute to increase resilience and adaptation to climate change impacts. Benefits such as increasing quality and quantity of water, improving soil preservation and fertility, securing good air quality, and increasing ecosystem protection and health, are all part of the potential ecosystem benefits NBS can provide. Qualitative and quantitative data showing the relevance of the NBS for the country will also help policymakers of that nation prioritize actions. Therefore, the task is to identify the possible contributions that each NBS action can offer to moderate risks associated with projected climate change and their potential environmental, social and economic co-benefits..

a. **Tool:**

- i. [Climate Action Impact Tool](#)
- ii. [NDC-SDG Linkage Tool](#)
- iii. [Mapping to support REDD+ planning and secure multiple benefits: toolbox and tutorials for QGIS and ArcGIS](#)

4. **Identify and prioritize NBS hotspots using spatial data to maximize opportunities to protect and restore ecosystems.** Identify priority hotspots for nature-based actions in-country utilizing remote-sensing tools, national monitoring systems including spatial and ground-based data, and community monitoring schemes. Actions could include steps to reintroduce extirpated keystone species; steps to reintroduce key processes such as flooding or fire; steps to increase ecosystem structure and integrity; and steps to restore and plant key native species in priority areas to maximize beneficial activities such as forest restoration (i.e. degraded and slope prone areas, riparian ecosystems, coastal protection zones).

a. **Tools:**

- i. [UN Biodiversity Lab](#)
- ii. [WRI Water Risk Atlas](#)
- iii. [TNC Urban Water Blueprint](#)
- iv. [Spatial analysis: a tool for integrated land use planning for REDD+](#)

Resources

Country's CBD 6NR

[Natural Climate Solutions, Griscom, et. al. 2017](#)





INTEGRATE MEASURABLE NATURE-BASED ACTIONS INTO THE NDC

Description

Once the crosswalk is ready and the nature-based actions with the greatest potential have been identified it is important to define the best way to integrate these into the NDC. NBS actions can be considered as part of countries' long-term strategy and progression of ambition over time via what is commonly referred to as the "ratchet mechanism" of the Paris Agreement. This is both a technical and political decision. Policymakers need adequate information and sound evidence to inform their decisions. The various steps of this Pathway aim to help guide the organization of all the information that will be needed for this critical decision.

While developing this step, it is crucial that the policymakers prioritize the integration of measurable nature-based actions into their NDCs and long-term strategies. Quantifiable indicators are crucial in tracking progress toward achieving the NDC goals. Ideally, all the NBS should have at least one measurable indicator.

Key Actions

1. **Analyze the enhanced NDC to determine the means for its implementation.** It may be very likely that, even when considering existing NBS commitments in other frameworks, the country is not fully realizing its potential. If so, the decision-makers should probably consider increasing NBS ambition further, to fully benefit from the NBS mitigation potential, prioritizing cost-effective, high mitigation potential pathways. It is important to consider the means for the implementation of these commitments. In some cases, countries could already have a budget allocated to these activities and institutions responsible for its implementation. In this case, its inclusion should be very straight forward. In other cases, countries may need to consider potential sources of finance and the capacity of national institutions to undertake new NBS action. It is also important to consider new partnerships with non-governmental organizations and the private sector to enhance the NDC even further.
2. **Introduce measurable indicators.** For the implementation of the Paris Agreement, countries have agreed that in communicating their second and subsequent NDCs, they shall provide the information necessary for clarity, transparency and understanding, and adhere their nationally determined contributions to specific guidelines.¹⁰ The

parties are strongly encouraged to provide this information in relation to their first nationally determined contribution, including when communicating or updating it by 2020. It is crucial that the updated NDCs for both developed and developing countries improve their robustness and level of ambition. That is why measurable actions should be introduced and/or strengthened in the enhanced NDCs and/or the NDC implementation plans, based on scientific evidence, local knowledge and good practices. To develop measurable targets, it is necessary to engage with research bodies and indigenous people and local communities, as co-developed indicators are more realistic, comprehensive and attainable. Monitoring systems can support efforts to develop measurable targets by providing information to establish and/or improve upon current baselines, and inform technical knowledge and target development. Finally, this should also be part of the inter-sectoral dialogue.

a. Tools:

- i. [2006 IPCC Guidelines for National Greenhouse Gas Inventories – AFOLU](#)
 - ii. [Adaptation Support Tool](#)
 - iii. Country's Monitoring Systems (Forests, Biodiversity, Coastal areas, etc.)
 - a. National Forest Monitoring Systems
3. **Inter-sectoral dialogue to define the integration of new goals.** Acknowledging that the definition of NDC goals is mainly derived from political negotiations, the parties involved in the decision-making process should create space for dialogue, including engagement with relevant stakeholders such as local communities and indigenous peoples representatives, in a gender-responsive manner. Some countries have created an inter-sectoral commission to develop NDCs. In such cases, this inter-sectoral dialogue should be conducted by the commission. In cases where the NDC is led by a single institution, an inter-sectoral workshop involving the focal points of the other policies might be the best way of implementing this action. Countries will also have to take advantage of active cross-sectoral and multi-stakeholder platforms that already exist and have been established through previous climate policy processes (i.e. REDD+ stakeholder engagement platforms; Climate Change Intersectoral Committees). Countries should consider the next two actions when conducting the dialogue.

¹⁰ Annex I and II decision 4/CMA1



IMPROVE OR CREATE THE ENABLING CONDITIONS TO SUPPORT INTEGRATION OF NBS IN NDCs

Description

This step entails identification of the main enabling conditions needed to support NBS enhancement or integration into the NDC, including financial and international cooperation, inter-ministerial alignment, the measurement, reporting and verification (MRV) system to track progress, and implementation of NBS long-term.

Key Actions

1. **Elevate the political support and strengthen political will for NDC implementation.** Countries can strengthen political will by aligning and showcasing national actions with international commitments to position themselves as global leaders, showing the potential economic and social benefits that could result from enhanced action, encouraging an all-of-government support by showing efficiency, fostering social and environmental gains of inter-sectoral coordination, and gaining support of key constituencies for nature-based actions.
 2. **Enhance financial and international cooperation to support NBS actions in NDC implementation.** Developing countries have indicated both unconditional and conditional targets in their first NDCs. Even when countries indicated that their NDCs are unconditional, the NDCs in some of those cases state that if more finance were provided, targets could be achieved in shorter time and be further strengthened. Scaling up finance will be essential to scale up NDC ambition in developing countries. These resources should come from various sources, both public and private. It is important to find the means to attract more investments from the private sector, both domestically and internationally, for the achievement of countries' NDCs.
 - a. **Tools:**
 - i. [Toolkit to enhance access to adaptation finance](#)
 - ii. [Readiness for Climate Finance: A framework for understanding what it means to be ready to use climate finance](#)
 - iii. [Blending Climate Finance Through National Climate Funds: A Guidebook for the Design and Establishment of National Funds to Achieve Climate Change Priorities](#)
 3. **Reduce risks for potential investors.** With the aim of attracting more international and private capital for investments in NBS solutions for the implementation of their NDCs, countries should consider measures that reduce the risks for potential investors. One such key investment when it comes to nature-based action, is securing land-rights, with attention to the rights of traditional communities and indigenous people. "Research shows that when IP/LCs have legally recognized and enforceable rights, both deforestation and carbon emissions can be significantly lower compared with areas outside of community forests"¹¹. Recognition of indigenous land rights and the value of traditional knowledge is an essential component of nature-based solutions and an important opportunity to strengthen national climate, biodiversity and desertification ambition. Another important condition to be considered, is to reduce the bureaucracy around investments in the forest sector, promote investments in sustainable forest management and products from biodiversity promoting a forest economy. Investing in strong and transparent MRV systems is another key area for attracting more investments.
 4. **Consolidate the necessary inter-sectoral coordination.** The process of updating the NDC and developing long-term strategies and securing a robust framework for its implementation requires high-level political commitments and a mandate for the different sectors to align and maximize synergies among sectoral plans and strategies. This could be done through renewed efforts of an inter-secretarial commission for climate change, as well as improving inter-secretariat and multi-sectoral communication. In particular, enhancing communication and engagement across the
- iv. [Assessment of Capacities to Implement Policy Outcomes of Investment & Financial Flows Assessment for Key Sectors](#)
 - v. [Guidebook on Policy and Financing Options to Support Green, Low-Emission and Climate-Resilient Development](#)
 - vi. [UNFCCC Climate Finance Data Portal](#)
 - vii. [OECD DAC External Development Finance Statistics](#)
 - viii. [Climate Public Expenditure and Institutional Review \(CPEIR\)](#)

11 http://rightsandresources.org/wp-content/uploads/2016/04/Indigenous-Peoples-and-Local-Community-Tenure-in-the-INDCs-Status-and-Recommendations_RRI_April-2016.pdf

three Rio Conventions on Biodiversity (CBD), Climate Change (UNFCCC) and Desertification (UNCCD) through increased coordination among country convention representatives can support alignment across each convention's commitments and targets to streamline reporting and enhance awareness of the linkages across biodiversity, climate change and desertification.

5. **Ensure that the general NDC governance structure(s) incorporates the NBS goals.** When integrating existing NBS from other frameworks into the NDC, one of the risks is that those NBS goals lack actionability to be implemented. In certain cases, this could be driven by issues with governance over those NBS actions. If this is the case, the enhanced climate ambition would be in jeopardy. Therefore, prior to integrating the new NBS, an evaluation of the governance of the desired NBS pathways or options is appropriate. This will ensure that the enhanced NDC integrates realistic and actionable NBS goals, and thus increases the chances of achieving the new climate ambitions. The recommendation is, then, to identify the gaps in the legal, institutional and budgetary frameworks of the NBS goals that the country wants to integrate to the enhanced NDC.

The enhanced transparency framework established under the Paris Agreement will require national MRV characterized by more systematic data collection and monitoring, which can be considered a core component of the overall NDC governance arrangements. Key capacities include selecting measurable indicators, as mentioned above, and identifying critical data requirements. It will be critical to ensure that NBS integrated into the NDC will be captured in the national MRV approach for tracking NDC progress.

a. **Tools:**

- i. [Environmental governance: A practical framework to guide, design, evaluation, and analysis \(SCB\)](#)
- ii. [Index of Governance and Public Policy in Disaster Risk Management \(IADB\)](#)

- iii. [A Handbook for Integrated Water Resources Management in Basins \(GWP\)](#)

6. **Strengthen stakeholder engagement.** Countries should improve communications with relevant stakeholders to ensure compliance with national plans and regulatory frameworks. Key stakeholder include but are not limited to environment, forests, water, agriculture and land-planning ministries and government agencies; sub-national governments; agriculture and forestry companies and concessions; corporations; academia; NGOs; and indigenous peoples and local communities organizations/representatives.

Resources:

[Climate Action Enhancement Package \(CAEP\)](#)

[C40 Cities Finance Facility \(CFF\)](#)

[Global Environmental Facility](#)

[Green Climate Fund](#)

[Clean Technology Fund \(CTF\)](#)

[The BioCarbon Fund](#)

[Adaptation for Smallholder Agriculture Programme \(ASAP\)](#)

[Adaptation Fund \(AF\)](#)

[The Forest Carbon Partnership Facility \(FCPF\)](#)

[The Forest Investment Program \(FIP\)](#)

[The Amazon Fund](#)

[The Global Climate Change Alliance \(GCCA\)](#)

[The Least Developed Countries Fund \(LDCF\)](#)

[The Partnership for Market Readiness](#)

[Special Climate Change Fund \(SCCF\)](#)

[UN-REDD Programme](#)

[The Indonesia Climate Change Trust Fund \(ICCTF\)](#)





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