

# Joint Submission to the Talanoa Dialogue

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## Natural Climate Solutions

*The Nature Conservancy (TNC), Conservation International (CI), International Union for Conservation of Nature (IUCN), National Wildlife Federation (NWF), Forest Trends, Blue Ventures, Center for Carbon Removal (CCR), and Wildlife Conservation Society (WCS)*



# Question 3: How do we get there?

## Executive Summary

The Nature Conservancy (TNC), Conservation International (CI), International Union for Conservation of Nature (IUCN), National Wildlife Federation (NWF), Forest Trends, Blue Ventures, Center for Carbon Removal (CCR), and Wildlife Conservation Society (WCS) are pleased to submit an input to the Talanoa Dialogue. This submission focuses on the potential for natural climate solutions – including the protection, restoration and sustainable management of terrestrial and coastal ecosystems and landscapes such as forests, grasslands, agricultural lands and wetlands – for climate change mitigation. Nature has an untapped mitigation potential that can offer up to 37 percent of the solution for keeping global temperatures to 2 degrees Celsius or below, making nature essential to achieving climate stability.<sup>1</sup> In addition, natural climate solutions provide essential social and environmental benefits, including clean air and water, sustainable food production, increased habitat for biodiversity, and increased resilience to the impacts of climate change. In the Talanoa spirit of collaboration and action, this submission focuses on the third question of “How do we get there?”, in terms of helping UNFCCC Parties and Non-Party Stakeholders become more aware of, and proactively draw on, these cost-effective natural climate solutions to collectively meet the goals of the Paris Agreement. Natural climate solutions or nature-based solutions for climate change, in addition to unlocking nature’s mitigation potential, are crucial for simultaneously addressing societal challenges, while enhancing resilience of natural and human systems.<sup>2</sup>

Given the inclusive, participatory and transparent approach of the Talanoa Dialogue, this submission reflects on the science and economics of natural climate solutions, with an emphasis on the forest and land sector, to demonstrate the mitigation potential of nature in answering the third question, “How do we get there?” In order to provide straightforward inputs and options on how “Natural Climate Solutions” can contribute so that the global community achieves the goals of the Paris Agreement, this submission includes examples of maximum mitigation potential from the natural solutions pathways for selected countries, to demonstrate the possibilities and potential options for integrating these solutions into more ambitious and implementable Nationally Determined Contributions (NDCs). The submission concludes with two case studies showcasing how such natural solutions can be implemented in practice.

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<sup>1</sup> Griscom, B., et al. (Oct 2017) [Natural Climate Solutions](#). *Proceedings of the National Academy of Sciences*. USA. Vol. 114, 11645–11650. (doi:10.1073/pnas.1710465114)

<sup>2</sup> Nature-based solutions are defined by IUCN as ‘actions to protect, sustainably manage, and restore natural or modified ecosystems, that address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits’, [Resolution 69](#), 2016 IUCN World Conservation Congress, Hawaii, USA.

## The science supporting natural climate solutions

A recently published study in the *Proceedings of the National Academy of Sciences (PNAS)*, “[Natural climate solutions](#),” calculates the scientific and economic potential for terrestrial and coastal ecosystems – forest, grasslands, agricultural lands and wetlands – to serve as a solution to climate change. Natural climate solutions represent proven ways of storing, absorbing and reducing carbon emissions in forests, grasslands and wetlands, and can provide over one-third of the cost-effective climate mitigation needed between now and 2030 to stabilize warming below 2°C.<sup>3</sup> However, many of these ecosystem-based approaches are not fully realized in current Nationally Determined Contributions (NDCs), according to a recent analysis<sup>4</sup> of NDC targets:

*The analysis conducted by IUCN and Climate Focus shows that 77% of NDCs contain references to ambitious and detailed—ongoing or planned—efforts in the forest sector, including forest landscape restoration (FLR),<sup>5</sup> that are relevant for national actions in the context of climate change. Yet, only 74% of NDCs include forest-related targets, and only 20% of those include quantifiable targets corresponding to the forest sector, either under economy-wide or sectoral approaches. Furthermore, when considering those NDCs with forest-relevant elements,<sup>6</sup> only 8% include targets expressed in tons of carbon dioxide equivalent.*

It is evident from this analysis that countries recognize the importance of natural climate solutions; however, the inclusion of nature in NDCs is far below its potential to contribute to global emission reductions. Therefore, there is an immense opportunity to enhance future NDCs by incorporating natural climate solutions to their full potential.

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<sup>3</sup> Griscom, B., et al. (Oct 2017) [Natural Climate Solutions](#). *Proceedings of the National Academy of Sciences*. USA. Vol. 114, 11645–11650. (doi:10.1073/pnas.1710465114)

<sup>4</sup> Climate Focus and International Union for the Conservation of Nature. (2017) The Bonn Challenge and the Paris Agreement: How can forest landscape restoration advance Nationally Determined Contributions? Forest Brief, No. 21. [https://www.iucn.org/sites/dev/files/content/documents/20171213\\_ndcs\\_fbrief.pdf](https://www.iucn.org/sites/dev/files/content/documents/20171213_ndcs_fbrief.pdf)

<sup>5</sup> As the ongoing process of regaining ecological functionality and enhancing human well-being across deforested or degraded forest landscapes. (ibid)

[https://www.iucn.org/sites/dev/files/content/documents/20171213\\_ndcs\\_fbrief.pdf](https://www.iucn.org/sites/dev/files/content/documents/20171213_ndcs_fbrief.pdf)

<sup>6</sup> 127 Nationally Determined Contributions under the Interim NDC Registry and those additional INDCs under the submissions portal.

Furthermore, what makes natural climate solutions compelling is that they can deliver storage and sequestration benefits, while also supporting adaptation to climate change by helping ensure ecosystems, economies and communities are more resilient to unavoidable climate impacts. Moreover, these nature-based interventions also offer other environmental and social co-benefits, such as improved soil quality, cleaner air and water, higher coastal resilience and biodiversity conservation.

It is important to stress and reiterate that the mitigation potential of these ecosystems is one important avenue to achieve the Paris Agreement goals; they should not be seen as a substitute for enhancing efforts to aggressively reduce fossil fuel emissions. Both are needed to successfully meet the goals set out under the Paris Agreement. It is also important that any activities conducted as part of ecosystem-based approaches adhere to environmental and social safeguards, while ensuring environmental integrity. The graphic above was reproduced with permission from PNAS highlighting the need for a combined solution to realize for a less than 2°C pathway.

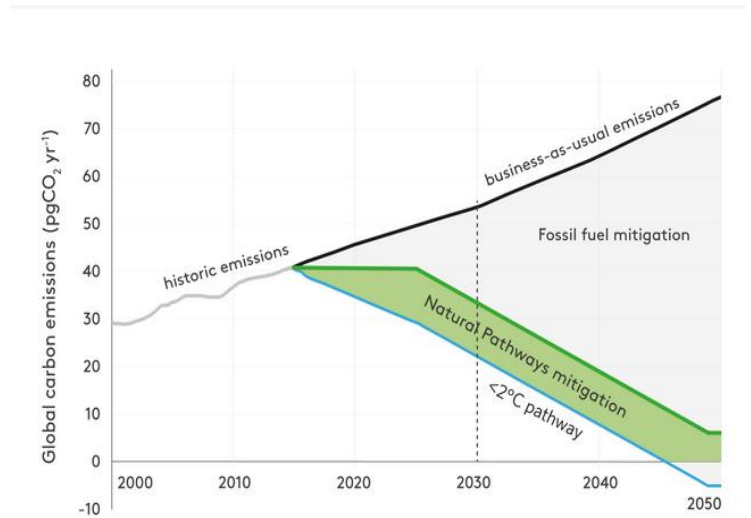


Figure 1: Contribution of natural climate solutions (NCS) to stabilizing warming to below 2 °C. Historical anthropogenic CO<sub>2</sub> emissions before 2016 (gray line) prelude either business-as-usual (representative concentration pathway, scenario 8.5, black line) or a net emissions trajectory needed for >66% likelihood of holding global warming to below 2 °C (green line). The green area shows cost-effective NCS (aggregate of 20 pathways), offering 37% of needed mitigation through 2030, 29% at year 2030, 20% through 2050, and 9% through 2100. This scenario assumes that NCS are ramped up linearly over the next decade to <2 °C levels indicated in Fig. 1 and held at that level (=10.4 PgCO<sub>2</sub> y<sup>-1</sup>, not including other greenhouse gases). It is assumed that fossil fuel emissions are held level over the next decade then decline linearly to reach 7% of current levels by 2050.

## Mitigation potential of ecosystems

The findings from the PNAS study provide straightforward options and examples on how more mitigation can be achieved through 20 specific natural pathways, thus providing a clear indication of the immense potential and opportunity that exists for enhancing future NDCs’ revision and implementation through the incorporation of these measures. These pathways, which concentrate action in three major biomes – forests, wetlands and grasslands – include the following:

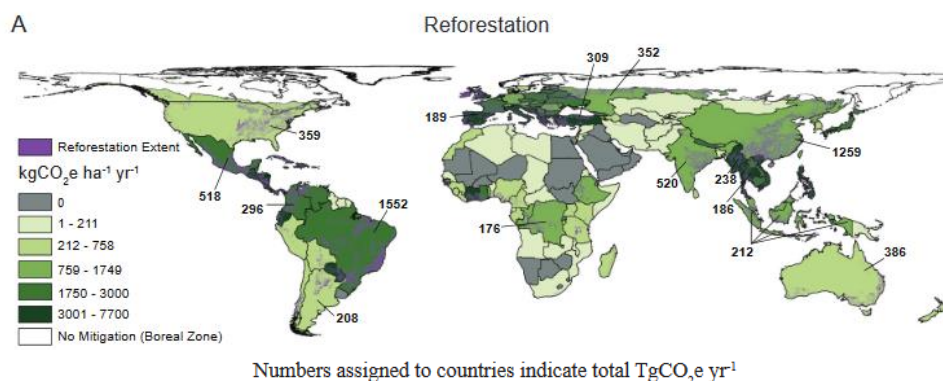
- **Forests:** Avoided Forest Conversion, Reforestation, Natural Forest Management, Improved Plantations, Forest Fire Management, Avoided Fuelwood Harvest
- **Wetlands:** Avoided Coastal Wetland Impacts, Avoided Peatland Impacts, Peatland Restoration, Coastal Wetland Restoration

- **Agricultural Lands and Grasslands:** Avoided Grasslands Conversion, Biochar, Cropland Nutrient Management, Conservation Agriculture, Integration of Trees in Croplands, Improved Rice Cultivation, Optimal Grazing Intensity, Planting Legumes in Pastures, Improved Animal Feed, Animal Management

These biomes include a diversity of land uses, including areas of protection, conservation, productive lands (e.g. agriculture, forestry), and restoration. Below we explore in more detail some examples of how these pathways could be used to help Parties identify opportunities provided by natural climate solutions to enhance their next NDC.

**Forests:** The forest-based natural climate solutions involve reforestation, avoided forest conversion and forest management pathways. The mitigation potential for the reforestation pathway is shown below.<sup>7</sup> The hues indicate mean density of additional mitigation potential (maximum mitigation with safeguards per country or region divided by ice-free land area). Green hues indicate density of sequestration potential, and the numbers in bold indicate total TgCO<sub>2</sub>e yr<sup>-1</sup> for the countries with the largest mitigation potential.

Figure 2: Distribution of mitigation opportunity for the Reforestation pathway



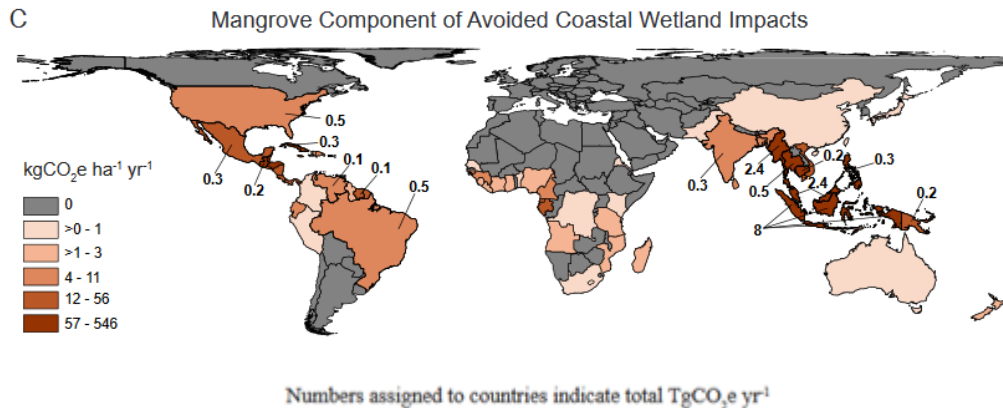
**Wetlands:** ‘Coastal blue carbon’ refers to the carbon sequestered in the soil and biomass of saltmarshes, seagrass meadows and mangrove forests. Conserving and restoring these valuable environments can significantly contribute to carbon mitigation, improve localised shoreline resilience to the impacts of climate change - including ocean acidification, as well as secure people’s livelihoods. 151 countries have at least one blue carbon ecosystem (mangrove forest, saltmarsh, and/or seagrass meadow); according to a 2016 analysis of coastal carbon ecosystems in NDCs,<sup>8</sup> only 28 countries’ NDCs reference coastal carbon ecosystems for mitigation. For example,

<sup>7</sup> Griscom, B., et al. (Oct 2017) [Natural Climate Solutions](#). *Proceedings of the National Academy of Sciences*. USA. Vol. 114, 11645–11650. (doi:10.1073/pnas.1710465114)

<sup>8</sup> Herr, D. and Landis, E. (2016). [Coastal blue carbon ecosystems. Opportunities for Nationally Determined Contributions. Policy Brief](#). Gland, Switzerland: IUCN and Washington, DC, USA: TNC

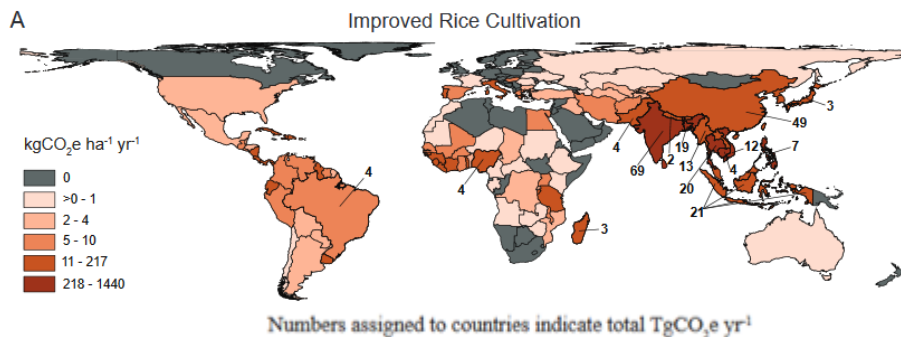
the mitigation potential for the mangroves in the avoided coastal wetlands pathway is shown below. In addition to coastal carbon ecosystems, peatlands make up 3% of the world's lands but store twice the amount of carbon as contained the world's forest biomass.

Figure 3: Distribution of mitigation opportunity for the mangrove component of avoided coastal wetlands pathway



**Agricultural Lands and Grasslands:** The agricultural lands and grasslands pathways offer one-fifth of the total NCS mitigation needed to hold warming below 2°C, while maintaining or increasing food production and soil fertility, based on the interventions from the PNAS study. In the United States, corn- and soy- driven conversion of approximately 3.4 million acres between 2008 and 2012 resulted in 94-186 MMT CO<sub>2</sub> emissions/yr,<sup>9</sup> demonstrating the importance of designing policies that consider environmental safeguards. The mitigation potential of the improved rice cultivation pathway is detailed below as another example.

Figure 4: Distribution of mitigation opportunity for the Improved Rice Cultivation pathway



<sup>9</sup> Lark, T.J., J.M. Salmon, and H.K. Gibbs. 2015. [Cropland expansion outpaces agricultural and biofuel policies in the United States](#). *Environmental Research Letters*, 10(4).

## Examples of collaboration to scale up action

To fully answer “How do we get there,” we recognize the important need to combine the science of natural climate solutions with the power of collective action and partnerships. Collaboration between civil society organizations, together with national governments and the private sector is essential to coordinate action and achieve the enhanced ambition needed to meet the goals of the Paris Agreement.

- The [Global Mangrove Alliance](#) is a partnership of civil society organizations (TNC, IUCN, Conservation International, Wetlands International and WWF) with support from governments working to accelerate a global approach to mangrove conservation and restoration at scale.
- The [Blue Carbon Initiative](#) is a global program working to mitigate climate change through the restoration and sustainable use of coastal and marine ecosystems. The Initiative currently focuses on mangroves, tidal marshes and seagrasses. The Blue Carbon Initiative brings together governments, research institutions, non-governmental organizations and communities from around the world. The Initiative is coordinated by Conservation International, IUCN, and the Intergovernmental Oceanographic Commission of the United Nations Educational, Scientific, and Cultural Organization (IOC-UNESCO).
- The [Bonn Challenge](#), a multi-partner effort launched by IUCN and the Government of Germany in 2011, is a global effort that harnesses the potential of natural climate solutions through forest landscape restoration, aiming to bring 150 million hectares of degraded and deforested land into restoration by 2020 and 350 million hectares by 2030. To date, 38 countries, 4 subnational jurisdictions, one company, and two public-private partnership have pledged to bring over 156 million of degraded and undermanaged hectares into restoration.<sup>10</sup> Over 36 jurisdictions in 26 countries<sup>11</sup> have been equipped with critical understanding on forces driving forest loss and degradation and identified strategic interventions for designing and implementing coherent and integrated land use policies through natural climate solutions.
- The [Nature4Climate partnership](#) was formed by TNC, Conservation International, World Resources Institute, Woods Hole Research Centre, WWF, and UNDP to show how natural climate solutions are cost-effective, practical and vital to achieving the global goals on climate change. These partnerships allow development of the scientific research and practical tools needed to successfully implement natural climate solutions in critical ecosystems around the world.

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<sup>10</sup> Kroeger, A., Garcia-Espinosa, M., Premachandra, P. New York Declaration on Forests, 2017 Assessment Report Goal 5. 2017, Climate Focus and IUCN. [http://forestdeclaration.org/goal/goal-5/#\\_ftn6](http://forestdeclaration.org/goal/goal-5/#_ftn6)

<sup>11</sup> Through the application of the Restoration Opportunities Assessment Methodology. Bonn Challenge and the Paris Agreement: How can forest landscape restoration advance Nationally Determined Contributions. 2017, IUCN and Climate Focus. [https://www.iucn.org/sites/dev/files/content/documents/20171213\\_ndcs\\_fbriief.pdf](https://www.iucn.org/sites/dev/files/content/documents/20171213_ndcs_fbriief.pdf)

## **Example of lessons learned from existing experience**

This submission will highlight two case studies that detail the lessons learned based on experience and progress so far in addressing the potential of natural climate solutions.

### **Case Study #1:**

## **Zero Deforestation by 2030 in Mexico's Yucatan Peninsula**

After the Amazon, Mesoamerica's Maya Forest is the largest remaining tropical rainforest in the Americas. The 35 million-acre forest stretches across Belize, northern Guatemala, and Mexico's Yucatan Peninsula. Its extensive and diverse forests provide refuge for iconic and endangered species such as the jaguar, white lipped peccary, tapir, scarlet macaw, harpy eagle and howler monkey. Over 70% of the region's forests are owned by ejidos, or local communities, making them key actors in land-use dynamics.

Throughout the Yucatan Peninsula, many ejidos continue to focus on diversified, community-based agricultural systems which are compatible with forest conservation. This system is facing increasing pressures – the Yucatan Peninsula is one of the highest risk places for habitat conversion in the country. Traditional practices often generate low income and therefore poverty is still prevalent in rural areas. Subsidies that promote forest conversion make resisting these pressures even more difficult. Clearing forests is still seen as the main path to economic well-being and this dynamic has made the Yucatan Peninsula one of the main deforestation hot spots in the country. Extensive ranching and agriculture are by far the biggest drivers of land use change. In the Peninsula, 50% of deforestation is caused by ranching and another 34% is caused by agriculture.<sup>12</sup>

Mexico is taking important steps to break this cycle, having passed a forward-looking climate change law with bold commitments to reduce carbon emissions and deforestation. The law aims to reduce emissions by 30% by 2020 and 50% by 2050 as well as reach zero deforestation by 2030. Momentum is high to reduce emissions and transform the development pathway toward a more sustainable model that relies on diverse, well-managed community systems and intensified production in targeted areas.

To support these goals, the three states of the Yucatan Peninsula (Yucatan, Campeche, and Quintana Roo) signed an agreement in December 2010, committing to work together on a regional approach to climate change. This agreement includes commitments to jointly develop public policies related to climate change, create a regional REDD+ strategy, undertake a regional approach to carbon accounting, and to create a regional fund for climate change. This political commitment provides an important foundation for a regional initiative to reduce emissions from deforestation and forest degradation and support reforestation (REDD+).<sup>13</sup>

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<sup>12</sup> Alianza Mexico REDD+ - CITRO, 2015.

<sup>13</sup> [REDD+ National System: A Boost to Sustainable Rural Development](#)



## Case Study #2:

### Community Mangrove Conservation in Madagascar

Mangrove forests are invaluable to the locals in Madagascar. For the people who live near the Bay of Assassins on the southwest coast of Madagascar, mangroves are life. Mangroves provide food to eat, lumber for houses, jobs for local residents, especially women, and protection from storm surge and sea-level rise. But at the same time, mangroves are being lost to deforestation and degradation at alarming rates. “If this value can be realized and transferred to the people whose livelihoods depend on the exploitation of mangroves, this benefit has the potential to be an incentive for sustainable, locally-led mangrove management,” says Lalao Aigrette, project coordinator for the non-profit, Blue Ventures.

[Blue Ventures](#), in partnership with the local management association, is developing a mangrove carbon project in the Bay of Assassins called Tahiry Honko, which means “preserving mangroves for sustainable use for future generations.” The project promotes reforestation, and the creation of mangrove protected areas, along with improved regulations to ensure sustainable use. Importantly, it generates income for the local community that isn’t based on the exploitation of mangroves.

Women’s associations and the youth of the community are central to the project. Women are trained to participate in the carbon monitoring activities, as well as reforestation, and robust youth programs insure that everyone understands the importance of mangroves for future generations. These groups are building scientific and technical capacity to account for the amount of carbon stored in Madagascar’s mangrove forests. The financial benefits from the sale of carbon credits through [Plan Vivo](#) will benefit the entire community and will go toward funding much needed community infrastructure like schools, wells and solar electricity. By engaging local management associations in project planning, management and monitoring, safeguards are being put in place to ensure coastal communities participate meaningfully in blue carbon and gain an equitable share of the benefits.

More case studies can be found at <https://global.nature.org/initiatives/natural-climate-solutions/ncs-case-studies>