



PBL Netherlands Environmental  
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# GOALS AND COMMITMENTS FOR THE RESTORATION DECADE

A GLOBAL OVERVIEW OF COUNTRIES' RESTORATION  
COMMITMENTS UNDER THE RIO CONVENTIONS AND OTHER  
PLEDGES

*Annelies Sewell, Stefan van der Esch and Hannah Löwenhardt*

Policy Brief

PBL



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### **Goals and Commitments for the Restoration Decade**

A global overview of countries' restoration commitments under the Rio Conventions and other pledges

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# Summary

## ***The multiple benefits of restoration, from local to global scales, are reflected in the array of global and regional goals for restoration***

The year 2021 will see the kick-off of the United Nations Decade on Ecosystem Restoration — a culmination of growing global attention, agreements and ambitions for restoration and improved land management. Measures that help to restore land and improve its management can offer multiple benefits to society simultaneously — contributing to food and water security, and helping to address biodiversity loss and mitigate and adapt to climate change. This diversity of benefits has resulted in restoration commitments submitted by countries across international conventions on climate, biodiversity and desertification and voluntary initiatives, such as the Bonn Challenge.

## ***Quantitative commitments on restoration under the Rio Conventions and the Bonn Challenge have been submitted by 115 countries***

The total global ambitions on restoration can be aggregated from the array of commitments countries have made under different conventions and goals. In total, 115 countries have put forward quantitative, area-based commitments to at least one of the three Rio Conventions (the CBD, UNCCD, UNFCCC) or to the Bonn Challenge. Many countries have provided commitments to more than one of these, many of which differing in size or type of restoration measures. Hence, the need to bring them together to take stock of the total global commitments.

## ***The total of all restoration commitments by countries is close to 1 billion hectares, almost half of which are in Sub-Saharan Africa***

The middle estimate in this policy brief totals close to 1 billion hectares (estimate range 765–1 billion hectares under various assumptions). This is significant, compared to current land use (4.7 billion ha cropland and grazing land), projections of land-use change (0.5 billion ha are expected to be converted into agriculture between 2010 and 2050), and estimates of land degradation (0.9 to 1.1 billion ha showing declining trends in productivity). Almost half of the restoration commitments are found in Sub-Saharan Africa, followed by Central and South America, China and South Asia. Relatively few commitments have been made by countries in North America, Europe, Russia, Central Asia, the Middle East and North Africa. The commitments appear roughly balanced between planned measures that focus on restoration and protection of natural areas, and on management and rehabilitation of agricultural and forestry areas.

***Efforts are required to improve the alignment, measurability and geographic specificity of commitments***

National plans, in general, do not appear to be aligned between conventions when it comes to quantitative restoration commitments. Improvement, here, could enhance planning and implementation. Also, many countries have additional qualitative commitments for restoration that lack specificity and are difficult to measure and, thus, to evaluate or monitor. Commitments need to be measurable, geographically specific and transparent to create realistic targets and to help monitor progress, as well as provide transparency to land users. Differences in reporting styles also pose a challenge for comparing restoration commitments and progress on restoration within and between countries and conventions.

***Opportunities to move from commitments to implementation***

At the onset of the UN Decade on Ecosystem Restoration in 2021, the plans and commitments are there, but how and to what extent these national plans and commitments will be implemented over the coming decade remains to be seen. The country commitments, and the overview presented here, could be used as a benchmark for evaluating implementation and reporting progress against existing commitments. There are upcoming opportunities to develop better alignment between restoration commitments under the different conventions and the Bonn Challenge, including new national plan cycles in, for instance, the CBD or UNFCCC, as well as the new restoration monitoring framework led by the FAO.

# 1 Global goals for restoration

There is increased political and scientific attention for land and ecosystem restoration, and 2021 will see the start of the UN Decade on Ecosystem Restoration. This attention comes from the multiple benefits that restoration provides and has translated into a large number of countries setting restoration goals and commitments under different UN Conventions and other initiatives (Chapter 1). This policy brief provides an inventory of these national commitments and provides an estimate of the total current global restoration ambition level, where these commitments are located, geographically, and what they entail (Chapter 2). Finally, Chapter 3 provides insights into where and how to improve future national plans for restoration.

## 1.1 Restoration is seeing increased attention from multiple angles

### ***There is increasing global attention and ambition for restoration of land and ecosystems.***

There is an increasing attention for the possible role of ecosystem restoration, including improved land management, in realising global sustainability ambitions (Suding et al., 2015; Chazdon et al., 2017). These ambitions are expressed in the goals and targets of the UN Convention to Combat Desertification, the UN Convention on Biological Diversity, and the UN Framework Convention on Climate Change. These three conventions are the Rio Conventions, agreed at the Earth Summit in Rio de Janeiro in June 1992. Restoration ambitions are also included in the Sustainable Development Goals (SDGs), and in various other international and regional agreements and initiatives.

The increased attention for restoration follows a number of high-level reports that highlight the extent and impact of climate change, land degradation and biodiversity loss. This is exemplified by the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) Land Degradation and Restoration Assessment (2018), the Intergovernmental Panel on Climate Change (IPCC) Special Report on Climate Change and Land (2019), and the first edition of the Global Land Outlook by the United Nations Convention to Combat Desertification (UNCCD) (2017), as well as much-discussed journal articles on reforestation potential and the role of nature-based solutions in tackling climate change (Bastin et al., 2019; Griscom et al., 2017; Roe et al., 2019; Strassburg et al., 2019).

Furthermore, a number of initiatives have arisen to build knowledge networks and capacity development, such as the Global Partnership on Forest and Landscape Restoration (2003), the Bonn Challenge (2011) and New York Declaration on Forests (2014). Most recently, the United Nations (UN) has declared the years between 2021 and 2030 as the UN Decade on Ecosystem Restoration, jointly led by the Food and Agriculture Organization of the United Nations (FAO) and United Nations Environment Programme (UNEP), supported by collaborating agencies including the three Rio Conventions, other international conventions, and regional partners including the International Union for Conservation of Nature (IUCN).

***Restoration encompasses the improvement of natural ecosystems as well as the rehabilitation of lands under human use***

Land and ecosystem restoration covers the full or partial restoration of an ecosystem. An area that has scope for restoration can be fully restored to its natural state, or be rehabilitated to serve a specific land use. Areas do not have to be abandoned for them to have a certain restoration potential. Agricultural areas that are still in use but have suffered from erosion or other degradation processes may also have scope for restoration. There is, therefore, a clear link between restoration and land management. Improved land management, or sustainable land management, can reduce or avoid degradation processes and, over time, lead to ecosystem recovery. For instance, applying grazing management may help grasslands and their soils to recover from overgrazing and erosion.

Central to discussions on restoration and degradation, and the potential contribution of restoration to global sustainability ambitions, are changes to ecosystem functions. These functions include the ability to regulate water, nutrients and produce biomass and are themselves dependent on the biological diversity and condition of the ecosystem. Changes to ecosystem functions can be intentional; for instance, when a natural system is converted into an agricultural system, or changes unintentionally, and some functions can increase while others decrease (Van der Esch et al., 2017; IPBES, 2018). Restoration is about increasing ecosystem functions where possible, generally, without reducing other functions.

Restoration, thus, covers efforts aimed at restoring ecosystems to their natural state and also rehabilitating and improving systems that are under human use and management. This policy brief uses 'restoration' to encompass all these degrees of restoration. Data presented in Chapter 2 are broken down into 'restoration and protection' for natural areas and 'management and rehabilitation' for used areas, as well as in more specific categories of restoration measures.

***Restoration can offer multiple benefits simultaneously***

Restoration and improved land management are recognised as cross-cutting instruments for the Rio Conventions (Rio Conventions, 2012) and sustainable development (Navarro et al., 2017). They can simultaneously contribute to the goals of all three conventions on biodiversity, desertification and land degradation and climate change (IPBES, 2018) and can have significant co-benefits for nearly all the SDGs, though these may occur on different

temporal scales and also feature trade-offs (IRP,2019). This high level of synergy across goals and targets makes restoration attractive in an era where trade-offs and difficult choices are becoming increasingly clear. Harnessing such synergies could aid development of integrated frameworks of restoration measures, policy alignment and cost-effective action (Akhtar-Schuster et al., 2017).

For example, conservation, restoration and improved land management efforts have the potential to benefit climate change mitigation in various ways, such as by increasing terrestrial carbon storage (IPBES 2018; Griscom et al., 2017; Strassburg et al., 2019) and climate change adaptation, by increasing ecosystem resilience to natural and climate change-related hazards, such as flash floods and landslides (Sanz et al., 2017). Furthermore, improved soil quality supports resilience and adaptation to climate change and extreme weather events, such as flooding and drought (Abhilash et al., 2016; Edrisi and Abhilash, 2016; Dubey et al., 2019).

Restoration can provide co-benefits for food security by safeguarding ecosystem services, such as soil protection, pollination, nutrient cycling and soil water-holding capacity, which are crucial for both short- and long-term agricultural productivity (Foley et al., 2011; Tilman et al., 2011; Bommarco et al., 2013; Bossio et al., 2010; Stavi et al., 2015; Tripathi et al., 2017), as well as biodiversity benefits including avoided species extinctions (Strassburg et al., 2019). Strategic planning can help to achieve multiple benefits and to avoid trade-offs between conservation and food security needs, in both the short and the long term, such as when land is taken out of production for restoration purposes (Dudley et al., 2005; IRP, 2019).

Healthy and productive landscapes and the benefits they provide can address further human security concerns, such as regarding employment, health, and education, while providing other socio-economic conditions that foster peace (Abhilash et al., 2016; IRP, 2019; Lonergan, 2012). For example, restoration and more secure land tenure can help to support food and livelihood security and economic diversification beyond agricultural livelihoods, thereby contributing to more stable environments (Mach et al., 2019).

## 1.2 Global and regional goals on restoration

***The multiple benefits of restoration, from local to global scales, are reflected in the array of global and regional goals for restoration***

The number of agreements and initiatives that include goals or objectives on restoration and improved land management is growing. The crowded playing field includes multilateral environmental agreements (MEAs) and multi-actor initiatives by public, private and civil society actors. Table 1.1 provides an overview of international and large regional agreements and initiatives.

### ***Multilateral environmental agreements (MEAs)***

Several multilateral environmental agreements (MEAs) include goals or objectives on restoration, at the international level. These goals are found across a spectrum of conventions with different environmental and sustainability ambitions, including the three Rio Conventions (UNFCCC, CBD, UNCCD) on climate change, biodiversity loss, desertification and land degradation, the Ramsar Convention on Wetlands, the Sendai Framework for Disaster Risk Reduction and the UN Forum on Forests (UNFF). Links to restoration are also found within the Sustainable Development Goals (SDGs) including in particular SDG 2 (Zero hunger), SDG 6 (clean water and sanitation), SDG 13 (climate action) and SDG 15 (life on land).

### ***Multi-actor initiatives for restoration***

There are many other ambitions for restoration, more hybrid in nature than their MEA counterparts, among public, private and civil society actors, not only at the international level but also regionally. They include initiatives centred around tree planting (1 Trillion Trees Campaign), soil restoration (4 for 1000) and forest and landscape restoration that aim to address climate change, human-well-being and biodiversity loss by restoring landscapes (Bonn Challenge and the New York Declaration on Forests). These initiatives were intended as a means to implement existing international commitments at national and regional levels and be more accessible to a wide range of public and private actors. Within the Bonn Challenge, the majority of voluntary commitments for action are made by national governments or national regions, and very seldom by private companies or other non-state actors. The New York Declaration on Forests, on the other hand, is a political declaration and a partnership of governments, multinational companies, civil society, indigenous peoples and local communities. However, while the declaration was signed by 190 organisations (including 57 trans-national companies), few have submitted official commitments on these platforms with respect to land restoration (Jopke and Schoneveld, 2018).

Table 1.1

**Agreements and initiatives with goals or objectives addressing restoration and improved land management**

Category	Agreement or initiative	Goals or objectives
Multilateral	<b>Paris Agreement (UNFCCC)</b>	Reporting on mitigation activities including agriculture, forestry and other land use (AFOLU) (Article 4; NDCs), conserve and enhance forest carbon stocks through sustainable management of forests (Article 5; REDD+) and enhance adaptive capacity, strengthen resilience and reduce vulnerability to climate change (Article 7.1; climate adaptation).
	<b>Aichi Biodiversity Targets (CBD)</b>	Halve the rate of loss of forests, ensure at least 17% of terrestrial areas are conserved through effectively and equitably managed protected areas or comparable approaches, restore at least 15% of degraded ecosystems, enhance resilience and contribution of biodiversity to carbon stocks, sustainably manage productive areas to also conserve biodiversity, and conserve and restore ecosystem services. Targets 2, 5, 7, 11, 14 & 15 primarily, though there are others that link more indirectly.
	<b>Achieving Land Degradation Neutrality (LDN) (UNCCD)</b>	By 2030, combat desertification, restore degraded land and soil, including land affected by desertification, drought and flooding, and strive to achieve a land degradation-neutral world. Aligns with SDG target 15.3, using the indicator 'Proportion of land that is degraded over total land area'.
	<b>Sustainable Development Goals (SDGs)</b>	SDG Targets 2.4, 6.6, 13.1, 15.1, 15.2, 15.3, 15.4, 15.5, 15.7. Covering: conservation and restoration of ecosystems, land degradation neutrality, halting loss of biodiversity, sustainable land management, resilience and climate adaptation, and sustainable management of natural resources.
	<b>UN strategic plan for forests 2030 (UNFF)</b>	Six Global Forest Goals including sustainable forest management, halt deforestation and forest degradation, including: a three percent increase (120 million hectares) in forest area worldwide, by 2030.
	<b>EU Green Deal/ Biodiversity Strategy</b>	Protecting 30% of land in Europe, increasing organic farming and biodiversity-rich landscapes, halting or reversing the decline of pollinators, planting 3 billion trees by 2030, restoring 25000 km of rivers and reducing the use and risk of pesticides by 50%, by 2030.
	<b>Ramsar Convention on Wetlands</b>	Four goals, addressing drivers of degradation and loss of wetlands; effectively conserving and wisely using wetlands.
	<b>Sendai Framework for Disaster Risk Reduction</b>	Seven global targets that aim to substantially reduce disaster risk and losses in lives, livelihoods and health and in the economic, physical, social, cultural and environmental assets of persons, businesses, communities and countries, for example through ecosystem-based adaptation.

Category	Agreement or initiative	Goals or objectives
Multi-actor, international	<b>The Bonn Challenge</b>	Restore 150 million hectares of the world's deforested and degraded lands by 2020 and extended by 200 million ha by the New York Declaration on Forests to 350 million hectares, by 2030.
	<b>New York Declaration on Forests</b>	Reducing and halting deforestation by 2030, restoring degraded landscapes and forest lands (adding 200 million hectares by 2030 to the initial 150 million hectares of Bonn Challenge goal, see Bonn Challenge above), reducing emissions from deforestation and degradation and strengthening forest governance.
	<b>1 Trillion Trees Campaign</b>	Restore and conserve 1 trillion trees globally, by 2030, to restore biodiversity and address climate change.
	<b>Ark 2030</b>	Restore and regenerate 500 million hectares of land across five critical landscapes, worldwide,
	<b>4 for 1,000</b>	Increase soil carbon stocks by 0.4% per year, in the first 30-40 cm of soil, up to 2050.
Multi-actor, regional	<b>AFR100</b>	Bring 100 million hectares of degraded and deforested land in Africa into restoration, by 2030.
	<b>Great Green Wall</b>	By 2030, restore 100 million hectares of currently degraded land, sequester 250 million tonnes of carbon and create 10 million jobs in rural areas,
	<b>ECCA30</b>	Building on the Astana Resolution (2018) to bring 30 million hectares of degraded and deforested land in Europe, the Caucasus and Central Asia into restoration, by 2030.
	<b>Initiative 20x20</b>	Restoration initiative in Latin America and the Caribbean to bring 20 million hectares of deforested and degraded land into restoration, by 2020.
	<b>Agadir Declaration</b>	Restoration initiative in the Mediterranean region by Silva Mediterranea to restore 8 million ha of degraded and deforested land, by 2030, endorsed by 10 countries.
	<b>Regreening Africa</b>	Reverse land degradation among 500,000 households on 1 million hectares, by 2022, in eight countries in Sub-Saharan Africa: Ethiopia, Ghana, Kenya, Mali, Niger, Rwanda, Senegal and Somalia.
	<b>1000 landscapes</b>	Achieve regenerative landscape and livelihood ambitions in 1000 landscapes for 1 billion people by linking currently fragmented efforts, building capacities and unlocking investment finance, by 2030.

# 2 Current restoration commitments

## 2.1 The size of current commitments under the Rio Conventions and the Bonn Challenge

### ***Countries have submitted commitments on restoration to the three Rio Conventions and the Bonn Challenge***

Both qualitative and quantitative voluntary country commitments related to restoration are published in the national plans, or as voluntary commitments that countries submit to the Rio Conventions, or via the Bonn Challenge or related initiatives. In general, the commitments are to be achieved between 2020 and 2030, and, in a small number of cases, by 2040. All the quantitative commitments, publicly available as of August 2020, have been collected and categorised in the Global Restoration Commitments (GRC) database (see Box 2.1), for all countries that have submitted restoration plans or commitments under at least one of the conventions or the Bonn Challenge. Table 2.1 provides an overview of the global agreements and initiatives with underlying country commitments included in the analysis.

Table 2.1

**Overview of global agreements and initiatives that address restoration and improved land management, with underlying commitments included in the GRC database**

Rio Conventions	
UNCCD - Land Degradation Neutrality	<p>In 2015, at the 12th session of the Conference of Parties (COP.12) to the UNCCD, the Parties endorsed SDG Target 15.3, which includes the concept of land degradation neutrality (LDN), as a strong vehicle for driving the implementation of the Convention. Alongside this, all national Parties were invited to formulate national voluntary targets to achieve LDN.</p> <p>The UNCCD defines Land Degradation Neutrality (LDN) as ‘a state whereby the amount and quality of land resources necessary to support ecosystem functions and services and enhance food security remain stable or increase within specified temporal and spatial scales and ecosystems’ (Global Mechanism of the UNCCD and CBD, 2019). LDN is an integral part of SDG Target 15.3, which aims to ‘combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land degradation-neutral world’, by 2030.</p> <p>LDN encourages countries to adopt a broad range of measures to avoid or reduce land degradation through appropriate planning, regulation and sustainable land management practices, combined with localised action to reverse past degradation, through land restoration and rehabilitation, to achieve a state of no net loss of healthy and productive land.</p> <p>Through the Land Degradation Neutrality Target Setting Programme, the Global Mechanism (GM) and the secretariat of the UNCCD, in collaboration with multiple international partners, are supporting interested countries with their national LDN target-setting process, including setting national baselines, targets and associated measures to achieve LDN.</p> <p>LDN is part of the UNCCD Strategic Framework (2018–2030). Countries deliver National Action Programmes (NAPs), as well as regional and sub-regional plans.</p>
CBD – Aichi Biodiversity Targets	<p>Aichi Biodiversity Targets 5, 7, 11, 14, 15 (under the Strategic Plan for Biodiversity 2011–2020) are most relevant for restoration, They include halving the rate of loss of forests, ensuring at least 17% of terrestrial areas are conserved through effectively and equitably managed protected areas or comparable approaches, restoring at least 15 of degraded ecosystems, enhancing resilience and contribution of biodiversity to carbon stocks, sustainably managing productive areas to also conserve biodiversity, and conserving and restoring ecosystem services. New objectives are being formulated to succeed the Aichi Biodiversity Targets for the post-2020 Global Biodiversity Framework. Countries submit their plans to achieve targets via National Biodiversity Strategic Action Plans (NBSAPs).</p>

Rio Conventions	
UNFCCC – Paris Agreement	<p>The Paris Agreement (2015), focused on undertaking ambitious efforts to combat climate change and adapt to its effects, has 2 goals relevant to restoration:</p> <ul style="list-style-type: none"> <li>• Article 4 (AFOLU and NDCs): Reporting on mitigation activities including agriculture, forestry and other land use (AFOLU).</li> <li>• Article 5 (carbon sinks and REDD+): ‘Parties should take action to conserve and enhance, as appropriate, sinks and reservoirs of greenhouse gases’. Including REDD+: ‘reducing emissions from deforestation and forest degradation, and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks’. The REDD+ mechanism contributes directly to achieving SDGs 13 and 15, which address climate change, reducing deforestation and sustainable use of ecosystems.</li> <li>• Article 7.1 (climate adaptation): ‘enhancing adaptive capacity, strengthening resilience and reducing vulnerability to climate change, with the view to contributing to sustainable development and ensuring adequate adaptation response in the context of the temperature goal’ (UNFCCC, 2015).</li> </ul>
Bonn Challenge and associated regional initiatives	
The Bonn Challenge (global)	<p>The Bonn Challenge is a voluntary, non-binding, global initiative launched to advance the restoration movement and in recognition of the importance of forest landscape restoration for meeting national priorities and international commitments (Dave et al., 2017). Launched in 2011, it is the largest action-oriented platform for forest and landscape restoration and has been recognised as a key driver in mobilising restoration ambition and actions across diverse ecosystems and landscapes (IUCN, 2017). It is intended as an implementation vehicle for domestic restoration priorities while simultaneously contributing to the achievement of many existing international commitments, including the SDGs, CBD Aichi Target 15, the UNFCCC REDD+ goal, and the UNCCD land degradation neutrality goal. The goal is to restore 150 million hectares of the world’s deforested and degraded lands by 2020, and 350 million hectares, by 2030.</p>
ECCA30 (regional)	<p>ECCA30 seeks to bring 30 million hectares of degraded and deforested land in Europe, the Caucasus and Central Asia (ECCA) into restoration, by 2030. ECCA30 is the most recent regional contribution to the Bonn Challenge, though it builds on the earlier Astana Resolution. It is a regional initiative to secure additional regional commitments and accelerate the implementation of the Bonn Challenge, Land Degradation Neutrality and land and forest-based targets towards achieving the objectives of the Paris Agreement. It will facilitate access to technical and financial support, and reinforce regional cooperation and capacity exchange on forest landscape restoration (FLR). Further, it will help countries receive international and regional recognition for their restoration ambitions connected to their domestic priorities and projects (Bonn Challenge, 2020).</p>
Initiative 20x20 (regional)	<p>The Initiative 20x20 is a country-led effort in Latin America and the Caribbean to bring 20 million hectares of deforested and degraded land into restoration, by 2020. Launched at UNFCCC COP 20 in Lima, it supports the Bonn Challenge and NYDF. 17 countries and 3 regional programs have committed to begin restoring more than 50 million ha of degraded land. It is supported by 40 technical institutions and a coalition of impact investors and private funds (Initiative 20x20, 2020).</p>
AFR100 (regional)	<p>The African Forest Landscape Restoration Initiative (AFR100) is a country-led effort to bring 100 million hectares of degraded and deforested land in Africa into restoration, by 2030. It aims to accelerate restoration to enhance food security, increase climate change resilience and mitigation, combat rural poverty, and restore deforested and degraded land. AFR100 contributes to the Bonn Challenge, the African Resilient Landscapes Initiative (ARLI), the African Union Agenda 2063, the Sustainable Development Goals and other targets (AFR100, 2020)</p>

***The global total of country restoration commitments ranges between 765 million and 1 billion hectares***

Adding up all the country commitments that have been submitted under the Rio Conventions and the Bonn Challenge or related regional initiatives provides a total global range of commitments from 765 million to 1 billion hectares<sup>1</sup>, to be restored or undergoing restoration by 2030 (Figure 2.1). This covers commitments for a total of 115 countries. The low, middle and high total estimates, and the closeness of the middle and high estimates (Figure 2.1) are the result of different assumptions on how country commitments overlap between the various Conventions and/or the Bonn Challenge, or across restoration categories (see Table 2.2). These figures are most likely an underestimate of the total current restoration plans, given that some conventions, ambitions, and regional and national plans are not included (see Box 2.1) but are likely to represent the bulk of current commitments, globally.

Through the Land Degradation Neutrality national voluntary target-setting programme, countries committed to restoring about 450 million hectares, across various forms of land restoration, according to national needs and circumstances. In the Nationally Determined Contributions to the UNFCCC, about 250 million hectares are committed, and in the National Biodiversity Strategic Action Plans under the CBD, some 90 million hectares are committed. The current commitments under the Bonn Challenge and associated regional initiatives add up to some 210 million hectares.

The assumptions behind the total range of estimates in Figure 2.1 are explained in Table 2.2. In an effort to address uncertainty behind the overlap between the various commitments and sources, a high, low and middle estimate are expressed.

Table 2.2

**Total range of estimates**

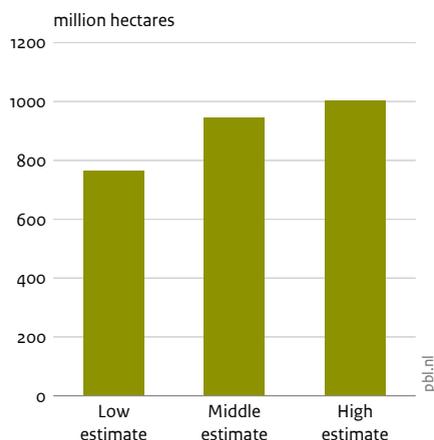
Name	Description	Assumption	Total (ha)
High estimate	All targets added up and combined per country	Assumes no overlap: each target is additional to the others	1,002,118,074
Middle estimate	Only the highest target (between sources) per restoration measure category, per country	Assumes some overlap: that other sources with a smaller target for the same restoration measure are included in the highest estimate of another source	946,844,114
Low estimate	Only the single highest commitment between all sources, per country, regardless of measure	Assumes high overlap: all other smaller commitments from other sources are included	765,472,331

<sup>1</sup> One billion hectares compares roughly to the size of Canada, the United States or China.

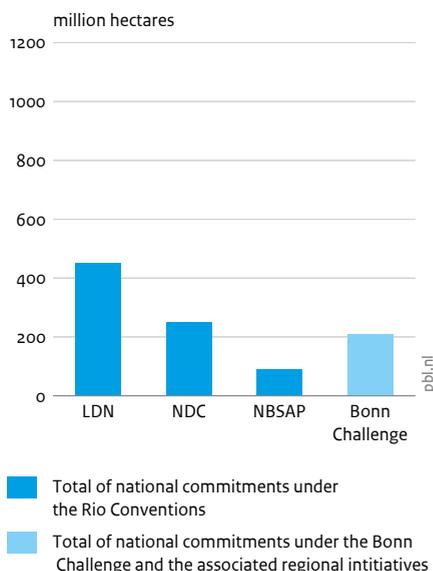
Figure 2.1

## Global restoration commitments, 2020

Total estimate range



High estimate per data source



Source: UNCCD, UNFCCC, CBD, Bonn Challenge; collected and adapted by PBL for Global Restoration Commitments database, August 2020

## 2.2 The geographic distribution of restoration commitments

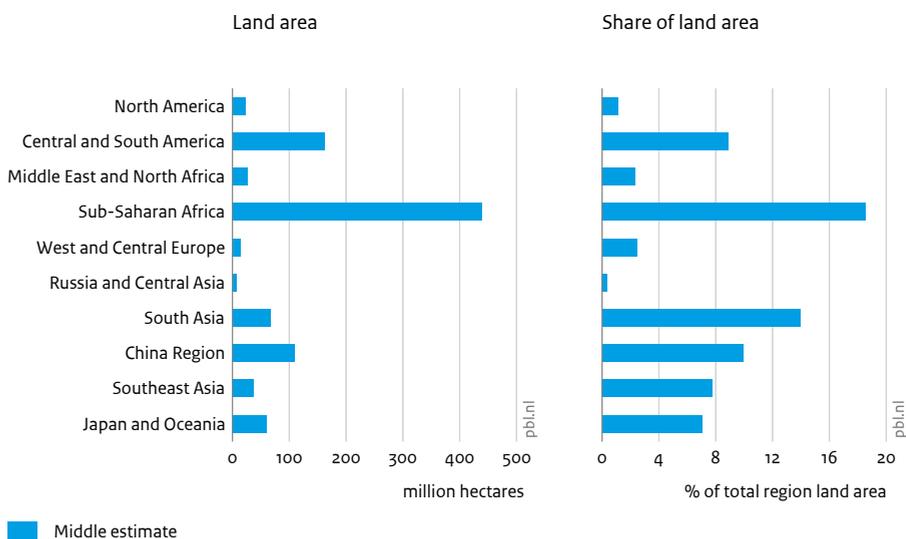
### ***Almost half of all restoration commitments are found in Sub-Saharan Africa, followed by Central and South America and China Region***

Restoration and improved land management commitments were aggregated into 10 regions<sup>2</sup> (for an overview of the number of countries per region, see Table A.2 in the Appendix). For the middle-range estimate (Figure 2.2), almost half of all restoration commitments are in Sub-Saharan Africa, in part due to the large number of Sub-Saharan countries submitting commitments under LDN and AFR100. This also occurs to some degree for Central and South America, though here the commitments primarily come from NDC and Initiative 20x20 commitments. Commitments in Japan and Oceania come primarily from the NBSAPs. Relatively small commitments are found in West and Central Europe, and Russia and Central Asia, with North America and the Middle East and North Africa regions.

<sup>2</sup> For a breakdown of countries into regions, see Figure A.1 of the Appendix.

Figure 2.2

**Total restoration commitments per region, 2020**



Source: UNCCD, UNFCCC, CBD, Bonn Challenge, FAO; collected and adapted by PBL for Global Restoration Commitments database, August 2020

When comparing the total regional land area covered by commitments to that region's total land area, the largest shares of land under restoration commitments are located in Sub-Saharan Africa (19%), South Asia (14%) and China region (10%) (Figure 2.2).

**Box 2.1 The Global Restoration Commitments (GRC) database**

The analysis of quantitative country restoration commitments, in this policy brief, is based on a new database on global restoration commitments that was developed by PBL for UNCCD's Global Land Outlook, second edition.

*Purpose*

The GRC database provides information on the type of restoration measures that countries plan to implement, and on the order of magnitude of restoration commitments in various countries, regions, and the world. The primary purpose of the database is to inform PBL's work on global scenario analysis covering land-use change, land degradation and land restoration for the UNCCD's Global Land Outlook, second edition. Data outputs from the GRC database (on the order of magnitude, regional location and restoration category of commitments) allow for estimating how scenario projections on land degradation, or scenario assumptions on

restoration policies, compare to the current level of ambition, and therefore informs on how relatively ambitious a scenario is vis-à-vis current plans. The database can also inform policymakers on the extent of current global and country commitments and facilitate discussions on possible improvements to commitments. Other potential uses include monitoring (whereby progress on restoration can be compared against the national commitments in the database), policy coherence discussions (i.e. on synergies between different convention commitments within countries), informing global restoration cost estimates (Verhoeven et al., forthcoming), identifying countries that require capacity building to improve the quality and measurability of commitments, and analysing best practices in reporting styles between countries and conventions.

#### *Method*

The method used for data collection and categorisation for the database builds upon existing work by Arts et al. (2017), Lewis et al. (2017), Wolff et al (2018), Climate Focus and IUCN (2018), Gichuki et al. (2019), and other reports linking the various Rio Conventions (CBD and FERI, 2016) and outlining restoration categories (Global Mechanism of the UNCCD, 2019). The database covers all commitments (as of August 2020) by countries on restoration and sustainable use of land and terrestrial ecosystems that are:

- publicly available through nationally submitted plans under the Rio Conventions and under the Bonn Challenge and associated regional initiatives, and
- quantifiable in hectares with a clear reference year, or in a percentage that is translatable into hectares, such as increase in forest area.

For the UNCCD, the quantitative commitments are extracted from the publicly available Land Degradation Neutrality (LDN) national voluntary targets. For the CBD, the commitments are extracted from the latest NBSAPs. For the UNFCCC, the most recent NDC country reports were used. For the Bonn Challenge, commitments were sourced from the Bonn Challenge website and the AFR100, Initiative 20x20, ECCA30 websites.

The GRC database, in its current form, is not an exhaustive overview of all restoration commitments, globally. There are regional or national plans that are not reported to the Rio Conventions or the Bonn Challenge, but those are not included (e.g. the EU's Green New Deal plans on reforestation) and the same goes for commitments that could exist under other conventions or ambitions (e.g. the Ramsar Convention or the UNFF Global Forest Goals). Still, the database is estimated to include the majority of commitments globally and thus provide a useful order of magnitude estimate. A technical note is available with more methodological background as well as an overview of commitments per country (Sewell et al., 2020).

## 2.3 The distribution of restoration measures under the national restoration commitments

### ***Country commitments address both restoration and protection, and management and rehabilitation***

Commitments can be divided into two overarching categories, broadly covering restoration and protection, and management and rehabilitation<sup>3</sup>. For country commitments under the Rio Conventions, the specific restoration measures that are intended to be implemented for the hectares committed are generally included in the plans or target-setting reports, though not always quantitatively. This information is not available for voluntary commitments under the Bonn Challenge<sup>4</sup>.

For this analysis, the different implementation measures are first aggregated into two overarching categories: 1) restoration and protection, and 2) management and rehabilitation. Restoration and protection include measures that aim to bring ecosystems back to a natural state or measures that aim at conservation and the prevention of degradation. Management and rehabilitation include measures that aim to rehabilitate areas that are under human use but are degraded, or to rehabilitate degraded areas for human use, or to improve the management of used areas to at least partially restore natural condition and functions (e.g. restore soils in agricultural areas), while maintaining the area for human use. When aggregated into these two main categories, overall commitments are evenly divided across these two categories, 522 and 480 million ha, respectively (Figure 2.3). However, within the type of commitments, there tends to be a focus on either one or the other.

### ***The conventions place different emphases on restoration measures***

The broad categorisation of commitments shows clear differences between the Rio Conventions. The LDN commitments place emphasis on improved land management and rehabilitation measures, which aligns with the LDN response hierarchy to avoid, reduce and reverse land degradation (UNCCD, 2016). The NBSAPs place more emphasis on ecosystem restoration and protection. While the latter may be expected, given the objectives of the CBD, the Aichi biodiversity targets do however include those on sustainable agriculture and forestry (e.g. Aichi Target 7), which may not have been translated into area-based commitments by Parties (SCBD, 2020). Commitments under the NDCs are balanced in this regard. For the Bonn Challenge, this detail was not available in a central repository (Box 2.2). Given the definition of forest and landscape restoration on restoring multifunctionality to landscapes, including sustainable land management techniques, such as silvopasture and agroforestry, Bonn Challenge commitments are likely to cover restoration and protection as well as management and rehabilitation measures.

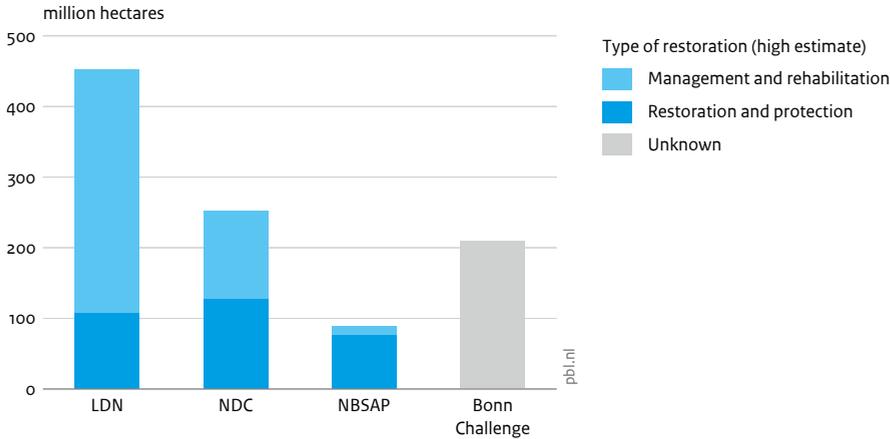
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<sup>3</sup> For more information on this categorisation, see technical note (Sewell et al., 2020).

<sup>4</sup> For more information on categorisation of the Bonn Challenge see Box 2.2.

Figure 2.3

**Global restoration commitments, per overarching type of restoration, 2020**



Source: UNCCD, UNFCCC, CBD, Bonn Challenge; collected and adapted by PBL for Global Restoration Commitments database, August 2020

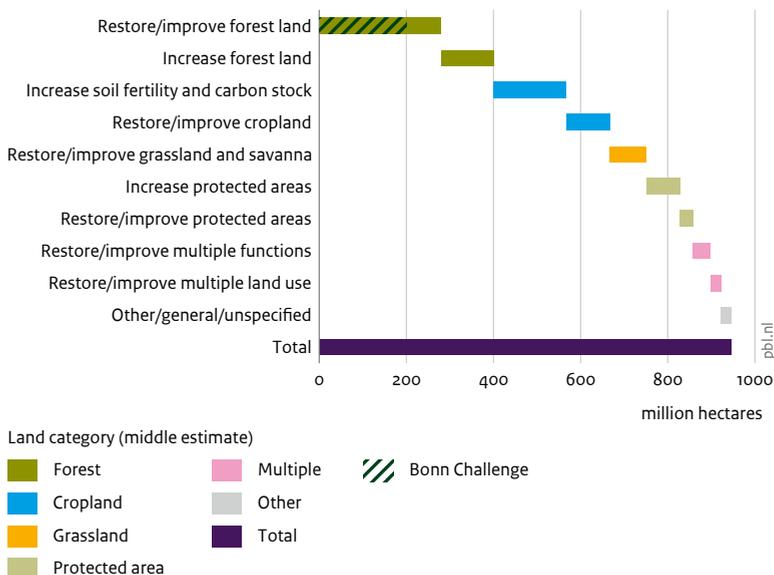
***There are a wide range of restoration measures included in the commitments***

For this analysis, the restoration measures in the commitments have been grouped into 10 categories (Figure 2.4). These categories include forest-based measures (for increasing forest land and restoration or improvement of forests), agriculture-based measures, such as improvements of soil fertility, cropland and grassland, the expansion and improvement of protected areas, and measures that are aimed at improving multiple ecosystem functions.

Countries have proposed different restoration measures for their commitments under different conventions. For instance, for the LDN commitments a country plans to increase soil fertility in cropland on the committed number of hectares, while that same country plans another number of hectares of reforestation under its NDC for the climate convention. This is logical and expected but it does point to the potential for countries to align their commitments between conventions and the Bonn Challenge.

Figure 2.4

Global restoration commitments, per restoration measure category, 2020



Source: UNCCD, UNFCCC, CBD, Bonn Challenge; collected and adapted by PBL for Global Restoration Commitments database, August 2020

Figure 2.4 shows that the commitments cover a wide range of land use types including predominantly forest (42%) and agricultural land (cropland and grassland, 37%). The category ‘restore/improve forest land’ includes all the Bonn Challenge commitments (200 million ha, middle estimate) (see Box 2.2 for further explanation); these are more likely to also be partly agriculture-based measures but as stated above, this information is not centrally available for the Bonn Challenge at the time of reporting. Additional categories were originally included in the analysis but seldom appeared in commitments, such as restoring or improving wetlands, peatlands and mangroves, coastal areas, mining areas and artificial (urban) areas. Others were very general or abstract in nature. These commitments are included in ‘other/general/unspecified’. For a full overview of this classification scheme, see Sewell et al. (2020).

## Box 2.2 Categorisation of Bonn Challenge commitments and inclusion in total global estimates

### *Inclusion in total global estimates*

The Bonn Challenge and associated regional initiatives are not comparable to the Rio Conventions commitments in terms of officiality. They aim to raise political will to restore, and are then translated into national strategies and plans. However, they are a well-known platform for commitments that show political intent for restoration, and not including these estimates would leave a large gap in the global overview of commitments. For example, it would mean the exclusion of 15 million hectares committed by the United States. Furthermore, there are several countries where the Bonn Challenge commitments are larger than those under any of the three Rio Conventions.

### *Categorisation*

Commitments under the Bonn Challenge and associated regional initiatives are found in central repositories of the Bonn Challenge, AFR100, and Initiative 20x20. More information on the breakdown of overarching commitments into restoration categories can likely be found in country ROAM reports and FLR strategies that focus both on restoration and protection, as well as management and rehabilitation. However, at the time of publication of this policy brief, the breakdown in specific measures intended for the implementation of commitments by countries under the Bonn Challenge was not publicly available from a central repository. Given that most Bonn Challenge commitments focus primarily on restoring forest land or tree-based restoration, they were categorised under 'restore/improve forest land' for calculating the middle estimate. For more information, see Sewell et al., (2020).

# 3 Insights for future plans and commitments on restoration

This overview of the quantitative country commitments under the Rio Conventions and the Bonn Challenge provides a set of insights into further development of national commitments on restoration towards achieving globally agreed goals.

Firstly, the total of the commitments is significant when put in perspective of assessments of land degradation and projections of future land use. There is, however, a geographic imbalance in terms of countries that have made commitments and the size of those commitments. In terms of contributing to global goals, there may be scope to expand restoration plans in regions that are underrepresented, including; North America, Russia and Central Asia; West and Central Europe, the Middle East and Northern Africa.

Secondly, in general, with respect to the various plans and commitments by countries, there is little coherence between the various Rio Conventions and/or the Bonn Challenge. In part, this may be due to some plans being more recent than others. Still, while many of the national plans mention other goals and ambitions, only a few align the restoration commitments in one plan, in terms of hectares and/or restoration measures, to those in another plan or commitment. There is scope for better alignment on restoration in national plans between the three conventions, which could enhance planning and implementation.

Thirdly, the quantified commitments allow for a national and regional comparison as well as a global stocktake to guide further implementation and monitoring. Geographic specificity in terms of what measures are proposed and where, is an important next step.

### 3.1 Current commitments are globally significant but geographically imbalanced

#### ***The total land area under restoration commitments is significant, compared to current land use, projections of land-use change, and estimates of land degradation***

The meaning of the total restoration commitments of just under 1 billion hectares and whether this is significant, can be put in perspective by comparing it to current land cover and land-use areas, to estimates of land degradation, and to projections of future land-use change.

- Total terrestrial area (excluding Antarctica and Greenland) is some 13.2 billion hectares.
- Current cropland area is estimated at some 1.5 billion hectares and pasture area at some 3.2 billion hectares (Stehfest et al., 2019; FAO, 2020).
- Total forest area is some 4 billion hectares, of which about a third is primary forest (FAO, 2020).
- An estimated 0.9 to 1.1 billion ha show a long-term persistent decline in productivity, including 12% to 20% of the cropland area (JRC, 2017; Van der Esch et al., 2017). Land degradation estimates vary widely because of different definitions and aspects of degradation (Gibbs and Salmon, 2015; IPBES, 2018).
- Most of the lands currently under crop production are estimated to have scope for soil restoration through more sustainable land management practices. In addition, some 1.2 billion hectares of natural area show signs of restoration potential (Van der Esch et al., 2017).
- Projections on land-use change estimate that cropland will expand by some 300 million hectares by 2050, in part caused by area required for energy crops, and expansion of pastures by 100 to 200 million hectares, although pasture projections are highly uncertain and show wide variation (Stehfest et al., 2019).

Compared to these figures, the restoration commitment total of one billion hectares certainly appears significant in its size. As shown in Section 2.3, the measures included in country restoration plans and commitments cover both restoration and protection, and improved management and rehabilitation. They also cover forests and forestry, cropland, pastures, protected areas and more. The one billion hectares of restoration commitments would cover a variety of different land uses, including roughly 10% of all forest area, perhaps a fifth of cropland (assuming soil fertility measures on cropland only) and a small share of pastures (Figure 2.4).

***Regions with the largest commitments are also projected to see the strongest continued pressure on land*** Sub-Saharan Africa, Central and South America and the China Region are regions that will continue to experience the strongest pressure on land resources, over the coming decades (Van der Esch et al., 2017). The largest commitments are also in these regions, which could turn out as a positive, with rehabilitation and improved land management helping to alleviate pressure on land by restoring productivity, and high demands on land making restoration more worthwhile. But they could also turn into a negative, with more

competition from agriculture for land making efforts for protection and conservation more difficult.

Relatively few quantitative commitments have been made under the Rio Conventions and the Bonn Challenge by countries in North America, West and Central Europe, Russia and Central Asia regions. This is in part due to a lack of participation in the Bonn Challenge and associated regional initiatives, as well as not having declared themselves as affected parties under the UNCCD. However, this does not mean that these regions do not experience land degradation, as changes to the use and condition of land also occur here (JRC, 2017; Van der Esch et al., 2017). Restoration and improved land management may have a role to play in these regions, with respect to national, regional or global benefits. For instance, the intensely farmed lands in these regions could have a large potential for improving soil carbon stocks.

Many countries have commitments under only one or two of the conventions, which often translates to an emphasis on one type of restoration (e.g. only reforestation under an NDC) (for a breakdown per country, see the appendix in Sewell et al., 2020). There is scope for countries to consider additional measures on restoration or improved land management that complement existing commitments.

## 3.2 Align national restoration commitments

### ***National plans, in general, do not appear aligned between conventions when it comes to quantitative restoration commitments***

In many cases where countries have submitted commitments under at least two of the Rio Conventions and/or the Bonn Challenge, the numbers of hectares and the types of restoration measures differ (see for a per country breakdown the annex in Sewell et al. (2020)). In part, this may be caused by some commitment plans being more recent than others. Still, while many national plans contain commitments that refer to goals and ambitions under other conventions or initiatives, only few clearly align the restoration commitments in one plan, in terms of hectares and in terms of restoration measures, to those in another plan or commitment under another convention or initiative.

While it is clear that there are synergies and benefits between the objectives of the different Rio Conventions and the SDGs (WWF, 2017; Global Mechanism of the UNCCD and CBD, 2019; Seddon et al., 2019), alignment between restoration commitments is lacking. A study by CBD & FERI (2016) shows there to be no consistency or cross-referencing between the ecosystem-based quantitative contributions under the UNFCCC and the national targets under Aichi Biodiversity Targets 5 and 15. Where alignment is found between conventions, it is due to effective coordination and management between various sectors or ministries, or within the same ministry (Gichuki et al., 2019). This highlights that the complexity of implementing

restoration at scale is also very much a challenge of government coordination, and potentially also donor coordination (Mansourian, 2017; Chazdon et al., 2017).

Better aligned plans for restoration and improved land management measures can profit from the synergies that restoration provides between different objectives. For example, a commitment to expand or restore protected areas under the biodiversity convention can also contribute to carbon sequestration in a country's nationally determined contribution under the UNFCCC. In addition, it is likely that better aligned plans can aid the implementation of restoration commitments when they are spatially explicit (see also Section 3.3), they can help to improve the accuracy and compatibility of commitments under different conventions and how they contribute to each other's objectives (e.g. LDN's soil fertility-related commitments and contribution to NDC terrestrial carbon sink ambitions), including trade-offs that need to be considered (e.g. between agricultural productivity and conservation), have access to various streams of finance (e.g. biodiversity and climate finance) and can streamline monitoring and evaluation.

### 3.3 Make commitments measurable, geographically specific and transparent to enable comparability, monitoring and evaluation

#### ***Commitments need to be measurable to monitor progress***

Many country plans or components have relevant qualitative commitments for restoration but lack quantitative, measurable and timebound commitments. This is particularly the case for the NBSAPs, which is likely due to that fact that they predate the other goals and commitments, have less specific reporting requirements for setting national targets, and Aichi Biodiversity Target 15 is expressed in percentage of degraded land, a metric few countries use or have data on (Kotiaho, 2015). In other cases, plans are quantifiable but do not translatable into an area metric such as hectares. For example, some targets are related to the number of projects, rather than an area percentage or number of hectares, others specified a rate of change, for example reducing the loss of natural ecosystems by 10% compared to a reference year. In general, the NBSAPs and NDCs do mention qualitative commitments for ecosystem-based restoration, but only some are translated into measurable or numerical targets (IIED, 2016; IUCN & Climate Focus, 2017). Measurable commitments will help to monitor progress and provide important feedback loops to achieve national ambitions (Meli et al., 2019; Roux et al., 2016).

#### ***Geographic specificity can help create realistic targets***

Most of the commitments under the NDCs refer to specific types of ecosystems, such as forests and mountain ecosystems, but rarely mention specific sub-national locations. NBSAPs often specifically mention the type of ecosystem and percentage of total area to be protected as specified in Aichi Target 15, but only occasionally provide specific protected locations within the text of the commitment or target, for example: 'By 2020 Nicaragua will

*have 2,500 hectares of natural regeneration in the dry forest of five protected areas (Refugio de Vida, Silvestre Río Escalante Chacocente and La Flor, Miraflor Moropotente, Quiabuc, Tepesomoto and the Sierra de Managua'. LDN commitments are the clearest, with specified hotspot and priority areas built into the report structure and leading to more sub-national focus. For example, in Colombia: 'By 2030, the productivity of at least 2,000 ha of soils with crops and / or pastures will be improved, with agroforestry production systems in the Caribbean and Andean regions (Sucre, Santander and Boyacá departments)', or in Vietnam: 'Natural forest restoration in 160,000 ha in the North West, Highland, South Central'.*

Given both the real costs and opportunity costs of restoration, a careful selection of areas to be restored is critical (Mansourian et al., 2017) and may result in more realistic and feasible restoration commitments that concentrate time, money and effort in areas with higher impact potential (Brancalion et al., 2019; Strassburg et al., 2019). More geographic specificity of commitments, in terms of distinct locations, ecosystem types and maps, can provide increased focus on critical hotspot areas, aid prioritisation and help create realistic and purposeful sub-national commitments and plans, as shown in many LDN reports.

***Large differences in reporting styles pose a challenge for comparing restoration commitments within and between countries***

In general, current plans for restoration vary greatly in reporting styles within and between countries and between the Rio Conventions and the Bonn Challenge. This makes it difficult to identify commitments in plans and hinders comparability between countries and conventions.

For example, NBSAPs commitment data are mostly available in NBSAPs, but some feature only in the country overview of national Aichi Biodiversity targets communicated to the CBD. Furthermore, NBSAPs vary greatly between countries in format, style and length, and lack a clear summary of commitments that are otherwise unevenly distributed throughout the reports, making them difficult to locate. In comparison, the NDCs have a central portal for all plans, though again there are large variations between them, in terms of length and style, with commitments sometimes formatted into the same excel style table for ease of comparison. LDN reports are the most recent and clear of the three conventions. Commitments are located on a central portal with a clear summary of LDN targets and supporting documentation. Each report follows a standard format with background information and baseline reference material, table of commitments, and hotspot regions as well as maps and graphs. This is due to a significant capacity-building effort supported since 2016 by the secretariat and the Global Mechanism of the UNCCD to assist countries in setting their national LDN targets through the LDN Target Setting Programme. These experiences could help inform new plan cycles for the UNFCCC and the CBD, and improve existing commitments (as mentioned in Section 3.2).

## 3.4 From commitments to implementation

Plans and commitments have been submitted, ready for the UN Decade on Restoration in 2021. The total of commitments on restoration that countries have currently put forward appears significant. Moving from commitments to implementation will require an enabling environment and better alignment between commitments.

Successful implementation relies on other socio-economic actors and an enabling environment around governance. While the 20th century saw great strides in our technical competence on restoration, the complexity of the task is frequently compounded by governance challenges (Mansourian, 2017). One of those challenges is the political will to implement the plans, but there are also other, socio-economic factors, such as land tenure security (including gender considerations) and legal instruments that are important for local level planning (Brancalion et al., 2019). In addition, there are financial incentives and disincentives, legal and institutional structures, and local empowerment (Guariguata and Brancalion, 2014; Mansourian, 2016; McLain, Lawry, Guariguata and Reed, 2018), as well as large variations in the costs of restoration measures (De Groot et al., 2013) to take into account. Implementing restoration commitments and integrated land-use planning effectively requires them to be endorsed by national policy and incorporated into local management plans and actions. Therefore, feedbacks from local realities to national restoration and improved land management strategies are important to ensure policy relevance, to monitor the progress on policy objectives, and update national-scale data where applicable (Meli et al., 2019).

How and to what extent these national plans and commitments will be implemented over the coming decade remains to be seen. The new restoration monitoring framework led by the FAO within the framework of the UN Decade on Ecosystem Restoration, for example, could play an important role in this and could make use of the overview and database presented in this policy brief, as a benchmark for expected action and reporting progress against existing commitments. In addition, there are many upcoming opportunities to improve the alignment of restoration plans and commitments under different conventions, including the successor to the Aichi Biodiversity Targets under the post-2020 Global Biodiversity Framework, and NBSAPs that may follow, the ongoing setting and refinement of voluntary LDN targets and updates of the NDCs under the UNFCCC. Updates in new national plan cycles, as well as the Bonn Challenge, could see a further increase in measurable, geographically specific commitments.

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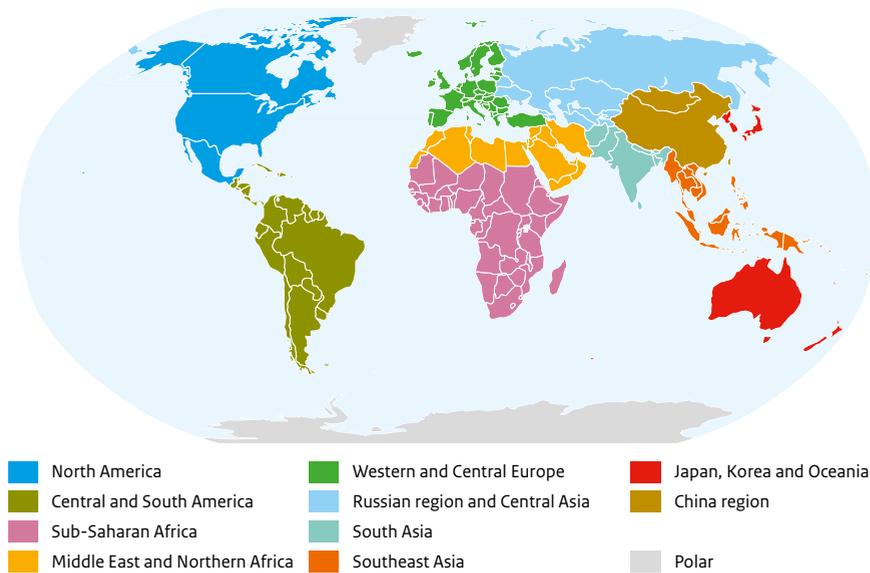
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# Appendix

## A.1 Regional aggregation used in this policy brief and number of countries with quantitative commitments per region

Figure A.1

The 10 regions used in this report to aggregate countries' commitments



Source: PBL

Table A.1

**Number of countries per aggregated region with quantitative commitments in GRC database**

Region	Number of countries
North America	2
Central and South America	20
Middle East and North Africa	9
Sub-Saharan Africa	45
West and Central Europe	6
Russia and Central Asia	10
South Asia	7
China Region	2
Southeast Asia	10
Japan and Oceania	4
<b>Total</b>	<b>115</b>

## A.2 Abbreviations & Glossary

<b>AFOLU</b>	Agriculture, forestry and other land use
<b>AFR100</b>	African Forest landscape Restoration initiative
<b>CBD</b>	United Nations Convention on Biological Diversity
<b>ECCA30</b>	Restoration initiative for Europe, the Caucasus and Central Asia
<b>FAO</b>	Food and Agriculture Organization of the United Nations
<b>GRC database</b>	Global Restoration Commitments database
<b>Initiative 20x20</b>	Restoration initiative for Latin America and the Caribbean
<b>LDN</b>	Land Degradation Neutrality
<b>MEAs</b>	Multilateral Environmental Agreements
<b>NBSAPs</b>	National Biodiversity Strategies and Action Plans under the CBD
<b>NDCs</b>	Nationally Determined Contributions under the UNFCCC
<b>Rio Conventions</b>	The UNFCCC, CBD and UNCCD conventions, agreed at the Earth Summit held in Rio de Janeiro in 1992.
<b>SDGs</b>	Sustainable Development Goals, a collection of 17 interlinked goals for 2030, building on the Millennium Development Goals and agreed on in 2015 by the UN General Assembly.
<b>UNCCD</b>	United Nations Convention to Combat Desertification
<b>UNEP</b>	United Nations Environment Programme
<b>UNFCCC</b>	United Nation Framework Convention on Climate Change
<b>UNFF</b>	United Nations Forum on Forests



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