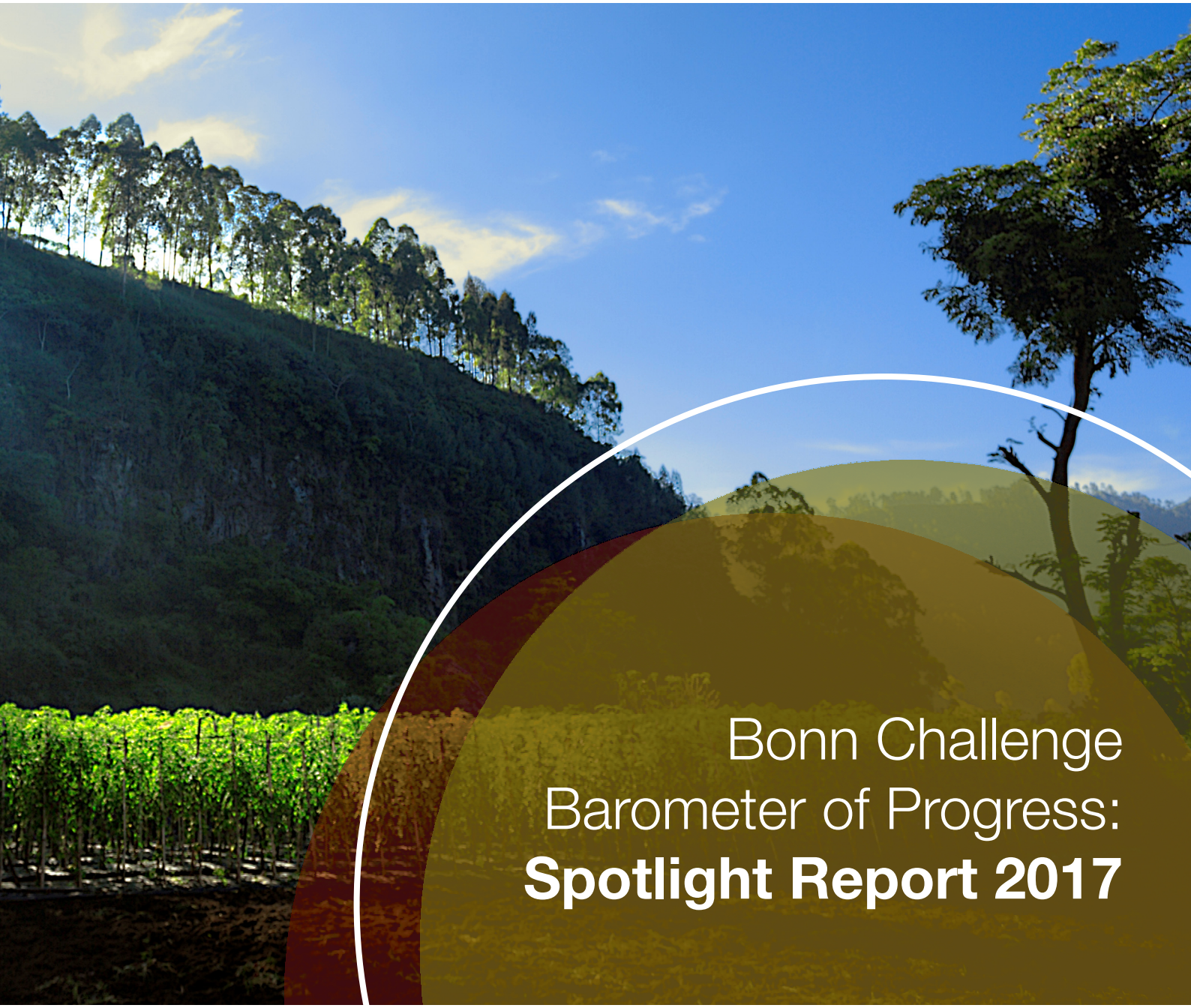

Bonn Challenge Barometer of Progress: **Spotlight Report 2017**

Supported by:

Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety

based on a decision of the German Bundestag

BONN CHALLENGE

Bonn Challenge Barometer of Progress: Spotlight Report 2017

This report has been produced by the IUCN Global Forest and Climate Change Programme with the support of the International Climate Initiative (IKI) under the Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB), Germany.

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FOREWORD

In September 2011 only six years ago, an event in Bonn, Germany, hosted by the Government of Germany and IUCN, set the Bonn Challenge goal of restoring 150 million hectares of forest by 2020. Three years ago, at the UN Climate Summit in 2014, more than 100 governments, NGOs and private enterprises adopted the New York Declaration on Forests, which endorsed the Bonn Challenge 2020 goal and stepped up the target by another 200 million hectares, to 350 million hectares by 2030. In 2017, commitments to restoring forest landscapes have already exceeded 160 million hectares.

My Government is proud to be part of this global restoration movement, for which the Bonn Challenge is a powerful engine. The Bonn Challenge recognises and catalyses the commitment of individuals, institutions and enterprises in all parts of the world to forest landscape restoration and supports them in taking their ongoing efforts to scale.

The success of the Bonn Challenge signals clear political interest in restoring forest landscapes. National, regional and international deliberations around the world express the same interest. But, of course, we all know that fully implementing the Bonn Challenge is the real opportunity. Implementing Bonn Challenge commitments will create new jobs, secure water supplies, conserve and maintain biodiversity, improve livelihoods and store CO_2, among other benefits.

Implementation of Bonn Challenge commitments is already well under way in many jurisdictions. The Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety is very pleased to support the IUCN project to develop the Bonn Challenge Barometer of Progress, which will capture and report on the real progress being made in restoring millions of hectares of forest landscapes. We know that progress will require more, and more diverse, partners, including in the private sector. We also need creative investment models and an enabling environment at domestic and international levels to realise these investments. Many countries are, therefore, putting significant efforts into putting in place an enabling environment for implementation and investment.

This Barometer Spotlight Report outlines a proposed methodology for tracking progress and provides case studies of initial implementation work in five countries. We encourage all interested parties to contribute ideas and information to help the Barometer present a credible, meaningful account of actions to restore forest landscapes. As they say, success breeds success, thus the Barometer captures and reports critical success factors, as well as bottlenecks to progress and creative ways of addressing them.

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1 INTRODUCTION

Overview of the Bonn Challenge Barometer

The Bonn Challenge is a global effort to bring 150 million hectares (Mha) into restoration by 2020 and 350 Mha by 2030. Underlying the Bonn Challenge is the forest landscape restoration (FLR) approach.[1] The Bonn Challenge is a voluntary, non-binding initiative[2] launched to advance the restoration movement and in recognition of the importance of forest landscape restoration for meeting national priorities and international commitments. To date 47 contributors have pledged more than 160 Mha to the Bonn Challenge.[3]

Around the world there are encouraging signs. Khyber Pakhtun Khwa province in Pakistan is well on its way to meeting its Billion Tree Tsunami target. A restoration initiative in the United States produced an estimated US$1.2 billion in local labor income between 2011 and 2016 and created or maintained an average of 5,180 jobs each year. Restoration with native vegetation in the Brazilian State of Minas Gerais is meeting the needs of urban areas for a secure supply of water and is generating income for the municipality of Extrema through payments for ecosystem services. The people of Tigray, Ethiopia, have reshaped their landscapes to increase food self-sufficiency. There are many such stories, but only a small proportion are well known, and the success factors and challenges behind them are not widely understood as there is no framework for collating and analysing them.

Countries and other Bonn Challenge pledgers are keen to move swiftly from demonstrating commitment to demonstrating results. They have been generating the information and putting in place the arrangements needed to achieve their Bonn Challenge commitments, and have begun bringing land under restoration. While significant ambition has been demonstrated in the form of pledges, challenges for restoration on the ground remain and will have to be overcome by countries and other pledgers, including through technical and financial means.
To capture and provide evidence of advances, partnership opportunities, needs and bottlenecks, IUCN initiated the development of the Bonn Challenge Barometer. The Barometer is a flexible yet standardised assessment tool that is currently being developed through an iterative process of design and piloting in multiple Bonn Challenge jurisdictions. The results of the application of the Barometer tool will be captured in a series of reports, beginning with the 2017 Spotlight Report, and will be profiled on www.InfoFLR.org. The Barometer will also track progress on Goal 5 of the New York Declaration on Forests, which is aligned with the Bonn Challenge targets.

This Spotlight Report describes the process for the development of the Bonn Challenge Barometer and the underlying concepts and initiatives. It also offers five case studies of progress on FLR, in Brazil, El Salvador, Mexico (Quintana Roo), Rwanda and the United States, which illustrate the types of information the Barometer reports will present. These five jurisdictions, plus one more to be identified from Asia, have generously agreed to be pilot cases for the development of the Barometer.

The 2017 Spotlight Report is a 'live' document, intended to generate discussion and invite contributions to the development of the Barometer and its progress-tracking protocol. During 2018, the pilot jurisdictions and experts will be further consulted on the framework and indicators to continue the development of the Barometer.

Information gathered through piloting the protocol will be compiled and analysed. The Bonn Challenge Barometer Report in 2018 will include information on the further development and application of the protocol and will be based on its full application in the six pilot jurisdictions. It will also be made available to as many other pledgers as possible – as data, resources and capacities allow – with a view to extending the application of the Barometer to all Bonn Challenge contributors by 2020.

Recognising that pledges to the Bonn Challenge are fully voluntary, the Barometer is intended to be an enabling and responsive tool, not a policing or compliance instrument. The Barometer will provide in-depth analysis demonstrating progress in implementing initiatives that

[1] www.InfoFLR.org
[2] The Bonn Challenge was launched by the Government of Germany (BMUB) and IUCN at a high-level event in 2011 organised with the support of the Global Partnership on Forest Landscape Restoration.
[3] www.bonnchallenge.org

align with FLR and the Bonn Challenge. The Barometer will add to the evidence base on the role of FLR implementation in contributing to global greenhouse gas mitigation and in meeting country NDCs. It is not intended to be an instrument to measure, report or verify (MRV) greenhouse gas mitigation but can contribute useful information to these and other discussions. The Barometer will also provide information on FLR's social and economic benefits in Bonn Challenge jurisdictions.

The audience for the Barometer is global; it will be useful to local to international-level actors. It is based on national or sub-national (e.g. state) level information, not landscape or site level information. The Barometer is designed to complement monitoring initiatives relying on satellite imagery or other means of monitoring restoration progress and will integrate such information as it becomes available.

The restoration imperative

Evidence suggests that land degradation and conversion have led to the loss of between US$ 4.3–20.2 trillion a year in the value of ecosystem goods and services.[4] More directly, 1.5 billion people are affected by the world's estimated 2 billion hectares of deforested and degraded land.[5] It is well established that the degradation and deforestation of landscapes can cause downward spirals into poverty.[6] Degradation and deforestation have also been routinely linked to the frequency and intensity of natural disasters, particularly floods and landslides, which are now being seen in all parts of the world.[7] Breaking the spiral of loss and degradation and restoring these lands would bring untold benefits to people and the planet.[8]

The Bonn Challenge

The Bonn Challenge, launched in September 2011[9] and extended by the 2014 New York Declaration on Forests,[10] is an enormous opportunity to improve environmental and social outcomes globally, nationally and sub-nationally. It is not a new global commitment but offers a practical way of realising existing national priorities such as rural development, and food, water and energy security, while contributing to the achievement of international commitments, including the Convention on Biological Diversity Aichi Targets, the Framework Convention on Climate Change's REDD+ (Reducing Emissions from Deforestation and Forest Degradation) goal and Paris Agreement, the UN Land Degradation Neutrality Goal, the UN Global Objectives on Forests and the Sustainable Development Goals.[11]

Regional collaboration platforms such as the Agadir Commitment,[12] the African Forest Landscape Restoration Initiative (AFR100)[13] and Initiative 20×20,[14] and the ministerial-level regional roundtables on the Bonn Challenge in Latin America, Asia, Eastern and Southern Africa, Central Africa and Central Asia[15] provide additional momentum for restoration action and contribute directly to the achievement of the Bonn Challenge.

The benefits of achieving the Bonn Challenge are considerable. For example, an analysis carried out to quantify the benefits of the New York Declaration on Forests concluded that achieving the Bonn Challenge 350 Mha by 2030 goal would result in at least 0.6 gigatonnes

[4] Costanza, et al., 2014
[5] UNCCD, 2014. Enhancing Food Security, 5
[6] Dasgupta, et al., 2005
[7] UNU-EHS, 2012. Cost-Benefit, 3
[8] A Global Opportunity
[9] The Bonn Challenge was launched in September 2011 at a ministerial event hosted by the Government of Germany and IUCN and supported by the Global Partnership on Forest Landscape Restoration (GPFLR).
[10] The New York Declaration on Forests made at the 2014 Climate Summit built upon and extended the Bonn Challenge target of 150 million hectares under restoration by 2020 by an additional 200 million hectares by 2030. The declaration was subsequently endorsed by more than 100 governments, civil society and indigenous organisations, and private enterprises (UNASYLVA, 2014).
[11] The CBD Aichi Targets include target 15 calling for restoration of 15% of degraded ecosystems by 2020. The UNFCCC REDD+ goal is to slow, halt and reverse the loss of forest and carbon stocks, and the Paris Agreement nationally determined contributions (NDCs) provide scope for restoration through reducing emissions and ecosystem based adaptation. The UN Convention to Combat Desertification (UNCCD) focuses on restoring unproductive land and achieving land degradation neutrality. The UN Global Objectives on Forests include the goal to reverse forest loss. Restoration is directly relevant to SDG Goal 15 to protect, restore and promote sustainable use of ecosystems, halt and reverse land degradation and desertification; Goal 13 to take urgent action on climate change, and Goal 2 to improve food security, among others.
[12] http://www.fao.org/forestry/45656-0ed7af343bc2e08d467c000593c2cd9ae.pdf
[13] http://afr100.org/content/nepad-agency
[14] http://www.wri.org/our-work/project/initiative-20x20
[15]

(Gt) of carbon dioxide (CO_2) sequestered a year on average, reaching at least 1.6 Gt a year in 2030 and totalling 11.8–33.5 Gt over the period 2011–2030.[16]

Upon making pledges, governments, organisations, coalitions, companies, or others who own or have the right to manage land, register their commitments with the secretariat for the Bonn Challenge.[17] The pledge is publicly announced, usually through an event designed for this purpose.

Members of the Global Partnership on Forest and Landscape Restoration (GPFLR)[18] offer technical support for planning and implementing restoration. For example, IUCN has been providing support to countries in assessing their restoration opportunities through the application of the Restoration Opportunities Assessment Methodology (ROAM),[19] which informs the operationalisation of FLR approaches as part of their national and sub-national policies and operations.

Regional collaboration platforms such as the Agadir Commitment,[20] the African Forest Landscape Restoration Initiative (AFR100)[21] and Initiative 20×20,[22] and the ministerial-level regional roundtables on the Bonn Challenge in Latin America, Asia, Eastern and Southern Africa, Central Africa and Central Asia[23] provide additional momentum for restoration action and contribute directly to the achievement of the Bonn Challenge.

Forest landscape restoration

Underpinning the Bonn Challenge is the forest landscape restoration (FLR) approach (Box 1).[24] A pledge to the Bonn Challenge signals a commitment to align restoration efforts with the FLR approach and principles.

The FLR approach is manifested through a wide range of land uses and transitions. Figure 1 shows the FLR options framework. A restored landscape applying an FLR approach would involve a mosaic of more than one or usually several of these options.

[16] Making the Case for Forest Landscape Restoration White Paper, Initial Working Draft for Future Discussion, Post- Bonn Challenge 2.0 Ministerial Event, March 2015, Unpublished. (IUCN), drawing on https://www.climateadvisers.com/wp-content/uploads/2014/09/Quantifying-Benefits-of-the-New-York-Declaration-on-Forests-09232014.pdf
[17] IUCN acts as the secretariat for the Bonn Challenge.
[18] GPFLR: http://www.forestlandscaperestoration.org/
[19]
[20] http://www.fao.org/forestry/45656-0ed7af343bc2e08d467c000593c2cd9ae.pdf
[21] http://afr100.org/content/nepad-agency
[22] http://www.wri.org/our-work/project/initiative-20x20
[23]
[24] IUCN & WRI. (2014). Forest Landscape Restoration principles. A guide to the Restoration Opportunities Assessment Methodology (ROAM): Assessing forest landscape restoration opportunities at the national or sub-national level. Working Paper (Road-test edition). Gland, Switzerland: IUCN. 125pp.

Box 1. Forest landscape restoration

Forest landscape restoration (FLR) is the long-term process of regaining ecological functions and enhancing human well-being in deforested and degraded lands. Ultimately, FLR is the process of restoring *"the goods, services and ecological processes that forests can provide at the broader landscape level as opposed to solely promoting increased tree cover at a particular location."* (Maginnis & Jackson, 2002).

Principles

Forest landscape restoration is founded upon several guiding principles:

Restore functionality – Restore the functionality of a landscape, making it better able to provide a rich habitat, prevent erosion and flooding, and withstand the impacts of climate change and other disturbances.

Focus on landscapes – Consider and restore entire landscapes as opposed to individual sites. This typically entails balancing a mosaic of inter-dependent land uses, which include but are not limited to: agriculture, protected areas, agroforestry systems, well managed planted forests, ecological corridors, riparian plantings and areas set aside for natural regeneration.

Allow for multiple benefits – Aim to generate a suite of ecosystem goods and services by intelligently and appropriately introducing trees and other woody plants within the landscape. This may involve planting trees on agricultural land to enhance food production, reduce erosion, provide shade and produce firewood; or trees may be planted to create a closed-canopy forest that sequesters large amounts of carbon, protects downstream water supplies and provides rich wildlife habitat.

Leverage suite of strategies – Consider the wide range of eligible technical strategies – from natural regeneration to tree planting – for restoring forest landscapes.

Involve stakeholders – Actively engage local stakeholders in deciding restoration goals, implementation methods and trade-offs. Restoration processes must respect their rights to land and resources, align with their land management practices and provide them with benefits.

Tailor strategies to local conditions – Adapt restoration strategies to local social, economic and ecological contexts; there is no 'one size fits all'.

Avoid further reduction of natural forest cover or other natural ecosystems – Address ongoing loss and aim to prevent further conversion of primary and secondary natural forest and other ecosystems.

Adaptively manage – Be prepared to adjust a restoration strategy over time as environmental conditions, knowledge and societal values change. Leverage continuous monitoring and learning, and make adjustments as restoration progresses.

Figure 1. The Forest Landscape Restoration Options Framework.

Land use	Land sub-type	General category of FLR option		Description
Forest land Land where forest is, or is planned to become the dominant land use > **Suitable for wide-scale restoration**	If the land is without trees, there are two options:	1. Planted forests and woodlots		Planting of trees on formerly forested land. Native species or exotics and for various purposes, fuelwood, timber, building, poles, fruit production, etc.
		2. Natural regeneration		Natural regeneration of formerly forested land. Often the site is highly degraded and no longer able to fulfil its past function – e.g. agriculture. If the site is heavily degraded and no longer has seed sources, some planting will probably be required.
	If the land is degraded forests:	3. Silviculture		Enhancement of existing forests and woodlands of diminished quality and stocking, e.g., by reducing fire and grazing and by liberation thinning, enrichment planting etc.
Agricultural land Land which is being managed to produce food > **Suitable for mosaic restoration**	If the land is under permanent management:	4. Agroforestry		Establishment and management of trees on active agricultural land (under shifting agriculture), either through planting or regeneration, to improve crop productivity, provide dry season fodder, increase soil fertility, enhance water retention, etc.
	If it is under intermittent management:	5. Improved fallow		Establishment and management of trees on fallow agricultural land to improve productivity, e.g. through fire control, extending the fallow period, etc., with the knowledge and intention that eventually this land will revert back to active agriculture.
Protective land and buffers Land that is vulnerable to, or critical in safeguarding against, catastrophic events > **Suitable for mangrove restoration, watershed protection and erosion control**	If degraded mangrove:	6. Mangrove restoration		Establishment or enhancement of mangroves along coastal areas and in estuaries.
	If other protective land or buffer:	7. Watershed protection and erosion control		Establishment and enhancement of forests on very steep sloping land, along water courses, in areas that naturally flood and around critical water bodies.

2 BONN CHALLENGE BAROMETER

Tracking progress

The demand by Bonn Challenge jurisdictions for a flexible yet standardised reporting process to adequately capture progress on FLR implementation in support of Bonn Challenge commitments is driven by multiple objectives. These include demonstrating to political constituencies (or shareholders or alliance members or donors) that promises made are being fulfilled. National governments are also driven by the desire to facilitate and enrich reporting on multiple global commitments, such as nationally determined contributions (NDCs), the Aichi biodiversity targets as well as those of land degradation neutrality and the Sustainable Development Goals. Reporting on progress and opportunities as well as bottlenecks is also expected to help to attract external support for implementation and it will assist donors in seeing the full value of their investments.

The Bonn Challenge is about 'bringing hectares into restoration', which entails not only the planting of trees and other woody plants on the ground but also the broader transformative process of forest landscape restoration that includes policy change and the strengthening of national capacities for ultimately and sustainably achieving restoration on the ground.

The forest landscape restoration (FLR) approach, as described above, strives to balance competing needs and trade-offs among a broad range of stakeholders, processes and activities. This means that actions taken to realise Bonn Challenge commitments are multi-faceted and that pledgers need a multi-faceted yet efficient process for reporting progress that reflects effort during the restoration process as well as results and benefits.

Furthermore, even at the time of expressing commitments, pledgers are at different stages in the process of undertaking restoration. Some pledgers have conducted extensive sub-national or national-level assessments of opportunities for restoration and have set up initiatives addressing biome-specific needs prior to making a Bonn Challenge commitment. Others follow up on their commitment with plans and preparations to achieve their target. This means that pledgers are at different stages in the process of undertaking restoration. Also, implementation capacities differ widely across jurisdictions. In tracking progress, therefore, the Bonn Challenge Barometer must take account of this groundwork and these challenges. A certain amount of flexibility in the parameters for measuring progress is therefore necessary to allow for a balanced assessment of advances in a range of jurisdictions.

The Bonn Challenge Barometer responds to this reality by setting out to capture the different dimensions that should be considered to meaningfully track the advances pledgers are making toward bringing hectares into restoration and to reveal the obstacles they are encountering with a view to attracting support for addressing these.

Specifically, the Barometer will provide:

1. *Information to help pledgers and institutions researching, planning and implementing restoration responses to emerging FLR opportunities;*
2. *In-depth analysis demonstrating progress in implementing initiatives that align with FLR and the Bonn Challenge;*
3. *Identification of obstacles or bottlenecks to enable sub-national and international decision makers to prioritise measures to overcome obstacles; and*
4. *Information revealing opportunities for bilateral and multilateral donors, and private-sector, research and international organisations to assist in supporting implementation.*

The next section gives an overview of the development of the Barometer and the indicators developed to track progress.

Designing the Barometer

The Barometer is still being developed and refined, and will be finalised through further consultations with the jurisdictions that will pilot its application and international monitoring experts. These dialogues are examining how to align the Barometer with existing data aggregation and

reporting requirements under the international agreements noted above. Information will be gathered, at least initially, by IUCN staff in consultation with Bonn Challenge jurisdictions and partners and, over time, the intention is that data will be provided by the pledgers and analysed by IUCN and partners. It is important that the Barometer should reduce or at least not increase the reporting burden on countries. For coalitions, non-governmental organisations and businesses making pledges, the Barometer can align with indicators used for annual reports and reports on the implementation of the New York Declaration on Forests (NYDF), if they are signatories.

The next section describes the framework for collecting and analysing information to track progress on Bonn Challenge commitments.

Framework

The conceptual model for the Bonn Challenge Barometer (Figure 2) shows the inputs, process and outputs. Once the Barometer tool has been fully developed, the consultative process to select indicators will not be needed and the inputs will feed directly into the collating and analysing of data.

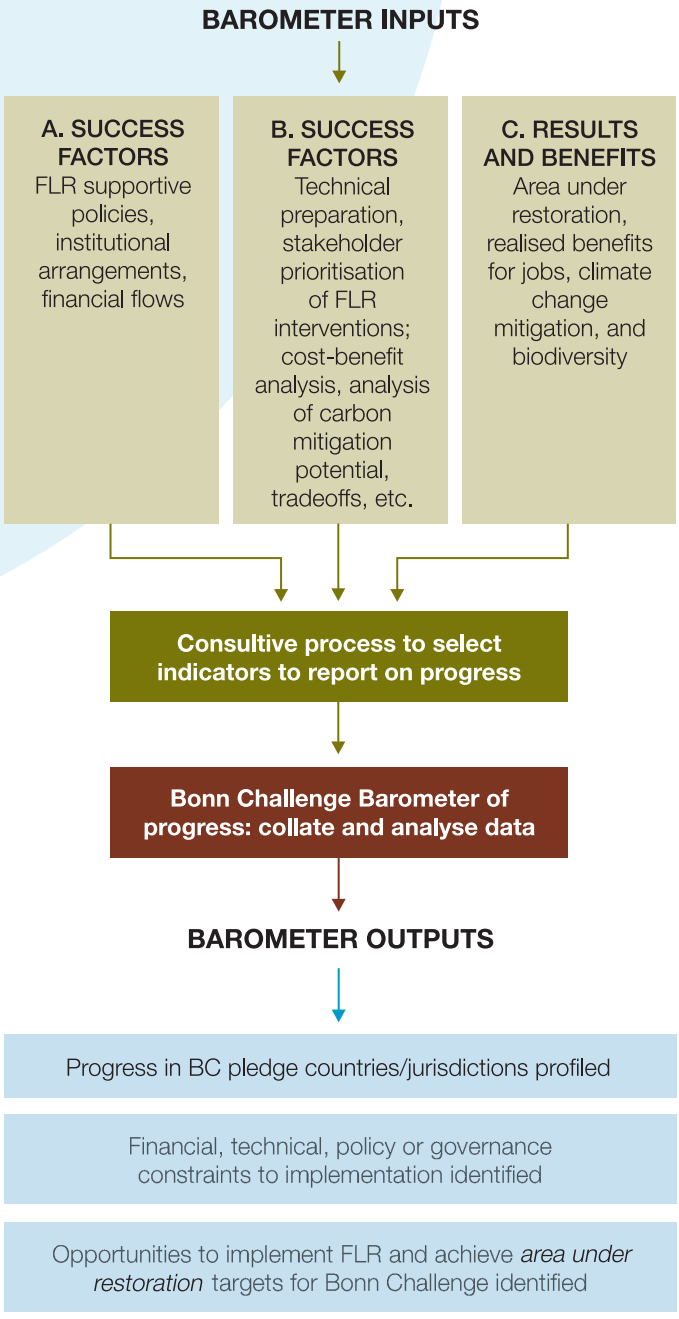
Inputs include success factors, and results and benefits:

1. **Success factors**. Steps taken to: (A) develop, revise or implement existing policies and national strategies, and to put in place or strengthen institutional mechanisms to facilitate implementation of restoration activities that align with FLR principles; direct financial flows and mechanisms to restoration; and (B) provide a solid technical foundation for planning, prioritisation and initiation of restoration.

2. **Results and benefits**. Contributions to achieving the targeted area under restoration. Benefits include employment generated through restoration initiatives, potential benefits to key biodiversity areas, potential for carbon sequestration and climate adaptation.

The next section gives an overview of possible indicators for success factors, and results and benefits. The baseline year for technical planning and recording or including

Figure 2. Conceptual model for the Bonn Challenge Barometer showing: the various types of input (A, B, C); the consultative process to identify and apply relevant indicators (green); the collation and analysis of data (brown); and outputs (blue) showing progress, obstacles and opportunities.



[25] January 2010 was selected as the baseline date for technical preparation and on-the-ground efforts to align with emissions reductions commitments under the UNFCCC for Annex 1 Parties and more advanced non-Annex 1 Parties.

initiatives that contribute to restoration[25] is 2010. The baseline year for policies, institutional arrangements and financial flows supporting implementation of Bonn Challenge commitments is the year a pledge was confirmed.

Caveat: The indicators and categories of information presented in the next section are examples of those that have emerged as the framework has evolved and will be refined following consultations and vetting in countries piloting the Barometer.

Success factors

Policy framework, institutional arrangements, financial commitments

The Barometer captures information about the fundamental building blocks for realising pledges: *policy frameworks, institutional arrangements and financial commitments*. Boxes 2 and 3 provide illustrative indicators.

Box 2. Indicators for tracking progress on policy frameworks, institutional arrangements

1.1 Policies, plans and strategies support or enable the implementation of initiatives that align with FLR principles and contribute to the achievement of the Bonn Challenge. Examples include:

- National or sub-national forestry, biodiversity conservation, rural development, land tenure, energy, food security, climate change or other policies that encourage or mandate restoration.
- Commitments to international instruments embodied in national strategies (e.g., National Biodiversity Strategies and Action Plans (NBSAPs), Nationally Determined Contributions (NDCs), land degradation neutrality targets).

1.2 Institutional arrangements that cut across sectors and scales, and play a role in implementing initiatives that align with FLR principles and contribute to the achievement of the Bonn Challenge. Examples of such institutional arrangements include:

- Inter-sectoral roundtables or inter-agency coordination mechanisms, such as those created across Mexico and Central America as an outcome of jurisdictions undertaking Restoration Opportunities Assessment Methodology (ROAM) processes.

Box 3. Indicators for tracking progress on financial commitments

1.3 Financial flows or mechanisms exist or have been identified, developed or operationalised to enable implementation of initiatives that align with FLR principles and contribute to the achievement of the Bonn Challenge. Examples include:

- Public expenditure: National budget flows, such as to the National Bank for Agriculture and Rural Development (NABARD) in India, which supports various schemes for on-farm forestry and agroforestry, and natural resource management by farmers.
- Private investment and loans: Investment in marketing products and services in restored areas; impact investors and blended capital (e.g., Althelia Ecosphere Climate Fund), private microcredit providers; agribusiness or other private-sector investment in restoration.
- Contributions from international donors: Bilateral support from donor government agencies; multilateral donor support through funds such as the Green Climate Fund (GCF), Forest Carbon Partnership Facility (FCPF) Readiness Fund or Carbon Fund, Global Environment Facility (GEF), Forest Investment Program (FIP), BioCarbon Fund.

Technical planning and preparation

Technical planning and preparation are necessary to prepare for implementing restoration on the ground and critical for ensuring stakeholder support for and participation in implementation. Technical planning and preparations include deciding on the priority landscapes, clarifying the objectives of restoration across these landscapes, analysing the trade-offs between the different objectives of landscape restoration and the needs of stakeholders, and costs and benefits of implementation. Box 4 presents examples of indicators for tracking progress in planning and preparation.

Results and benefits

The Barometer provides information on the results and benefits of implementing forest landscape restoration initiatives on the ground. In assessing results and benefits, the *area brought into (or under) restoration* may be defined as the area in hectares where restoration measures that follow the principles of FLR have been initiated or are operating or influencing the landscape to slow or reverse ecological, social and economic processes that underlie the need for restoration. Box 5 gives examples of indicators for evaluating results and benefits.

Box 4. Indicators for tracking progress on technical planning and preparation

2.1 Planning process undertaken to enable implementation of initiatives that align with FLR principles and contribute to the achievement of the Bonn Challenge. Examples of activities at the planning stage include:

- Multi-stakeholder identification and prioritisation of restoration interventions.
- Spatial analysis of restoration potential, including land rights assessment, that includes the production of (sub-) national opportunity maps.
- Analysis of economic costs and benefits of planned FLR interventions.
- Analysis of the potential carbon sequestration, biodiversity conservation and climate change adaptation benefits where relevant.
- Development of business or finance models for implementing FLR opportunities.

2.2 Identification of existing or development of new frameworks to monitor and evaluate progress on the implementation of initiatives that align with FLR principles and contribute to the achievement of the Bonn Challenge. For example:

- Monitoring protocols for site-based projects, such as for the Brazilian Atlantic forest by the Atlantic Forest Restoration Pact – PACTO (*PACTO Monitoring Protocol for Forest Restoration Programs and Projects*); *and the Society for Ecological Restoration Progress Evaluation 'recovery wheel'* (http://www.ser.org/page/SERNews3113).
- Landscape-scale biophysical monitoring of restoration underway; tools such as Open Foris Collect Earth (*Open Foris Collect Earth*).
- Regional monitoring initiatives, such as monitoring guidelines for AFR100.
- Monitoring initiatives related to international instruments, e.g. UNFCCC, CBD, UNCCD.

Box 5. Indicators for results and benefits

3.1 Area under restoration towards the Bonn Challenge commitment.

3.2 Estimate of carbon sequestered (tons/CO_2/year) in the area under restoration.

3.3 Socioeconomic benefits. For example:

- Number of additional jobs generated.

3.4 Expected biodiversity benefits. For example:

- Overlaps between landscapes under restoration and key biodiversity areas (KBAs).

Way forward

During 2018, the pilot jurisdictions and other experts will be consulted on the framework and indicators to continue the development of the Barometer, including more precisely defining terms, indicators and sources of data. Information gathered as a result of piloting the protocol will be compiled and analysed. The Bonn Challenge Barometer Report in 2018 will include information on the process of developing and applying the protocol during 2017–2018 as well as describing the status of implementation in jurisdictions.

The next section presents case studies of the steps taken to fulfil Bonn Challenge commitments in five jurisdictions.

The **case studies are not intended to present a total figure for the area under restoration in these countries or a comprehensive view of the status of progress in these jurisdictions but rather to illustrate the kinds of information that will be compiled and analysed by the Barometer** to indicate advances toward fulfilling Bonn Challenge pledges. There are several signs of progress toward implementing Bonn Challenge commitments and this Spotlight 2017 Report illustrates some of these advances in the pilot countries. The information presented in the case studies is not exhaustive but rather provides a snapshot of success factors, and results and benefits to date.

3 CASE STUDIES

Brazil

Bonn Challenge pledge and context

In December 2016, recognising the potential of FLR to help Brazil fulfil international commitments and achieve national goals – notably the Brazilian Nationally Determined Contribution (NDC) and the Convention on Biological Diversity (CBD) Aichi Targets, the Native Vegetation Protection Law (replacing the Forest Code 1965) and Low-Carbon Agriculture Program – Brazil made a Bonn Challenge commitment to restore 12 Mha of deforested or degraded forest land by 2030. The Ministry of the Environment (MMA) and the Ministry of Agriculture (MAPA) are jointly responsible for realising Brazil's Bonn Challenge pledge. Complementing the national pledge is a commitment to restore 1 Mha made by the Atlantic Forest Restoration Pact (PACTO), announced in 2012.

The Native Vegetation Protection Law (NVPL) (Federal Law 12.651/2012) is the main legislation regulating land use and management on private property, which accounts for approximately 53% of Brazil's native vegetation. The Bonn Challenge commitment to restore 12 Mha is just over half of the 21 Mha (+/–6 Mha) targeted for restoration under Brazil's NVPL 2012 (Soares-Filho, et al., 2014). The national land registry system – National Rural Environmental Registry System (SICAR) – set up under the NVPL, is seen as a powerful mechanism to reduce habitat conversion, allow monitoring, and support private land owners in complying with legal requirements to compensate for their 'native vegetation deficit' and restoring native vegetation (Azevedo, et al., 2017). Brazil's NDC under the UNFCCC Paris Agreement incorporates a target of restoring and/or reforesting 12 Mha of forest by 2030.

The following paragraphs describe success factors, and results and benefits in realising Brazil's Bonn Challenge commitment.

Success factor: Policy framework, institutional arrangements, financial commitments

The National Policy for the Recovery of Native Vegetation (PROVEG), established by federal decree (Federal Decree No.8,972) in January 2017, was one of the first actions taken by Brazil to support implementation of its Bonn Challenge commitment. PROVEG articulates, integrates and promotes policies, programmes and actions that encourage the recovery of forests and other native vegetation under the Forest Code. The mechanism for implementing PROVEG is PLANAVEG, the National Plan for Native Vegetation Recovery. PLANAVEG was established by Inter-ministerial Normative Rule No. 230 November 2017 (Ministry of Environment, Ministry of Education and Culture, Ministry of Agriculture and Chief of Staff – Climate Change). One of the key aspects of this law is its clear integration with other environmental protection policies, the National Climate-Change Policy and systems such as SICAR under the Forest Code.

The decree also established a commission (CONAVEG) to coordinate implementation, monitoring and evaluation of PROVEG and PLANAVEG, revise PLANAVEG every four years, and facilitate interaction between state, district and municipal bodies in managing and implementing PROVEG and PLANAVEG.

PLANAVEG is designed to enhance coordination and coherence between national and state institutions. The plan integrates eight strategies to support FLR as part of the coordinated government effort: i) raising awareness of the benefits of restoration; ii) enhancing the quality and quantity of seeds and seedlings of native species; iii) promoting markets for native vegetation products and services; iv) aligning and integrating institutions and public policies; v) developing financial mechanisms to support recovery initiatives; vi) improving and expanding technical assistance and rural extension; vii) spatial planning and monitoring; and viii) investing in research, development and innovation. In this way, PLANAVEG aims to strengthen policies, financial incentives, markets, restoration technologies, best agricultural practices and other measures to promote the restoration of 12 Mha of deforested and degraded forest land by 2030.

In addition to this policy framework at the national level, sub-national policies, institutional arrangements and financial mechanisms in support of FLR have developed

significantly. For instance, the Federal District issued a new decree to enable monitoring of current and future FLR projects. Espírito Santo state defined priority areas for expanding Programa Reflorestar, the state's payment for ecosystem services (PES) programme. All these steps institutionalise sustainable, coherent policies on and in support of FLR.

Moreover, a national civil society coalition, the Brazilian Coalition on Climate, Forest and Agriculture, aims to contribute to achieving the NDC. The coalition has over 160 members and several working groups. Forty members of the Working Group for Restoration and Reforestation are mapping all restoration and reforestation initiatives underway. The next step will be to extend this mapping to all members of the coalition and then to the whole country. The goal is to aggregate results on restoration and integrate them into reporting on the NDC target. The working group is also supporting the development of a web portal to give stakeholders access to information on restoration and reforestation and, eventually, information on progress toward the NDC target. Another new initiative is the Alliance for Restoration in Amazon, a multi-stakeholder coalition focusing on conservation and restoration of the Amazon forest biome.

Success factor: Technical planning and preparation

The Brazilian government, through its National Institute on Space Research in partnership with the Brazilian Agricultural Research Corporation, has implemented the TerraClass Project. This is the continuous mapping of land use and cover in the Amazon and Cerrado biomes over time. This mapping provides a broad understanding of the ecological, economic and productive dynamics in these biomes, including estimates of areas that are recovering.

At the national level, every four years, the federal government issues a national inventory of greenhouse gas emissions, which includes information on emissions associated with land use and forests.

IUCN and its members have supported the application of the Restoration Opportunities Assessment Methodology (ROAM) in four states covering many biomes – São Paulo, Espírito Santo, Pernambuco, Santa Catarina – and in the Federal District. Economic analyses and carbon abatement curves are being developed for Pernambuco and Santa Catarina, and have been completed and the results integrated in the sub-national restoration strategy in Espírito Santo. The economic analysis for the Federal District has also been completed. In Pernambuco the draft report is currently being peer reviewed. The results will be used to develop a financial strategy to leverage on-the-ground FLR opportunities at state level. IUCN is working closely with the Federal District government to use the assessment process to leverage established restoration targets and lead to a formal pledge of almost 20,000 hectares to the Bonn Challenge.

State-level assessments of restoration opportunities and plans support PLANAVEG, the NDC target for restoration and reforestation, and other national and sub-national policies. The stakeholder processes convened around the application of ROAM and the development of sub-national restoration strategies contribute to CONAVEG, the committee, which as noted above, was established under PROVEG to coordinate and monitor advances toward implementing PLANAVEG.

In addition to state assessments of restoration, a collaborative initiative, the Brazilian Annual Land Use and Land Cover Mapping Project (MAPBiomass), involving several universities, NGOs and government agencies, tracks changes in land cover, including restoration, using satellite imagery (http://mapbiomas.org/map#transitions).

Results and benefits

While there are several initiatives on the ground, there is a lack of aggregated information at the national level. SICAR information, when fully validated, will monitor field initiatives at national level. There are strong signs of progress in different areas across the country; several states have their own forest restoration programmes, such as Programa Reflorestar in Espírito Santo. Brazil's Bonn Challenge pledge is a commitment at the national level and, as mentioned above, is complemented by a sub-national biome-specific pledge from the Atlantic Forest Restoration Pact (PACTO). Because it is too soon to assess the results and benefits of the national pledge, the long-established PACTO example is presented as an example. PACTO's work provides examples of results on the ground. Under the Bonn Challenge, PACTO will report on 1 Mha of Atlantic rainforest restoration by 2020.

The goal of PACTO, a coalition of NGOs, government bodies at various levels, businesses, research centres,

associations and colleges, is to restore 15 Mha of degraded and deforested land by 2050, by aligning the efforts of its 260 government and civil society members. PACTO is working toward planting 2 million native species in the Atlantic forest through an initiative funded by ECOSIA, a German company. PACTO has an updated web-based monitoring system, already in use, that monitors actions using three categories of indicators: ecological, socio-economic and management (Viani, et al., 2017). The system will be important in tracking trends in the restoration in the Atlantic rainforest biome and reporting on progress toward implementing PACTO's Bonn Challenge pledge.

Pact for the Atlantic Forest Restoration Pact (PACTO)

Progress in achieving the Bonn Challenge commitment by PACTO partners includes:

- 2,500 projects of SOS Mata Atlântica Foundation have planted 35 million seedlings across 20,000 hectares.
- The Copaíba Environmental Association has been working on restoration in 20 municipalities in Minas Gerais and São Paulo states; in the catchments of 210 tributaries of the Peixe and Camanducaia rivers an area of 300 hectares is now under restoration.
- The goal of Fibria Celulose is to restore 40,000 hectares in protected areas in Espírito Santo, Minas Gerais, Bahia, São Paulo and Mato Grosso do Sul by 2025. Of this, 19,000 hectares have been under restoration since 2015. The company has undertaken reforestation using native species or a mix of native and eucalyptus, promoted natural regeneration and worked to control the spread of invasive species.
- Verdesa has planted more than half a million native seedlings on 320 hectares of seasonal (semi-deciduous) forest in São Paulo state since 2010.

El Salvador

Bonn Challenge pledge and context

El Salvador's Bonn Challenge pledge of bringing one million hectares of degraded land under restoration by 2030 was announced in 2012. In making this commitment to the Bonn Challenge, the contributions of restoration to 'mitigation based on adaptation', as well as biodiversity conservation, improving livelihoods, ecosystem services and disaster resilience were all highlighted.

The following paragraphs describe success factors, and results and benefits in realising El Salvador's Bonn Challenge commitment.

Success factor: Policy frameworks, institutional arrangements, financial commitments

Priorities for adaptation identified in El Salvador's mitigation based on adaptation (MbA) strategy include restoring degraded or deforested ecosystems to re-establish ecological integrity through agroforestry, as well as through soil management and the conservation of water sources.[26]

The 2012 El Salvador REDD Readiness Strategy emphasises protection and restoration of ecosystems as key issues for action. Other areas related to FLR that the strategy highlights are: the conservation of forest ecosystems; protected areas; protection of existing mangroves; restoration of degraded forests and other supporting ecosystems; the restoration of gallery forests; and revegetation of riverside landscapes.[27] The MbA approach of the El Salvador National Programme for the Restoration of Ecosystems and Landscapes prioritises increasing forest carbon reserves and changing agricultural practices. It also promotes reducing the rates of deforestation and degradation in existing forest ecosystems, which include natural forest ecosystems, forest plantations, forests in protected natural areas (PNAs), biosphere reserves and agroforestry systems such as coffee plantations.[28] Agreements have been made with municipalities. Local sustainable development plans (*planes locales de desarrollo sostenible*) are being implemented in seven territories. The plans incorporate actions for the restoration of ecosystems and landscapes, prioritising conservation areas and areas of biosphere reserves.

El Salvador's MbA approach was endorsed by the Forest Carbon Partnership Facility (FCPF) Participants Committee. In January 2014, FCPF provided a second grant of US$ 3,600,000 for preparing a National Strategy for Ecosystem and Landscape Restoration based on MbA. The mid-term progress report on the El Salvador MbA programme was presented in September 2017 to the FCPF.

A National Council for Environmental Sustainability and Vulnerability (CONASAV) has been created, which coordinates dialogues among civil society representatives, academics, business people, financial institutions, religious leaders and the media, along with the mandated participation of governmental and municipal institutions, international organisations and other stakeholders interested in increasing sustainability and reducing the country's vulnerability to climate change. As a concrete result of its work, the CONASAV created the Ecosystems and Landscapes Restoration Roundtable on 17 January 2017, with more than 60 representatives from different social and economic organisations in several parts of the country. Since its creation, the roundtable has based its work on the National Programme for the Restoration of Ecosystems and Landscapes promoted by the Ministry of the Environment and Natural Resources (MARN).

Success factor: Technical planning and preparation

With the support of IUCN and taking the El Salvador National Programme for the Restoration of Ecosystems and Landscapes as a starting point, the Ministry of Environment and Natural Resources assessed restoration opportunities using ROAM. The assessment identified nine priority restoration actions. The potential impacts of restoration were assessed by estimating their monetary benefits, as well as environmental (carbon balance, fuelwood production, impact on connectivity, erosion control, and the export of sediments and nutrients) and social (job creation, food security and livelihoods)

[26] Forest Carbon Partnership Facility. Readiness Fund. (2017). *Mid-term Report: El Salvador*. Forest Carbon Partnership Facility. http://forestcarbonpartnership.org/sites/fcp/files/2017/Aug/MTR%20REDD%2B%20El%20Salvador%2014%2008%202017%20ENG%20final.pdf

[27] Forest Carbon Partnership Facility. (2013). *REDD Readiness Progress Factsheet: El Salvador.* https://www.forestcarbonpartnership.org/sites/fcp/files/2013/june2013/El%20Salvador_Progress%20Fact%20Sheet_March%202013.pdf

[28] Forest Carbon Partnership Facility. Readiness Fund. (2017). M*id-term Report: El Salvador*. Forest Carbon Partnership Facility. http://forestcarbonpartnership.org/sites/fcp/files/2017/Aug/MTR%20REDD%2B%20El%20Salvador%2014%2008%202017%20ENG%20final.pdf

co-benefits. The major outcomes of the assessment process were:

- Identification of 1,187,951 hectares where there are opportunities for restoration. Developing a baseline, prioritising current uses of the land, and defining transitions to improve and recover ecosystem goods and services.
- Quantification and qualification of potential impacts of restoration. Evaluation of long-term financial and economic results of current uses and transitions to different management systems, as well as improvements to ecosystem services (erosion control, sediment and nutrient retention and carbon balance) and social circumstances.
- Analysis of existing and potential financial instruments. Designing a financing mechanism for transitions to meet goals.

Subsequent to the outcomes of the ROAM process, IUCN supported the Government of El Salvador in developing the Action Plan for the Restoration of Ecosystems and Landscapes, Project 2018–2022, focusing on mitigation-based adaptation. Furthermore, an area of 400,000 hectares to be brought under restoration during Project 2018–2022 has been identified – through a multi-criteria spatial analysis of financial, social and environmental benefits – in order to support decision-making for the gradual implementation of the restoration strategy. Finally, El Salvador has implemented a restoration monitoring system to track restoration activities implemented under its Action Plan for the Restoration of Ecosystems and Landscapes, which gathers information on the type of restoration, the habitat being restored and the total area under restoration action.

Results and benefits

Thanks to the Action Plan for the Restoration of Ecosystems and Landscapes, approximately 108,000 hectares have already been brought under restoration, as of November 2017.[29] Four projects are being developed to further support implementation, focusing on: (1) design of the Restoration Incentive Program; (2) system of community monitoring of the restoration; (3) mechanisms to achieve greater integration of the private sector in restoration activities and (4) establishment of the Forest Seed Centre for the conservation and use of native forest germplasm in restoration.

As noted in Section 2, the results and benefits presented here are illustrative and not intended as a total figure for the area under restoration in El Salvador or a comprehensive report of all progress made in the jurisdictions enacting restoration initiatives.

[29] According to the national restoration monitoring system. Accessed 25 November 2017. http://apps3.marn.gob.sv/geocumplimiento/restauracion/mapa.php

Mexico

Bonn Challenge pledge and context

In 2013, the Government of Mexico pledged to bring 8.5 Mha of land under restoration by 2020. The National Forestry Commission (CONAFOR)[30] and the Ministry of Agriculture (SAGARPA) are jointly responsible for realising Mexico's Bonn Challenge pledge. In addition to the federal commitment, in 2015 the states of Campeche, Quintana Roo and Yucatan, in an unprecedented sub-national effort, jointly pledged to bring under restoration 0.95 Mha by 2020, and an additional 1.05 Mha during the period 2021–2030; the latter area representing an additional contribution to the country´s restoration commitment. Similarly, in 2017, the Government of Chiapas pledged 0.17 Mha by 2020 and 0.18 Mha during the period 2021–2030.

The state of Quintana Roo will pilot the Barometer 2018–2019. Nonetheless, progress at the national level in setting up or implementing policies and directing financial flows are an important context for developments in the state, and are thus presented here together with progress in Quintana Roo.

The following paragraphs describe success factors, and results and benefits in realising Mexico's Bonn Challenge commitment.

Success factor: Policy frameworks, institutional arrangements, financial commitments

Since the Government of Mexico's Bonn Challenge pledge, the National Forestry Commission (CONAFOR) and the Ministry of Agriculture (SAGARPA) have fostered inter-institutional coordination to promote sustainable rural development by signing a Collaboration Agreement. The Agreement outlines the modalities for aligning and coordinating forest conservation, and forestry and agricultural policies and programmes, to avoid deforestation and use existing public resources more efficiently and effectively. The Agreement does not explicitly mention FLR but will enable the coordination and alignment of public policies – in agricultural and forest sectors (i.e. through the implementation of the national REDD+ Strategy) with a landscape approach – that align with and are complementary to the FLR principles underpinning the federal Bonn Challenge pledge.

In December 2016, the governments of the three states in the Yucatan Peninsula – Yucatan, Campeche and Quintana Roo – signed the Framework Agreement on Sustainability of the Yucatan Peninsula for 2030 (ASPY 2030). ASPY 2030 promotes inter-institutional coordination at the state level, among states, and among national government, private-sector, academia, financial institutions, civil society and international bodies to foster low-emissions growth and to successfully implement sustainability strategies, particularly for REDD+, biodiversity, landscape restoration and coastal resilience, among others. The commitments made in 2015 by the three state governments to restore 2 million hectares under the Bonn Challenge by year 2030 were included in the goals of the ASPY.

Each year, CONAFOR and SAGARPA implement many federal programmes and subsidies in Mexico. Programmes range from payments for ecosystem services, financial support for commercial forest plantations and soil conservation, to incentives for agricultural and livestock production. Most programmes, for which all farmers and rural communities meeting the requirements are eligible, are not coordinated; many currently drive deforestation. The Agreement between SAGARPA and CONAFOR may help to unleash a wide range of resources and programmes that will support both landscape restoration and the REDD+ agenda. In this context IUCN is currently collaborating with the World Bank for the implementation of Forest Carbon Partnership Fund projects in Mexico. IUCN is identifying sustainability criteria for joint SAGARPA, CONAFOR and state government investments through demand-driven programmes and designing appropriate instruments for the implementation of the inter-sectoral Agreement. This work will provide a framework for aligning FLR with the REDD+ national policy, which in Mexico is also implemented through a landscape approach.

The restoration opportunities assessments carried out for the three states in the Yucatan Peninsula identified federal subsidies programmes which could support the implementation of Bonn Challenge pledges. Federal programmes support part of the initial investment cost for a wide range of activities with great potential for

[30] CONAFOR will restore 1 million hectares, which is consistent with the restoration goals to 2018.

restoration, ranging from the CONAFOR Program on Commercial Forest Plantation, Reforestation, Agroforestry, Environmental Compensation (offset) for forest land-use change, to SAGARPA's Program on Conservation and Sustainable Use of Soil, Program on Sustainable Modernization of Traditional Agriculture, and Program of Grasslands Management and Grassland Reconversion, among others.

Success factor: Technical planning and preparation

Quintana Roo and the other Yucatan Peninsula states have built an in-depth technical foundation for pledge implementation. With the support of IUCN, the three states in the Yucatan Peninsula and stakeholders used ROAM to assess restoration opportunities.

The analyses of carbon sequestration and the economic value of current land use developed for the Yucatan Peninsula are presented in Table 1 and will serve as the baseline for the sub-national pilot of the Bonn Challenge Barometer in the state of Quintana Roo.

The ROAM assessments concluded that realising the Bonn Challenge targets of the three states (0.95 Mha by 2020 and cumulatively 2 Mha by 2030) could generate net economic benefits of up to US$ 2.1 billion a year with a minimum net carbon capture of 107.1 Mt CO_2e, which would represent 30.7% of Mexico's NDC target. More specifically, preliminary findings of state-level restoration opportunities assessments indicate that there are 3.35 Mha where nine restoration strategies and land-use transition models, backed by business plans, would deliver a positive rate of return on restoration.

Results and benefits

On the ground restoration in Mexico can be estimated using the records of public programmes related to restoration. In the state of Quintana Roo, for instance, during 2011–2014, CONAFOR programmes extended over more than 57,000 hectares.[31] Some programmes focused on conservation, others on sustainable management of existing forests; programmes covering 17,921 hectares – reforestation, silviculture and agroforestry – related directly to FLR. SAGARPA programmes also offer great potential for supporting landscape restoration but, to date, have not yet made a contribution. The development of landscape restoration strategies using ROAM and the Agreement will provide opportunities for many SAGARPA programmes to support landscape restoration.

As noted in Section 2, the results and benefits presented here are illustrative and not intended as a total figure for the area under restoration in Mexico or a comprehensive report of all progress made in the jurisdictions enacting restoration initiatives.

[31] Source: CONAFOR database of beneficiaries (Patrón de beneficiarios CONAFOR).

Table 1: Expected impact of Bonn Challenge sub-national restoration pledges in the Yucatan Peninsula.

			CBD	UNFCCC	REDD+	Green Development
	Restoration priority (ha) according to economic criteria for achieving Bonn Challenge 2 Mha goal		Contribution to Aichi targets	Contribution to NDCs (Mt CO_2e)	Restoration priority (ha) within REDD+ FCPF pilot investment areas	Annual net economic value of restoration
Yucatan	551,164 (100% BC pledge)	Improved 'milpa' (418,341) Forest plantations (63,397) Agroforestry rainfed (6,718) Agroforestry irrigated (4,489) Forest enrichment (58,219)	5, 7, 8, 11, 14, 15 5, 7, 15 5, 7, 8, 15 5, 7, 8, 15 5, 7, 11, 14, 15	41.6 (12% of national NDCs)	46,168	US$ 799 million (5.8% GDP Yucatan)
Campeche	751,003 (100% BC pledge)	Improved 'milpa' (166,626) Forest plantations (128,439) Silvopastoral (137,267) Agropastoral (270) Agroforestry rainfed (54,229) Agroforestry irrigated (837) Forest enrichment (263,335)	5, 7, 8, 11, 14, 15 5, 7, 15 5, 7, 15 5, 7, 8, 15 5, 7, 8, 15 5, 7, 8, 15 5, 7, 11, 14, 15	39.9 (11.4% of national NDCs)	170,907	US$ 837 million (2.2% GDP Campeche)
Quintana Roo	503,977 (72% BC pledge	Ecological restoration (15,861) Improved 'milpa' (132,825) Forest plantations (21,945) Silvopastoral (61,687) Agropastoral (7,088) Agroforestry rainfed (47,751) Agroforestry irrigated (1,701) Forest enrichment (215,119)	5, 11, 14, 15 5, 7, 8, 11, 14, 15 5, 7, 15 5, 7, 15 5, 7, 8, 15 5, 7, 8, 15 5, 7, 8, 15 5, 7, 11, 14, 15	25.6 (7.3% of national NDCs)	386,858	US$ 498 million (3.4% GDP Quintana Roo)

Rwanda

Bonn Challenge pledge and context

In 2011, the Government of Rwanda pledged to bring 2 Mha under restoration by 2020. A key influence on this commitment was the severe environmental degradation in the country. Soil erosion across Rwanda, for instance, averages 250 tons/hectare/year, increasing to 421 tons/hectare/year in croplands (Karamage et al., 2016). Commitment to halt and reverse this scale of environmental degradation is manifest in the Rwandan national development plan. Vision 2020, launched in 2000 and revised in 2012, recognises the cross-cutting nature of natural resources, environment and climate change.[32] The development of the Green Growth and Climate-Resilient Strategy (GGCRS) in 2011 fostered the government's efforts to turn the country into a low-carbon development economy.[33] Restoration was also reflected in district development plans, which set targets for hectares to be brought under restoration every year for five years.

The following paragraphs describe important success factors in Rwanda, and emerging results and benefits of implementing FLR to achieve Rwanda's Bonn Challenge commitment.

Success factors: Policy frameworks, institutional arrangements and financial commitments

The Rwandan Economic Development and Poverty Reduction Strategy (EDPRS) is the framework for achieving Vision 2020 and the Sustainable Development Goals (SDGs).[34] Rwanda's commitment to a policy framework that minimises pressure on natural resources, including biodiversity and forests, and reverses land degradation is largely supportive of FLR.[35] Political will is also reflected in Rwanda's national Green Growth and Climate-Resilient Strategy (GGCRS), the framework for Rwanda to become a developed, climate-resilient, low-carbon economy by 2050. The GGCRS identifies sustainable land management and agroforestry as two of 14 programmes of action.[36]

Rwanda's Bonn Challenge commitment is being implemented predominantly through agroforestry (on approximately 1.5 Mha). Agroforestry implementation needs multidisciplinary support from governmental institutions and development partners. A strong policy framework notwithstanding, incomplete coordination between various institutions and agencies was identified as an obstacle to progress through the ROAM process in 2014.[37] To overcome challenges, the Government of Rwanda has taken several decisive steps. These steps include establishing several bodies to take charge of sectoral and cross-sectoral issues of relevance to implementing FLR initiatives to achieve Rwanda's Bonn Challenge goal, both at central and decentralised levels. At the central level these bodies include the Prime Minister's Office, economic, social, and governance clusters, and the Forward Looking Joint Sector Review that cuts across sectors. The Joint Action Development Forum operates at the local level and also cuts across sectors. To facilitate improved coordination across sectors involved in land use and land-use management, for example, Rwanda has established a cross-sectoral collaborative task force bringing together different ministries and government institutions, and private-sector and civil society organisations focusing on FLR and Sustainable Food and Agriculture. Since its establishment in 2015, the cross-sectoral task force, which includes members representing agriculture, education, forestry, land administration, livestock management and mining, has worked to integrate a restoration agenda and its multiple benefits to nature into national planning processes.

The government has also taken action to streamline and improve the management of afforestation and restoration, including agroforestry initiatives. One of the major steps taken was the transfer of the national tree seed centre and oversight of agroforestry to the sole responsibility of the Ministry of Natural Resources, instead of continuing the

[32] Rwanda, Vision 2020. http://www.minecofin.gov.rw/fileadmin/templates/documents/NDPR/Vision_2020.pdf. Accessed 28 September 2017
[33] Republic of Rwanda. (2011). Green Growth and Climate Resilience. National Strategy for Climate Change and Low Carbon Development. Republic of Rwanda, Kigali. https://cdkn.org/wp-content/uploads/2010/12/Rwanda-Green-Growth-Strategy-FINAL1.pdf. Accessed 3 October 2017
[34] Republic of Rwanda. (2011). Green Growth and Climate Resilience: National Strategy for Climate Change and Low Carbon Development. Republic of Rwanda, Kigali. https://cdkn.org/wp-content/uploads/2010/12/Rwanda-Green-Growth-Strategy-FINAL1.pdf. Accessed 3 October 2017
[35] Rwanda Vision 2020.
[36] Republic of Rwanda. (2011). Green Growth and Climate Resilience: National Strategy for Climate Change and Low Carbon Development. Republic of Rwanda, Kigali. https://cdkn.org/wp-content/uploads/2010/12/Rwanda-Green-Growth-Strategy-FINAL1.pdf
[37] Improving institutional coordination and removing inconsistencies between the policies and strategies of different ministries were identified as important action items as a result of the 2014 ROAM process conducted in Rwanda by the national government in collaboration with IUCN and WRI.

joint ownership structure with the Ministry of Agriculture.[38] Subsequently, the creation of a Ministry of Land and Forestry (MINILAF)[39] shows progress in focusing attention on reversing degradation and accelerating FLR in Rwanda. To enhance coordination of FLR efforts, a national task force composed of MINILAF, the National Police and the Ministry of Defence, together with the Ministry of Local Government and Private Sector Federation was established in 2016.

To consolidate and enhance financial support for environmental initiatives, the Government of Rwanda established the National Climate and Environment Fund (FONERWA) in 2013. The fund is now the primary financing mechanism for environmental and climate-change projects in Rwanda. By centralising funding for environment and climate-change initiatives, the government is able to ensure that they are consistent with national priorities and targets. While funding was initially demand-led, there is a progressive transition to selecting projects programmatically, creating an opportunity to invest in FLR. The fund has created private-sector financing instruments that attract green private investment. Through collaboration with FONERWA, and with support from IUCN, Rwanda is piloting the Climate Smart Lending platform,[40] a tool designed to help lenders incorporate climate risk in their loan portfolios while incentivising the adoption of climate-smart farming methods, including agroforestry, by smallholders. Rwanda has also engaged in performance contracts as a way of accelerating development and improving service delivery to its population. Improving land management and promoting restoration efforts is part of the flagship performance contracts. Rwanda is also a leading country on community financing for restoration through a green villages and loans associations movement, mainly spearheaded by civil society organisations.

From public finance, Rwanda increased investment in restoration by 40% in 2015 and 2016 from US$ 2 million to US$ 3.4 million a year for restoring forest landscapes. This continues to show the government's commitments to implementing its restoration targets within the available financial means. Private financial institutions, such as banks, have made commitments to restore degraded lands, for example, the Bank of Kigali has made a commitment to restore 100 hectares by 2020, while the National Police has made a commitment to restore 22,000 hectares by 2025.[41]

By focusing on implementing FLR as a strategy to reverse widespread degradation and harness the delivery of ecosystem goods and services, such as water provision and improving productivity of agricultural lands, Rwanda has garnered support from multilateral and bilateral donors in addition to private investment. Financing from the World Bank Forest Investment Programme and the Pilot Program Climate Resilience (PPCR) is supporting FLR as a priority investment area in Rwanda. Financial commitment from the Government of the Netherlands to reverse degradation has more than doubled since 2015.

Success factors: Technical planning and preparation

The ROAM process, carried out between 2012 and 2014 by the Government of Rwanda with the support of IUCN and WRI, provided a strong foundation for implementing initiatives that align with the FLR principles and contribute to achieving Rwanda's Bonn Challenge pledge. Recommendations for land-use transitions to implement FLR initiatives and contribute to Rwanda's Bonn Challenge pledge include transitioning from agriculture to agroforestry, improving management of woodlots, and moving from deforested and degraded lands to protective forests or to naturally regenerated forests.

The ROAM process also produced carbon abatement curves for the land-use transitions that had been recommended. Transitioning from agriculture to agroforestry across privately held land in Rwanda was estimated to lead to an additional 31 Mt CO_2e stored. Similarly, transitioning from poorly managed to improved management of woodlots would store 28 Mt of CO_2e. Costs of restoration transitions were calculated as part of the economic analysis. The transition from traditional agriculture to agroforestry is expected to cost the most at US$ 986/ha, while allowing natural regeneration over a 30-year period would incur the lowest cost at US$ 450/ha.

[38] One of the major challenges facing afforestation and restoration was the ownership of the national tree seed centre, which was formerly under the Ministry of Agriculture, while the forests were managed by a different ministry. As a result of government action, an agreement was signed between the two ministries which transferred ownership of the national tree seed centre to the Ministry of Natural Resources.
[39] The Ministry of Natural Resources was subsequently split into the Ministry of Environment (MoE) and the Ministry of Land and Forestry (MINILAF).
[40] Climate Smart Lending Platform. https://www.climatefinancelab.org/project/climate-smart-finance-smallholders/
[41] Forestry ministry, Police sign MoU on environmental conservation. The New Times. 8 November 2017. http://www.newtimes.co.rw/section/read/223207/

The ROAM report recognised that the Rwandan conflict in 1994 has led to knowledge gaps in the forest sector that have yet to be fully closed. In recent years, however, the government has proactively addressed these gaps, for example, instituting modular training sponsored by the Rwanda Water and Forestry Authority, district forest management plans, the National Forest Development Strategy, the national forestry policy and the national agroforestry strategies now under development. The Government of Rwanda also has developed a national tree reproductive material strategy which emphasises the availability of high quality seeds of diverse species, ranging from indigenous to potential exotic species.[42]

Opportunities for FLR in Rwanda

Using the Restoration Opportunity Assessment Methodology (ROAM), in 2014 Rwanda identified the following FLR opportunities:

- New agroforestry: 1,110,476 hectares
- Improved management of woodlots: 255,930 hectares
- Improved management of timber plantations: 17,849 hectares
- Natural forests: 13,933 hectares
- Protected forests: 128,191 hectares

In total, 1,526,379 hectares in Rwanda present opportunities for restoration. Due to population density, agroforestry offers the greatest opportunity; about 30% of land nationwide, flat and sloping, is suitable for restoration (InfoFLR).

Results and benefits

Recent analysis by MINILAF showed that a total of 900,000 hectares of land has been brought under restoration since 2011 representing about 45% of the total commitment by Rwanda.[43] A total of 1008 hectares is under natural ecological restoration in the Gishwati-Mukura National Park to restore ecological functionality; 860,000 hectares are under agroforestry; 1400 hectares are plantations; and 37,600 hectares are counted as protective forests including bamboo and other species on river banks, lake shores, road sides and highly exposed slopes.

The current analysis shows that about 186,000 green jobs were created between 2014 and 2017, with women participating in more than 60% of these jobs.[44]

As noted in Section 2, the results and benefits presented here are illustrative and not intended as a total figure for the area under restoration in Rwanda or a comprehensive report of all progress made in the jurisdictions enacting restoration initiatives.

[42] PAREF is committed to increasing Forests cover in Rwanda. 16 June 2011. http://parefrwanda.blogspot.com
[43] MINILAF. (2017). Current Forest Restoration Status in Rwanda, Ministry of Land and Forest (MINILAF), Rwanda.
[44] Rwanda Green Climate Fund website. www.fonerwa.org

United States

Bonn Challenge pledge and context

In 2011, the United States (US) made a Bonn Challenge pledge to bring 15 Mha under restoration by 2020. The US Department of Agriculture Forest Service (USFS), in partnership with other government agencies, states, tribes, non-governmental organisations and private landowners, leads activities to achieve the target *area under restoration* using an all-lands approach.

The following paragraphs describe success factors, and results and benefits in realising the United States' Bonn Challenge commitment.

Success factor: Policy frameworks, institutional arrangements, financial commitments

US policies for forest governance and land ownership are central to its Bonn Challenge commitment. Recent laws and policies relevant to FLR include the Title IV the Omnibus Public Land Management Act 2009 (P.L. 111-11), the Agricultural Act 2014, the 2012 Planning Rule (36 CFR 219) and the Forest Service Ecosystem Restoration Policy (US Forest Service, 2014, Forest Service Directives FSM 2020). These laws and policies strengthen a 'shared stewardship' approach by the Forest Service and tribal, state and local governments, and non-governmental partners, which recognises that cross-boundary partnerships and local knowledge are key to successful FLR.

The USFS Collaborative Forest Landscape Restoration (CFLR) programme was enacted through the Omnibus Public Land Management Act 2009. The Act authorises the restoration of forest landscapes. To encourage investment in collaborative approaches to foster healthy, resilient forests and communities, and to restore fire-adapted ecosystems that reduce the risk of wildfire, the priorities for restoration are landscapes of at least 20,200 hectares.

The Omnibus Public Land Management Act 2009 also established the Collaborative Forest Landscape Restoration Fund, which is authorised to grant up to US$ 40,000,000 annually for fiscal years 2009–2019. CFLR funds can be matched with USFS appropriations, permanent and trust funds, and partnership funds – including in-kind contributions – and with restoration funds from the sale of wood products. In 2017 there were 23 projects across the country.[45]

Every CFLR project reports expenditures, including CFLR appropriated funds, USFS investments and partner funds in its annual reports.[46] CFLR investments have leveraged significant additional funding from multiple public and private funding streams, including:

- More than US$ 100 million in partner investments for work on National Forest Systems lands through grant funding, stewardship agreements, job training for youth crews, monitoring and more; and
- More than US$ 230 million in additional public–private partnership funding, including work on private and state lands within CFLR landscapes.

Collaborative Forest Landscape Restoration Program

The Collaborative Forest Landscape Restoration (CFLR) Program is an innovative, community-driven approach to restoration that delivers multiple benefits. Projects have allowed collaborators to turn their restoration visions into action on the ground.

CFLR projects:

- Encourage collaborative, science-based restoration;
- Support ecological, economic and social sustainability;
- Leverage local, national and private resources;
- Facilitate the reduction of wildfire management costs and risks, including through re-establishing natural fire regimes;
- Demonstrate the degree to which various restoration approaches achieve ecological and watershed health objectives; and
- Use forest restoration by-products to offset treatment costs while benefiting local rural economies and improving forest health.

[45] Details on the projects and their monitoring efforts are shared publicly on the CFLR website.
[46] Collaborative Forest Landscape Restoration Program Results. https://www.fs.fed.us/restoration/CFLRP/results.shtml

Success factor: Technical planning and preparation

The USFS balances the multi-use nature of forests against multiple socioeconomic and ecological objectives when determining landscapes for restoration. CFLR projects are some of the strongest examples of restoration that align with FLR principles. Each CFLR project works with partners to determine and prioritise areas[47] for consideration, and takes various approaches to reaching ecological, social and economic goals. Project partners, working together, continue to identify approaches to evaluating, prioritising and planning activities.[48] Recently, several CFLR projects, and researchers inside and outside the USFS, have used modelling and spatial data to help map priority landscapes for restoration, and to inform collaborative deliberations on trade-offs between the desired outcomes of a given treatment in a given area.[49]

CFLR projects are required to use multi-party monitoring approaches to assess the ecological, social and economic impacts of their activities for no less than 15 years after implementation commences. Each project reports on the status of their multi-party monitoring, including the partners involved and the results, in their annual reports. Indicators monitored and tracked include:

- Estimated jobs and local labour income supported by project activities (using the Treatment for Restoration Economic Analysis Toolkit);[50]
- Acres and miles treated for a set of 20+ US Forest Service Agency performance metrics;[51]
- Ecological indicator reports;[52]
- Community benefits;[53] and
- Effectiveness of treatments in restoring fire-adapted ecosystems.[54]

Local, innovative approaches are captured in the annual reports. Examples include:

- Social and Economic Monitoring for the Lakeview Stewardship Collaborative Forest Landscape Restoration Project;[55] and
- Colorado Front Range Collaborative Forest Landscape Restoration Project: Ecological Monitoring of Treatment Effects on Stand Structure and Fuels through 2013.[56]

Results and benefits

CFLR projects fall within a wider set of restoration activities carried out by the USFS. Between 2011 and 2016, the US has implemented restoration activities across 12.3 million hectares of lost or degraded forest land. This work includes a diverse suite of activities to restore or maintain forest and grassland health, including reforestation, invasive species removal, wildlife habitat improvement, and treatments to reduce the risk of catastrophic wildfire.

While the CFLR program constitutes about 10 percent of USFS accomplishments under the Bonn Challenge, results from the program provide a snapshot of the diversity of forest landscape restoration work occurring in the agency. From 2010 to 2016 restoration interventions on CFLR landscapes have resulted in:[57]

- Treatment over 2.4 million acres (970,000 hectares) to reduce the risk of catastrophic wildfire, protecting forests and watersheds, and making communities safer;
- Improved wildlife habitat over 2.0 million acres (809,000 hectares);

[47] 2010 Collaborative Forest Landscape Restoration Program Project Proposals. https://www.fs.fed.us/restoration/CFLRP/2010proposals.shtml
[48] See for example: Haugo, R., Gaines, W., Begley, J., Robertson, J., Churchill, D., Dickinson, J., Lolley, R. and Hessburg, P. (2016). ManastashTaneum Resilient Landscapes Project: Landscape Evaluations and Prescriptions. Tapash Sustainable Forest Collaborative and The Nature Conservancy. http://www.tapash.org/okawen/wp-content/uploads/2016/09/ManastashTaneum_May2016v4.pdf
[49] See for example, Volger, K.C., Ager, A.A., Day, M.A., Jennings, M. and Bailey, J.D. 'Prioritization of Forest Restoration Projects: Tradeoffs between Wildfire Protection, Ecological Restoration and Economic Objectives'. Forests 2015, 6(12), 4403-4420; doi:10.3390/f6124375. http://www.mdpi.com/1999-4907/6/12/4375
[50] Collaborative Forest Landscape Restoration Program Reporting, Guidance, and Directives. https://www.fs.fed.us/restoration/CFLRP/guidance.shtml
[51] Collaborative Forest Landscape Restoration Program Results. https://www.fs.fed.us/restoration/CFLRP/results.shtml
[52] Ibid.
[53] Ibid.
[54] Ibid.
[55] White, E.M, Davis, E.J. and Moseley, C. (2015). Social and Economic Monitoring for the Lakeview Stewardship Collaborative Forest Landscape Restoration Project: Fiscal Year 2012 and 2013. Ecosystem Workforce Program Working Paper Number 55. University of Oregon. ewp.uoregon.edu/sites/ewp.uoregon.edu/files/WP_55.pdf
[56] http://frontrangeroundtable.org/uploads/FR_CFLRP_EcologicalMonitoringReport2013_Final__3_.pdf
[57] Numerous studies have examined CFLR success factors, outcomes, and socioeconomic and ecological results. A compilation of some of this work is available at https://www.fs.fed.us/restoration/CFLRP/resource-library.php

- Treatment over 117,000 acres (47,000 hectares) for noxious weeds and invasive plants;
- Establishment of over 121,000 acres (49,000 hectares) of forest vegetation; and
- Creation of local incomes of approximately US$ 1.2 billion and created or maintained on average 5,180 jobs each year.[58]

The Forest Service uses the agency performance measure 'acres of public and private forest lands restored or enhanced' to track progress toward the US Bonn Challenge target. The measure accounts for a range of activities to restore or maintain forest and grassland health, including reforestation, removing invasive species, improving wildlife habitats and reducing the risk of catastrophic wildfire.

While the performance measure is a helpful gauge of progress in implementing restoration, it has limitations. If an acre is treated over several years, treatments count separately in each year. In addition, when an acre needs more than one type of treatment, this counts as two acres that were treated. To reduce double-counting, the Forest Service takes a subset of the individual measures to approximate the footprint of total aggregate treatments on an acre, but this does not account for counting treatment of the same acre in separate years. In 2016, the USFS put in place a new, geospatially-enabled performance accountability system, which includes both spatial and tabulated data for many key output measures, and will enable a more accurate footprint of completed restoration. The Forest Service is also using available data sets to develop additional national outcome measures to help describe restoration results, such as the *number of watersheds moved to an improved condition class*.

[58] Labour income and jobs created have been estimated for 2011 to 2016. Other accomplishments include all years from 2010 to 2016.

4 ADDITIONAL SIGNS OF PROGRESS

The overarching priority of the Bonn Challenge contributors and partners is to speed translation of commitment into action. In addition to the case studies described above, there are other positive signs of action on Bonn Challenge commitments. Examples of progress drawn from the work of IUCN and its members include:

- Thirty-six jurisdictions across 26 countries with more than 4,500 stakeholders know where and how to implement restoration and for which benefits, through the application of the IUCN and WRI Restoration Opportunities Assessment Methodology (ROAM).[59]
- New restoration policies or action plans have been developed in more than 25 jurisdictions, for example in Brazil, Mexico, Uganda, Malawi, Rwanda and all six mainland Central American countries. Restoration has been integrated into national climate-change strategies, for example in Mexico, El Salvador and Sri Lanka.
- New inter-ministerial arrangements, for example in Burundi and Guatemala, are strengthening collaboration on restoration.
- Of the 36 governments that made pledges under the Bonn Challenge, 16 already directly mention restoration as one of their strategies to achieve their NDC targets.[60]
- Funding has been allocated for restoration, for example US$ 291.5 million for Bonn Challenge action from Germany (IKI), Norway's International Climate and Forest Initiative (NICFI) and the Global Environment Facility (GEF); more than US$ 105 million of World Bank funding for restoration directed to Burundi and Mozambique; US$ 1210 million redirected to restoration by the Guatemalan Programa de Investigación en Manejo Integral del Bosque y Servicios Ambientales (PROBOSQUES) incentive scheme; and US$ 5.37 billion of rural development funding redirected to implementing India's Bonn Challenge pledge.

[59] The Restoration Opportunities Assessment Methodology (ROAM) is a flexible, affordable way for countries to rapidly identify and analyse the potential for forest landscape restoration (FLR) and to pinpoint opportunities at national or sub-national level.
[60] Lee, D. and Sanz, M.J. (2017). UNFCCC Accounting for Forests: What's in and what's out of NDCs and REDD+. Policy Brief. Climate and Land Use Alliance. http://www.climateandlandusealliance.org/wp-content/uploads/2017/09/Policy-brief-NDCs-and-REDD-revised-Sep-6-2017.pdf

5 CONCLUSIONS

This report provides preliminary information on how Brazil, El Salvador, Mexico, Rwanda and the United States are fulfilling their Bonn Challenge pledges. There are many other examples of progress beyond the Barometer pilot countries profiled in this report. For example, Khyber Pakhtun Khwa province in Pakistan has announced that implementation has already surpassed its 340,000 hectares pledge, which would make it the first jurisdiction to have fulfilled its pledge, and the Government of India has indicated that, between 2011 and 2017, 9.8 million hectares have been brought under restoration through various government, NGO and private sector-led efforts. Clearly, activities and efforts to implement FLR initiatives in support of Bonn Challenge pledges vary – as do the starting points and capacities of the pledgers. The Barometer aims to help track progress along the wide spectrum of measures being taken to fulfil Bonn Challenge commitments. The journey is as important as the arrival at the destination if results and benefits are to be sustainable.

Foremost among the objectives of the Barometer is helping Bonn Challenge pledgers see for themselves where there are signs of progress, and where there are specific bottlenecks or obstacles to realising their commitments. This can then enable identification of needs for technical, financial or other support.

The provisional design of the Barometer allows a broad audience to review examples of policies, institutional arrangements and other factors supporting the objectives of the Bonn Challenge. Sharing information in this way creates opportunities for wide adoption of best practices across jurisdictions. For example, the roundtables on forest landscape restoration established in Guatemala and El Salvador promote coordination among institutions on Bonn Challenge commitments across scales. In Brazil, the main tool prescribed by PROVEG to boost implementation of FLR is the creation of technical working groups focused on implementation of one or a set of strategies. Similarly, the cross-sectoral and multi-scalar task forces established by Rwanda are critical for improved coordination and coherence of policy implementation in support of achieving the country's Bonn Challenge pledge. These steps also indicate Rwanda's commitment to FLR as an integral part of its green development strategy, ultimately unlocking financial flows to promote investments in agroforestry.

In the long run, drawing attention to examples of actions taken to establish or strengthen policy frameworks, institutional arrangements and financial investments that support FLR can encourage action to not only restore degraded lands but also to avoid future degradation.

At the same time, systematically collecting and organising information on technical planning in Bonn Challenge countries, and disentangling data on current and potential investment in restoration to meet targets for *areas under restoration* under the Bonn Challenge, reveal gaps in funding and FLR planning capacity that need to be addressed. Systematically reporting on restoration on the ground helps evaluate the effectiveness of Bonn Challenge pledgers' FLR interventions.

The Barometer builds on and extracts data from national and sub-national monitoring systems (where these exist), many of which rely heavily on satellite remote sensing methods, techniques and capacity (for example, those under development in Brazil through PACTO and MapBiomass). A challenge that has become evident through the production of this report is that although there may be a great deal of progress, the data is sub-national, even site specific, and systems for aggregating this data at the national or even state level are seemingly not already in place in many jurisdictions.

In 2018, the protocol for the Barometer will be finalised in consultation with national governments, practitioners and researchers, and piloted in six national or sub-national jurisdictions. Information gathered and compiled will be analysed based on criteria agreed upon in country consultations.

In its final form, the Bonn Challenge Barometer will generate information that countries can integrate in national reports to the Rio conventions as it will build on the indicators used in other reporting systems that measure progress on restoration. In this way, the Bonn Challenge Barometer is designed to collate, analyse and present information on indicators tracking developments that are supportive of implementing initiatives that align with FLR and the Bonn Challenge; to report on the total *area under restoration* in Bonn Challenge jurisdictions; and to identify the benefits to carbon sequestration, jobs and biodiversity arising from these initiatives. This should reduce, or at least not increase, the reporting burden on jurisdictions and, for non-governmental pledges, this should provide strategic directions for improving their operations.

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