



Restoration
Barometer

IUCN Restoration Barometer

2022 Report



Supported by:



Contents

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About

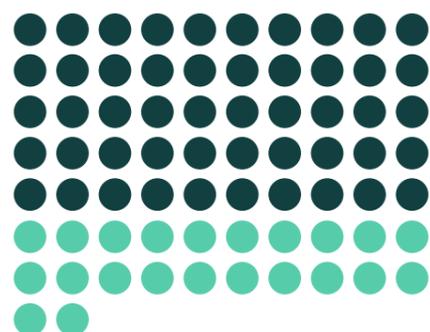
The new and improved Restoration Barometer now tracks ecosystem restoration progress by the public and private sector across all terrestrial ecosystems, including coastal and inland waters.

Key facts and highlights

The countries

Countries that have endorsed the Restoration Barometer:

50



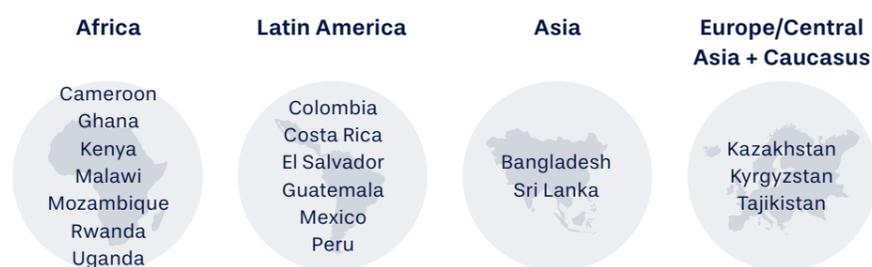
National Barometer applications in 2022:

22



Countries included in the Barometer 2022 report:

18



Additional countries applying the Barometer in 2022 whose data is being finalised:

4

The ecosystems

Users of the Barometer have reported restoration progress on the following eight ecosystems.

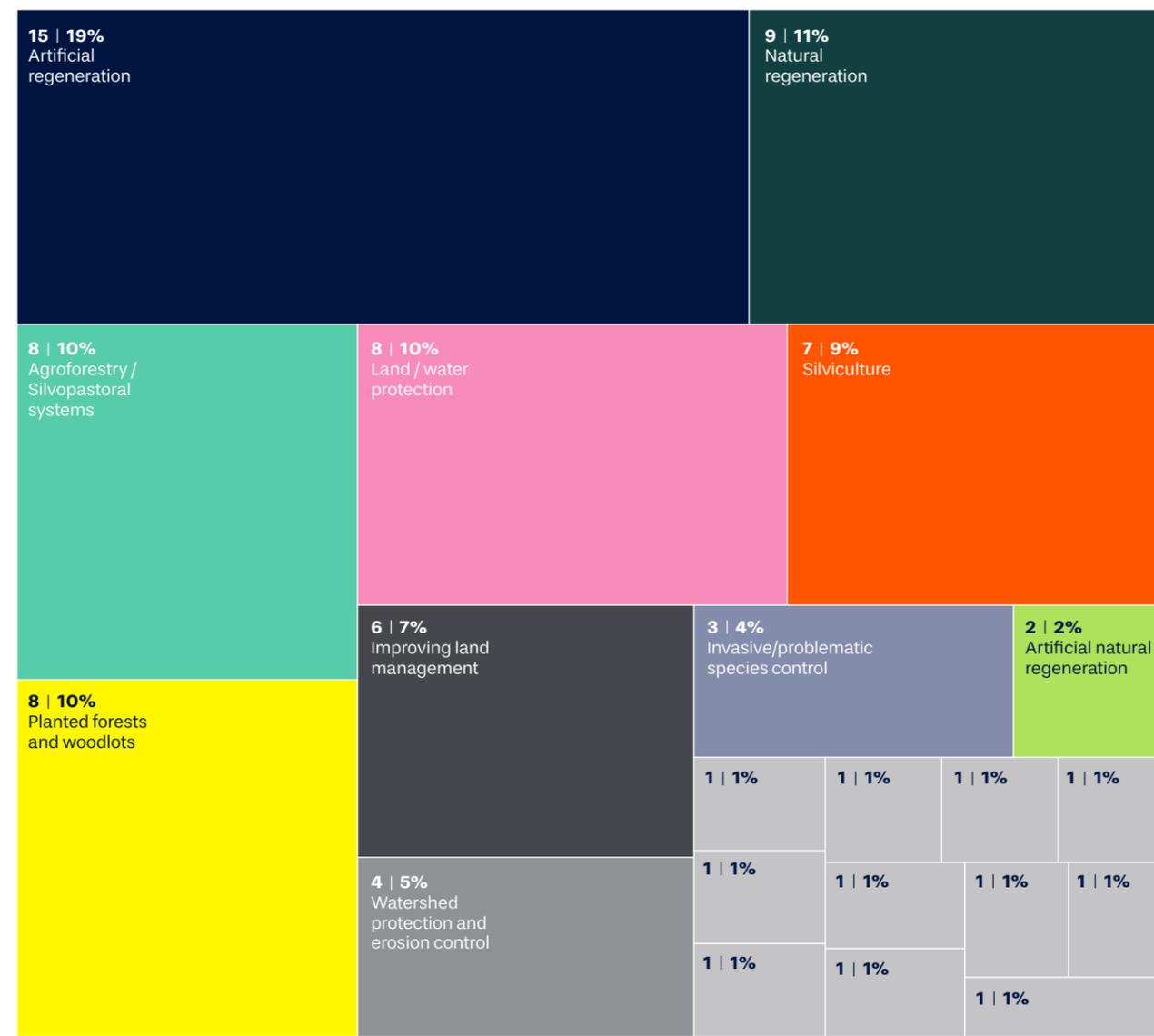
| Ecosystem type | Countries reporting progress on ecosystem type in 2022 | |
|--------------------------------------|--|-----|
| | # | % |
| Coasts and mangroves | 9 | 15% |
| Deserts and semi-deserts | 5 | 8% |
| Farmlands and mixed-use areas | 10 | 17% |
| Forests and woodlands | 17 | 28% |
| Grasslands, shrublands and savannahs | 6 | 10% |
| Peatlands | 2 | 3% |
| Rivers, streams and lakes (wetlands) | 8 | 13% |
| Urban areas | 3 | 5% |

The restoration interventions

The Restoration Barometer follows the IUCN [Restoration Intervention Typology for Terrestrial Ecosystems](#).

Each ecosystem type is split into a series of interventions that can be implemented as part of restoration efforts. For full data on interventions used by country and ecosystem, visit the [country dashboard](#).

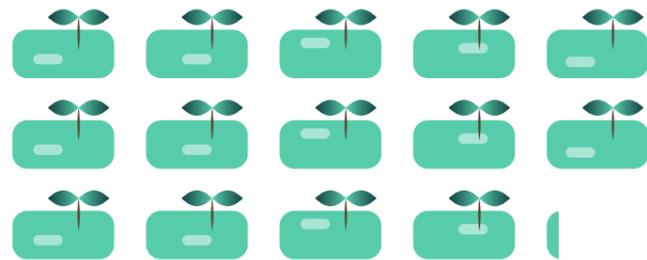
Countries reporting use of intervention type in 2022 (# | %)



- Creation / enhancement of habitat for native species of wildlife
- Creation of green spaces / green belts (native flora) for cooling, air filtration and mental health
- Establish / manage woodlots
- Improved fallow
- Increasing extent and complexity of tree canopy
- Others
- Rehabilitation and management
- Restoration of catchment zones
- Restoration of urban waterways to semi-natural condition (measured in kilometres)
- Restore hydrology
- Terracing, water protection infrastructure

The impacts

Area of land under restoration
(reported by 18 countries):



14,240,519 ha

CO₂ sequestered
(reported by 9 countries):



% area under restoration that is formally designated as a Key Biodiversity Area
(reported by 7 countries):



1.5% - 71.4%

% area under restoration that is formally designated as a Protected Area
(reported by 7 countries):



1.7% - 95.6%

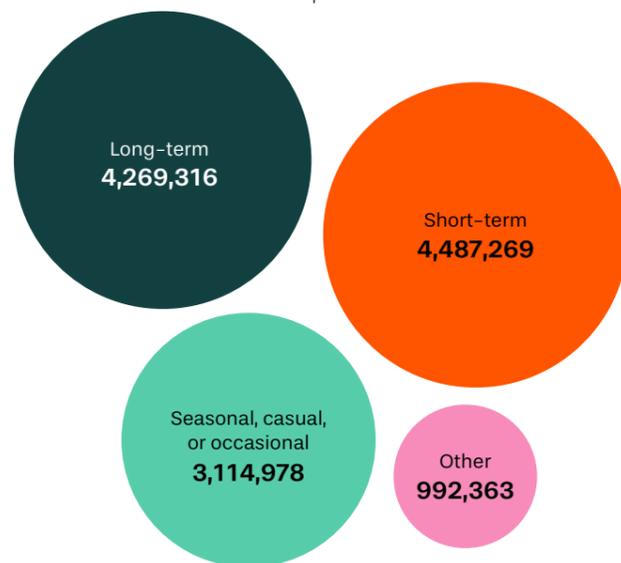
Hectares expected to contribute significantly to the conservation of threatened species
(reported by 6 countries):

1,199,366 ha



Number of jobs created
(reported by 14 countries):

Total
12,863,925



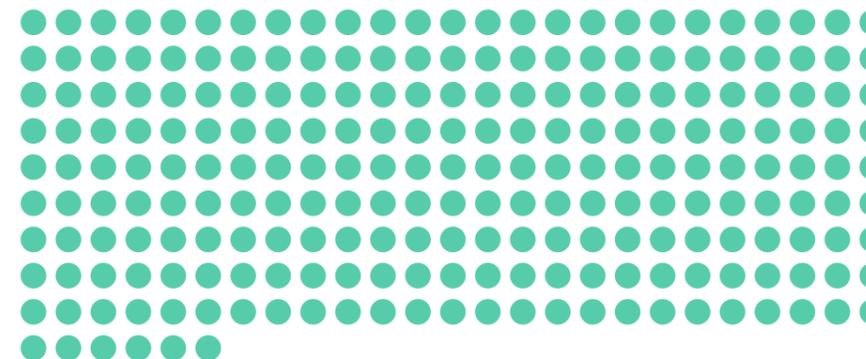
Number of full-time, long-term jobs:



478,593

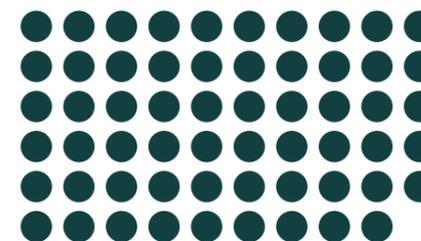
The enabling drivers

Number of supportive policies established
(reported by 18 countries):



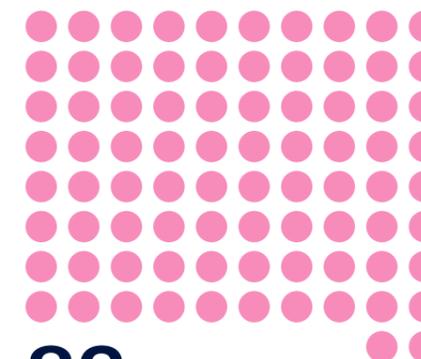
286

Number of advanced technical planning tools for restoration being used
(reported by 16 countries):



59

Number of national restoration monitoring mechanisms in place
(reported by 16 countries):

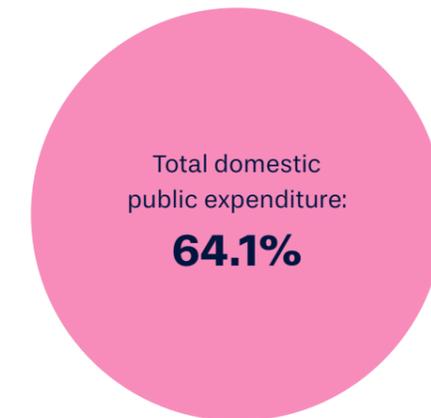


82

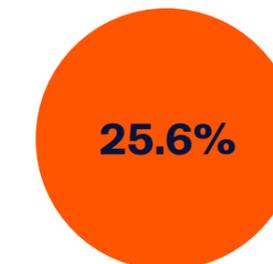
Amount of funding allocated to restoration
(reported by 15 countries):



Ratio of public to private finance



Total private investment (incl. microfinance and impact investments):



Total international donor support:



Total domestic philanthropic and non-profit:



Introduction to the Restoration Barometer

The creation of a nature-positive world by 2030, which benefits planet and people, is not possible without the widespread restoration of ecosystems. Healthy ecosystems not only maintain ecological integrity and support biodiversity, but also protect human health, provide clean air, water and food, help combat poverty and act as natural defences against extreme weather.

There is no choice but to incorporate ecosystem restoration into national and international targets and to ensure its rapid, and sustained, implementation.

But, to generate and maintain the high levels of ambition required to achieve targets, it is vital that people know what, how and where actions are being implemented.

While setting targets is the first step in the restoration journey, restoration cannot be an overnight success: to ensure restoration efforts last over time requires sufficient preparatory planning, capacity building and long-term commitment from numerous actors.

It is in this context that International Union for Conservation of Nature (IUCN) is launching its flagship Restoration Barometer report. Based on data submitted by 18 countries¹ to the IUCN Restoration Barometer from 2021 to 2022, this report demonstrates the progress that reporting countries are making on their restoration targets – and the flow of tangible benefits. It also shows the importance of enabling structures, such as policies and funding, for the long-term positive impacts of restoration to be realised.

About the Restoration Barometer

The IUCN Restoration Barometer is the only tool currently used by national and sub-national governments to track progress on the implementation of restoration targets across all terrestrial ecosystems, including coastal and inland waters. It is based on the core principles of flexibility and inclusivity, so it can be used by all countries – including those who are just starting to invest in and scale up restoration.

The Barometer is currently used by 22 governments, endorsed by over 50, and allows users to record the enabling policies, modes of planning, monitoring systems and funding structures that make restoration efforts possible. It also tracks the size of the area being restored, plus corresponding climate, biodiversity and socio-economic benefits from restoration.

Through submitting data to the Barometer, users are able to simplify and streamline reporting on their restoration commitments, building a comprehensive picture of restoration progress and identifying where gaps might exist, so that resources can be allocated effectively and future restoration efforts maximised. The Barometer can be used to record progress towards national targets and global goals over time, such as the UN Decade on Ecosystem Restoration, the Bonn Challenge, the Post-2020 Global Biodiversity Framework, the Paris Agreement, the Land Degradation Neutrality Targets and 1t.org.

Though 22 countries submitted data to the Restoration Barometer in 2022, this report includes information from 18 of these while data from the remaining four is still being finalised by the countries and reviewed by IUCN. Progress will be assessed in an additional 12–15 countries in early 2023.

The full, submitted data from the Restoration Barometer is available for public access through the [country dashboard](#), which will continue to reflect the ongoing restoration journey amongst users over time.

In 2022, a pilot application of the Restoration Barometer, involving 34 private sector companies who have made restoration commitments, was also carried out. The results will be presented in early 2023.

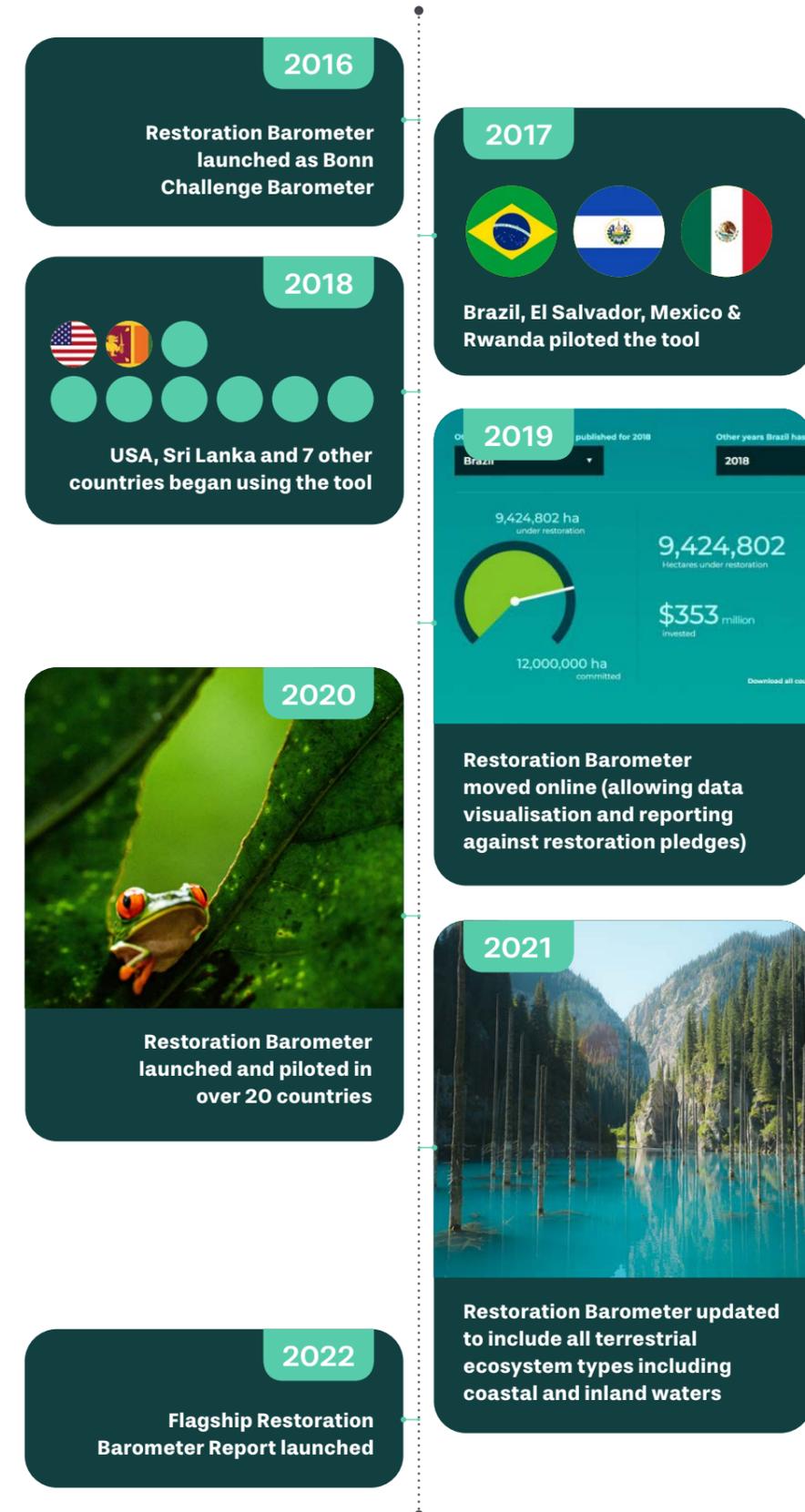
Timeline of the Barometer

The Restoration Barometer was first launched in 2016 as the Bonn Challenge Barometer. It was piloted in forest landscapes – including in Brazil, Rwanda, El Salvador, Mexico and the United States – to measure the success of restoration programmes and understand the hurdles to both implementation and quantification of the benefits stemming from restoration efforts. Subsequently, the tool was rapidly adopted by a further 13 countries.

In 2020, the Bonn Challenge Barometer was expanded and rebranded to signify the extension of its scope beyond forest ecosystems and Bonn Challenge signatories. By 2021, the Restoration Barometer was updated to include all terrestrial ecosystem types, including coastal and inland waters.

“The Barometer has helped consolidate and validate past restoration efforts and also made it possible to account for the actions of organisations that hadn't previously reported on their efforts. Now we have the complete picture.”

JAVIER DE PAZ, INSTITUTO NACIONAL DE BOSQUES, GUATEMALA



The Barometer's indicators

The Barometer is unique because it systematically and flexibly allows users to report on eight indicators of restoration progress. These include "action" indicators and "impact" indicators, which build a comprehensive picture of how a country is progressing on its restoration commitments.

Action indicators



Policies and institutional arrangements

Policies and other institutional arrangements are essential to enable action on the ground. They offer roadmaps to support restoration goals and demonstrate the level of a government or company's commitment to its restoration promises.*



Financial flows

Funding makes restoration efforts possible and can come from multiple sources, including domestic public expenditure, private investment, international donors, or non-profit organisations. The Barometer tracks how much has actually been allocated to restoration, versus the amount promised.



Technical planning

Effective planning is critical to identifying where, how and why restoration efforts should take place – as well as assessing the potential benefits before implementation begins. A robust technical planning process also prioritises the knowledge and engagement of Indigenous People and local communities.



Monitoring systems

Governments and other stakeholders involved in restoration can use a variety of tools to monitor restoration implementation. This monitoring produces a data-rich picture of the number of projects taking place and where restoration is positively or negatively progressing.



Area of land

The area of land under restoration shows how the implementation of restoration efforts is progressing. This is measured through hectares under restoration, which means the area (in hectares) where functionality (ability to provide ecosystem goods and services) has been improved by restoration (not only area of direct intervention).



Carbon sequestered for climate mitigation

Restoration can be a nature-based solution for climate change mitigation through carbon sequestration. The amount of carbon sequestered depends on the land area and the selected intervention.



Benefits to biodiversity

Restoration has the potential to increase the extent and quality of habitats that are home to threatened species of flora and fauna. It can also improve connectivity between fragmented landscapes, ensuring the genetic diversity and stability of endangered animal populations. The Barometer measures how restoration is being deployed for conservation.



Socio-economic impacts

Many restoration projects take place in and around communities and the implementation, monitoring and maintenance processes can lead to job creation and other livelihood benefits.

Impact indicators

Data accuracy**

All data submitted to the Barometer is validated by governments and reviewed by IUCN. A tier system is used across some indicators to ensure data integrity and reporting accuracy. There are three tiers:

- **Tier one:** responses representing estimates or broad generalisations with little to no supporting empirical data, presented with low confidence in their accuracy.
- **Tier two:** responses that are more grounded in data, ground assessments, or evaluations, but are still considered generalisations and are presented with a moderate level of confidence.
- **Tier three:** responses based on rich data, ground measurements, peer-reviewed studies and evaluations, presented with a high level of confidence.

** While some data submitted to the Restoration Barometer is differentiated by tier, for the purpose of this report all data across tiers has been aggregated. Please visit the Restoration Barometer [country dashboards](#) to see the complete data.

* The Restoration Barometer applies to both governments and the private sector. However, this report will be focusing solely on government use of the Barometer.

Countries reporting to the Barometer

This report contains results from 18 countries reporting to the Barometer. As all countries are encouraged to use the Barometer irrespective of whether or not they are able to compile complete data, there are both full, "standard" reports, which cover all indicators, and "spotlight" reports, which cover fewer indicators. To date, these countries have collectively pledged over 48 million hectares for restoration across a variety of ecosystems.

Restoration pledges by region and country

Prior to 2022, the Barometer was also used by the United States and Brazil. In 2019, the United States achieved and exceeded its pledge to bring 15 million hectares into restoration by 2020, reaching 17 million hectares in mid-2019. The process Brazil went through in the development of its 2019 Barometer report spurred some improvements in forest restoration indicators and in the development of an initial version of a structured monitoring database for Forest Landscape Restoration. Capacity challenges have resulted in a pause in the application of the Barometer in Brazil.

Data from Ecuador, India, Pakistan and Uzbekistan is being finalised and will soon be available on the Barometer [country dashboard](#).

| Latin America | |
|----------------------|--------------|
| 19,868,280 ha | |
| Colombia | 1,000,000 ha |
| Costa Rica | 5,000,000 ha |
| El Salvador | 1,000,000 ha |
| Guatemala | 1,200,000 ha |
| Mexico | 8,468,280 ha |
| Peru | 3,200,000 ha |

| Europe, Central Asia and the Caucasus | |
|---------------------------------------|--------------|
| 1,889,000ha | |
| Kazakhstan | 1,500,000 ha |
| Kyrgyzstan | 323,000 ha |
| Tajikistan | 66,000 ha |

| Asia | |
|-------------------|------------|
| 950,000 ha | |
| Bangladesh | 750,000 ha |
| Sri Lanka | 200,000 ha |

| Africa | |
|----------------------|------------|
| 39,380,831 ha | |
| Ghana | 2,000,000 |
| Kenya | 5,100,000 |
| Cameroon | 12,062,768 |
| Malawi | 4,500,000 |
| Mozambique | 1,005,000 |
| Rwanda | 2,000,000 |
| Uganda | 650,295 |

The ecosystems

The Restoration Barometer follows the types of actions or interventions outlined in the IUCN Restoration Intervention Typology for Terrestrial Ecosystems. This builds on the IUCN Ecosystem Typology 2.0 which categorises ecosystem types, as well as the ecosystem categories identified in the UN strategy for the Decade on Ecosystem Restoration.

The Barometer covers all terrestrial ecosystems including coastal and inland waters, where use or management rights can be identified (i.e., not high seas). It also includes human-dominated landscapes like urban and mixed-use areas, which can provide untapped potential for restoration.

- Coasts and mangroves
- Deserts and semi-deserts
- Farmlands and mixed-use areas
- Forests and woodlands
- Grasslands, shrublands and savannahs
- Peatlands
- Rivers, streams and lakes (wetlands)
- Urban areas



COUNTRIES REPORTING PROGRESS ON THIS ECOSYSTEM IN 2022

| %

Footnote: Restoration by ecosystem data does not include Kyrgyzstan nor Guatemala due to data unavailability.

Laying foundations

Landscapes cannot be fully restored overnight. Restoration is a long-term process that requires considered steps before implementation with good prospects for sustainable outcomes can begin. These steps constitute building blocks, which, with the investment of time, lay foundations for the ongoing sustainability of restoration efforts. When done well, this will help generate the most benefits possible.

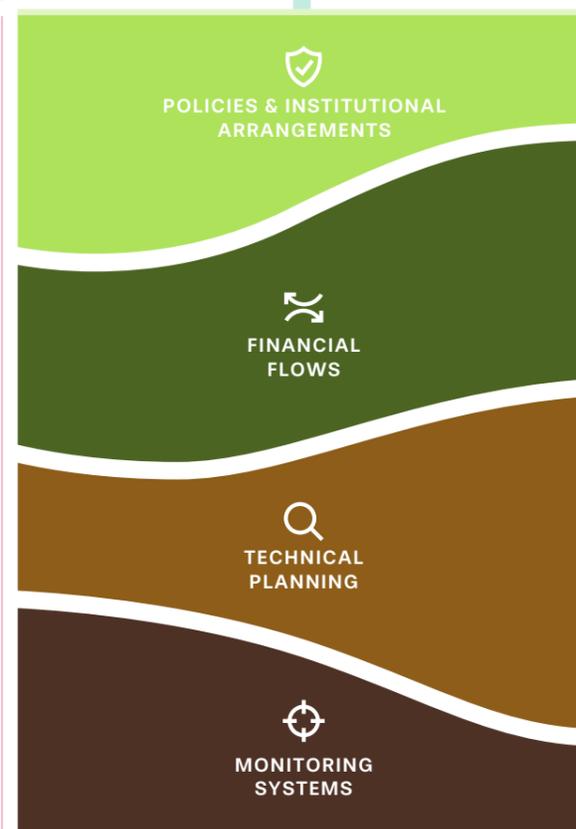
People, communities, institutions and others, including in the case of the Barometer national or sub-national governments, must carefully consider what can and needs to be put in place to best facilitate restoration. In line with the Barometer's first four "action" indicators, critical building blocks for enabling and sustaining restoration actions include well-designed policies and institutional arrangements, thorough technical planning, secure funding flows and robust monitoring systems.

However, what this looks like in practice varies from country to country and is dependent on context. The following section highlights some of the various approaches that countries are taking to lay the foundations for their restoration efforts.

Impact

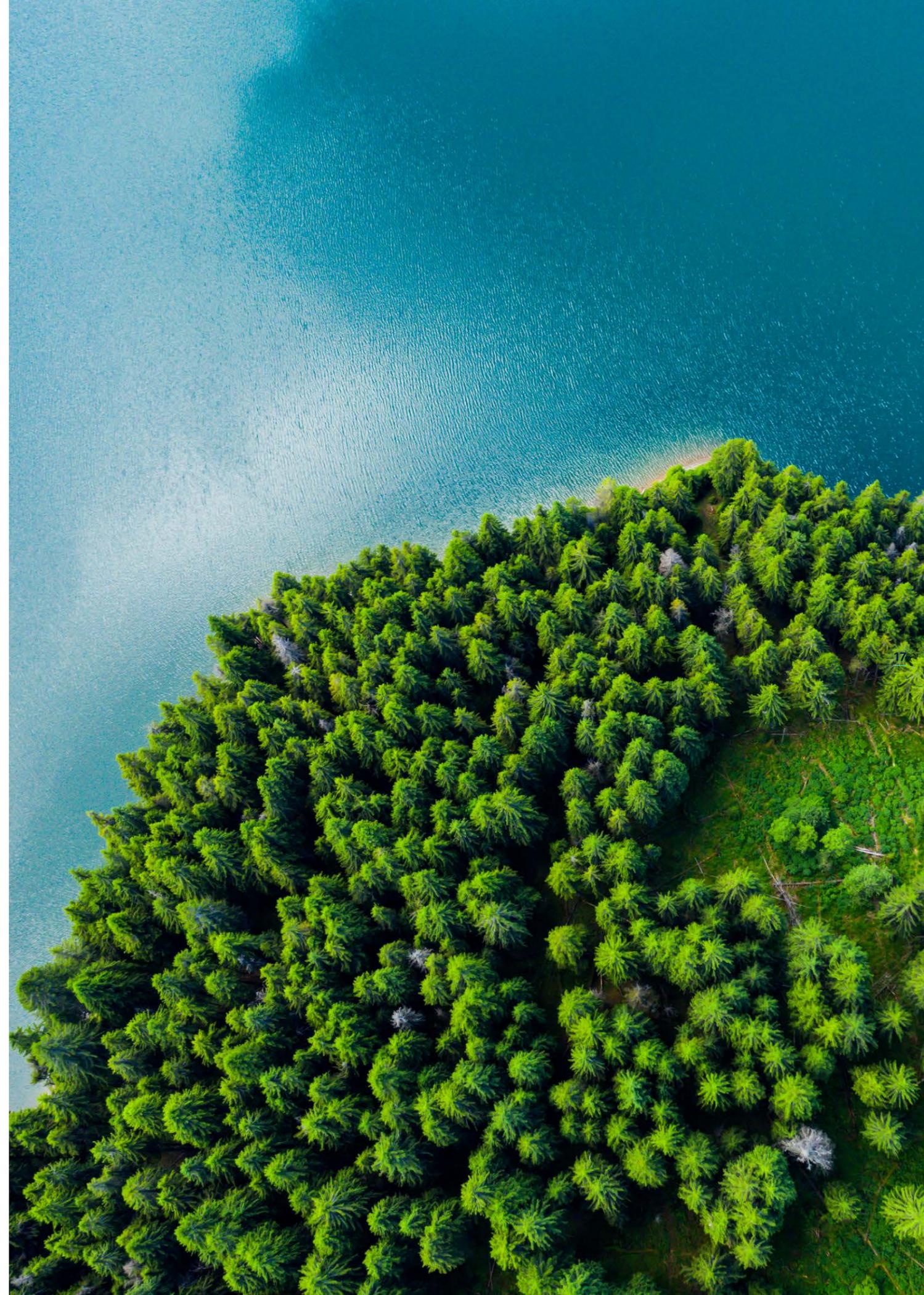


Action



The Barometer has been useful in Colombia to show what progress has been made and also to identify other indicators and categories we should be exploring. It shows us what's been done, and where we need to go."

FABRICIO ASTUDILLO, IUCN, COLOMBIA





Mozambique National Mangrove Strategy

The Zambezi River Delta, which meets the ocean in the middle of Mozambique's coast, contains almost 180km of continuous mangrove forests. This massive coastline comprises 50% of Mozambique's mangrove area and is one of the largest mangrove forests in Africa and across the Western Indian Ocean. In total, Mozambique's mangrove forests cover 396,080 hectares, with some mangroves growing up to 50km inland and up to 30km in height.²

Spread over a large number of territories, Mozambique's mangroves have been reducing at a rate of 18.2km² per year over the past few decades—largely due to tourism along with urban and industrial development.³ To address this, in May 2020, the national government of Mozambique formally cemented the Mangrove Management Strategy 2020–2024 into policy through [Resolution No. 33/2020](#). Its main purpose is to coordinate restoration efforts at different state levels and outline the actions to be undertaken, putting in place both qualitative and quantitative nationwide targets for sustainable mangrove restoration and management.

5,000 hectares were targeted for restoration by 2022 through the Strategy and, following its establishment, the Mozambique government introduced the National

Mangrove Restoration Program focused on its effective implementation. Numerous actors – from local government, NGOs, civil society, academia and research institutions – are involved in implementing the goals of the Strategy, including the Oceanographic Institute of Mozambique, GEF Blue Forests Project, Sathuma and the Mecufi mangrove nursery association. And, with sustainable development at the heart of the policy, community involvement in the restoration activities is a priority, for example through incentivising participation in community-based associations, establishing mangrove seed nurseries and planting seedlings. As of June 2022, over 75% of the 5,000 hectares target had been successfully met, with enhanced momentum to reach 100% by end of year.⁴

Kyrgyz Republic Green Economy Development Programme for 2019–2023

Located in the heart of the Central Asian mountains, the Kyrgyz Republic is already feeling the impacts of climate change. The glaciers surrounding its borders, which make up roughly 4% of the country's territory, are rapidly shrinking and other increasing climate-related hazards include drought, land and mud-slides, flash floods and glacier lake outburst floods.⁵ What's more, unsustainable agricultural practices have significantly degraded land-use productivity and negatively affected biodiversity in the country.⁶

In 2018, the Kyrgyz Republic approved the [Concept of Green Economy in the Kyrgyz Republic](#) and created a public council to facilitate the development of a green economy. With the goal to mitigate the negative impacts of climate change and guide the country's economy-wide transition towards sustainability, the Concept covers several broad sector targets including Green Agriculture and Protection of Biological Diversity.

On agriculture, the policy targets land degradation and restoration, with a focus on water conservation. The guidance given to protect and restore vital ecosystems focuses on engaging communities to protect the biodiversity nearest to their homes, and on establishing financial support for research and monitoring to inform policy and conservation efforts.

The implementation of this policy has been guided by an action plan developed by the Kyrgyz Republic

government and facilitated by initiatives including the United Nations' Partnership for Action on Green Economy, which undertakes activities including individual and institutional capacity building and aligns the country's efforts with UN Sustainable Development Goals.⁷

Policies such as the Concept of Green Economy create the frameworks and help to unlock the resources that drive restoration action and facilitate positive outcomes for ecosystems and people. In 2022, the Kyrgyz Republic reported to the Restoration Barometer that over 135,000 hectares of land is under restoration and 3,368 full-time equivalent jobs have been created through restoration activities, and these positive outcomes have been facilitated by proactive government policies.

INDICATOR ECOSYSTEMS



INDICATOR ECOSYSTEMS





Colombia National Plan for Ecological Restoration, Rehabilitation and Recovery of Degraded Areas (PNR)

Housing large parts of the Amazon within its borders, Colombia is the second most biodiverse country globally. But despite over 16% of the country's terrestrial territory and 17% of marine and coastal area being designated Protected Areas, the country faces substantial pressures to its ecosystems from urbanisation, agriculture expansion, cattle ranching and infrastructure development.⁸

Colombia's government faces the challenge of balancing the needs of rural populations and the urgent need to conserve biodiversity and draw down carbon from the world's atmosphere. Many of the country's Protected Areas are presently under threat as populations living in surrounding areas – who seek access to vital natural resources within these areas – drive deforestation and other forms of ecosystem degradation.

In 2014 the government joined Initiative 20x20 – a regional initiative contributing to the Bonn Challenge – with a pledge made jointly between the Ministry of Environment Sustainable Development and the Ministry of Agriculture and Rural Development to restore one million hectares of degraded land by 2020. The Colombian government cemented this pledge in policy in 2015, implementing the Plan Nacional de Restauración: Restauración Ecológica, Rehabilitación y Recuperación de Áreas Disturbadas (PNR) (National Plan for Ecological Restoration, Rehabilitation and Recovery of Degraded Areas).

The policy seeks both to support 20x20 goals and promote biological diversity and equitable distribution of resources to communities through restoration, reclamation and rehabilitation. The PNR spans 20 years, focusing on planning in the first eight years and then developing capacity through

pilot projects and knowledge sharing across key stakeholders in civil society, private sector and government. Specific strategies in the plan include: the establishment of forest Protected Areas, planting of native tree species, management of invasive species, assisted and passive restoration of forests, community-based land management and forestry and reconstruction of wetlands.

By making restoration goals part of national policy, governments are able to ensure action is taken and progress achieved to meet these goals. Since 2014, nearly 560,000 hectares of land has come under restoration in Colombia according to data submitted to the Restoration Barometer, including across agricultural land and forests, and the country continues to protect its land- and seascapes.



Nationally Determined Contributions

It is widely agreed by climate scientists that preserving and restoring nature is key to limiting global warming to 1.5°C.⁹ For example, peatlands – which cover just 3% of land – are a major carbon sink, storing twice as much carbon as the world's forests. However, when drained, peatlands turn into a carbon source and currently account for approximately 10% of all fossil fuel emissions.¹⁰ In addition, forests have a vital function in climate stability as they regulate water, nutrients and the planet's carbon cycles.

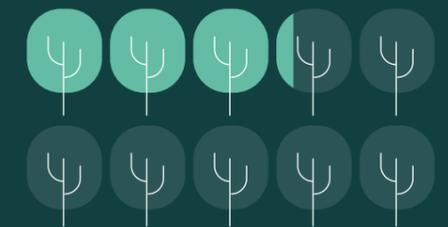
For these reasons, it is imperative that the role of restoration is recognised in countries' climate change adaptation and mitigation targets introduced by the 2015 Paris Agreement, known as Nationally Determined Contributions (NDCs). For example, Forest Landscape Restoration approaches encompass many cost-effective land management activities that address drivers of deforestation and degradation while tackling the climate change crisis.¹¹

Through committing to ambitious targets in policy, governments signal commitment to restoration actions, which helps drive widespread implementation. In addition, including restoration within NDCs adds international accountability to the goals.

Bangladesh and Sri Lanka are two countries currently reporting to the Restoration Barometer that have included restoration targets in their NDCs. As part of this, Bangladesh has pledged to restore degraded forests and undertake reforestation and rehabilitation in coastal areas and

islands, while Sri Lanka's restoration commitments include increasing its forest cover by 32% by 2030.

As of 2022, Sri Lanka has reported that 5,241 hectares are under restoration across the country, over 99% of which is in forest and woodland ecosystems. Meanwhile, in Bangladesh 44% of the 198,332 hectares under restoration are in coast and mangrove ecosystems, and 38% in forests and woodlands.



SRI LANKA HAS COMMITTED TO INCREASE ITS FOREST COVER BY

32%

by 2030

INDICATOR ECOSYSTEMS



INDICATOR ECOSYSTEMS



Costa Rica Coffee Nationally Appropriate Mitigation Action (NAMA)

Coffee production is at the centre of Costa Rican history, serving as a major source of national wealth. Today production accounts for nearly 8% of national domestic production (GDP), employs up to 150,000 people during harvest and remains a key part of the heritage and livelihood of the Costa Rican people.¹²

However, coffee production contributes 10% of the country's total greenhouse gas emissions—a challenge for Costa Rica's ambitious net-zero national target of full decarbonisation by 2050. Understanding its importance for both economic and cultural prosperity, the government has sought to reduce the carbon footprint of the industry and promote and institutionalise sustainable coffee production through the implementation of the Nationally Appropriate Mitigation Action Coffee ("NAMA-Café"), in a participatory process between 2014 and 2023.

NAMA-Café includes promoting agroforestry systems to local farmers, increasing soil fertility, improving wastewater management to reduce chemical run-off into water systems and reducing fertiliser use – all of which have knock-on benefits to surrounding ecosystems.

While the plan ultimately seeks to implement low-carbon and sustainable coffee production, this cannot be fulfilled without the correct foundations first being laid. As such, NAMA-Café has focused on technical and institutional capacity building, data gathering and knowledge sharing. Technical and policy advice has also been delivered to key stakeholders in the private sector and coordination and cooperation among relevant government bodies like the Ministry of Agriculture and Livestock, Ministry of Environment and Coffee Institute of Costa Rica (ICAFFE) has been deepened through national initiatives aimed at reducing GHG emissions.

Through this extensive planning, the structures are being put in place that

allow long-term success. For example, coffee farmers and mill operators are being given the knowledge to initiate the shift towards sustainable coffee production, including how to use fertilisers efficiently and with minimal environmental impact, pest and weed management, as well as the benefits of introducing shade trees on farms (i.e., agroforestry).¹³

The success of planning can be seen in the results, and as of 2022, Costa Rica has reported 498,279 hectares as being under restoration, 11% of which is across farmland and mixed-use area ecosystems.



BY THE END OF 2021

€3.6m

were granted to local operations

Kazakhstan National Forest Surveys and afforestation projects

Kazakhstan is home to one of the largest forested areas in the European and Central Asian region, despite it covering just 5% of the country's land. These forests – which spread across river basins and mountains, and include thorny trees and bushes – provide vital life-giving services and resources to the humans and animals that call the country home.¹⁴

Given that the majority of people live in, or near to, forests, there is a deep connection to the ecosystem and an understanding of its importance to Kazakhstan's prosperity. Despite this, the forests remain under threat from climate change-related impacts, such as drought and human activity. These can include constructing roadways, poor resource management and polluting industries.¹⁵

To address these threats and preserve the forests for future generations, the government is implementing nation-wide forest surveys in Kazakhstan's Protected Areas to help design state managed afforestation projects and identify key areas for investment and data collection, to inform future policy efforts.

The surveys include the mapping of all key regions, assessment of prior

reforestation work, identification of areas that require restoration and the development of forest management plans through local and state level stakeholder engagement. They serve as a foundation for national-level policy and produce a set of criteria and indicators for country-wide sustainable forest management.

As nearly 2.9 million tonnes¹⁶ of CO₂ are captured each year by Kazakhstan's forests, this mapping exercise represents a critical step for the nation as it seeks to meet its 2030 target of reducing greenhouse gas emissions by 15%.¹⁷ To date, over 575,000 hectares of land is under restoration in Kazakhstan, predominantly in forests and woodlands, which would not be possible without the thorough planning demonstrated through these surveys and assessments.

INDICATOR



ECOSYSTEMS



INDICATOR



ECOSYSTEMS



Restoration Opportunity Assessment Methodology (ROAM)

It is widely understood that restoring large areas of degraded and deforested land can contribute to local and national economies, sequester significant amounts of carbon, strengthen food and clean water supplies and safeguard biodiversity.¹⁸ For these reasons it is critical that governments have guidance on how to best allocate resources for widespread landscape restoration, and effectively and efficiently maximise impact.

To fill this role, IUCN and World Resources Institute developed the Restoration Opportunities Assessment Methodology (ROAM), a dynamic tool designed to help countries maximise their national or sub-national restoration efforts.

By providing vital information on priority areas for restoration, the most feasible intervention types, finance and investment options, and analysis on the preparedness of targeted areas for restoration (e.g., whether there are supporting policies and capacity-building schemes), ROAM ultimately guides countries towards robust Forest Landscape Restoration strategies appropriate to their unique context. Kenya, Malawi, Ghana, Costa Rica, El Salvador and Guatemala are just some of the countries reporting to the Restoration Barometer that have incorporated this methodology into their restoration efforts.

In Rwanda, the ROAM assessment classified the country into different agro-ecological zones and indicated the most highly degraded areas, or

those sensitive to degradation through high resolution maps. These maps have since been used as a reference point for national restoration planning, with the landscapes identified as the most degraded, with high political and economic concerns, taken as first priority. The country's Eastern Province is one such example, which contains the largest area of agricultural land and is highly vulnerable to increasing drought. Subsequently, the Transforming Eastern Province through Adaptation (TREPA) was established in 2021, which seeks to restore ecosystems and transform fragile landscapes in the Eastern Province, alongside the development of livelihoods associated with sustainably managed agricultural and tree products.

Thorough planning ensures restoration is taking place in the most optimal locations and can allow governments to direct resources where they are needed. By using planning tools such as ROAM, Rwanda has been able to progress its restoration efforts. In 2022, the country reported 597,718 hectares as being under restoration, across farmlands, forests and wetlands.

Kenya Regreening Africa App

Adverse land-use changes including desertification, land degradation and drought, affect the sub-Saharan region of Africa more than any other region in the world.¹⁹ The largely rural region is heavily reliant on the agricultural industry, a key driver of soil and land degradation, which continues to expand to support a rapidly growing African population.

In Kenya, agriculture is a central component of the economy, generating a third of the country's Gross Domestic Product and employing 40% of the total workforce.²⁰ Expanding climate-friendly farming techniques along with restoring degraded land will have a great impact on Kenya's ability to sustainably support its growing economy.

In 2019, in partnership with the Regreening Africa App, Kenya set a target to restore 150,000 hectares of degraded land. The app, developed by World Agroforestry (ICRAF), collects information on land management and forest health from the farmers who live and work on these lands, increasing transparency in the way restoration activities are implemented and monitored. Farmers can report information such as the number and type of trees planted, tree survival rates and species being planted and restored. In addition, data is collected on Farmer-Managed Natural Regeneration (FMNR) management practices, training programmes offered to farmers, as well as the number of women and youth who have benefited from restoration projects.

The app analyses the data and provides actionable guidance to farmers, connecting them to relevant global initiatives and resources while also collecting information to assess the impacts of existing agricultural practices and restoration efforts.

Since its launch, the monitoring of restoration efforts has been streamlined and the app has helped facilitate the targeted upskilling and reskilling of local farmers. Its unique ability to monitor in real time, engage local stakeholders and efficiently identify roadblocks to sustainable land use, has paved the way for development that prioritises the needs of Kenyan people whilst protecting its vital natural resources.

This has been demonstrated in data reported to the Restoration Barometer: to date, over 231,000 hectares of farmland and mixed-use areas are under restoration in Kenya and 300,000 full-time equivalent jobs have been created through restoration efforts.

INDICATOR

ECOSYSTEMS



INDICATOR

ECOSYSTEMS





Guatemala Forest Landscape Restoration Monitoring Platform

Guatemala is well known for its ancient pyramids and its ancient forests, which cover over a third of the country's territory. The Tikal pyramids, a UNESCO World Heritage Site, sit amidst Guatemala's Maya Biosphere Reserve, the largest remaining natural forest in Mesoamerica.²¹

Despite its beloved natural and historic wonders, the country is at high risk of biodiversity loss from pressures associated with deforestation and land degradation. Approximately 33% of Guatemala's surface area is covered in forests – a significant decline from 50% forest cover in 1950.²²

To better understand changes in land-cover and forest health, the Guatemalan National Forest Institute began utilising state-of-the-art satellite imaging to track change over time. The data is accessible via the [Guatemala's Forest Landscape Restoration](#) platform, where the information is free for public use, and users can track different restoration efforts, such as agroforestry, conservation in Protected Areas and forest plantation projects.

According to data submitted to the Barometer, 379,192 hectares of land are currently under restoration in Guatemala, 92% of which are in forest and woodland ecosystems. Within these efforts, interventions such as agroforestry, silviculture, natural regeneration and planted forests are being implemented.

Monitoring restoration progress through the use of satellites allows key stakeholders to access information on the total number of restoration projects across Guatemala, demonstrating over time how resources are being allocated and if they are delivering the intended impact. In this way, it is used to inform policy and strategy at the national and sub-national levels to achieve robust restoration goals.



APPROXIMATELY 33%
of Guatemala's surface area is covered in forests – a significant decline from 50% forest cover in 1950



Bangladesh Mangroves for the Future

Bangladesh, a low-lying delta with an extensive river system, is home to the Sundarbans Reserve Forest, one of the largest mangrove forests in the world, stretching approximately 140,000 hectares, and the only mangrove forest to support tigers.

These mangrove forests provide critical resources to numerous Bangladeshi coastal communities, including water and food security, and floodwater protection, meaning maintaining and restoring them is a matter of life and death for many. This is especially so given Bangladesh is among the most vulnerable in the world to climate change-induced natural disasters such as cyclones and floods,²³ with conservative estimates suggesting that 25 million people could be displaced from the coasts by 2050.²⁴

In 2017, Bangladesh committed to restore 0.75 million hectares under the Bonn Challenge, recognising the benefits of Forest Landscape Restoration programmes, including community-led mangrove restoration. To monitor the implementation of mangrove restoration and sustainable management of the coastal

ecosystems, the Mangroves for the Future (MFF) platform – a collaboration between IUCN and UNDP – is used in Bangladesh.

Used across projects, MFF facilitates knowledge sharing, strengthens integrated coastal management institutions and integrates civil society's role in owning the restoration and management process, giving them a greater stake in the outcomes.

To date, MFF has supported the rehabilitation of 125 hectares of mangroves through its small and medium grants, which support initiatives that provide practical, hands-on demonstrations of effective coastal management in action. This has helped provide shelter from storms for nearby villages, as well as habitat and nursery functions for fish and birds.²⁵

INDICATOR

ECOSYSTEM



INDICATOR

ECOSYSTEMS



Funding

Without adequate sources of funding, the restoration targets and goals laid out in policies, the planning to ensure restoration happens in the right places and the monitoring processes that map progress are not possible.

In many cases, funding dedicated to restoration can be tracked directly to the development of green jobs. In Costa Rica, Mexico and Guatemala, for example, a majority of

funding for restoration comes from government incentives and a clear link can be seen between this expenditure and job creation. Additionally, funding can be directed towards specific associations or research institutions that facilitate restoration implementation. In Mozambique, Eden Reforestation, an association, employs local communities to implement mangrove restoration.

| Country | Amount of funding (USD) | % total of funding |
|--|-------------------------|--------------------|
| Bangladesh | 18,966,512,226 | |
| Total domestic philanthropic and non-profit | - | - |
| Total domestic public expenditure | 12,213,500,718 | 64.4% |
| Total international donor support | 361,011,508 | 1.9% |
| Total private Investment (incl. microfinance and impact investments) | 6,392,000,000 | 33.7% |
| Cameroon | 102,275,589 | |
| Total domestic philanthropic and non-profit | - | - |
| Total domestic public expenditure | 35,427,161 | 34.6% |
| Total international donor support | 53,926,898 | 52.7% |
| Total private Investment (incl. microfinance and impact investments) | 12,921,530 | 12.6% |
| Costa Rica | 496,188,440 | |
| Total domestic philanthropic and non-profit | - | - |
| Total domestic public expenditure | 468,929,404 | 94.5% |
| Total international donor support | 27,259,036 | 5.5% |
| Total private Investment (incl. microfinance and impact investments) | - | - |
| El Salvador | 286,847,998 | |
| Total domestic philanthropic and non-profit | 42,762,194 | 14.9% |
| Total domestic public expenditure | 90,214,547 | 31.5% |
| Total international donor support | 78,632,655 | 27.4% |
| Total private Investment (incl. microfinance and impact investments) | 75,238,602 | 26.2% |
| Ghana | 241,300,814 | |
| Total domestic philanthropic and non-profit | 49,762 | <1% |
| Total domestic public expenditure | 43,035,381 | 17.8% |
| Total international donor support | 176,201,375 | 73% |
| Total private Investment (incl. microfinance and impact investments) | 22,014,296 | 9.1% |
| Guatemala | 352,881,390 | |
| Total domestic philanthropic and non-profit | - | - |
| Total domestic public expenditure | 181,937,538 | 51.6% |
| Total international donor support | 15,795,007 | 4.5% |
| Total private Investment (incl. microfinance and impact investments) | 155,148,846 | 44% |

| Country | Amount of funding (USD) | % total of funding |
|--|-------------------------|--------------------|
| Kazakhstan | 51,816,373 | |
| Total domestic philanthropic and non-profit | - | - |
| Total domestic public expenditure | 50,248,158 | 97% |
| Total international donor support | 1,568,215 | 3% |
| Total private Investment (incl. microfinance and impact investments) | - | - |
| Kenya | 781,311,240 | |
| Total domestic philanthropic and non-profit | 198,003 | <1% |
| Total domestic public expenditure | 94,585,619 | 12.1% |
| Total international donor support | 684,323,761 | 87.6% |
| Total private Investment (incl. microfinance and impact investments) | 2,203,857 | <1% |
| Kyrgyzstan | 64,411,000 | |
| Total domestic philanthropic and non-profit | - | - |
| Total domestic public expenditure | 64,411,000.00 | 100% |
| Total international donor support | - | - |
| Total private Investment (incl. microfinance and impact investments) | - | - |
| Malawi | 561,386,990 | |
| Total domestic philanthropic and non-profit | - | - |
| Total domestic public expenditure | 205,054,220 | 36.5% |
| Total international donor support | 356,330,670 | 63.5% |
| Total private Investment (incl. microfinance and impact investments) | 2,100 | <1% |
| Mexico | 3,266,919,519 | |
| Total domestic philanthropic and non-profit | - | - |
| Total domestic public expenditure | 3,266,919,519 | 100% |
| Total international donor support | - | - |
| Total private Investment (incl. microfinance and impact investments) | - | - |
| Mozambique | 8,227,952 | |
| Total domestic philanthropic and non-profit | - | - |
| Total domestic public expenditure | 45,841 | <1% |
| Total international donor support | 8,102,111 | 98.5% |
| Total private Investment (incl. microfinance and impact investments) | 80,000 | 1% |
| Rwanda | 904,823,184 | |
| Total domestic philanthropic and non-profit | 717,564 | <1% |
| Total domestic public expenditure | 161,358,950 | 17.8% |
| Total international donor support | 734,674,450 | 81.2% |
| Total private Investment (incl. microfinance and impact investments) | 8,072,220 | <1% |
| Tajikistan | 21,128,270 | |
| Total domestic philanthropic and non-profit | - | - |
| Total domestic public expenditure | 68,180 | <1% |
| Total international donor support | 21,041,490 | 99.6% |
| Total private Investment (incl. microfinance and impact investments) | 18,600 | <1% |
| Uganda | 228,316,000 | |
| Total domestic philanthropic and non-profit | 1,000,000 | <1% |
| Total domestic public expenditure | 7,076,000 | 3.1% |
| Total international donor support | 148,570,000 | 65% |
| Total private Investment (incl. microfinance and impact investments) | 71,670,000 | 31.4% |
| Grand total | 26,334,346,985 | |

Creating impact

The benefits from restoration efforts are numerous and in many cases can positively affect landscapes and ecosystems beyond the immediate project area. Restoration done at its best will be sustainable, meaning it has positive environmental, social and economic benefits that will arise and continue to flow over time.

On the environmental dimension, this includes improving soil health and water quality, and strengthening ecosystems so that they become a natural defence against extreme weather events, such as flooding. Restoration can also positively impact biodiversity, both in the immediate and wider surrounding areas.

In addition, restoration projects are closely tied to the people that live in and around them, meaning opportunities can be created for the local communities supporting the restoration efforts. In fact, understanding how restoration affects local people is fundamental to its long-term success.

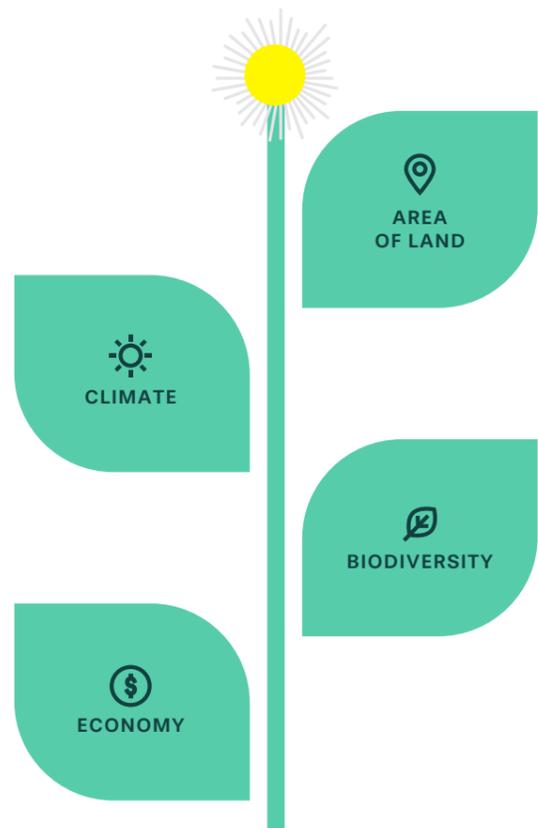
As such, ecosystem restoration is strongly connected to sustainable development and contributes directly to UN Sustainable Development Goals 1, 2, 6, 13, 14 and 15, through: creating jobs and sustainable value chains; enhancing food security and dietary diversity; increasing water availability; supplying wood energy for cooking; mitigating the effects of climate change and enhancing the resilience of ecological and social systems. It can also contribute to Goal 16 by increasing the availability of natural resources.²⁶

The following section highlights the various impacts restoration can have, as demonstrated by the four "impact" indicators in the Barometer: area of land under restoration, carbon sequestered for climate mitigation, benefits to biodiversity and socio-economic impacts.

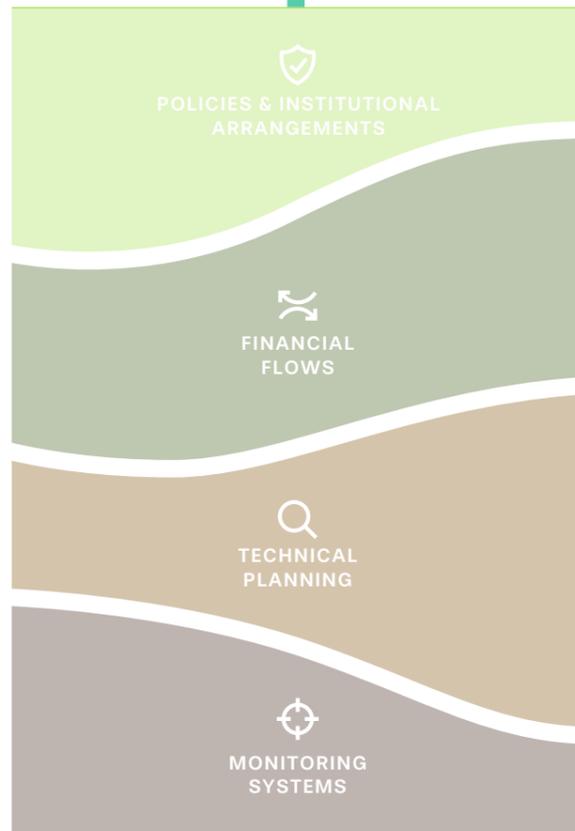
●● The Barometer has helped us gather information about our restoration impacts and progress across the spectrum— socioeconomic impact, climate, biodiversity and more. It's also strengthened efforts between the public and private sector and sparked enhanced stakeholder participation in impactful initiatives, like Green Ghana."

KWAME AGYEI, FOREST SERVICES DIVISION, FORESTRY COMMISSION, GHANA

Impact



Action



Area of land under restoration

In recent decades there has been significant popular attention focused on forest restoration, as governments and other actors seek to rebuild forest ecosystems that have been cleared by human pressures such as logging, mining and agriculture. Despite the importance of forest ecosystems, restoration is not limited to forests: it can take place in different ecosystem types within and across countries and can use a variety of approaches.

The Restoration Barometer is unique as it encourages users to submit data and track progress on up to eight ecosystems, if present within a country. It does this by collecting data on "hectares under restoration", meaning the area (in hectares) where functionality (ability to provide ecosystem goods and services) has been improved by restoration (not only area of direct intervention). In addition, users of the Barometer track the types of restoration interventions being undertaken, for example artificial regeneration, agroforestry, land and water protection, enhancement of habitat for native species of wildlife and more.

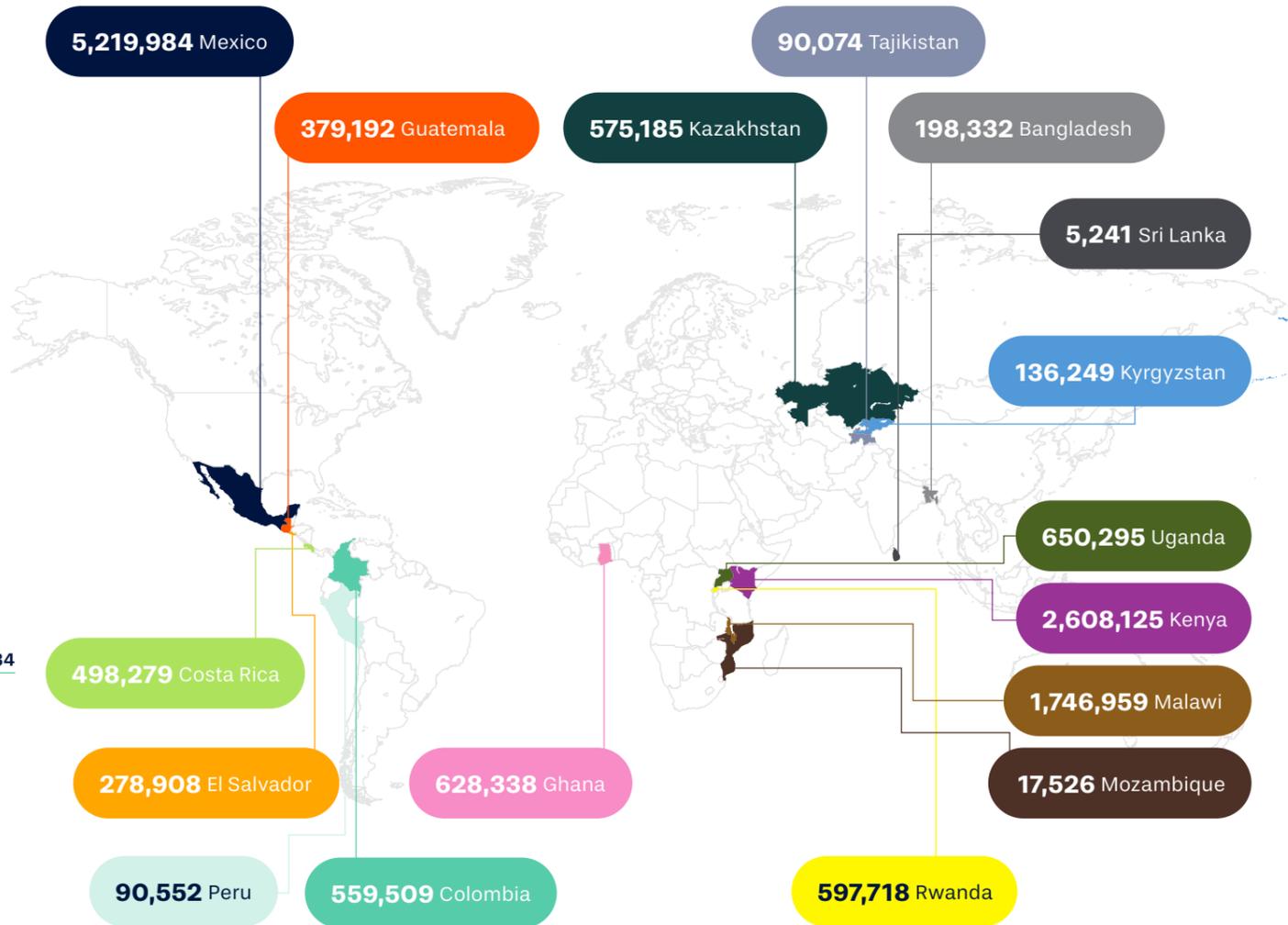
Now that the Barometer is able to capture and report on progress across ecosystem types, it is evident that countries are evidently making progress in a number of ecosystem types, such as farmlands and mixed-use areas, deserts, grasslands and wetlands. Future reports will demonstrate even broader distribution of progress across ecosystem types.

Hectares under restoration by ecosystem type



Hectares under restoration by country

GLOBAL HECTARES UNDER RESTORATION
14,240,519



Restoration as climate change mitigation

Restoration is not only about enhancing the natural functioning of ecosystems; it can also be a climate mitigation tool. As restoration efforts expand across hectares, the amount of carbon sequestration potential of the ecosystems increases. This happens in various ways such as through planting or removing threats to mangroves, removing invasive species from kelp forests,

increasing soil organic matter, leaving degraded woodlands to naturally regenerate and re-wetting drained peatlands.

Nine countries reporting to the Barometer in 2022 recorded the carbon sequestration results of their restoration efforts so far, totalling over 145 million tCO₂.



Benefits to biodiversity

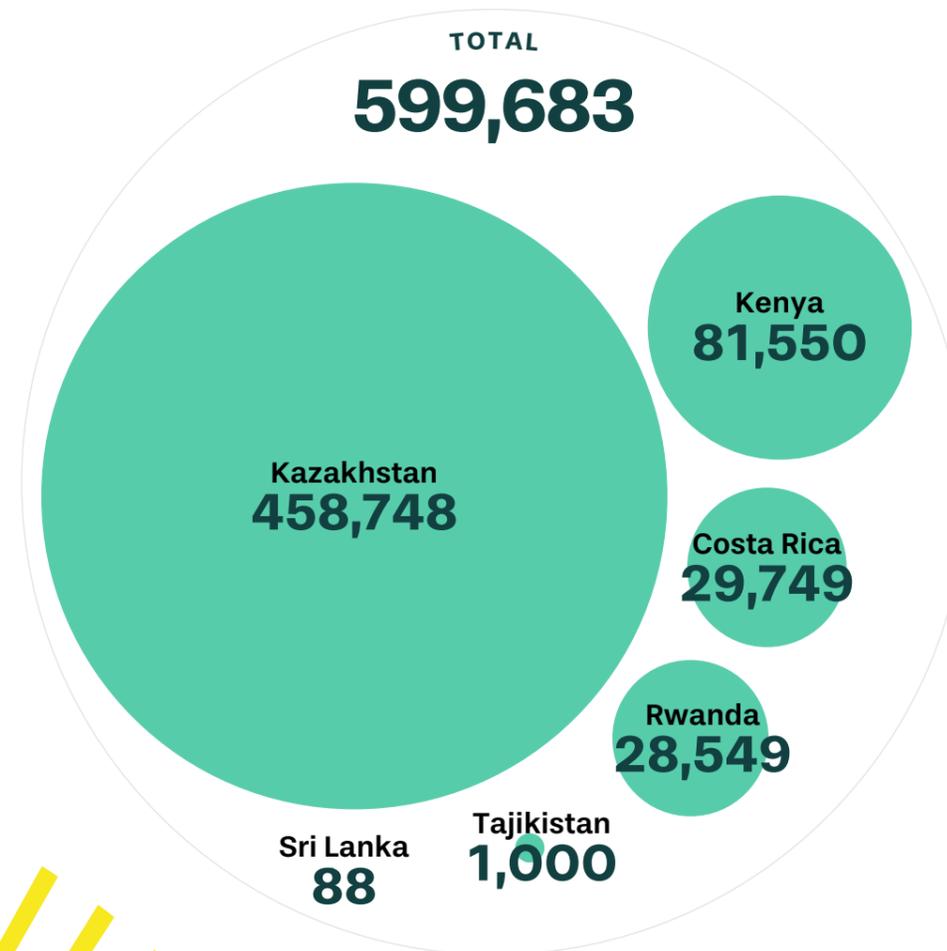
Ecosystems and biodiversity are deeply interconnected. When ecosystems are subject to degradation and destruction, the species richness and diversity of those areas suffer. Without a wide range of animals, plants and microorganisms, ecosystem health and functioning suffers too.

It is therefore crucial that restoration efforts address how biodiversity can be enhanced and supported. The Restoration Barometer tracks the benefits to biodiversity over time by encouraging users to report on IUCN Red List of Threatened Species™, Protected Areas, Key Biodiversity Areas (KBAs) and more, with a particular focus on threatened species. In addition, the Barometer looks to identify overlaps between areas under restoration and KBAs.

Several of Rwanda's projects have focused on creating and expanding buffer zones to safeguard biodiversity, as well as repurposing and restoring many areas into national parks."

EPHREM IMANIRAREBA, FOREST LANDSCAPE RESTORATION PROGRAM, RWANDA

Hectares expected to contribute significantly to the conservation of threatened species



Mexico

SPOTLIGHT ON

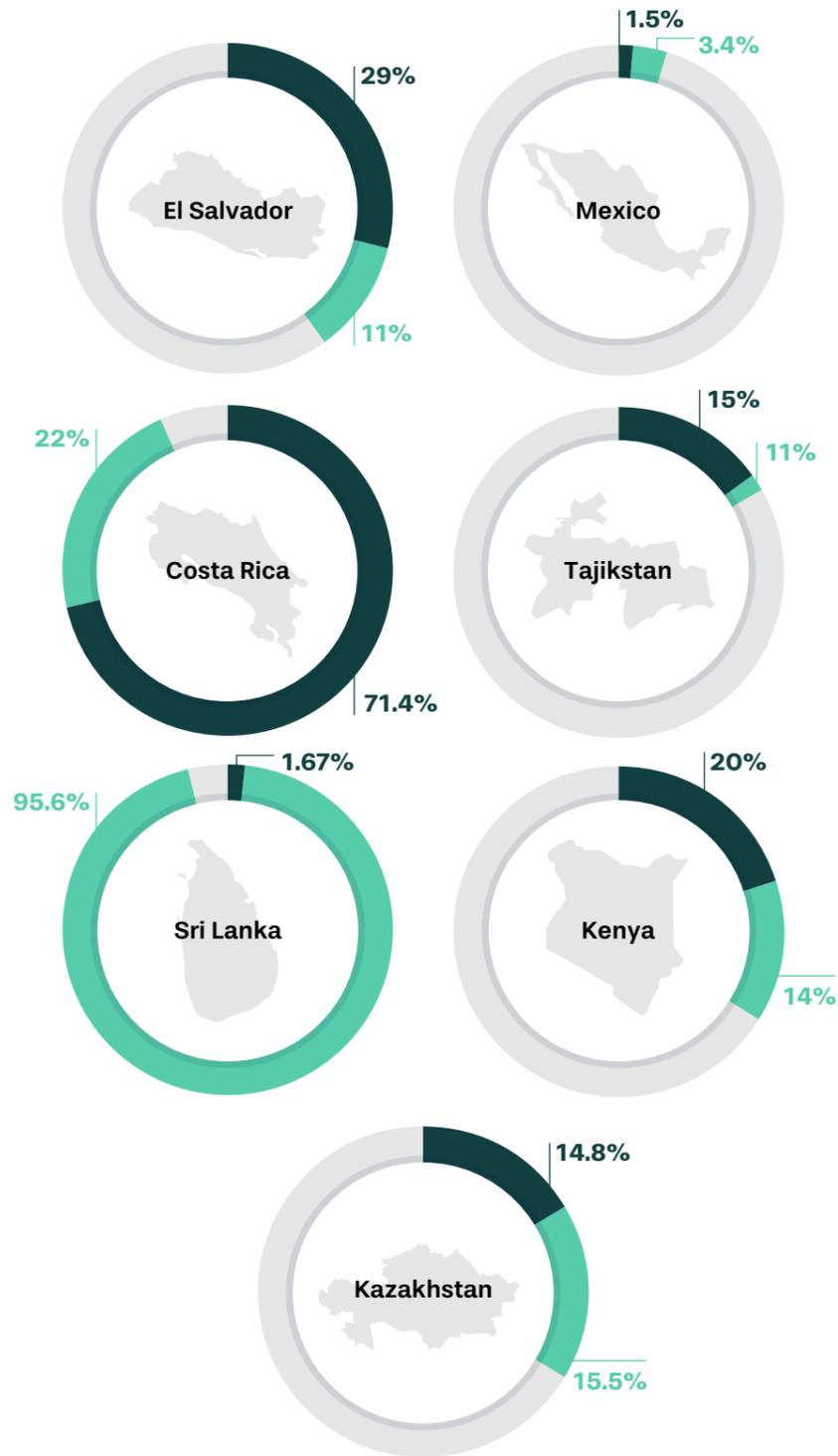
In Mexico, 87% of species identified under restoration efforts are categorised in the national "Norma Oficial Mexicana 059 SEMARNAT 2010", which identifies the species or populations of wild flora and fauna at risk in the country.

Of these, over half (53%) are considered in danger of extinction. The trans volcanic rattlesnake (*Crotalus Triseriatus*)

was the species whose habitat benefited the most from restoration, followed by the western mountain parrot (*Rhynchopsitta Pachyrhyncha*).



% Area under restoration that is formally designated as a Key Biodiversity Area and Protected Area



● % area under restoration has a formal designation as a Key Biodiversity Area
 ● % area under restoration has a formal designation as a Protected Area

DEFINITION
Key Biodiversity Area

Key Biodiversity Areas (KBA) are sites that significantly contribute to the global persistence of biodiversity, in terrestrial, freshwater and marine ecosystems. They are some of the most biodiverse places on earth and can involve globally important ecosystems, or significant populations of animals, fungi and plants. Applying restoration goals to KBAs is crucial to safeguarding these critical sites and the Restoration Barometer allows users to track how much of their restoration areas have a formal designation as a KBA. This year, eight countries submitted data on KBAs.

DEFINITION
Protected Area

Currently, close to 15% of earth's land and 10% of its territorial waters are covered by national parks and other Protected Areas. When governments designate formal Protected Areas, they offer a safeguard against the degradation of landscapes and ecosystems which threatens biodiversity and important ecosystem services, like water purification and carbon sequestration. If effectively managed and fairly governed, Protected Areas can provide numerous benefits, including preserving natural and cultural resources, providing sustainable livelihoods and protecting human health.

IUCN Red List

IUCN Red List is the world's most comprehensive database on the extinction risk of animals, fungi and plants, and indicates the health of the world's biodiversity. Given the potential benefits of restoration to biodiversity, users of the Restoration Barometer are encouraged to report on how restoration efforts specifically support Red List species (from native plant species to reptiles) in their respective countries. In 2022, nine countries reported Red List species that have benefited from restoration: Costa Rica, Ghana, Kazakhstan, Kenya, Mexico, Peru, Rwanda, Sri Lanka and Tajikistan. A snapshot of these species includes the following:

KAZAKHSTAN

- Turkestan lynx (*Lynx isabellinus*)
- Snow Leopard (*Panthera uncia*)
- Himalayan brown bear (*Ursus arctos isabellinus*)

GHANA

- Rosewood (*Pterocarpus erinaceus*)
- African teak (*Pericopsis elata*)

Talbotiella gentii is a medium-sized forest tree, endemic to Ghana

MEXICO

- Mexican alligator lizard (*Abronia graminea*)
- Mantled howler monkey (*Alouatta palliata*)
- American crocodile (*Crocodylus acutus*)
- Mexican prairie dog (*Cynomys mexicanus*)
- Ocelot (*Leopardus pardalis*)
- Jaguar (*Panthera onca*)

RWANDA

- Chinaberry (*Melia azedarach*)
- African cherry (*Prunus africana*)
- African sandalwood (*Osyris lanceolata*)

TAJIKISTAN

- Darvas plum (*Prunus darvasica* Temberg)
- Markhor (*Capra falconeri* Wagner)

Darvas plum is a rare plant endemic to Tajikistan

Socio-economic impacts

In order for restoration to happen, it requires human involvement, which in many cases leads to job creation. While the specific work will vary by project or scheme, it can include jobs directly linked to the restoration efforts, such as farmer-assisted natural regeneration and replacing non-native species with native species to increase diversity; jobs linked to wider project goals, such as building houses; and income generated from new, alternative livelihoods, such as seed selling.

In addition, restoration projects often have wider socio-economic benefits beyond employment, including education, up-skilling and capacity-building, sustainable energy sources, enhanced food security and positive health developments.

Developed with the International Labour Organization, the Restoration Barometer allows users to monitor the number of jobs created by restoration; the duration (long-term, minimum of two years; short-term, maximum of one year; or seasonal); and whether these jobs are full-time equivalent (FTE) or casual.²⁷ It also encourages the tracking of job distribution by gender, going beyond gender binaries to include non-binary and other identities.



Communities in Malawi have seen great benefits from implementing restoration efforts. In Kapilimitu, a community organised to restore a degraded hill and have had such success that the trees have regenerated and the locals are now able to engage in beekeeping."

TEDDIE KAMOTO, ASSISTANT DIRECTOR OF FORESTRY, DEPARTMENT OF FORESTRY, MALAWI

Job type by region

Total Jobs Created
+ **12,863,925**

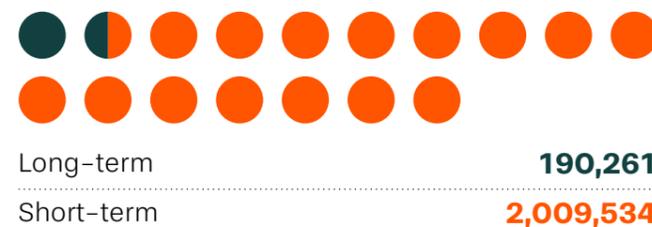
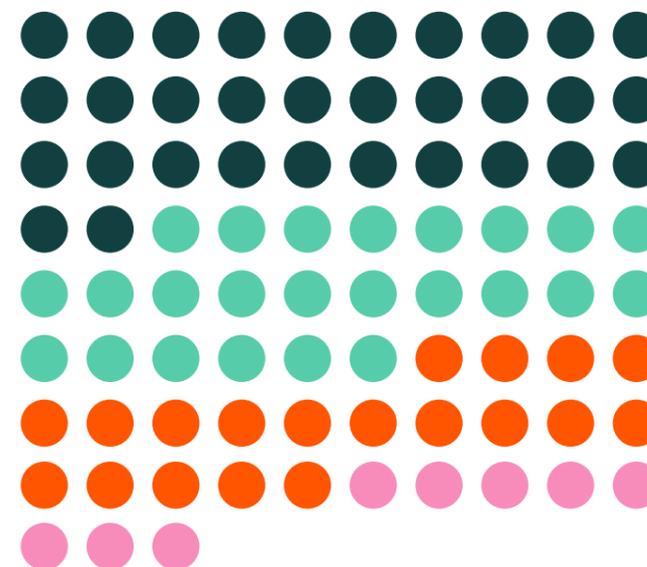
- Long term
- Seasonal, casual, or occasional
- Short term
- Other



Africa
10,620,148
jobs created



Latin America
2,199,794
jobs created



Asia
43,983
jobs created

| | |
|---------------------------------|-----------|
| Long-term | 4,061,059 |
| Seasonal, casual, or occasional | 3,088,991 |
| Short-term | 2,477,735 |
| Other | 992,363 |

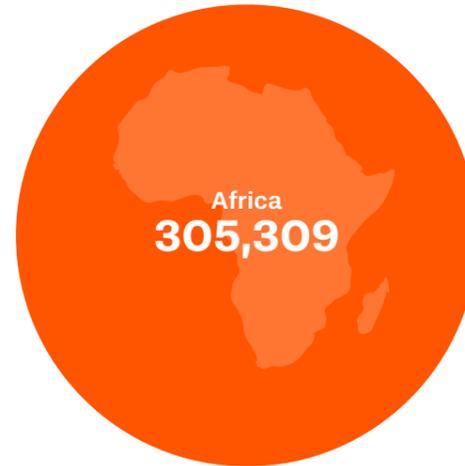
| | |
|---------------------------------|--------|
| Long-term | 17,996 |
| Seasonal, casual, or occasional | 25,987 |



The creation of sustainable jobs

While the type of work generated by restoration projects will vary in type and over time, many restoration programmes lead to the creation of jobs that are both full-time and long-term. Jobs that enable people to achieve good living and working conditions throughout an extended working life are critical to the success of restoration and other social endeavours. These sustainable jobs can contribute to reducing economic instability and poverty in local communities, promote skills development over the long-term and enhance local economies through sustainable development.

Number of full-time equivalent (FTE), long-term jobs by region



SPOTLIGHT ON

Rwanda



In Rwanda, the sustainable forestry project *Green Gicumbi* focuses on building the resilience of vulnerable communities to climate change. Alongside rehabilitating forests, climate resilient houses are being built by local people, cookstoves distributed and alternative incomes established within communities.

SPOTLIGHT ON
Costa Rica

Over 76,000 jobs linked to restoration have been reported by Costa Rica. From 2011–2020, 30% of short-term jobs were linked to restoration interventions promoting natural regeneration, while 48% stemmed from silviculture and forest plots and plantations. Restoration requires substantial maintenance work, for example through thinning, pruning and weed control. The potential of restoration in multifunctional agricultural landscapes to create jobs also stands out, accounting for 80% of restoration-related work in 2020.



Future of the Barometer

The restoration of ecosystems is a critical part of our journey to a safe climate and liveable, biodiverse future, in which people and planet can thrive. It is vital that the importance of widespread and large-scale ecosystem restoration is both understood and implemented across the globe.

However, without adequately laying the foundations for ecosystem restoration, including setting up enabling policies, carefully planning for where and how restoration should take place and with whom, and monitoring implementation over time, the positive impacts of restoration cannot be realised to their full potential. The Restoration Barometer facilitates this process by allowing countries to track restoration progress across all terrestrial ecosystems over time.

What's more, the Barometer will soon be undergoing expanded functionality, further enhancing its utility to the restoration movement. This includes the extension of the Barometer to kelp, seagrasses and shallow reefs, allowing users to report from ridge to reef in 2023. In addition, users will have access to tailored guidance and evaluations, including technical planning resources (such as species selection), economic assessments of the value of restored ecosystems, including how it improves income stability for local communities, and improved indicator contextualisation to tell an even deeper story of restoration progress.

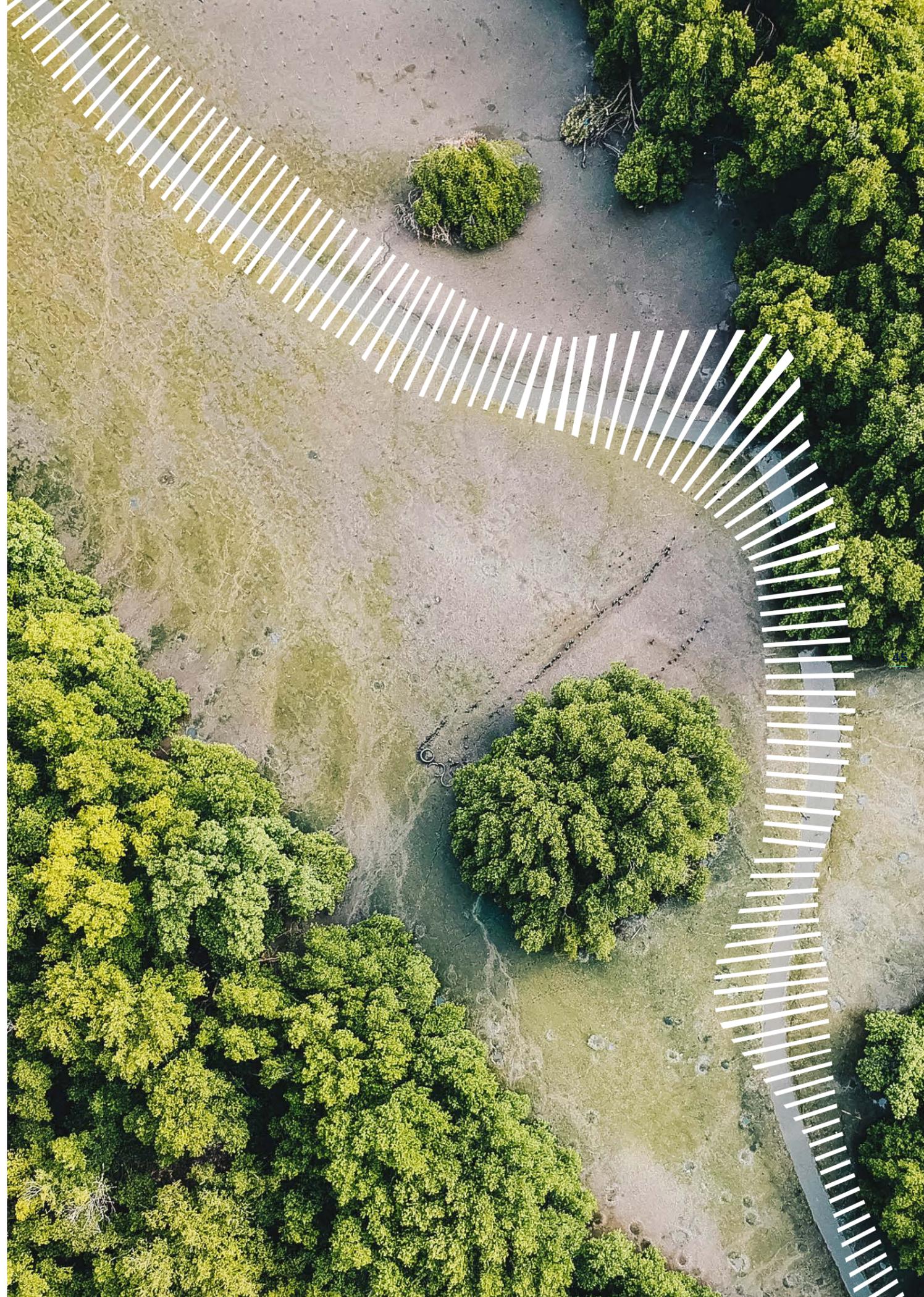
While the Restoration Barometer has so far been focused on reporting by country governments, it is currently being piloted by 34 companies, in development with the World Economic Forum's 1t.org campaign. Next year, this new private sector pathway will go live on the Barometer website, opening up opportunities for the private sector to transparently monitor their company-wide restoration commitments.

To find out more about the IUCN Restoration Barometer, visit restorationbarometer.org



The Barometer allows us to gather all the data we need to show the evolution and progress of Cameroon's restoration commitments and has inspired a lot of passion in learning how we can strengthen future efforts."

DOMINIQUE ENDAMANA, REGIONAL FOREST PROGRAMME, IUCN, CAMEROON



Endnotes

1. Data from 4 additional countries is being finalised. Reports on an additional 12–15 countries will be available by the end of February 2023.
2. <https://portals.iucn.org/library/sites/library/files/documents/2021-001-En.pdf>;
<https://www.nairobiconvention.org/mozambique-country-profile/mozambique-biodiversity/>
3. <https://portals.iucn.org/library/sites/library/files/documents/2021-001-En.pdf>;
<https://www.nairobiconvention.org/mozambique-country-profile/mozambique-biodiversity/>
4. <https://media.un.org/en/asset/k1d/k1dpewlxac>
5. https://climateknowledgeportal.worldbank.org/sites/default/files/2021-06/15814-WB_Kyrgyz%20Republic%20Country%20Profile-WEB.pdf
6. https://climateknowledgeportal.worldbank.org/sites/default/files/2019-06/CSA%20_Profile_The%20Kyrgyz%20Republic.pdf
7. <https://www.un-page.org/countries/kyrgyz-republic/>
8. <https://www.atlanticcouncil.org/in-depth-research-reports/books/allies-innovate-to-protect-our-ecosystems/>
9. <https://www.nrdc.org/experts/jennifer-skene/new-ipcc-report-highlights-need-global-forest-protection#:~:text=As%20the%20IPCC%20report%20highlighted,severe%20in%20the%20warming%20world.>
10. <https://www.unep.org/news-and-stories/story/peatlands-store-twice-much-carbon-all-worlds-forests>
11. <https://www.iucn.org/resources/other-brief/increasing-ambition-ndcs-through-flr>
12. <https://nama-facility.org/projects/costa-rica-low-carbon-coffee/>
13. https://www.giz.de/en/downloads/giz2019_en_Factsheet_NAMA%20Cafe.pdf
14. <https://unece.org/forests/publications/overview-state-forests-and-forest-management-kazakhstan>
15. <https://unece.org/forests/publications/overview-state-forests-and-forest-management-kazakhstan>
16. All references to tonnes of CO₂ in this report refers to metric tonnes.
17. <https://www.undp.org/kazakhstan/stories/forests-kazakhstan-natural-treasure-safeguard-and-nurture-future-generations>
18. https://www.forest-trends.org/wp-content/uploads/imported/cobenefits-final-draft-032116-_new-back-page-pdf.pdf
19. <https://www.fao.org/documents/card/en/c/cb6111en>
20. <https://www.usaid.gov/kenya/agriculture-and-food-security>
21. <https://en.unesco.org/biosphere/lac/maya>
22. <https://www.forestcarbonpartnership.org/country/guatemala>
23. <https://www.ipcc.ch/report/sixth-assessment-report-working-group-i/>
24. <https://www.google.com/search?q=mangrove+restauration+bangladesh&sq=mangrove+restauration+banglasden&aqs=chrome.1.69i57j33i10i160l2.10539j0j7&sourceid=chrome&ie=UTF-8>
25. <https://www.bonnchallenge.org/sites/default/files/resources/files/%5Bnode%3Anid%5D/Bonn%20Challenge%20Report.pdf>
26. UN Sustainable Development Goals include: 1 – No Poverty; 2 – Zero Hunger; 6 – Clean Water and Sanitation; 13 – Climate Action; 14 – Life Below Water; 15 – Life on Land; and 16 – Peace, Justice and Strong Institutions.
27. Full-Time Equivalent (FTE) is a unit obtained by comparing an employee's average number of hours worked to the average number of hours of a full-time worker. A full-time worker is therefore counted as one FTE, while a part-time worker gets a score in proportion to the hours he or she works. Source: ILO Statistical Glossary.pdf (ilo.org)



Restoration Barometer

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