WORLD ECONOMIC FORUM

Forests for Climate: Scaling up Forest Conservation to Reach Net Zero

WHITE PAPER

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Images: Getty Images, Unsplash

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Preface

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Our forests – as well as other natural ecosystems – are the bedrock of life on earth. We must and we can find a shared, simple way of valuing them – and keeping them – as standing, vibrant, biodiverse forests.

The good news is that what is emerging is a growing understanding of what needs to happen – in policy action, corporate investment and community engagement. We can also learn from what is already happening in pioneering geographies, to help us to keep our forests, and the communities that live in them, vibrant.

As with many complex system challenges like this, there is a surprisingly clear and simple set of conditions required to preserve our forests – and in so doing help restore balance to our climate. We need four things:

– sustained and sustainable financing

– large-scale implementation

– high-integrity governance frameworks

– active ownership and participation of the communities who live and work in the forests

The approach known as jurisdictional REDD+ combines these four elements to take forest stewardship and conservation to a new level.

Jurisdictional REDD+ incentivizes countries to stop deforestation and prevent forest degradation, and increase conservation and sustainable management of resources in exchange for payments that provide a sustained source of financing. Jurisdictional approaches are supported by national or sub-national governments who have the authority to regulate and enforce land use policies, providing the necessary scale. They also offer an assurance of environmental and social integrity because they require engagement from all the stakeholders involved across a jurisdiction, including Indigenous peoples and local communities.

This report provides more detail on the evolution of REDD+ and what a jurisdictional approach entails. In the case study section, it provides detailed examples of how this evolution is playing out in critical tropical forest countries, such as Brazil, Ecuador, Ghana and Viet Nam. It also provides information on the clear opportunity for the private sector to invest in the global effort required to reverse deforestation by 2030.

Investments in jurisdictional REDD+ emissions-reduction credits can stimulate the growth of a high-integrity voluntary carbon market, which can mobilize billions of dollars a year in additional climate finance. This report seeks to further our understanding of the potential opportunity and risks, and to avoid past mistakes.

Executive summary

Forests – especially tropical forests – are one of the main reasons why our planet supports life. Preserving them in the face of today's climate and biodiversity crises is vital.

Forests are essential to climate, nature, people and the economy. Almost 1.6 billion people depend on forests for food, water, wood and employment. Forests sequester carbon, regulate our climate, act as flood barriers, recharge groundwater, filter air, protect biodiversity and more. Their economic value has been estimated at $150 trillion.

There is no tackling climate change without forests. If we don't halt deforestation by 2030 at the very latest, it will not be possible to limit global warming to 1.5°C. Natural climate solutions, which include forest conservation and restoration, can provide one-third of the mitigation needed to reach this target.

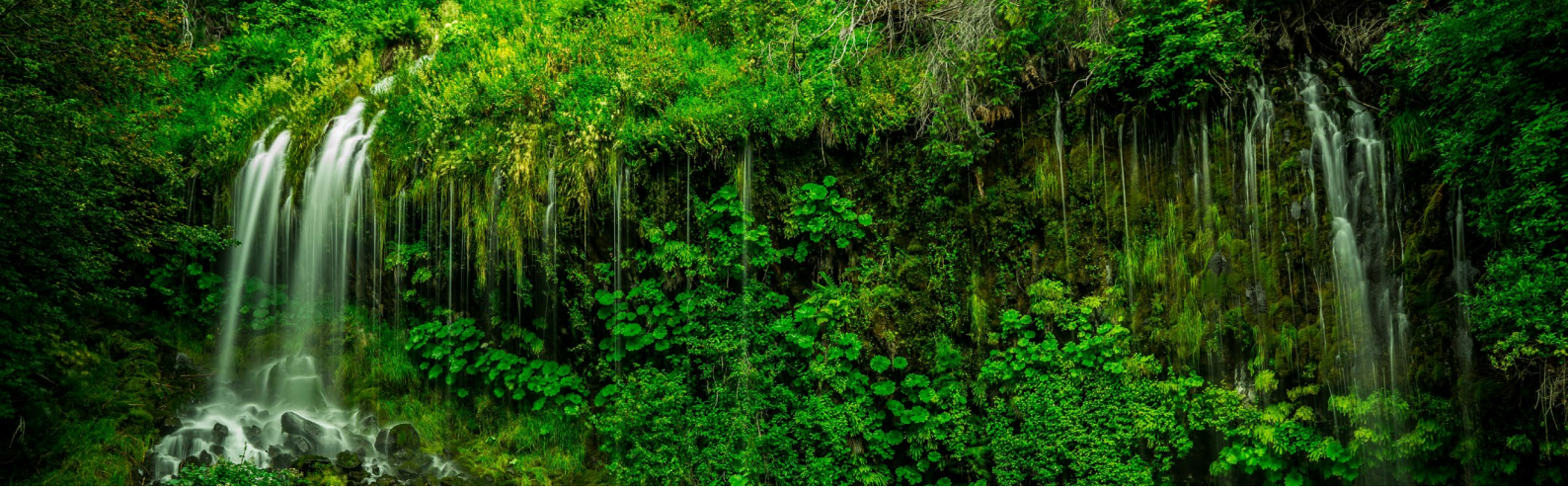
Deforestation is responsible for nearly 15% of global CO_2 emissions – if tropical deforestation were a country, it would be the world's third largest emitter. Every 15 minutes the world loses an area of tropical forest the size of Central Park. In 2021, destroyed primary rainforest released as much CO_2 as the emissions of India. Economic factors – especially agriculture and cattle ranching – are the key causes. Forests are valued more cut down than standing. The funding currently provided to preserve them, for example through the UN's REDD+ programme (reducing emissions from deforestation and forest degradation) is nothing like enough.

Preventing deforestation is the most cost-effective way to abate carbon emissions. Avoided deforestation offers up to nine-times as much potential low-cost carbon abatement as planting new trees. As much as 50 times more land is needed for reforestation to generate the same climate mitigation outcomes as protecting standing forests. Tropical forests store more carbon than any other land-based ecosystem, as well as providing irreplaceable ecosystem services.

Why jurisdictional REDD+ is the way forward. This white paper proposes jurisdictional approaches to REDD+ as a way of making a significant contribution to preserving the world's forests, by driving change across four key challenges:

- **Scale**: to deliver meaningful global emissions reductions through forest preservation will require far greater ambition than the limited scale of REDD+ projects. Jurisdictional approaches are backed by governments with the authority to enforce land use. They can support systemic change by introducing policies such as subsidies, spatial planning, infrastructure development and issuing permits.
- **Funding**: between $100 billion and $390 billion per year will needed by mid-century to save sufficient forests to keep the planet on a 1.5°C pathway. Yet just €19.4 billion (around $20-24 billion) of public finance was committed to REDD+ activities over seven years from 2008-2015. Meanwhile $326 billion per year is currently being invested by private finance into "non-nature-based" climate solutions, so the potential to scale up private funding for forests is huge. Jurisdictional approaches can accelerate flows of public and private financing, by generating carbon credits for avoided deforestation and additional reforestation. Profits made from the sale of these credits are used to sustain the forest conservation programme.
- **Integrity**: attempts to end deforestation have sometimes been compromised by concerns such as additionality, leakage, permanence and double-counting that need to be addressed. Jurisdictional approaches offer strong assurances of environmental and social integrity because they require accounting for the actions of all actors across a jurisdiction. This makes the measurement and monitoring of environmental integrity risks easier to manage.
- **Inclusion**: The prime mover in a jurisdictional approach tends to be a state or regional government, but it can also be a coalition of Indigenous peoples. If local communities, who know their landscapes and ecology better than anyone, engage in the process, the outcomes are far more likely to be sustainable and effective. In addition to cutting emissions, jurisdiction-scale forest conservation and restoration can deliver significant benefits for biodiversity and local livelihoods.

❝ Avoided deforestation offers up to nine-times as much potential low-cost carbon abatement as planting new trees



> Deforestation rates are three-to-four times lower on land governed by Indigenous communities

The private sector has a critical role to play in reversing deforestation. This can take three forms:

- **Eliminating deforestation in supply chains**: pressure is growing on companies from investors, consumers and employees to clean up their supply chains – vital given that over half of global GDP is dependent on services nature provides.
- **Carbon trading and offsets**: e.g. payments into mandatory emissions-trading systems and offsets traded through voluntary carbon markets (which could be worth up to $30 billion per year by 2030). Jurisdictional-level carbon credits offer companies a major new opportunity to contribute.
- **Private investment into "nature-positive" development**: Companies and financial institutions are increasingly investing in nature-positive initiatives (including forest conservation) that deliver benefits for biodiversity, climate and people.

Risks that a jurisdictional approach to high-integrity offsets can help overcome. Larger-scale jurisdictional REDD+ programmes can bring higher levels of integrity. Private sector players have been attracted to initiatives such as the LEAF Coalition (aiming to mobilize $1 billion to preserve forests), which uses a rigorous standard known by the acronym TREES (The REDD+ Environmental Excellence Standard). The types of risks that need to be understood and managed include:

- **Additionality**: Can emissions reductions really be attributed to a particular programme, or would they have been achieved in any case?
- **Leakage**: Is a programme simply displacing deforestation or forest degradation, by pushing poor or illegal practices somewhere else?
- **Permanence:** Will a programme result in permanent changes, or is there a risk that emissions reductions may be reversed in the future?
- **Double-counting**: How can you be sure that emissions reductions that result from one programme are not also attributed to another programme?
- **Quantification and verification**: How robustly are emissions reductions calculated, and how is the data verified?
- **Social safeguards**: Does a programme respect the rights and encourage the full participation of Indigenous and local communities, and ensure the equitable sharing of benefits with relevant stakeholders?

Importance of inclusion. Deforestation, biodiversity loss and carbon emissions are lower on land governed by Indigenous communities. Almost half of the intact forests in the Amazon are in Indigenous territories. Studies show that deforestation rates in these areas are three-to-four times lower than in equivalent lands not held by Indigenous people. Globally, Indigenous people manage nearly 300 billion metric tons of carbon stored above and below ground, equal to more than 30 years' worth of global emissions. Inclusion of Indigenous peoples and local communities is now becoming a condition for certification and funding.

The jurisdictional approach to forest carbon credits has many advantages. For example, it:

- Incentivizes governments to take actions necessary to reduce deforestation
- Promotes inclusiveness by engaging a diverse range of stakeholders from the same jurisdiction
- Aligns with the accounting frameworks negotiated under the Paris Agreement
- Reduces the risks of threats to environmental and social integrity
- Opens opportunities for public-private collaboration, including efforts to reduce deforestation within supply chains
- Provides companies with a positive way to meet their net-zero commitments – with an emphasis on the residual emissions that are beyond their direct control or capacity to abate
- Most importantly, it has the ability to reach large scale – and to achieve that scale quickly

1 Why preserving forests is essential

If we don't halt deforestation by 2030 at the very latest, it will not be possible to limit global warming to 1.5°C

Forests are essential to both our livelihoods and our ecosystems. Almost 1.6 billion people depend on forests for food, water, wood and employment. Forests sequester carbon, regulate our climate, act as flood barriers, recharge groundwater, filter air, protect biodiversity and so much more.

Forests also play a central role in the changing climate. They are both a solution and a cause, absorbing greenhouse gas emissions when preserved and restored, but releasing emissions when cut down or degraded. Because of their critical role, reducing forest loss not only restores and conserves forests, it also provides one of the most effective and immediate ways we can curb climate change.

1.1 There is no tackling climate change without forests

Deforestation is responsible for nearly 15% of global CO_2 emissions

The world will not remain on a 1.5°C global warming pathway without preserving forests. The science is clear: we cannot achieve the Paris Agreement's climate goals unless we harness the power of nature for both climate mitigation and adaptation.

Natural climate solutions,[1] which include forest conservation and restoration, can provide one-third of the mitigation that will be needed by 2030 to limit global warming to the 1.5°C target. If done well, these solutions can also play a role in reversing the other environmental crisis of our time – biodiversity loss. Forests cover almost a third of the planet's land area and harbour most of Earth's terrestrial biodiversity. They contain 60,000 different tree species, 80% of amphibian species, 75% of bird species and 68% of the world's mammal species.

A report published in 2020 by Boston Consulting Group (BCG) estimated that the total value of the world's forests is as much as $150 trillion – nearly double the value of global stock markets when the analysis was made (see Box 1). The ability of forests to regulate the climate through carbon storage is the largest component of that total value, accounting for as much as 90%, according to BCG.[2]

However, the destruction of our ecosystems continues apace. Deforestation alone is responsible for nearly 15% of global CO_2 emissions.[3]

If tropical deforestation were a country, it would have the third largest national carbon footprint in the world. Conversely, by preserving and restoring tropical forests, mangroves and peatlands, CO_2 emissions could be cut by 7 billion metric tons (gigatons) annually[4] – nearly as much as the global CO_2 emissions from burning natural gas every year.

BOX 1 Quantifying the true economic value of the world's forests

- One of the main reasons we are losing forests is economic. Currently, forest nations and communities generate higher incomes from logging, resource extraction or agriculture than from standing forests. Yet this is in the short term, and this calculation overlooks the true economic value of forests and their associated benefits provided locally and to the wider world.
- In 2020, global consulting firm BCG estimated the total economic value of the world's forests at $150 trillion – nearly double the value of global stock markets.
- BCG addresses forest value across four attributes: climate regulatory function; environmental benefits (e.g. air purification, water filtration); commercial output; and social value.
- The largest component is the climate regulatory value of forests, which accounts for 65-90% of the total. BCG's analysis aggregated the carbon stocks of the world's forests and calculated their equivalent value on regulated carbon markets. It took no account of the actual climate change impact – nor the consequences of more extreme weather events.

Source: Boston Consulting Group

1.2 Why preserving tropical forests must be a priority

Established forests are far more effective at sequestering carbon than newly planted trees

Natural climate solutions, which increase carbon storage in forests, grassland and wetlands, could deliver one third of the emissions reductions required by 2030. Forest conservation, management and restoration are a key pathway and one of the most cost-effective and immediate solutions to curb climate change, protect invaluable biodiversity and sustain livelihoods.

Within the broad range of natural climate solutions, growing trees seems like an obvious way to reverse deforestation and it can be – under certain circumstances. Many companies, governments, communities and individuals are scaling up efforts in reforestation. For example, the World Economic Forum's 1t.org initiative supports a global movement to conserve, restore and grow one trillion trees by 2030. At the time of writing, the initiative had secured 36 pledges from companies across more than 60 countries since its launch in 2020.

Preventing deforestation is the most cost-effective way to abate carbon emissions

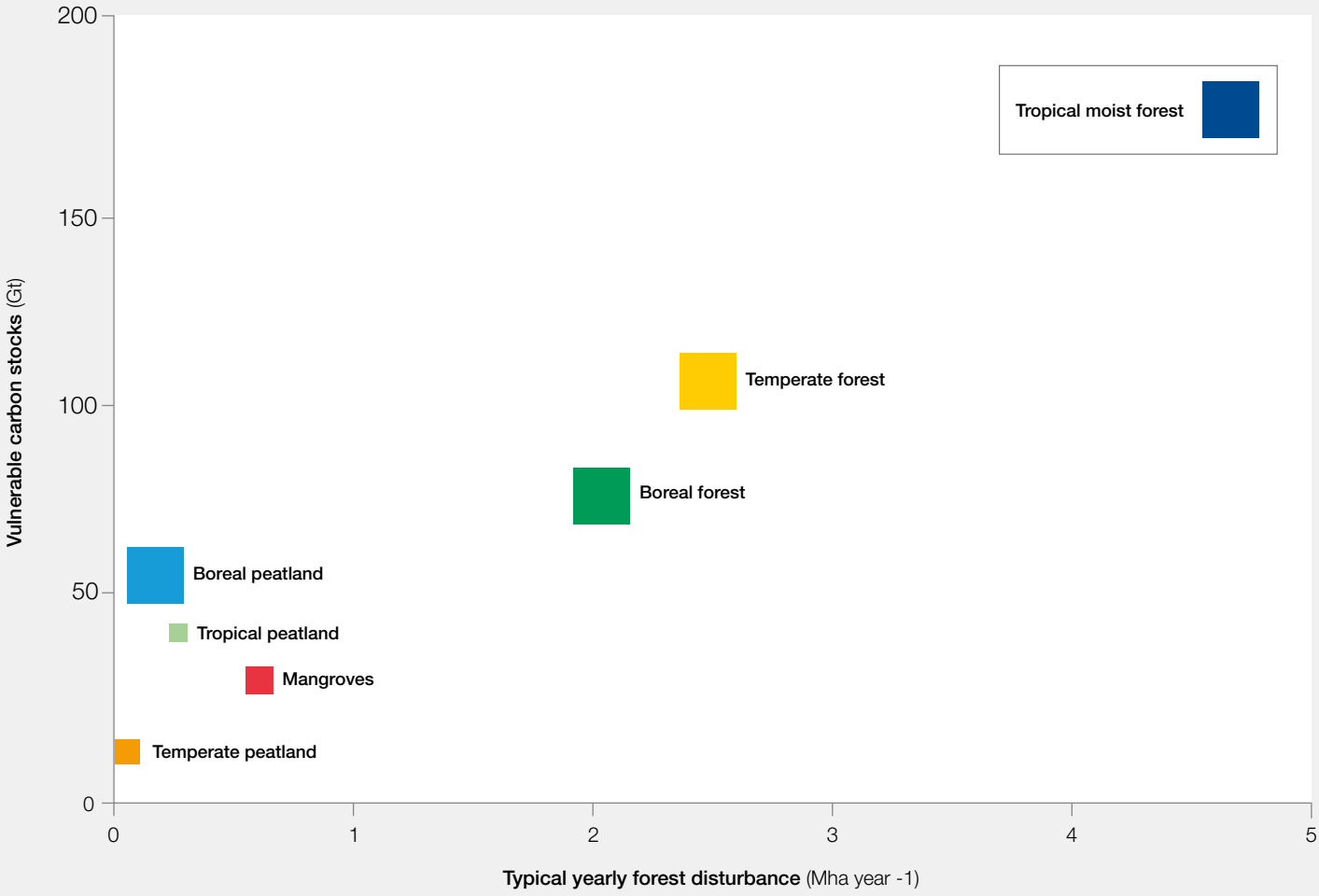
While growing new trees is beneficial and essential to restore those forests that have been lost or degraded, the priority – as in any first aid scenario – should be to stem the continuous, life-threatening bleeding that is deforestation by conserving existing forests. This will protect both the biodiversity they sustain and the carbon they hold. Established forests are far more effective at sequestering carbon than newly planted trees.

One study by Emergent[5] concludes that avoided deforestation offers up to nine-times as much potential low-cost carbon abatement as new trees. Emergent's research suggests that each year as much as 50 times more land is needed for reforestation to generate the same climate mitigation outcomes as protecting standing forests. Meanwhile, WWF has found that preventing the loss of one hectare of mature, carbon- and biodiversity-rich forests will typically avoid emissions of about 100 tons of carbon, while tropical reforestation sequesters about 3% of that.[6]

Of all forests, tropical forests play the most vital role

Tropical forests play a vital role in reducing climate change, but of all types of forest, they are most at risk (see Figure 1).

FIGURE 1 **Tropical moist forests store the most carbon and are most at risk**



Source: Emergent[7]

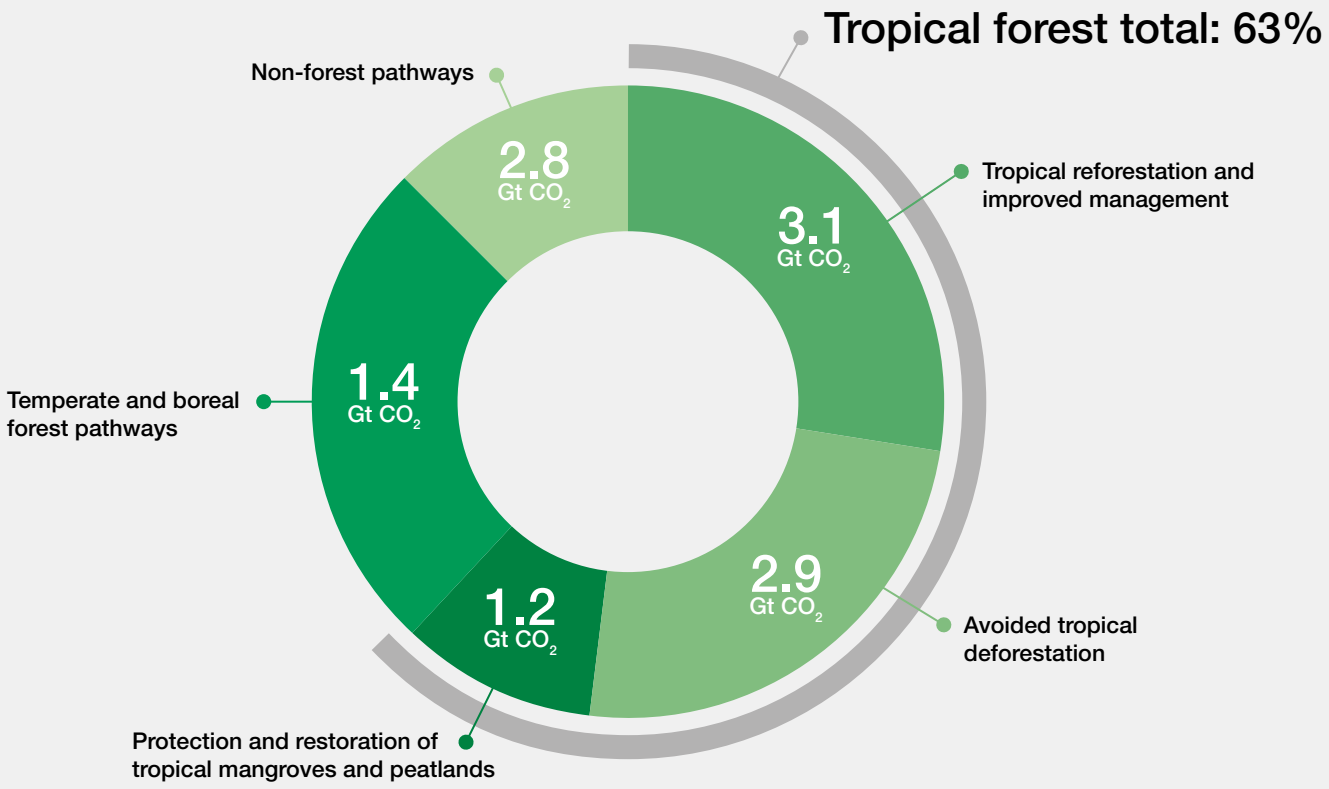
Investment in maintaining natural carbon sinks is less expensive than technological solutions

Preserving tropical forests brings many critical benefits:

- They store more carbon than any other land-based ecosystem, holding approximately one-quarter of the carbon stored in land-based ecosystems globally
- They often hold irrecoverable carbon and, when allowed, can regenerate faster than boreal and temperate forests[8]
- They play an essential role in setting an achievable route to net-zero emissions – the loss of intact, mature forests cannot be compensated for by new planting, valuable though that is
- They provide irreplaceable co-benefits and ecosystem services, and are home to the vast majority of the world's documented species
- They support the livelihoods of hundreds of millions of people by providing direct or indirect sustenance, employment and wealth creation
- They have an important role to play in minimizing the global economy's costs of transition to climate stability, as investment in maintaining natural carbon sinks is less expensive than technological solutions

According to a study in 2020 by McKinsey (which bases its analysis on data from the Intergovernmental Panel on Climate Change or IPCC), to keep the planet on a 1.5°C warming pathway would require reducing global net carbon dioxide emissions by 50-55% by 2030, compared to 2010 levels. In terms of billion metric tons (gigatons or Gt), this means slashing 2010's emissions of 39 gigatons by between 19.5 and 21.5 gigatons per year, within the next eight years. The preservation, improved management and reforestation of tropical forests, mangroves and peatlands can deliver over 7 gigatons of emissions reductions towards this target (see Figure 2).

FIGURE 2 | **Tropical forests, mangroves and peatlands can deliver 7 gigatons of emissions reductions per year by 2030**



Note: Tropical forests can deliver nearly two-thirds of the land sector's cost-effective mitigation potential by 2030.

Source: Data from Griscom et al. 2017, Supplementary Information Table S4

> The preservation, improved management and reforestation of tropical forests, mangroves and peatlands can deliver over 7 gigatons of emissions reductions per year

1.3 Why deforestation is still happening

> Last year, 3.75 million hectares of tropical primary rainforest were destroyed, releasing as much CO_2 as the annual emissions of India

The role of forests in the global carbon cycle is fundamental. Unless tropical deforestation is halted, there can be no solution to the climate crisis. This is beyond doubt – so why does deforestation still continue? At the root of it is economics – a growing demand for agricultural products (especially beef, soy and palm oil) and inadequate investment in conserving forests. Put simply, forests are worth more money cut down than left standing.

Although rates of deforestation have slowed considerably, the world continues to lose tropical forests at an alarming rate. We lost an estimated 10 million hectares per year between 2015 and 2020 globally. This means that every 15 minutes, the world continues to lose an area of tropical forest equal to the size of New York's Central Park. Put another way, deforestation claims an area close to the size of Greece every year, according to a 2020 study by McKinsey[9]. The study adds: "Deforestation's outsize impact stems from the fact that removing a tree both *adds* emissions to the atmosphere (most deforestation today involves clearing and burning) and *removes* that tree's potential as a carbon sink."

Since 2002, more than 60 million hectares of primary forest[10] have been lost in the tropics, equivalent to an area the size of France. The vast majority of tropical deforestation – more than 80% of it – occurs in landscapes where agriculture is the dominant driver. In 2021 alone, 11.1 million hectares of tree cover were lost.[11] Of this, 3.75 million hectares were tropical primary rainforests, and the loss resulted in 2.5 gigatons of CO_2 emissions – equivalent to the annual fossil fuel emissions of India.

Economics of agriculture and cattle ranching drive deforestation

Deforestation is driven by economics, as forests are worth more financially when they are cut down than if left standing. The main reason why tropical forests are being destroyed is because forest nations and communities can generally expect to receive higher incomes if their trees are harvested, their natural resources are extracted and their land is used for agriculture and pasture.

The main driver of deforestation is agriculture and cattle ranching, with the global food system responsible for approximately one-third of all global greenhouse gas emissions. Most of these emissions are embedded in the production of key agricultural commodities – such as palm oil, soy, beef, and paper and pulp – and include emissions resulting from land use change. For many agri-food companies, emissions from supply chains represent 80% or more of their total emissions and a significant proportion of these emissions is linked to deforestation.

Global food system trends are a cause for concern. The past two decades have seen a dramatic increase in demand for agricultural commodities. Globally, the annual consumption of food and agricultural products rose by about 48% between 2001 and 2018, growing at more than twice the rate of increase in the human population. To meet this burgeoning demand, there has been a significant shift towards agricultural production in tropical regions, which now represents 50% of global agricultural output, up from 44% in 2001. As a result, tropical forest loss remains stubbornly high.

“ Consumption of food and agricultural products from 2001-2018 grew twice as fast as the global population

1.4 What we can do to conserve our forests

Reversing global deforestation is a complex challenge, which many governments, UN agencies, international organizations, NGOs, communities and companies have struggled to tackle over many decades. At the heart of the challenge are four key, interconnected issues which the following chapters of this white paper will address:

- **Scale**: To deliver meaningful global emissions reductions through forest preservation will require far greater ambition than the limited scale of REDD+ projects to date.
- **Funding**: Between $100 billion[12] and $390 billion[13] per year will needed by mid-century to save sufficient forests to keep the planet on a 1.5°C pathway. Yet just €19.4 billion (around $20-24 billion) of public finance was committed to REDD+ activities over seven years from 2008-2015.[14]
- **Integrity**: Attempts to end deforestation have sometimes been compromised by concerns such as additionality, leakage, permanence and double-counting that need to be addressed.
- **Inclusion**: Indigenous peoples and local communities know how to look after their forests better than anyone; it’s vital they are included in any solution.

2 Raising ambitions to scale up forest preservation

Saving the world's forests requires a paradigm shift from individual projects to regional and national-scale initiatives that fully engage local communities.

2.1 Size matters: moving from a project-based to a jurisdictional approach

Collective large-scale approaches are the way forward if we want to halt deforestation. For more than two decades, the focus of forest conservation efforts – through initiatives such as REDD+ (see Box 2) – has been to support individual projects that are often at a small scale. Historically, REDD+ projects have been relatively successful at slowing or halting deforestation in targeted areas. However, deforestation has continued elsewhere. A new level of ambition is needed.

Building on the last two decades of understanding, attention is now turning from project-level forest conservation to jurisdiction-wide programmes, known as "Jurisdictional REDD+". This jurisdictional approach offers a way of scaling up forest conservation and restoration strategies to cover an entire country, state, landscape or region, such as Ghana's cocoa producing area (see Case Study 2). The aim is to maximize carbon sequestration, while boosting the benefits for livelihoods and for the entire forest ecosystem.

The large area covered by a jurisdictional REDD+ programme makes it several orders of magnitude larger than even the biggest REDD+ project. And it is the sheer scale of these programmes – combined with the active involvement of their governments and their local communities – that is the key to their potential.

BOX 2 **Reducing emissions from deforestation and forest degradation (REDD+)**

In 2007, the UN formalized an initiative known as REDD+, which stands for "Reducing Emissions from Deforestation and Forest Degradation". REDD+ projects aim to contribute to the fight against climate change by preserving existing forests in specific areas that are considered at risk of deforestation.

REDD+ is the framework through which countries, the private sector, multilateral funds and others can pay countries to avoid cutting down their forests. This funding can take the form of direct results-based payments or can be in exchange for carbon credits – which represent reductions in greenhouse gas emissions through forest protection and management to compensate for emissions made somewhere else.

The "+" in REDD+ signifies the role of conservation, sustainable management of forests and enhancement of forest carbon stocks. REDD+ helps countries value the carbon and ecosystem services their forests provide and creates financial incentives to:

- **Reduce deforestation** – when forests are converted to other uses (e.g. agriculture)
- **Reduce degradation** – when forests lose their ability to provide ecosystem services
- **Promote sustainable management** – ensuring social, ecological and economic benefits for future generations

2.2 Driving change through greater scale, funding, integrity and inclusion

Jurisdictional approaches can make a significant contribution to preserving the world's forests, by driving change across the four challenges identified above:

- **Scale:** they are backed by national or subnational governments, which have the authority to regulate and enforce land use. They can bring about and support systemic change, by introducing and enforcing policies such as subsidies, spatial planning, infrastructure development and issuing permits. By creating a stronger framework for action, their policies create an enabling environment that supports local and private initiatives, such as nested REDD+ projects[15] and deforestation-free supply chain initiatives.

- **Funding:** Through a combination of policies, enforcement and support for forest management (and sustainable agriculture) initiatives, a jurisdictional REDD+ approach can generate carbon credits for avoided deforestation and additional reforestation. The profits made from the sale of these carbon credits are then used to sustain the forest conservation programme. For a more detailed discussion on financing, see Chapter 3.

- **Integrity:** They offer strong assurances of environmental and social integrity because they require accounting for the actions of all the actors across a jurisdiction. And as the measurement and monitoring of forest carbon stocks are applied at the jurisdictional level, many of the environmental integrity risks (e.g. leakage, permanence and additionality) are inherently easier to manage. For a more detailed discussion on integrity, see Chapter 4.

- **Inclusion:** The prime mover in a jurisdictional approach tends to be a state or regional government, but emerging jurisdictional standards increasingly require the participation of Indigenous peoples and territories. When local communities, who know their landscapes and ecology better than anyone, engage in the process, the outcomes are far more likely to be sustainable and effective. And in addition to cutting emissions, jurisdiction-scale forest conservation and restoration can deliver significant benefits for Indigenous peoples, biodiversity and rural livelihoods. For a more detailed discussion on inclusiveness, see Chapter 5.

3 Mobilizing private sector commitment and funding to reverse deforestation

Major new investments are needed to reverse deforestation by 2030 and realize the carbon emissions gains from preserving forests. The private sector has a critical role to play.

3.1 Financing forest conservation needs a major new push

> "Saving forests to fight climate change will cost $100-390 billion per year by mid-century – yet investments in REDD+ have amounted to just $3 billion per year

To date, there has been a massive lack of funding and investment in forest conservation, management and restoration, which undermines efforts to tackle deforestation. Change is certainly possible. But investment and action are urgently needed and at a large scale. Time is of the essence, and every tool and scale of implementation are needed to avoid catastrophic climate change and protect critical biodiversity – while providing sustainable livelihoods to the local communities and Indigenous Peoples who live in these forests.

Accurate data on the global financing of forest conservation is hard to come by. A report published by the UN Environment Programme (UNEP) in 2021 finds that current investments in nature-based solutions (NbS) amount to an estimated $133 billion per year.[16] Most of this comes from public sources, with just $18 billion per year from private finance. This compares to $326 billion per year invested by private finance into climate-related solutions (e.g. low-carbon transport, renewable energy, energy efficiency).

It is difficult to say how much of UNEP's $133 billion figure is invested in forests, as the data is not sourced or organized that way. But, according to a study by the European Commission, a total of just €19.4 billion (approximately $20-24 billion) of public finance was committed by EU and non-EU donors to direct and indirect REDD+ activities over a 7-year period from 2008-2015.[17] This amounts to approximately $3 billion per year – and not all of that money was disbursed.

UNEP maintains that investments into land-based NbS will need to at least triple by 2030 to around $400 billion per year, "if the world is to meet its climate change, biodiversity and land degradation targets", rising even higher by mid-century. By 2050, "forest-based solutions alone will require $203 billion per year". Of this figure, around half ($100 billion/year) would be needed for "the management, preservation and restoration of forest assets" with the balance needed to plant new forests.

Another analysis, conducted in 2020 by RTI International, a non-profit research institute in the US, found that it would cost as much as $393 billion per year, by 2055, to pay landowners to plant and protect enough trees to sequester 6 gigatons of carbon dioxide annually and help restrict climate change to 1.5°C.[18]

Compare these amounts with the cash channelled into REDD+ activities and it's clear that the investment required by forest-country governments to conserve their forests is many orders of magnitude greater than current financial flows.

Historically, the main funding to tackle deforestation has come from wealthy donor governments, "forest governments" in tropical countries, multilateral development banks and international organizations. To protect the world's forests, we need a major financial and technological effort that includes national budget allocations, development support, climate finance, private investment and public-private finance.

Policies and economic incentives need to be put in place to advance forest conservation at all levels – including national and regional policies, scaled-up community-led forest conservation, and private sector investment.

This chapter will focus on the clear opportunity for the private sector to invest in the effort required to reverse global deforestation by 2030.

3.2 Private sector opportunities to cut carbon emissions by saving forests

Private sector investment to conserve forests can take at least three forms:

- **Eliminating deforestation in supply chains**: pressure is growing on companies from investors, consumers and employees to clean up their supply chains, in terms of their impacts on both climate and nature. Given that over half global GDP[19] is dependent on services nature provides, this makes economic sense too.

- **Carbon trading and offsets**: private sector investments to reduce emissions, for example, payments into mandatory emission-trading systems and offsets traded through voluntary carbon markets. Jurisdictional-level carbon credits offer companies a major new opportunity to contribute.

- **Private investment into "nature-positive" development**: climate and nature are two sides of the same coin. Companies and financial institutions are increasingly investing in nature-positive initiatives (including but not limited to forest conservation) that deliver benefits for biodiversity, climate and people.

Voluntary carbon markets could deliver billions to fight deforestation

Voluntary carbon markets provide a compelling mechanism to engage companies in mobilizing climate finance at sufficient speed and scale to help the world to stay within the 1.5°C limit, while bringing benefits to communities and ecosystems (see Box 3).

The value of the global voluntary carbon market topped $1 billion in 2021 and could be worth $5-30 billion per year by 2030, with perhaps two-thirds of this channelled into anti-deforestation projects and programmes. As well as helping bridge the financing gap for natural climate solutions, carbon markets can enable companies to meet their net-zero targets – and demonstrate their commitment to natural ecosystems, Indigenous peoples and sustainable livelihoods.

A high-integrity voluntary carbon market has the potential to mobilize billions of dollars a year in additional climate finance. With rigorous standards in place that address concerns around additionality, leakage and double-counting[20], the voluntary carbon market can build resilience and transfer wealth to the world's most vulnerable countries, in turn supporting sustainable development and local livelihoods.

However, to live up to this potential, investors, NGOs, regulators and the public must trust the voluntary carbon market to deliver in the public interest. Investment in high-quality jurisdictional REDD+ emissions reduction credits is one of the mechanisms gaining attention and is recommended by bodies such as the Science-Based Targets initiative as a mitigation option.

BOX 3 | **Quick guide to voluntary carbon markets**

An article from the Financial Times[21] explains it with simplicity: as corporate boards raced to announce their net-zero carbon emission targets, it argues, carbon credits have risen from relative obscurity to become a widely used, and cheap, tool for enabling successes to be claimed.

Typically, carbon credits – in the form of projects that reduce emissions, such as newly planted trees – are bought and then "retired" on an independent registry, so that no one else can claim the carbon reduction from them.

They come in two varieties: regulated (or compliance) and unregulated (or voluntary). The EU's emissions trading scheme is the world's largest compliance-based scheme and raised $34 billion in 2021. This so-called "cap-and-trade" scheme measures corporate greenhouse gas emissions and requires companies to buy additional allowances when their emissions exceed statutory levels.

But with the price for regulated EU carbon credits hitting record highs (rising from around €25 in August 2020 to nearly €100 in August 2022)[22] and companies committing to targets which go well beyond their statutory obligations, many of them are turning to the voluntary, unregulated offset market.

REDD+ credits from forest protection projects account for around a quarter of all carbon credits that have been issued to date – so they already represent a large subset of the voluntary carbon market.[23] With the emergence of REDD+ credits from jurisdictional programmes, this proportion is likely to increase.

Jurisdiction-level carbon credits offer companies a chance to make a difference

The availability of jurisdiction-level carbon credits opens up more opportunities for companies to make a meaningful contribution to combating deforestation (see Box 4).

Jurisdictional approaches can include deforestation-free supply chain initiatives, where companies or groups of companies work together in the landscapes where they source a large proportion of their commodities. They can also be through the financing of forest conservation programmes that cover an entire jurisdiction via the purchase of emissions-reduction credits.

BOX 4 | **Jurisdictional REDD+ scales up financing for forest protection from individual projects to entire landscapes**

REDD+ puts an economic value on tropical forests and provides developing countries with the opportunity to receive payments from donor countries in return for protecting their forests and managing them more sustainably.

The acronym has also been adopted in voluntary carbon markets for carbon credits resulting from forest protection or restoration.

Until recently, the only types of REDD+ activities able to raise financing through voluntary carbon markets were individual projects (e.g. a community-based tree-planting scheme or a project to protect an area of natural forest threatened by encroachment).

Jurisdictional REDD+ is changing all that.

Governments, international organizations and players in voluntary carbon markets have set up frameworks to help national and subnational governments in forest-rich countries to access market-based payments for successful forest management initiatives that take place across entire landscapes.

Key examples of recent developments in jurisdictional REDD+ and carbon markets are:

- ART group (Architecture for REDD+ Transactions), which has developed TREES (The REDD+ Environmental Excellence Standard)[24]
- LEAF Coalition (Lowering Emissions by Accelerating Forest finance)
- Verra's jurisdictional and nested REDD+ framework

For instance, the launch of the LEAF Coalition (see Box 5) in 2021 has enabled more companies, including Amazon, Salesforce and Delta Air Lines, to support jurisdictional efforts for sustainable land use. Together, LEAF Coalition public-private participants have mobilized more than $1 billion in forward-purchase agreements for jurisdictional REDD+ carbon credits to compensate tropical forest nations for reducing deforestation and to incentivize increased ambition.

BOX 5

The LEAF coalition

The LEAF Coalition, launched in 2021, provides corporations with an opportunity to access high-quality carbon credits (emission reductions) and start tackling tropical deforestation, at scale, today.

The LEAF Coalition is the largest-ever public-private partnership dedicated to halting tropical deforestation, bringing together global corporations and sovereign donors. To date it has:

- Garnered the commitment of many of the world's largest businesses (e.g. Amazon, Airbnb, BCG, McKinsey, SAP), as well as the governments of Norway, UK and the US to purchase high-quality emissions reductions as part of broader voluntary commitments to global climate action
- Sent a strong demand signal to drive systematic change by generating over $1 billion of funding to protect tropical forests
- Received successful proposals from 23 tropical forest jurisdictions
- Signed letters of intent with five countries (Costa Rica, Ecuador, Ghana, Nepal and Viet Nam), and a number of memoranda of understanding (e.g. with the Interstate Consortium for Sustainable Development of the Legal Amazon, Brazil)

LEAF provides an opportunity to accelerate companies' climate commitments through high-integrity tropical forest protection. The coalition requires companies to meet strict criteria including a demonstrable commitment to science-based emissions reductions across their value chains, backed by mid-century net-zero targets.

The coalition uses the independent and rigorous ART/TREES standard (the first jurisdictional crediting standard for REDD+), to ensure uncompromising environmental and social integrity (see section 4.4).

Similarly, the Green Gigaton Challenge, launched in 2020, aims to mobilize funds for transacting at least one gigaton of high-quality jurisdictional REDD+ emissions by 2025. Furthermore, the initiative states on its website: "Jurisdictional REDD+ has by far the largest potential to supply offsets with high environmental integrity at scale, by supporting forest country governments to implement ambitious policies at national, state or province level."

These new funding streams promise to catalyse at-scale action in many tropical forest nations. This trend towards collective action is mirrored in the agri-business sector. Many leading companies and NGOs are now convening collective approaches – making it easier for others to join the fight against commodity-driven deforestation. The case studies on Ghana and Brazil which accompany this white paper are good examples.

Eliminating deforestation from supply chains

More than half of global GDP – around $44 trillion of economic value – is moderately or highly dependent on nature

As the main driver of deforestation is economic, pressure is building on companies to eliminate deforestation from their supply chains and related activities alongside robust net-zero commitments. Across the world, companies are facing pressure from investors, the public and campaign groups to play their part in tackling climate change and biodiversity loss – by reducing deforestation in their supply chains, driving down emissions embedded in value chains as well as decarbonizing their direct operations, and supporting sustainable food and land-use systems.

As research from the World Economic Forum demonstrates – with more than half of global GDP moderately or highly dependent on nature and the services it provides, this is as much a commercial imperative as it is an environmental one.

The momentum behind corporate engagement at the jurisdictional level has been building steadily in recent years, encouraged in part by multistakeholder platforms such as the Science Based Targets initiative (SBTi) and the Tropical Forest Alliance (TFA), hosted by the World Economic Forum.

The TFA was established to support companies through their transition to deforestation-free supply chains for commodities including palm oil, soy, cocoa, cattle, and pulp and paper. The TFA's work has focused on jurisdictional approaches for more than five years, with many companies realizing that their own corporate commitments to deforestation-free supply chains may only work if aligned to public policies to achieve sustainable land use at scale. TFA also works on demand-side measures from major economies such as the US, EU and China.

The SBTi – which represents more than 3,000 companies accounting for $38 trillion of the global economy – recommends that businesses act beyond their value chains. One way they do this is to support forest conservation programmes and projects. For example, more than 1,000 companies are now members of Business for Nature, the campaigning group that lobbies for more ambitious policies to reverse nature loss.

More manufacturers and retailers, many quite distant and without direct operations in their production landscapes, are now engaging beyond their own value chains. These include members of the Consumer Goods Forum Forest Positive Coalition of Action, Action for Sustainable Derivatives, and the Soft Commodities Forum.

BOX 6

Further reading on financing the conservation of forests – five useful resources

1. Get a big picture view of finance for nature
Although gaining ground in terms of research, the study of financial flows into nature-based climate solutions – when compared to the energy transition and decarbonization – remains nascent, but there are some excellent studies. The State of Finance for Nature report and the Financing Nature report are good places to start. The Forum's Nature and Net Zero report also contains a wealth of data.

2. Understanding voluntary carbon markets and forests
When it comes to the evolution of carbon markets – and the role of forests – there is no better place to find up-to-date analysis that the Ecosystem Marketplace hub, including the 2022 State of Voluntary Carbon Markets report.

3. Finance for large-scale forest protection
The LEAF Coalition and Emergent have a wealth of information about financial flows for large-scale forest protection measures, including a white paper on why companies should invest in the LEAF Coalition. It is also worth looking at the Green Gigaton Challenge and a good Climate Funds update on the history of REDD+ finance.

4. Investing in jurisdictional REDD+
There is an increasing number of articles focused on the growing interest from the private sector for investing in jurisdictional REDD+. This corporate guide to tropical forest credit integrity differentiates carbon credits by impact, quality and scale. S&P has a blog on the growing demand and challenges for investing in these types of projects, and the Forum's Agenda blog website has an easy-to-read explainer from Emergent. Mongabay has detailed articles on the history of REDD+ financing including the many challenges it has faced and the Global Landscapes Forum has a webinar on 10 years of REDD+.

5. Where and how the money is flowing
The case studies that accompany this report provide examples of how jurisdictional REDD+ is playing out on the ground in key tropical countries. There are hundreds of resources about in-country forest protection case studies: highlights include a case study by Vivid Economics and a policy brief from CDP on jurisdictional approaches in Brazil. Nature4Climate has a global case study map of nature-based solutions in action that includes many REDD+ projects.

4 A matter of integrity

"Integrity" is the word of the moment. It means involving all stakeholders and investing only in the highest quality projects.

As jurisdictional REDD+ gains momentum, it is entering a new phase of public scrutiny. Several factors are at play here: the growth of the voluntary carbon market (of which REDD+ comprises around 25%), the impending availability of jurisdictional REDD+ carbon credits, the momentum behind the LEAF Coalition and awareness of the importance of natural climate solutions.

4.1 How environmental integrity is safeguarded by jurisdictional REDD+

"To avoid charges of greenwashing, companies need to show that these carbon credits are being used to complement a broader programme of corporate decarbonization

Carbon credits do not always have the best of reputations. The voluntary carbon market is seen as an unregulated space, with poor transparency, where companies can buy credits of questionable quality as a pain-free way of meeting their carbon targets.[25]

With many more companies announcing net-zero commitments, the space is certainly heating-up. In 2021, the size of the market grew three-fold to exceed $1 billion. By the end of the decade, it is forecast to reach $50 billion a year.[26]

As the scale escalates, so too does the scrutiny. It is predicted that buyers and sellers of carbon credits will come under increasing pressure from investors, regulators, campaigners and consumers to demonstrate the veracity of their claims and to counter accusations of greenwashing.

When it comes to carbon markets, "integrity" is the word of the moment – and the definition is fast evolving. But broadly speaking, high integrity in carbon markets encompasses two principles:

- Involving all the people on the ground who have a stake in a particular carbon credit project
- Putting money into the highest quality environmental and social projects available

To protect the world's tropical forests and enable them to fight climate change more effectively, significant funds are necessary. As we noted earlier, cost estimates to save sufficient forests to keep the planet on a 1.5°C pathway range from $100 billion to $390 billion a year. The voluntary carbon market represents a vital source of finance.

On the supply side, schemes that sell forest conservation credits need to convince buyers that their initiatives do deliver genuine emissions reductions or carbon removals.

On the demand side, the companies that buy these credits need to reassure themselves – as well as their stakeholders – that they have done their due diligence and their credits are credible. And to avoid charges of greenwashing, they need to show that these credits are being used to complement a broader programme of corporate decarbonization initiatives, such as efficiency improvements, renewable energy investments, circularity and other carbon emission elimination strategies.

Considerations around integrity were clearly top-of-mind when the latest generation of jurisdictional REDD+ programmes was envisaged and the standards that govern them formulated. With the benefit of decades of experience in forest conservation, jurisdictional REDD+ programmes are genuinely high-integrity initiatives, delivering bona fide benefits, backed by robust reporting and verification.

4.2 Setting the bar high for quality carbon credits

Best practice dictates that the use of credits should be confined to counterbalancing only the hard-to-abate emissions on the pathway to net zero

Some critics maintain that the use of carbon credits to offset emissions gives companies a licence to pollute. All too often, the critics say, companies buy carbon credits in an attempt to compensate for a poor environmental performance – claiming to have reduced their emissions, while doing little to limit the size of their actual carbon footprint.

Research suggests that this is rarely the case. Companies that do buy carbon credits tend to be more engaged in direct emissions-reduction activities than those that don't offset.[27] Meanwhile, best practice dictates that the use of credits should be confined to counterbalancing only the hard-to-abate emissions on the pathway to net zero (that is, those emissions that a company cannot eliminate through currently feasible decarbonization initiatives) and any residual emissions at the point when net zero is reached.[28]

New high-profile corporate sustainability initiatives, such as the Voluntary Carbon Markets Integrity Initiative and The Climate Pledge, impose strict criteria on the way companies use and report on offsetting, and the role that the purchase of carbon credits should play in their wider decarbonization programmes. To qualify for the SBTi's new net-zero standard (aligned with a 1.5°C warming pathway), for example – companies must decarbonize 95% of their operations (Scope 1 and 2 emissions) and may only purchase carbon credits to offset the remaining 5% of hard-to-abate emissions. SBTi, whose net-zero standard is widely regarded as one of the most rigorous on the market, refers to the carbon credits that jurisdictional REDD+ programmes offer as "high-quality".

Meanwhile, with regards to jurisdictional REDD+, the LEAF Coalition (see Box 5) has imposed certain obligations on companies that want to participate in the scheme and purchase emissions-reduction credits. This means that companies must already have a clear and demonstrable commitment to climate action – and the credits must be used in addition to, and not as a substitute for, deep cuts in their own emissions performance, and the emissions performance of their respective suppliers.

4.3 Risks that high-integrity offsets must overcome

As anyone from the world of corporate sustainability and reporting would tell you, the bar for participation is therefore set high. Looking at the jurisdictional REDD+ programmes themselves, the types of risks that need to be understood and managed include:

- **Additionality**: Can emissions reductions really be attributed to a particular initiative, or could they have been achieved in any case?
- **Leakage**: Is an initiative simply displacing deforestation or forest degradation, by pushing poor or illegal practices somewhere else?
- **Permanence:** Will an initiative result in permanent changes, or is there a risk that emissions reductions may be reversed in the future?
- **Double-counting**: How can you be sure that emissions reductions that result from one initiative are not also attributed to another initiative?
- **Quantification and verification**: How robustly are emissions reductions calculated, and how is the data verified?
- **Social safeguards**: Is an initiative respecting the rights and encouraging the full participation of Indigenous and local communities, and ensuring the equitable sharing of benefits with relevant stakeholders?

How best to manage these risks has been debated over many years. They are relevant, not just to forest conservation programmes, but to all manner of emissions-reduction initiatives (including renewable energy projects and carbon capture technologies).[29] In the face of public and regulatory scrutiny, and with the benefit of more than a decade of experience, the environmental and social safeguards protecting REDD+ have evolved. And the latest generation of jurisdictional REDD+ standards has been specifically designed to overcome risks to environmental and social integrity.

"The risks have not gone away," explains Frances Seymour, Distinguished Senior Fellow at the World Resources Institute and Chair of the Architecture for REDD+ Transactions (ART) Board, whom we interviewed for this report. "What has changed is our ability to measure forest carbon stocks, understand the risks inherent in any emissions-reduction activity, and mitigate against them."

4.4 How the scale of jurisdictional REDD+ can play a vital role in managing risk

So, how is integrity safeguarded in jurisdictional REDD+ programmes? You could probably sum it up in two words: **scale** and **circumspection**.

As Frances Seymour argues, larger-scale jurisdictional REDD+ programmes, by their very nature, bring higher levels of integrity – partly because large-scale programmes translate to at-scale emissions reductions, partly because they require the active involvement of governments, and partly because of their all-encompassing nature. In addition, the scale of jurisdictional approaches helps reduce some of the risks of leakage previously associated with REDD+ projects.

"With these programmes, you are working directly with governments and offering them financial incentives to bring about meaningful change. Governments with the political will have the power to make policy changes, regulate land use, enforce the law and do all the other things that are needed to prevent deforestation and degradation.

And, because you are working at large scale, across entire jurisdictions, many of the risks – like leakage, permanence and additionality – are inherently easier to manage," she explains.

Meanwhile, one of the things that has attracted private sector players to the LEAF Coalition has been the level of rigour behind the standard developed by ART, known by the acronym TREES (The REDD+ Environmental Excellence Standard). Global companies such as Airbnb, Salesforce and Unilever have rallied behind the initiative, and contributed to the $1 billion of funding the LEAF Coalition has so far amassed. Jamey Mulligan, a senior scientist with Amazon – one of the coalition's prime movers – explains the attraction: "We see it as a game-changer. The standard takes a very conservative approach to measuring carbon stocks. That means you can treat it with a very high level of confidence. But, perhaps more important, it promises to be the fastest path to real impact, at significant scale."

> **The [TREES] standard promises to be the fastest path to real impact, at significant scale**
> Jamey Mulligan, senior scientist with Amazon

None of this is to say that success is guaranteed, nor that jurisdictional REDD+ programmes are without risk. They may have real potential, they may draw on decades of experience, they may follow a compelling logic, and they may be backed by rigorous standards. But, until the ball is rolling, the emissions reductions are verified, and the finance begins to flow, the benefits do remain theoretical.

As Frances Seymour explains, "With TREES, the aim is to strike the appropriate balance. We want the highest integrity possible. But we don't want the standard to be so rigorous that it becomes impossible to meet. Until momentum builds, we won't know for sure whether we have got that balance right. And, based on what more we see and learn, we are committed to updating the standard accordingly."

Meanwhile, companies that do want to participate are advised to make themselves aware of the potential pitfalls, and urged to do their due diligence when purchasing any type of carbon credits, including emissions reductions from jurisdictional REDD+. For example, a coalition of NGOs, including the World Wildlife Fund, The Nature Conservancy and the World Resources Institute recently published a Tropical Forest Credit Integrity Guide for Companies which provides context and recommendations, including guidance on investing in jurisdictional-scale credits.

For example, beyond the question of environmental integrity, there are some lingering concerns over the role of and benefits for Indigenous Peoples and local communities in jurisdictional REDD+ programmes. Although related safeguards and protections are included in the TREES standard, scrutiny continues as its innovative approach is being tested for the first time.

While acknowledging the uncertainties, advocates of jurisdictional REDD+ programmes are genuinely optimistic, and seem convinced that momentum will gather and the benefits will escalate.

"I think we can reasonably expect to see a virtuous circle, both on the demand side and the supply side," says Frances Seymour. "Governments will see that the standards can be met, they will be incentivized to stay in the scheme, and their peers from other countries will be persuaded to participate. Meanwhile, early-mover buyers of emissions reductions will be vindicated, their contributions to climate action will be recognized, and more companies will come to regard these as high-integrity credits that make a demonstrable difference."

Jamey Mulligan is similarly enthusiastic: "Today, the carbon markets are a bit of a minefield. It can be very hard to understand the quality of some credits, so a lot of time and money needs to be spent with consultants, and the transaction costs are very high. We want the LEAF Coalition to be, and to be seen to be, a high-integrity solution – which reduces transaction costs, brings confidence to investors, mobilizes capital at scale and, ultimately, plays a pivotal role in halting deforestation."

BOX 7

Further reading on jurisdictional REDD+, voluntary carbon markets and integrity concerns – five useful resources

1. A great entry point
To the uninitiated, the world of jurisdictional REDD+ financing and the role of voluntary carbon markets can be bewildering. For a gentle introduction, which focuses on the creation of the LEAF Coalition, Reuters has published a useful, easy-to-read introduction. Or, for a bit more detail, which is still mercifully easy-to-follow, this is a great article on Medium, written by Nandita Lal, a carbon markets consultant.

2. Find out, verbatim, what the standards say
Verra and ART manage rigorous standards or frameworks for the measurement, monitoring, reporting and verification of jurisdictional REDD+ programmes. You can get the detail from their respective websites – both of which are clearly written and easy-to-read.

3. Get a feel for the innate benefits of jurisdictional programmes
Experience suggests that increased scale does translate to increased potential with fewer risks and greater innate integrity. To find out more, and to get some substantiation for this assertion, here's a useful white paper (jointly published by Emergent, Forest Trends, the Environmental Defense Fund and the UN Environment Programme). Or, for a more academic assessment, here's a robust (and easily understandable) research paper published in the scientific journal Environmental Research Letters.

4. Take a deep dive into the issues of impact, quality and scale
An excellent resource, which we cite in this article, is the Tropical Forest Credit Integrity Guide for Companies, recently published by a coalition of NGOs. Intended to provide guidance for potential buyers of carbon credits (and to nudge the market toward credits with high social and environmental integrity), it also acts as an excellent primer on the subject of integrity.

5. Acknowledging the opposing views
Of course, not everyone agrees with the views expressed in this paper. There are some within the environmental community who strongly believe that, whatever their level of integrity, carbon credits are innately problematic. So, to understand the full spectrum of opinion, you should maybe look at a recent report from the NGO Amazon Watch.

5 Importance of inclusion

When it comes to forest protection, integrity and inclusion go hand in hand. Indigenous peoples have a critical role to play.

Recent research published by the World Economic Forum suggests that REDD+ programmes can bring tangible benefits to Indigenous peoples and local communities.[30] That's as it should be. A solid and growing body of evidence proves that the best guardians of tropical forests are the people who have always called them home.[31]

This chapter takes a look at some of the evidence, the way Indigenous peoples are typically involved in REDD+ programmes, and how their involvement is intrinsic to the latest generation of jurisdictional initiatives.

5.1 Indigenous peoples: leaving it to those who know best

"Between 2006 and 2011, Indigenous territories in the Peruvian Amazon reduced deforestation twice as much as protected areas with similar ecological conditions and accessibility

To anyone who is not familiar with the subject, it could come as something of a surprise to learn that there has often been conflict between conservation initiatives and Indigenous peoples. The accusation is that, often, conservation projects take a "fortress" approach, seeking to demarcate protected areas and flush everyone out from them, in the belief that this will enable nature to return to an untouched or pristine state. This approach, so the argument goes, excludes Indigenous peoples, can banish them from their ancestral homelands, and misunderstands the special nature of tropical forest ecosystems and the symbiotic role that local communities often play.

Against this background, it is interesting to note that REDD+ is relatively well regarded for its engagement with Indigenous peoples and local communities. The Forum-commissioned research project – which analysed a decade's worth of online discussion in social media, blogs and forums, and in the mainstream media – found that REDD+ was widely thought to bring tangible and significant improvements to the lives of local communities.[32]

"Globally, Indigenous people manage nearly 300 billion metric tons of carbon stored above and below ground, equal to more than 30 years' worth of global emissions

This is reassuring, not just because the rights and interests of Indigenous and local peoples are being respected. A growing body of evidence also suggests that the best guardians of tropical forests tend to be the people who have always called them home.

Deforestation, biodiversity loss and carbon emissions are lower on land governed by Indigenous communities. For example, deforestation rates in the territories managed by Indigenous people tend to be 50% lower than in territories elsewhere, almost half of the intact forests in the Amazon are in Indigenous territories, and even though Indigenous territories cover 28% of the Amazon Basin, they only generated 2.6% of the region's carbon emissions.[33] Other studies go much further, suggesting that deforestation rates are three-to-four times lower in these areas than in equivalent lands that are not held by Indigenous people.[34]

What is more, many Indigenous territories have been found to prevent deforestation at least as effectively as the so-called fortress approach of protected areas, and some even more effectively. For example, between 2006 and 2011, the Indigenous territories in the Peruvian Amazon reduced deforestation twice as much as protected areas with similar ecological conditions and accessibility.[35] Meanwhile, a 2019 study found that Indigenous lands as far-flung as Australia, Brazil and Canada had comparable biodiversity to government-protected areas.[36]

It is also important to note that we are not talking about isolated examples or small-scale territories. The lands managed by Indigenous people are vast. One study, by Rights and Resources International, calculates that, around the world, Indigenous people manage nearly 300 billion metric tons of carbon stored above and below ground, equal to more than 30 years' worth of global emissions.[37] Another study calculates that more than 20% of the world's land area is managed by Indigenous peoples and local communities.[38]

So, what is it that makes Indigenous people such good forest guardians?

> The Kenyah Dayak people in Borneo successfully manage more than 150 species of tree within a single plot, while western foresters can struggle to manage just four or five species

The fact is, Indigenous peoples know their lands better than anyone. And it seems certain that cultural factors and traditional knowledge have a significant role to play. As the UN's Food and Agriculture Organization puts it: "Many Indigenous and tribal peoples have productive systems that are less harmful to forest ecosystems. This is an empirical finding, based on data, not a naïve ideological or romantic notion."[39]

Over centuries, Indigenous communities have developed interdependent systems of agriculture and forestry that are uniquely suited to the ecological circumstances of the land they inhabit. For them, there is often no clear line between agriculture and forestry. And, in many cases, the reason why forests remain in these areas is that they are important to local communities and carefully managed by them.[40] For example, it has been concluded that large tracts of what had once been thought to be pristine Amazon rainforest had actually been profoundly shaped by people for many generations.[41]

An article published by the Yale School of the Environment provides a useful insight into what makes Indigenous agroforestry so special. In it, the distinguished ecologist Charles M. Peters (curator of botany at the New York Botanical Garden and professor of tropical ecology at Yale) describes how the Kenyah Dayak people in Borneo successfully manage more than 150 species within a single plot, while western foresters can struggle to manage just four or five species, and prefer to deal with one or two. "To do what they are doing you have to pay attention to every one of those species and ask how it is doing and what its requirements are. Are there seedlings and saplings? Are you ensuring that once you harvest that tree there will be others of its kind that take its place? It's a very complicated and wonderful thing. And all of this is being accomplished with traditional knowledge, as opposed to putting in plots and counting things as Western foresters do. How are they doing this? How did they learn this? They learned it by trial and error over a thousand years and more."[42]

5.2 Indigenous peoples' role in REDD+ programmes

With the evidence mounting, things appear to be moving in the right direction. Indigenous people and local communities are starting to play a more central role in many of the world's most successful conservation programmes. This is certainly a factor in many of the more recent jurisdictional REDD+ programmes – which are designed to ensure that traditional knowledge and agroforestry models are rejuvenated, that Indigenous people are more actively engaged in the planning stages, and that they are adequately paid for ecosystem services (a little like the environmental payments that farmers receive in many western countries).

REDD+ and Indigenous people in Guyana

A case in point is Guyana, a country that has successfully preserved its forests and will be rewarded for it through jurisdictional REDD+. Guyana is the first developing country to launch a low-carbon development strategy. Nine different Indigenous peoples live throughout Guyana's rainforests, mountains, savannahs and coast. Making up 15% of the population, they have stewarded the country's diverse landscape for centuries. The government is committed to the socio-economic development of these Amerindian communities, preservation of their culture, and recognition and protection of their collective rights, which are enshrined in the Amerindian Act.

Guyana's low-carbon development strategy identifies and implements projects to create sustainable jobs while developing climate resilience and adaptation – supporting Indigenous peoples while advancing jurisdictional REDD+ initiatives and forest governance.

REDD+ and Indigenous people in Costa Rica

“ Since the 1990s, Costa Rice has doubled its forest cover, making it one of the first tropical nations to halt and reverse deforestation

Another good example is Costa Rica, a country with 60% forest cover, which is widely recognized for its abundance of biodiversity. However, this was not always the case. In the 1990s, Costa Rica had one of the world's highest deforestation rates. In the subsequent three decades, pioneering conservation efforts led by both government and Indigenous peoples have doubled forest cover – making Costa Rica one of the first tropical nations to have successfully halted and reversed deforestation.

Maintaining their ancestral relationship with the forests, Costa Rica's eight remaining Indigenous peoples communally manage the ecological richness of the 24 territories in which they live.

The country has recognized their critical contributions to forest management by developing a national Indigenous consultation plan, through which they have helped establish the national jurisdictional REDD+ strategy.

Costa Rica's innovative jurisdictional REDD+ programme includes a cultural mediators programme, which introduces local communities to REDD+ topics in a way that is understandable and relevant to local circumstances. The programme also creates an Indigenous peoples' forest management plan – incorporating all territorial rights as defined by the Indigenous peoples themselves – and expands payments to them for ecosystem services.

5.3 Inclusion of Indigenous peoples is becoming a condition for certification and funding

As the private sector, in particular, wakes up to the urgency of curbing deforestation, the level of financing available for forest protection is rapidly growing, especially through public-private initiatives such as the LEAF Coalition.

To qualify for these funds, jurisdictional REDD+ programmes need to meet strict criteria. Architecture for REDD+ Transactions (ART) and Verra, the international standard-setters that monitor and verify jurisdictional REDD+ programmes, require them to involve local communities and bring them tangible benefits. One of the guiding principles of ART's TREES standard is "to ensure the recognition, respect, protection, and fulfilment of the rights of indigenous peoples and local communities".[43] The standard also requires forest protection initiatives to promote the "meaningful participation of indigenous peoples and local communities" at every step, including planning, implementation, gathering data and assessing the success of the programmes.

In practice, Indigenous peoples and local communities (IPLCs) are already carrying out activities to protect forests, for example by reintroducing ancestral agroforestry models. So jurisdictional REDD+ programmes can help channel finance to support their continuing activities, by ensuring IPLCs receive payments for ecosystem services.

BOX 8 Further reading on Indigenous peoples and forest management – five useful resources

There is plenty of intriguing information and many inspiring stories on Indigenous peoples and forest management. Here are some resources that can give a better feel for the subject:

1. A gentle introduction
There is so much information out there, it can be difficult to know where to start. If you are new to the subject, there is a great introductory article published by the Yale School of the Environment (which we refer to in this piece). Another useful introduction (which covers both temperate and tropical forests) comes from the National Geographic.

2. An excellent overview and a signpost to much more
The recent UN report, Forest Governance by Indigenous and Tribal Peoples, is an excellent resource. It is very accessible and easy to read and, as well as providing a comprehensive overview of the subject, it also serves as a digest, referencing and signposting the way to hundreds of other resources and studies.

3. 50+ case studies to browse through
Local Biodiversity Outlooks is an online initiative from an NGO called the Forest Peoples Programme. This excellent website includes more than 50 case studies of Indigenous peoples and local communities who are leading on the preservation of biodiversity.

4. Acknowledging the opposing views
Of course, not everyone agrees with the views expressed in this paper. There are some within the environmental community who believe strongly that jurisdictional REDD+ programmes don't do enough for Indigenous peoples. So, to understand the full spectrum of opinion, you should maybe look at a recent report from the NGO Amazon Watch. Another good reference point is an article by author and journalist Fred Pearce, again published by the Yale School of the Environment.

5. Find out, verbatim, what the standards say
As we report in this piece, ART and Verra manage rigorous standards or frameworks for the measurement, monitoring, reporting and verification of jurisdictional REDD+ programmes. You can get the detail from their respective websites.

Conclusion

The importance of prioritizing the protection of standing forests is well established. Ending tropical and subtropical forest loss this decade is a crucial part of meeting global climate, biodiversity and sustainable development goals and, in fact, offers one of the biggest and fastest opportunities for climate action in the coming decade.

The jurisdictional approach to tropical forest protection addresses the important issues of protection and scale by mobilizing action across an entire country or state. It seeks to create a new business model for forests that incentivizes governments to take the decisions and perform the actions that only they have the authority to implement, including policy reform and strict law enforcement. A whole-of-landscape approach also creates the opportunity to factor-in the ecosystem services of the region, the protection and restoration of biodiversity, and the recognition of Indigenous peoples' and local communities' rights and full and effective participation.

The jurisdictional approach to forest carbon credits has many advantages. For example, it:

- Incentivizes governments to take actions necessary to reduce deforestation
- Promotes inclusiveness by engaging a diverse range of stakeholders from the same jurisdiction
- Aligns with the accounting frameworks negotiated under the Paris Agreement
- Reduces the risk of threats to environmental and social integrity
- Opens opportunities for public-private collaboration, including efforts to reduce deforestation within supply chains
- Provides companies with a positive way to meet their net-zero commitments – with an emphasis on the residual emissions that are beyond their direct control or capacity to abate
- Most importantly, jurisdictional REDD+ has the ability to reach large scale – and to achieve that scale quickly

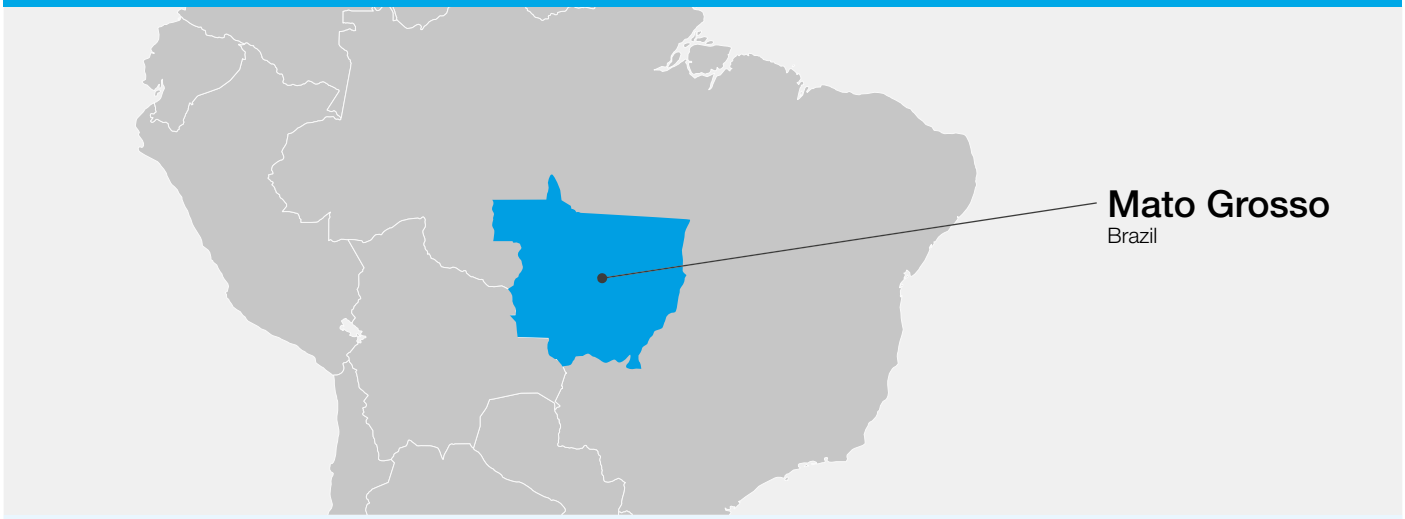
While the project-based approach of REDD+ can have decent impacts when done properly, these projects on their own do not come close to matching the scale needed to address the deforestation and climate crises. There is an urgent need to coordinate, include and scale-up action. Furthermore, many actions needed to halt deforestation – such as enforcement and regulatory reform – can only be taken with the cooperation and direct participation of the public sector.

Jurisdictional REDD+ delivers on these priorities. It entails a holistic and inclusive approach to forest protection – one that brings together public, private and civil society actors – and it unlocks the resources needed to deliver systemic impact across entire landscapes.

Appendix: case studies

CASE STUDY 1

Brazil: reconciling production with preservation



Mato Grosso state is pursuing the world's largest jurisdictional sustainable development programme, aiming to avoid 6 gigatons of carbon emissions

The Brazilian state of Mato Grosso is pursuing a coordinated, state-wide approach to forest conservation, which brings together government, business and NGOs.

Described as the world's largest example of a "jurisdictional" approach to sustainable development, it seeks to increase the efficiency of agricultural production, while also protecting forest cover, enhancing biodiversity and improving the prospects of family farmers and Indigenous peoples – with the ultimate goal of avoiding 6 gigatons of carbon emissions.

In this case study, we take a look at the background to the programme, the progress made so far and the prospects for the future.

Diverse landscapes in a state as big as France and Germany combined

To get a feel for the Brazilian state of Mato Grosso, you might want to open up your laptop and launch Google Earth.

Type in the words Mato Grosso (which, in Portuguese, mean "thick forest") and you find yourself hovering over a vast swathe of central South America. Immediately, you get a sense of the scale of this gargantuan landlocked state. At 903,000 square kilometres, it's the size of France and Germany combined – or, put another way, you could easily lose the whole of Texas within its borders and have enough room left over for more than half of California.

Start to descend, and you see plenty of variety. In the north is the dense, moist rainforest of the Amazon, in a belt across the centre are the lush savanna grasslands of the Cerrado while, pushing their way into the south-west, are the tropical wetlands of the Pantanal. And, reflecting this diversity in landscapes, the state is also home to more than 40 Indigenous peoples.

What you don't see is urban sprawl. Across Mato Grosso's 114 municipalities, the population density is less than four people per square kilometre (by contrast, Europe's least densely populated country, Norway, is home to 14 people per square kilometre). And by far the largest of the few scattered cities is the state capital of Cuiabá with a population of just half a million (similar in size to say Dresden or Dublin).

Recognizing an innate tension

Despite the scale and diversity, there is a common denominator to Mato Grosso. Almost anywhere you choose to zoom-in on Google Earth, you soon sense an innate tension between the paler colours of agricultural land – contained within the straight lines of vast, geometrical fields – and the deep green tones of the native vegetation, which still covers 62% of the land area.

Start to read about Mato Grosso's economy and you begin to appreciate how this tension plays out in everyday life. Even though it generates less than 2% of Brazil's GDP, Mato Grosso is an agricultural powerhouse – the country's largest producer of soy, maize, cotton and sunflowers, where cows outnumber people by a ratio of ten-to-one.

> **Mato Grosso is Brazil's largest producer of soy, maize, cotton and sunflowers, where cows outnumber people by ten-to-one**

Strong forces at play – which are set to get stronger

There is an insatiable global appetite for all this produce. Once a poor relation to Brazil's better known coastal regions, Mato Grosso is finally on the up. A recent article in the Financial Times vividly describes an agribusiness-fuelled boom, a frontier-like spirit, a mood of optimism and strong support for Brazil's pro-business federal government. As one newly wealthy farmer explains: "We could go over to China and slap them in the face and they would still come and buy our soyabeans because they don't have another option."[44]

The pull is set to get much stronger. In the next 20 years, there is expected to be a 35% increase in world demand for meat.[45] By the end of this decade, the demand for soyabeans is likely to increase by 70 million tons – half of which will be satisfied by Brazil, where the area under production is forecast to grow from 36 million to 45 million hectares.[46]

Global demand for meat is forecast to increase 35% in the next 20 years. To meet growing demand for soy, Brazil will have to increase its area under production by 25%

So, how can all of this be reconciled with the global imperative to protect our remaining tropical forests? How can Mato Grosso's landowners be dissuaded from cultivating their own property when, economically, it is worth so much more to them as farmland than as forest? And, in a remote, sparsely populated state of such colossal proportions, how can land-grabbing and illegal logging be effectively monitored and policed?

Another side to the story

Fortunately, there is another side to the Mato Grosso story.

Despite the surge in agricultural production, the rate of deforestation remains at around 15% of its 2004 peak. There is an ambitious, well-regarded programme in place to minimize further losses and there is cautious optimism that Mato Grosso can be successful in reconciling production with preservation.

The story dates back to the Paris climate change conference in 2015, when the government of Mato Grosso launched its three-pronged PCI strategy:

- **Produce** – to expand and increase the efficiency of agricultural production
- **Conserve** – to protect native vegetation and restore degraded areas
- **Include** – to improve the living standards of family farmers and Indigenous peoples

It may sound utopian. The goals may appear mutually exclusive. But the state government had already proved its mettle. A decade previously, Mato Grosso had by far the highest levels of deforestation in the Brazilian Amazon. Yet it had been more successful than any other state in arresting the destruction of its forests. It had put tough new environmental policies and protections in place, and it was confident it could continue on the same trajectory.

The PCI strategy was a way to articulate the state's vision, rally support and find consensus among many different stakeholders. It corralled a wide range of sustainable development initiatives and secured the level of external funding it would need to limit further deforestation and, ultimately, to avoid the 6 gigatons of carbon emissions that would otherwise ensue.

Mixed results – but confidence for the future

How do we judge success in Mato Grosso, and prospects for the future?

"We have had a lot of success in attracting partners," explains Fernando Sampaio, executive director of the PCI Institute, the independent body that was established to coordinate the delivery of the strategy. "All of the key players in government agencies, civil society and private business are engaged and largely aligned. And they all understand that Mato Grosso has a vision, has a strategy, has a plan, has targets and has reliable ways to monitor what's happening on the ground."

"What we have not yet done is to break the false narrative that a low-carbon economy equates to a low-value economy," he continues. "Today, the most heavily forested areas of Mato Grosso still have the lowest living standards. The people in these areas look enviously at the soy-producing regions. And they conclude that the forest is bringing them nothing but poverty. To be truly successful, we must nurture a well-functioning bio-economy – one that puts a value on the standing forest while also enabling farmers to get more value from the land that is already in agricultural production."

Sampaio goes on to argue there is ample land available to meet the demand. "The prediction is that, by 2030, another 10 million hectares of soy plantations will be required across Brazil. Yet, right here in Mato Grosso, we have more than 40 million hectares of degraded pastureland which could be rejuvenated," he says.

We must nurture a well-functioning bio-economy that puts a value on the standing forest, while enabling farmers to get more value from their agricultural land

Fernando Sampaio, Executive Director, PCI Institute

Understanding what is happening on the ground
One of the most striking aspects of the PCI strategy is the rigour with which targets are set and progress is monitored. Across the three strands of "Produce, Conserve, Include", a total of 21 time-bound objectives have been agreed, indicators have been established and a web-based dashboard provides an overview of the latest status.

It's not all good news of course. In a state this large, across areas this remote, one of the toughest challenges is to track and crack down on instances of illegal logging and forest fires. To this end, the PCI Institute used a tranche of its initial funding (secured from the UK and German governments through an initiative called the REDD+ Early Movers programme, or REM)[47] to acquire the Planet Satellite Image Monitoring platform.

Enabling near-real-time monitoring of the entire Mato Grosso region, this platform generates accurate deforestation alerts, enabling the state government and law enforcement agencies to move quickly to identify hotspots, engage with landowners, seize equipment, limit losses and prevent the progress of further environmental crimes.

Making it easier for the business world to engage
One of the big innovations from Mato Grosso is the way PCI has engaged so successfully with the business world.

From the outset, programme leaders took care to involve many different stakeholders, welcome them into the debate and include them in the governance of the PCI Institute. As well as ensuring their respective interests are aligned, this multi-sectoral approach bolsters the independence of the programme and enables it to withstand any changes in the state government.

Businesses – including both producers and buyers – are represented on the decision-making bodies, while a corporate action group facilitates deeper engagement, ensures that PCI complements existing supply chain initiatives and provides a channel for companies to give feedback. The PCI Institute has also been able to act as a matchmaker between companies that want to clean up their supply chains and sustainable development projects within the region.

"We recognized from the start that many companies want to support the PCI strategy, but aren't sure how to," Sampaio explains. "So, we put together a Pitch Book – a menu of plug-and-play sustainable development projects that are actively looking for support and contribute to the wider PCI goals."[48]

By simply leafing through the pages of this pitch book, you soon get a feel for the variety of initiatives being pursued and the emphasis on family farmers and Indigenous peoples. Examples include the Xingu Seeds Network, a community-based development network to support the creation of markets for seeds from native plants and trees, and the Redes Socioprodutivas, a project which helps smallholders to develop and profit from agroforestry products like cocoa, babaçu and Brazil nuts.

The state is also piloting a new initiative called CONSERV, which aims to prove that standing forests have value. The project has identified over 7 million hectares of privately owned areas in Mato Grosso that could be legally deforested. CONSERV will show that paying landowners to conserve this native vegetation is cost-effective.

Finding new ways for the necessary financing to flow
Of course, realizing change of this magnitude requires significant investment. And another strand of the Mato Grosso story is the disciplined way that the PCI Institute has prioritized and costed its initiatives and coordinated the dialogue between donors and investors. An independent study in 2021 estimated that $30 billion would be needed to fully finance the PCI Strategy by 2030 – of which 80% needs to come from the private sector.[49]

The PCI Institute is advocating a range of investment models and funding mechanisms, including green bonds, endowment funds, private equity and venture capital. In addition, it is confident that funds will finally begin to flow through the voluntary carbon markets, based on "jurisdictional REDD+" credits – a policy framework set up under the UN Framework Convention on Climate Change that can channel payments to jurisdictions (e.g. regions, states or landscapes) such as Mato Grosso for protecting their forests.

"Jurisdictional REDD+ credits could be a game-changer, especially for family farmers and Indigenous peoples," says Sampaio. "As well as having strong social safeguards, the scheme is a way of putting a tangible value on standing trees, and channelling funds directly to the people who need it the most."

"Jurisdictional REDD+ credits could be a game-changer, especially for family farmers and Indigenous peoples

Lessons learned and applied
Mato Grosso enjoys a high profile within forest conservation circles. It is probably the best-known example of a jurisdictional approach to sustainable development, the principles developed in the state have been discussed and deliberated over at many conferences and events, and PCI executives are in high demand as speakers.

That is not to say that everything about the programme is perfect, nor that it enjoys a consistent record of success. But it does represent a beacon of hope and demonstrates that – with adequate funding – production and preservation can indeed be reconciled, not just in a single project but across a vast sub-national territory.

BOX | **Further reading on Mato Grosso – five useful resources**

There is plenty of information available about Mato Grosso, the pressures it faces and the success of its jurisdictional approach to forest conservation. Here are some resources that can give a better feel for the subject:

1. A gentle introduction
Much of the information out there is very detailed and complex. But, for an easier introduction, there is an informative series of articles published by Reuters. The Financial Times recently published a vivid article describing the forces behind deforestation in the state. And, of course, the PCI website (available in both Brazilian and English) provides an overview of the strategy and its governance.

2. An overview of the first five years and the future vision
In 2020, the PCI Institute published a useful status report on the first five years of the PCI strategy, and provided more detail on its vision for 2030, the objectives it had set and the way they would be monitored.

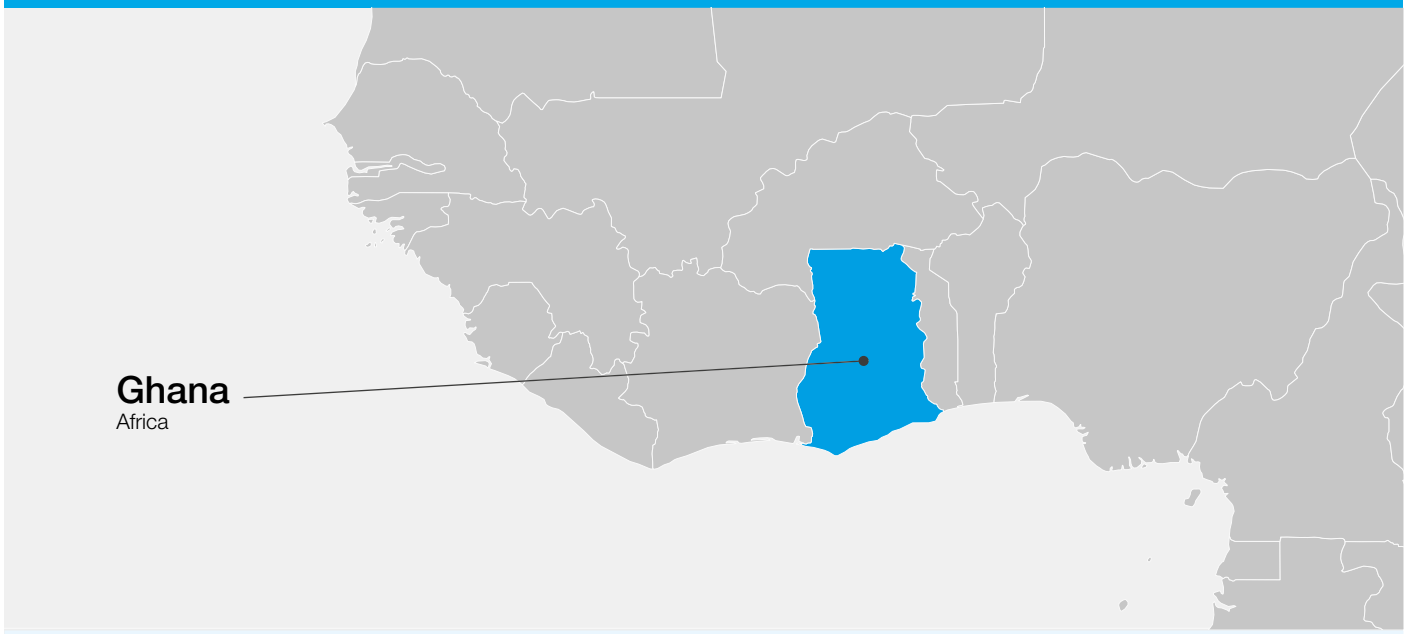
3. An insight into some of the projects
An excellent resource is the PCI Pitch Book. As well as being a "menu" of some of the on-the-ground programmes in Mato Grosso that are ripe for corporate engagement, it provides a great insight into the type of initiatives that together contribute to the PCI strategy.

4. A near-real-time view of the progress being made
One of the principles of the PCI strategy is to prove clarity and transparency on its performance. A dedicated monitoring website provides a dashboard of all 21 objectives, and allows you to drill down for more information.

5. An independent in-depth case study
Because it is the largest and among the best-established of all the jurisdictional approaches to forest conservation and management, Mato Grosso is often put forward as a model. In 2022, CDP (a non-profit that runs a global disclosure system for investors, companies, cities, states and regions to manage their environmental impacts) published a case study to evaluate its strengths.

CASE STUDY 2

Ghana: something to get excited about



The world's first commodity-based emissions-reduction programme seeks to reverse cocoa-driven deforestation while boosting biodiversity and livelihoods.

Ghana has one of the highest rates of deforestation in all of Africa.

On the face of it, the big culprit is cocoa and the world's insatiable desire for chocolate. But, if you look behind the scenes, it's a more nuanced story of struggling farmers and falling yields.

Between them, the Ghanaian government and the world's biggest chocolate makers have a recipe for recovery – which they describe as the world's first commodity-based emissions-reduction programme.

In this case study, we take a look at what's happening on the ground.

Modern Ghana's story is inextricably tied to the story of chocolate

When the country became independent from Britain on 6 March 1957, it was the world's largest grower of cocoa beans and its chief source of revenue was cocoa exports. To mark Ghana's birth, the normally frenetic New York Cocoa Exchange fell quiet as trading was ceremonially suspended and everyone was asked to meditate silently for the success of the new nation and the welfare of its people. Within a week, however, in the face of a tumbling cocoa market, it was reported that the fledgling nation's economic plans were in tatters.[50]

Today, Ghana may be less exposed to the vagaries of the global cocoa market. Gold and oil are now the country's leading exports, Ghana's vibrant digital sector is among the most dynamic in Africa and, following the interruption of the COVID-19 pandemic, the economy has returned to steady growth. But cocoa still plays an outsize role in the fortunes of Ghana, its people and its environment.

> "At more than 3% annually, Ghana has one of the highest deforestation rates in Africa. In 2021, 101,000 hectares of natural forest cover were lost

Ghana supplies a fifth of the world's cocoa and in 2021 produced its largest ever crop, at an estimated 1,047,000 tonnes – second only to Côte d'Ivoire and more than all South American countries combined.[51] The commodity directly employs 800,000 farmers and almost a third of the country's people are dependent on it for at least some of their income.[52] Meanwhile, global demand continues to grow, with global chocolate consumption forecast to climb by around 2.6% a year.[53]

Tension between cocoa and conservation

Of course, there is an innate tension between cocoa production and forest conservation.

The cocoa bean thrives best in the humid reaches of the high forest and, for more than a century, Ghana's cocoa plantations have vied for space with natural vegetation. Consequently, at more than 3% annually, Ghana has one of the highest deforestation rates in Africa.[54] In 2021 alone, a further 101,000 hectares of natural forest cover were lost,[55] mainly to cocoa production.

Yet, an enthusiastic coalition of the Ghanaian government, the conservation community and the global cocoa industry remain confident that future demand can be comfortably met – while also reversing the process of deforestation, avoiding emissions, protecting biodiversity and improving the livelihoods of local people.

Taking a collective, inclusive and commodity-based approach

Ghana is taking what it calls a commodity-based approach to forest conservation. In simple terms, this means the government, in the form of the Ghana Forestry Commission, has joined forces with the chocolate industry to resolve the innate tensions between cocoa production and forest conservation.

A decade or two ago, when the world first became aware of the threats to our forests, there was a pervasive belief that big business alone had the power to halt agriculturally-driven deforestation. The logic was compelling. By wielding their influence and insisting their supply chains become deforestation-free, the world's biggest consumer goods companies would be able to set the global standard – reducing the incentives for farmers to encroach further into forests and squeezing out any remaining pockets of bad practice.

But this approach underestimated the complexities at play. The global conservation community has since arrived at the view that the elimination of deforestation from commodity supply chains needs to be supplemented by more holistic and integrated landscape-based programmes – through which governments, companies, communities and conservationists agree on shared goals and work together on co-ordinated initiatives which address forest protection and preservation in tandem with sustainable production, farmers' livelihoods, community engagement and social inclusion.

Given the social and economic importance of cocoa, the route taken by Ghana has been to keep the supply chain initiatives at the centre of its thinking, while also addressing the wider needs, values and livelihoods of the communities who produce the beans – in what the government describes as "the world's first commodity-based emissions-reduction programme".[56]

Getting to the roots of the issue

Despite its prevalence, cocoa is not native to Ghana. It was first brought to the country in 1876 when, returning from Equatorial Guinea, Tetteh Quarshie, a local blacksmith, smuggled in a few handfuls of beans hidden beneath his box of tools and earned his place in history as a national hero. Instead, cocoa hails from the Amazon Basin rainforests where, for millennia, it has grown under the moist, shady forest canopy.

For its first hundred years or so, Ghanaian cocoa farming mimicked these natural conditions and the beans coexisted quite comfortably with the native forest. But, from the latter part of the 20th century, in an officially sanctioned attempt to boost production, the all-important shade trees were progressively removed and a monoculture began to predominate. This did result in short-term productivity gains, but it shortened the productive life of trees and brought increased susceptibility to disease. With the resulting loss in biodiversity, it also had a negative impact on fertilization levels. And it encouraged farmers to keep edging their way into forests to chase new, albeit temporary, yield increases.

Today, many of Ghana's cocoa plantations are in a sorry state. Typically, they provide no or low shade for a ragtag collection of low-yield, disease-prone trees. To compound these issues, the loss of forest cover has reduced local rainfall levels, which further diminishes yields, while the reduction in biodiversity limits the prevalence of cocoa-pollinating insects.

Why it's necessary to keep local communities at the heart of any solution

All the while, the cocoa farming community faces a precarious existence.

The land they farm is often collectively owned by so-called "stools" or chieftaincies, and individual families have inherited the right to cultivate it through traditional sharecropping systems. Typically, the farms are quite small, ranging from less than a hectare (around the size of a football pitch), to a maximum of 10 hectares.[57] The farmers themselves are often ageing, their incomes are rarely above subsistence levels[58] and, with no generational memory of the pre-monoculture area, they are seldom equipped with the knowledge, much less the resources, to make any meaningful improvements.

As an added complication, the state has traditionally claimed ownership of all naturally occurring trees, including those on private or collectively owned land. This has given farmers little incentive to nurture shade trees – for fear of losing them to loggers and having their plantations damaged in the process.

The average yield – estimated at 400kg of cocoa beans per hectare[59] – is woefully low, compared to an estimated 800kg in neighbouring Côte d'Ivoire[60] which, back in the 1970s, overtook Ghana to become the world's leading producer.

> **Removal of shade trees for short-term gains has led to less rain, less biodiversity and lower yields.**

Clearly, the farmers themselves – all 800,000 of them[61] – need to be placed at the centre of any solution. And, to secure a future supply of deforestation-free beans, it is critical for the cocoa industry to place as much emphasis on community and social inclusion as it does on forest protection and restoration.

Unable to see the wood for the trees?
So, what are Ghana and its private sector partners doing to address the challenges?

To the uninitiated, it can be a real struggle to understand the details. In a recent editorial, the Financial Times lamented the fact that, all too often, the debate on climate change is obscured by "tiresome abbreviations" and "jargon that clogs understanding" in a way that is "actively harmful".[62] And, when researching the Ghanaian deforestation debate, you do soon find yourself swimming in a sea of acronyms – among them the CFI (the Cocoa & Forests Initiative), the WCF (the World Cocoa Foundation), the GCFRP (the Ghana Cocoa Forest REDD+ Programme), the FCPF (the Forest Carbon Partnership Facility), the CLP (the Cocoa Life Program), the HIAs (Hotspot Intervention Areas) the CORIP (the Cocoa Rehabilitation and Improvement Program), and many, many more.

The fact is, this barrage of jargon and acronyms does reflect the complexity of the situation, the tangled knot of interconnected issues at play, and the diverse coalition of organizations and people involved. But, at the risk of gross over-simplification, below is a summary of what is being done...

Working hand-in-hand with local communities to rejuvenate farmland
The effort is being led by Ghana's Forestry Commission, with the backing of the global chocolate industry, drawing on funds from the World Bank. Together, they have identified six distinct landscapes (the Hotspot Intervention Areas or HIAs) within Ghana's high forest zone, with a combined area of 5.9 million hectares (about twice the size of Belgium), where cocoa production is intensive (taking up a third of the total land area), and deforestation rates are high.

For each HIA, a landscape management and investment plan is being established, and the aim is to work hand-in-hand with the local communities, helping them rejuvenate their existing farmland and restore degraded forest while, at the same time, improving their livelihoods.

In areas where the forest has been entirely cleared, the emphasis is on sustainable production, including planting new shade trees, replacing old or diseased cocoa plants with healthy young equivalents, and lifting yields through, for example, hand pollination and irrigation schemes (to help offset the impact of deforestation). In areas where the forest has merely been degraded, an agroforestry model is encouraged.

An important component is financing from REDD+, the UN's forest protection scheme. Ghana was one of the first African countries to successfully implement large-scale or jurisdictional REDD+ programmes, and is expected to be a recipient of additional funding from the LEAF Coalition, a new scheme launched in 2021 as a high-integrity platform for companies to buy emissions-reduction credits. LEAF promises to channel payments at speed, directly to the communities involved.

Ghana's cocoa yield is approximately 400kg per hectare – woefully low compared to the 800kg in neighbouring Côte d'Ivoire. The country's jurisdictional REDD+ target would see this rise to 600kg per hectare

A phased approach is being taken. The Asunafo-Asutifi landscape in the southwest of the country was selected as a test case and the learnings are being progressively applied in the other five. In each one, local forums are created to enable communities to take ownership of the process, and partners are enlisted to deliver the plan. In Asunafo-Asutifi, for example, the NGO Proforest is helping to facilitate the plan and the global snack company Mondelez, which was already running similar programmes in the area, is providing practical support in mapping farmland, training farmers, providing seedlings and improving access to micro-finance.

When speaking to people directly involved, both from the public and private sectors, you soon detect a mood of optimism, bordering on excitement. Despite the disruption wrought by the pandemic, the Asunafo-Asutifi test case is moving at pace, and the other five regions are keen to play catch-up. Some important regulatory headway has been made on the tree tenure issue, enabling farmers to assume ownership of the shade trees on their land for the first time. And, between them, the Ghanaian Forestry Commission and the cocoa industry have drawn up a clear set of engagement principles providing a roadmap for any companies that want to get more directly involved, ensuring that their initiatives contribute to the greater good.

Realistic yet transformational targets
A characteristic of any jurisdictional REDD+ initiative is measurable, scientific targets.

And, if you look at the targets that have been committed to in Ghana, you begin to appreciate how achievable they are and how transformational they could be.

One of the most telling targets is to take average cocoa yields to 600kg per hectare.[63] That is just three-quarters of the yield in neighbouring Côte d'Ivoire, and two-thirds of the yield in Viet Nam. So, yes, it is eminently achievable. But, even so, it represents a 50% uplift of the current performance – which translates to a sustainable 50% increase in farmers' revenues, while simultaneously eliminating the drivers of further deforestation, restoring degraded areas and protecting biodiversity.

It's easy to see why people are getting excited.

BOX

Further reading on Ghana – five useful resources

Unless you happen to be a climate scientist, or a tropical forest aficionado, it can be a challenge to find out about the success of Ghana's jurisdictional approach to forest conservation. Here are some resources that can give a better feel for the subject:

1. A great entry point
To get a good feel for the issues, and how they are being addressed, a great starting point is the Proforest website. Proforest is the NGO that's helping to facilitate the Asunafo-Asutifi Landscape Programme (one of the six landscapes that make up the wider Ghanaian jurisdictional initiative). And it's done an admirable job of explaining the background in this easy-to-read 14-page case study.

2. An update on progress
One of the many partners on the Ghanaian forest conservation scene is the Cocoa & Forests Initiative (CFI), a public-private coalition involving the governments of Côte d'Ivoire and Ghana, and 35 cocoa and chocolate companies, committed to working together on landscape-based initiatives. Its 2020 Annual Report on Ghana offers a useful overview of the progress that's being made.

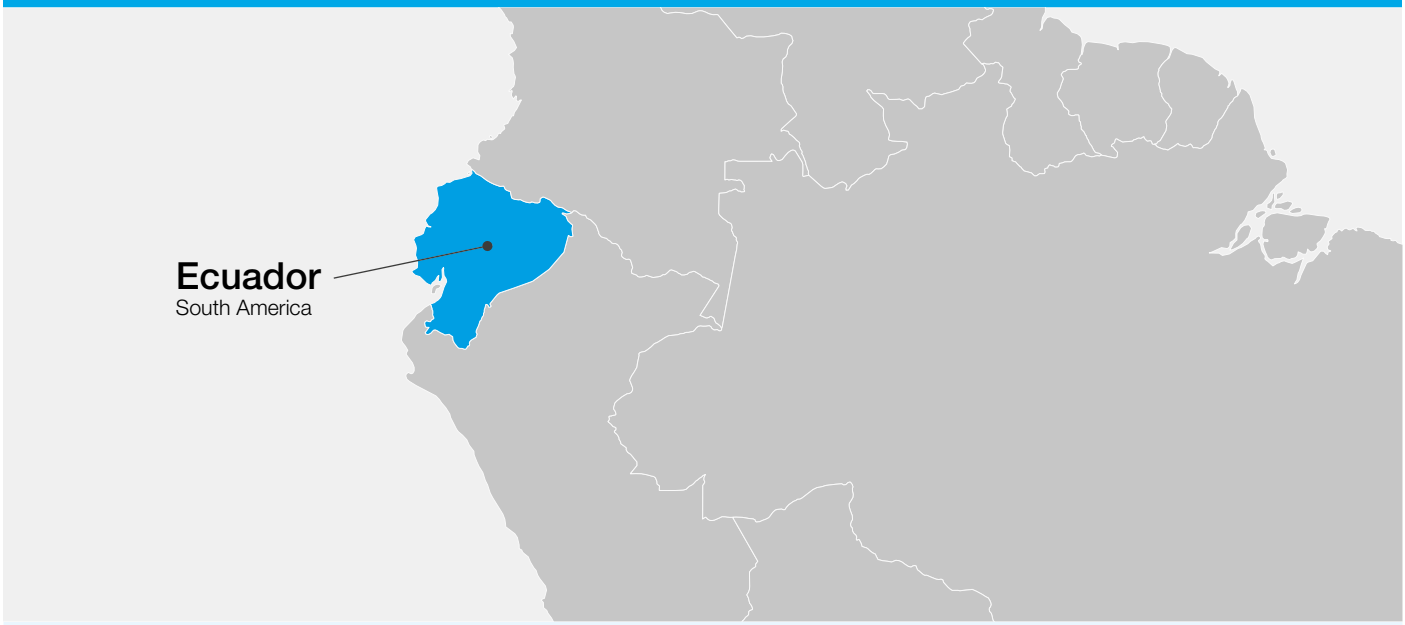
3. The view from Mondelez
As you would expect, one of the most active companies is Mondelez International. Its Cocoa Life sustainability programme manages a range of initiatives in Ghana including the mapping of farms, the training of farmers and the distribution of seedlings. Its 2021 progress report provides an update on its activities and their impact.

4. How cocoa fits into Ghana's wider REDD+ programmes
Although cocoa has an outsize role, the Ghana Cocoa Forest REDD+ Programme is one part of a wider REDD+ strategy. To see what else is happening, how the initiatives all fit together and the progress being made, take a look at the Ghana REDD+ website.

5. Looking for some clarity on jurisdictional REDD+ financing?
To the uninitiated, the world of jurisdictional REDD+ financing can be bewildering. For a gentle introduction, Reuters published a useful, easy-to-read introduction, including the way it relates to Ghana. Or, for a bit more detail, which is still mercifully easy-to-follow, this is a great article on Medium, written by Nandita Lal, a carbon markets consultant.

CASE STUDY 3

Ecuador: drawing on diversity



As the first country to grant nature inalienable rights, Ecuador is now leading the way on putting Indigenous peoples at the heart of forest conservation.

Ecuador is characterised by diversity.

In its geography, its people and its nature, the country is incredibly varied. And, to conserve its forests, Ecuador is taking an innovative approach – which gives constitutional rights to its nature and draws on the traditions of its many Indigenous peoples.

In this case study, we take a look at the background and the progress that's being made.

"Diversity" is certainly a word that applies to Ecuador's people. No one knows the proportions for sure, but the largest ethnic group is the *mestizos*, or people of mixed Indigenous and European descent, who are thought to make up around two-thirds of the 18 million population. Around a quarter are from Ecuador's 14 main Indigenous groups. The remainder are of direct African, European, Middle Eastern and East Asian descent. And, although Spanish is the official language, 13 native languages are also recognized.

For the geography, the word is also fitting. Ecuador's territory extends all the way out to the volcanic Galápagos Islands, located 1,400 kilometres off the west coast, where Charles Darwin first began to figure out the origin of species. It also covers the fertile coastal region, the mountainous highlands and, of course, the rainforests of La Amazonía.

"For its size, Ecuador is the most biodiverse place on earth, home to 16,000 plant species

When it comes to nature, the word diverse is an understatement. Ecuador is classed as one of 17 "megadiverse" countries worldwide.[64] And, for its size (at 280,000 square kilometres, similar to Italy or New Zealand) it is the most biodiverse place on earth – home to 16,000 plant species, 25% of which are endemic, and 1,700 bird species, including 140 types of hummingbird.[65]

But, for the economy, the word diverse is entirely inappropriate. The country relies heavily on commodities. Oil exports account for around a third of all public sector revenues. Ecuador is the world's biggest exporter of bananas, while other commodities, like gold, cut flowers, soy and cocoa, figure prominently. Ironically, the uptick in demand for wind power has resulted in a recent surge in balsa wood exports (a component of most turbine blades). And, of course, all this extraction exerts considerable pressure on the country's forests and creates tensions among the people who live within them.

A commitment to halting and, ultimately, reversing deforestation

Irrespective of its reliance on commodities, the authorities clearly value the country's natural resources. To help resolve the innate tensions, Ecuador has earned something of a reputation for innovative environmental reforms which draw heavily on its cultural richness and natural diversity.

Back in 2008, for example, Ecuador became the first country in the world to grant nature the inalienable right to exist and flourish. As part of the constitution, a set of codified rights of nature were enshrined, giving people the authority to petition on behalf of nature and requiring the government to remedy violations of those rights.

More recently, Ecuador's highest court ruled that Indigenous peoples' consent for new oil and mining projects is required throughout the Ecuadorian Amazon. And, in setting out its ongoing plans and commitments for the conservation of its forests, the country has kept its Indigenous peoples centre stage.

> **In 2008, Ecuador became the first country in the world to grant nature the inalienable right to exist and flourish**

Ecuador's commitment to deforestation is reflected in the pledges it has made under the Paris Agreement on climate change (the so-called Nationally Determined Contributions or NDCs), including a 9% decrease in greenhouse gas emissions, achieving "zero net deforestation" at a national level, and restoring at least 30,000 hectares of degraded forest. [66] [67]

The country is an active participant in REDD+ and it is taking a coordinated, jurisdictional approach to the delivery of its REDD+ action plan. For example, the Ministries of Agriculture and Environment are working with the palm oil industry (in the form of the Roundtable on Sustainable Palm Oil) on certification for deforestation-free palm oil. They are also collaborating with the UN Development Programme (UNDP) on a five-year scheme called PROAmazonía, which seeks to transform agriculture in the Amazonía region, by promoting more sustainable farming practices and establishing new markets for deforestation-free products.

More recently, the country has submitted proposals to the LEAF Coalition – the jurisdictional REDD+ scheme launched in 2021 as a high-integrity platform for companies to buy emissions-reduction credits – which promises to channel payments at speed via tropical forest governments to the communities involved.

Putting Indigenous peoples at the heart of the solution

Ecuador subscribes to the view that the best guardians of tropical forests are the Indigenous peoples who have always called them home. This is echoed in a recent report by the UN Food and Agriculture Organization, which analyses 300 scientific studies from Latin America and the Caribbean and concludes that forests in Indigenous and tribal areas tend to be much better conserved than other forests.[68] While Indigenous territories cover a total of 23% of the Amazon Basin, they account for just 2.6% of carbon emissions, according to the UN.

> **While Indigenous territories cover 23% of the Amazon Basin, they account for just 2.6% of carbon emissions**

One of the pillars of Ecuador's REDD+ strategy is the Socio Bosque programme. First established in 2008 and run by the Ministry of the Environment, this supports the poorest private and communal landholders, especially in areas that are most susceptible to deforestation. It offers guaranteed yearly payments for forest conservation activities, a little like the sustainable farming and environmental incentives paid to farmers in countries such as the UK. So far, agreements have been signed to cover 630,000 hectares of forest, and recent analysis has shown that the impact extends well beyond the area covered by each agreement. On average, for every 100 hectares that farmers are paid to conserve, up to 15 additional hectares of forest clearing are avoided.[69]

How it plays out in the province of Pastaza

Not everything is managed centrally by the national government. Ecuador's provinces are encouraged to develop their own sustainable development policies, and one of the pacesetters is Pastaza, located in the east of the country, deep in the jungle of the Amazonía region.

The largest of Ecuador's 24 provinces, Pastaza stretches for 30,000 square kilometres (about the size of the Netherlands). The most biodiverse area of this megadiverse country, Pastaza is remote, with paved roads a relatively new development. Around 90% of the province is still covered by tropical forest. It is also home to seven of Ecuador's 14 Indigenous nations who, collectively, account for around 40% of Pastaza's 115,000 inhabitants and own more than 80% of its land.[70]

Although Pastaza's forest remains largely intact, it is under significant pressure from agricultural expansion, illegal logging and mining, and the unregulated construction of the roads that are needed to extract these commodities. According to the provincial government, the Indigenous people who have nominal control of the land face continual pressure and inducements to acquiesce.

> **Despite the presence of significant oil reserves, the province of Pastaza is committed to a conservation-focused development path**

As far back as 2011, the provincial government decided that, despite the presence of significant oil reserves, Pastaza would pursue a conservation-focused development path. The government also determined that, given the demographics of the province and the tenure of its land, the Indigenous nations should be the focal point of this development. The next major breakthrough came in 2021 when an implementation plan was formalized, with seven Indigenous nations as signatories, backed by $52 million in REDD+ funding.

Reverting to age-old agricultural systems

Through its sustainable development plan, Pastaza wants to curtail the dependence on oil and mining projects for economic development. Instead, it aims to rekindle the ancestral agroforestry systems of the province's Indigenous peoples and create new markets for the crops they grow. In this way, food security can be boosted and livelihoods improved, while conserving the natural forest and its ecosystems.

In the past, some REDD+ programmes have been criticised for pursuing a top-down approach and promoting the production of a limited selection of global staples, such as coffee and cocoa. In Pastaza, however, the emphasis is on traditional foods such as *yuca* (or casava), peanuts, *achiote* (a paprika-like spice and colouring agent), and vanilla.

> **“ Pastaza's agroforestry initiative is the world's first example of a jurisdictional REDD+ plan to be linked directly and inextricably to Indigenous nations**

Instead of intensive or mono-crop plantations, the aim is to encourage farmers to revert to *chakras* (“swollen gardens”), the traditional agroforestry systems that mimic the forest's natural composition. As well as providing a range of different subsistence crops and herbal remedies for Indigenous families, these chakras also act as an extension of the forest habitat for rainforest flora and fauna.

In the first phase of the Pastaza plan, more than 100 extended families are being helped to design and create chakras, after which the process will be extended to more communities. At the same time, market research is being conducted to identify star-performing crops – like achiote and vanilla – that are favoured within the region and have real commercial promise, and to identify end buyers and routes to market.

In parallel, incentives and agreements are being established to restore and conserve more than 1,600 hectares of land and water courses, extending the benefits and drawing on the learnings from the national Socio Bosque programme.

Replicating the approach across Ecuador and beyond

In many ways, the Pastaza plan is seen as a test case for a landscape-based or jurisdictional programme – and one that could be replicated much further afield.

To draw attention to the programme, a delegation from Pastaza travelled to the UN's COP26 Climate Change Conference in Glasgow in 2021, where it was heralded as the world's first example of a jurisdictional REDD+ plan to be linked directly and inextricably to Indigenous nations.

Its delivery is being coordinated by the NGO Nature and Culture International, which is active across much of Latin America and regards the plan as a template. In the first instance, it is set to be a model for the neighbouring provinces of Morona Santiago and Zamora Chinchipe. The vision is to open the door to more climate funding and, ultimately, to take the approach to other jurisdictions nationwide.

By recognizing and celebrating its natural and cultural diversity in this way, Ecuador is extending its reputation for innovative environmental reforms and initiatives – as well as, hopefully, bringing more diversity to its traditional economic model.

BOX | **Further reading on Ecuador – five useful resources**

Despite its credentials as one of the world's most megadiverse countries and the innovative reforms it has introduced, it can be a challenge to find easy-to-follow information about what Ecuador is doing to conserve its forests – and even more of a challenge to unearth the details of the Pastaza plan. Here are some resources that could help:

1. An inspiring overview
As part of its REDD+ programme, Ecuador is collaborating with the UN Development Programme (UNDP) on a five-year scheme called PROAmazonía, which aims to transform agriculture, promote sustainable farming and establish new markets for deforestation-free products. The excellent PROAmazonía website has the details.

2. An introduction to the Pastaza programme
To find out more about the Pastaza plan, you should take a look at the conservation and environmental news website Mongabay (which, remarkably, is one of the few mainstream media outlets to have covered it). One article from 2017 provides the early background, a second article from 2022 investigates the chakra-based sustainable agroforestry initiatives, while a third laments the impact of the recent balsa wood boom.

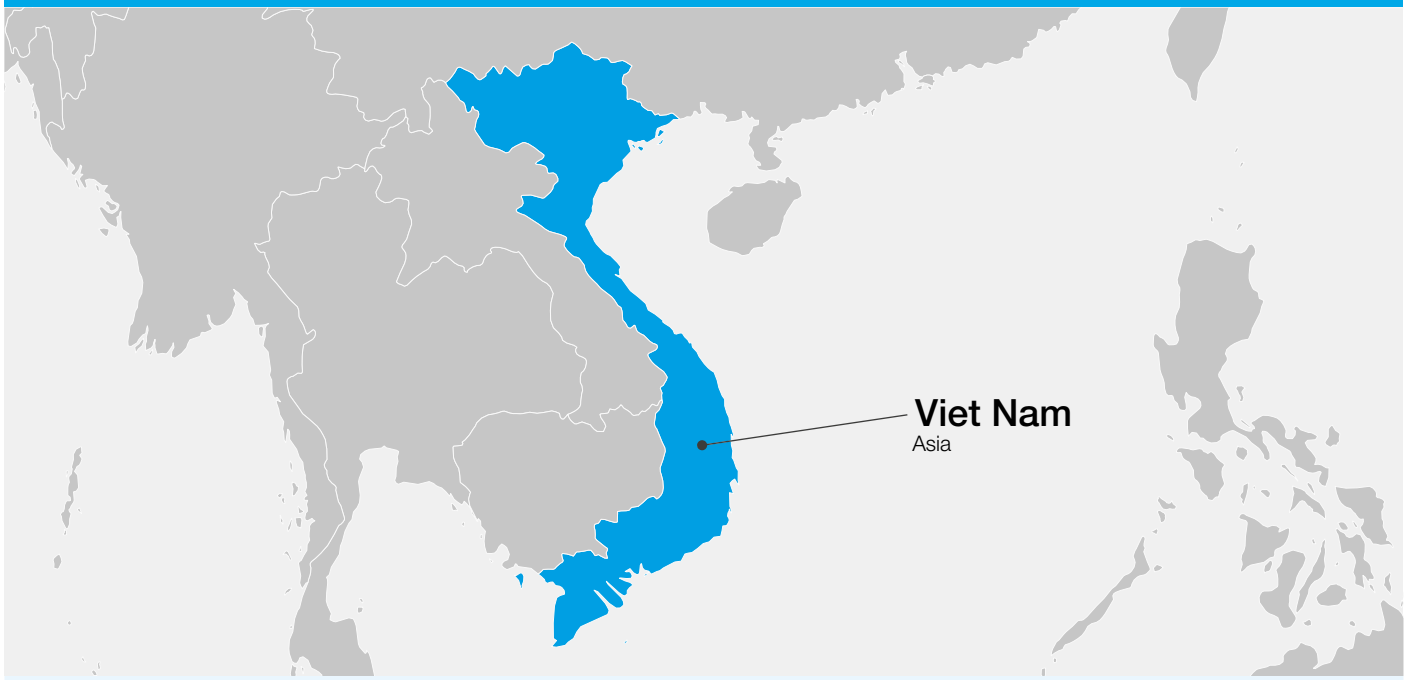
3. The view from Nature and Culture International
Nature and Culture International is the NGO that has been enlisted to coordinate the implementation of the Pastaza sustainable development plan. Its website gives an overview of its conservation work across Latin America and also provides some details of its involvement in Pastaza.

4. A deep dive into the Pastaza details
By definition, all REDD+ programmes are subject to a detailed implementation plan, including a range of time-bound targets and commitments. Pastaza is no different, and the provincial government manages a website that provides the full details of its REDD+ Measures and Actions Implementation Plan – which is surprisingly (and mercifully) easy to read, even for those of us who aren't climate scientists.

5. A wider view of the value that Indigenous people bring to forest conservation
In this Ecuador case study, we refer to a UN Food and Agriculture Organization report on the benefits of regarding Indigenous peoples as guardians of forest conservation. The full report, Forest Governance by Indigenous and Tribal Peoples, is easily accessible and well worth a read.

CASE STUDY 4

Viet Nam: from quantity to quality



Following war with America in the 1970s, Viet Nam has regrown its forest cover from 17% to 42%. It's now aiming to conserve over 4 million hectares using a jurisdictional REDD+ approach.

A few decades ago, Viet Nam had one of the lowest levels of forest cover anywhere in the world. Now it has the highest in all of South-East Asia.

It's been a remarkable transformation. But, even so, there is considerable work to be done in protecting and restoring the country's natural resources.

In this case study, we take a look at the progress made, the challenges that remain and the way this remarkable country is pulling together to pursue its sustainable forestry ambitions.

Environmental hero?

In many ways, Viet Nam has a great environmental story to tell.

This is one place in the world where tropical forest cover is actually increasing. In the past three decades, it has grown from 28% to 42% of the country, the highest rate in South-East Asia, and there are plans to push it even higher.[71] To supplement the income of rural communities, Viet Nam has pioneered a scheme to pay farmers to care for their local forests. And, in 2021, the government launched a new five-year campaign to plant a further 1 billion trees – 210 million of which were in the ground by the end of the year, 115% ahead of plan.[72]

Viet Nam is also a biodiversity hotspot. Classified as one of the 20 most biodiverse countries in the world,[73] it is home to 30 national parks and, within the past few decades, hundreds of new-to-science plants and animals have been discovered. These include the antelope-like *saola*, the largest land-dwelling animal discovered anywhere since 1937, and a 21-inch-long stick insect.[74]

Perhaps due to Viet Nam's susceptibility to extreme weather events, the country is also home to a growing cadre of lively homegrown civil society organizations, including People and Nature Reconciliation (PanNature), Centre for Water Resources Conservation and Development, ECO Vietnam Group, Save Vietnam's Wildlife, and the Mekong Environment Forum – all of which continue to enlist more volunteers and keep environmental issues high on the public policy agenda.[75]

Or environmental villain?

Look below the surface, however, and the picture maybe isn't quite so rosy.

Most of that lush new forest cover is taken up by fast-growing cash crops, like acacia and bamboo, that do little to support natural ecosystems. All the while, old-growth forests continue to shrink in size.[76] And, to the bemusement of some environmental groups, the majority of the 1 billion new trees are destined for urban areas, with just 15% earmarked for upland forests.[77]

In terms of biodiversity, a recent article in the New York Times talked of "empty forest syndrome", claiming that the pressure being exerted by loggers, poachers and farmers amounts to animal genocide.[78]

And, according to the Environmental Performance Index (a joint initiative from Yale and Columbia universities), which evaluates 180 countries on environmental health and ecosystem vitality, Viet Nam ranks at a lowly 141st place.[79]

Or somewhere in between?
Arguably, the reality falls somewhere between these two extremes.

Viet Nam is neither the environmental hero nor the villain it is sometimes painted. Instead, this is a large country with a complicated past, a fast-growing economy and fragile natural resources, that is clearly working hard to juggle and reconcile many competing priorities – and appears keen to bridge the gap between ambitious environmental policy and on-the-ground practice.

As part of its development agenda, the country's forests do have a prominent role. Viet Nam was one of the earliest participants in REDD+. It was also one of the first countries in the world to submit proposals to the LEAF Coalition.

Having successfully grown its forest cover by 50%, and as a global pacesetter in "payments for ecosystems services" (PES), Viet Nam also has significant experience in delivering large-scale forest conservation initiatives. Drawing on this experience, its plan for the future could be characterized as a shifting of gears, and there are many reasons to believe it will be successful.

A country rich in variety
Before we get into the details of Viet Nam's approach to forest management, it is worth setting the context – and getting a feel for this unusual, exotic and rapidly industrializing nation.

First, the legacy of the Viet Nam War has to be acknowledged. At the peak of hostilities, an explicit aim of US forces was to eliminate the forest cover that concealed the North Vietnamese troops and their crops. In a single year, 1967, over 5 million gallons of defoliants were sprayed across 600,000 hectares. By the end of the 1970s, forest cover had shrunk to just 17%, down by almost two-thirds on pre-war levels,[80] representing the lowest rates of forest area and wood stock per capita globally.[81] The conflict, coupled with the period of isolation that followed, also had its economic consequences. In 1985, when it began the transition to a market-based economy, Viet Nam had a GDP per person equivalent to just $500 in today's money – one of the lowest in the world.[82]

Second, it is useful to appreciate the geography. Viet Nam is a long, thin strip of a country, stretching 1,650 kilometres north-to-south along the very edge of the Indochinese Peninsula, while east-to-west it is as little as 50 kilometres across. Landscape-wise, it is a place of real extremes. You get the fertile flatlands, which run from the Red River Delta in the north, all the way along the coastline, to the Mekong Delta in the south. On all sides, mountains rise precipitously to heights of up to 3,000 metres. And, given the humid monsoon climate, all is lush and green.

In terms of population, it is larger than you may think (with 96 million people, it's the world's 15th most populous country). It is also home to 54 officially recognized ethnic groups, making it one of the world's most diverse countries.[83] These groups range in size from a few hundred (like the Si La people, who live in the remote north-western mountains, speak a Tibeto-Burman dialect, make their living from hunting, foraging and subsistence farming, and are known for their custom of tooth lacquering – black for the women and red for the men), right the way through to the dominant Kinh or Viet ethnic group that accounts for more than 85% of the population.[84]

A history of remarkable achievement
Given the challenges it once faced, Viet Nam's achievements are all the more remarkable.

In total, some 5.2 million hectares of new forest cover has been added since the 1990s (around the size of West Virginia). Forest management has been transferred from exclusive central-government control to a multi-sector approach involving NGOs, businesses, local communities and management boards. And, although state-owned forest companies continue to exert significant influence, large swathes of woodland have been transferred to direct community ownership, with 1.4 million households granted about 3.4 million hectares of forest.[85]

> "Large swathes of woodland have been transferred to community ownership, with 1.4 million households granted 3.4 million hectares of forest

All of this has been accompanied by a string of regulatory changes, one of the most significant being the protection of most remaining old-growth forests. And, as one of the earliest collaborators in the REDD+ programme, Viet Nam was also quick to seek guidance and support from the international community.

> "In 2021, the government launched a five-year campaign to plant a billion new trees – mainly in urban areas

Meanwhile, the country's economic development has been gravity-defying. Over the past three decades, Viet Nam has been one of the world's five fastest-growing countries, it has attracted foreign direct investment inflows at more than twice the global level,[86] and the country has been climbing steadily up the economic value chain, embracing sectors from textiles to tech (Samsung, for example, now makes most of its smartphones there).[87]

This economic growth has, of course, placed a strain on the environment. It has also been unevenly distributed. On average, GDP per capita remains relatively low (at $2,800 compared to a global average of $10,900).[88] And the non-Kinh Indigenous peoples have seen little benefit. They lag behind on all measures – for example, 45% are categorized as poor (compared with just 3% of Kinh), and their geographic remoteness hinders the government's attempts to support them.[89]

Moving ahead to the next stage of development

As Viet Nam's economy becomes more mature and better balanced, so too does its approach to forest management – including a definite shift of emphasis from quantity to quality.

The watershed moment came in April 2021 when, amid the fanfare of a government press conference, the Minister of Agriculture and Rural Development, Le Minh Hoan, announced the details of a new legally-binding forest development strategy. This sets out plans and targets for 2030, and a longer-term vision for 2050. As one would expect, it attempts to chart a finely balanced course between economic, environmental and social considerations.

From the economic perspective, forest products do figure prominently in Viet Nam's finances. In 2020, the value of forest-related exports exceeded $13.2 billion, ranking Viet Nam as the world's fifth-largest exporter of wood and forest products, and the second largest in Asia.[90] A central principle of the strategy is to lift this further, increasing the value by 5% a year, adding up to 50% by 2030.[91] But instead of simply expanding forest areas, there will be more of a focus on quality, by developing responsible forestry, raising productivity and adding value to forest products.

From the environmental perspective, the strategy acknowledges the value that forests bring, both to Viet Nam and the wider world. Under the Paris Agreement on climate change, the country committed to a 9% reduction in greenhouse gas emissions, rising to a potential 27% reduction with international support, and its forests play a central role. While the rate of forest cover is set to stabilize at around 43%, its character will change significantly. For example, the restoration of protected and special-use forest will increase by 15,000 hectares a year, while the forest area designated for sustainable management will increase to more than 1 million hectares.

> **Viet Nam's 2021 forest development strategy seeks to expand sustainable management of forests to 1 million hectares, while doubling incomes among Indigenous peoples**

All of this combines with the social perspective. To achieve these wider goals, the strategy recognizes that more support must be provided to the people who actually manage the forests – in particular, the Indigenous peoples of the more remote upland areas. So the plan includes a concerted programme of capacity building and technical assistance, which should in turn improve livelihoods. Within the production forests (managed for timber), the target is for a 50% increase in incomes by 2025. Among Indigenous peoples, the target is to double incomes.

Viet Nam is actively seeking the support of international donors and the global private sector in delivering this strategy. For example, it was among the first tranche of countries to be approved for funding by the LEAF Coalition. To signal the country's involvement in LEAF's programme and its level of commitment, a high-ranking delegation led by Prime Minister Pham Minh Chinh travelled to the UN's COP26 Climate Change Conference in Glasgow in 2021 to sign a letter with Emergent (coordinator of the LEAF Coalition).[92]

Under the auspices of this jurisdictional REDD+ programme, some 4.26 million hectares of forest, extending from the central highlands to the southern coastal wetlands (encompassing the provinces of Quang Ngai, Binh Thuan, Kon Tum, Dak Nong and Lam Dong), have been earmarked for coordinated action – with provincial governments, businesses, local communities and NGOs working toward shared conservation, supply chain sustainability and green development goals.

BOX | **Further reading on Viet Nam – five useful resources**

It can be a real challenge to get a comprehensive yet comprehensible picture of what Viet Nam is doing to protect and restore its forests. There is plenty of news out there about various aspects of the work, and there are also a lot of in-depth scientific and academic reports, but there is not much in between. Here are some resources that can help to bridge the gap:

1. A good entry point
In Viet Nam, environmental issues are high on the public policy agenda, they generate plenty of interest among the general public, and the country has a vibrant community of related NGOs. A recent opinion piece in Geopolitical Monitor gives a good feel for the general mood, the rise of environmental activism and the spectrum of issues at play.

2. Dipping into some of the detail
To get a feel for the complex knot of issues at play in Viet Nam, and the diversity of opinion over the country's environmental record, a good place to start is the conservation and environmental news website Mongabay. One article, from 2016, charts the remarkable increase in forest cover; another, from 2018, investigates the record on payments for environmental services; and a third, from 2022, critiques the plan to plant 1 billion more trees by 2025.

3. Getting an authoritative view of progress
At the start of 2021, two respected international research organizations, CIFOR (the Centre for International Forestry Research) and CGIAR (the Consultative Group on International Agricultural Research) jointly published a report on Viet Nam's Forestry Development Strategy. Outlining results for 2006-2020 and recommendations for the period 2021-2030, it's a great place to get the detail on what worked, what didn't and what deserves to be prioritized next.

4. Some views from the NGO community
One of the characteristics of REDD+ programmes is the involvement of civil society. To deliver on-the-ground initiatives, NGOs work in partnership with local communities. In Viet Nam, one of the most active is the homegrown NGO PanNature. Another is the Vietnamese arm of the World Wildlife Fund, whose work on forests can be accessed here.

5. A deep dive into the detail
The detail of Viet Nam's plans, commitments, regulations and targets is easily accessible, both in Vietnamese and in English. For example, you can get chapter and verse on the 2021-2030 Forestry Development Strategy from the government's web portal. There is also a dedicated website on Viet Nam's REDD+ programme.

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Endnotes

1. Natural climate solutions, or NCS, are actions that avoid greenhouse gas emissions and increase carbon storage in forests, grassland and wetlands. Well-known examples include forest conservation, restoration and management. Restoration not only returns forests to a healthy state, but also increases the amount of carbon sequestered, improves biodiversity and the quality of soil and water in the ecosystem, and provides economic benefits for communities that depend on that forest. For more information, see: Hartmann, Teresa and Gabriela Martinez, "What are natural climate solutions?", *World Economic Forum, Agenda Blog*, 16 September 2021, https://www.weforum.org/agenda/2021/09/what-are-natural-climate-solutions-ncs-alliance/.

   Nature-based solutions (NbS) constitute a range of actions to protect, sustainably manage and restore natural ecosystems to address social, economic and environmental challenges, and provide human and biodiversity benefits. For the purposes of this paper, we are primarily addressing nature-based solutions for climate, and primarily mitigation strategies, otherwise known as natural climate solutions (NCS), which are a subset of nature-based solutions. Source: Nature4Climate.
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