Brazil and the
Amazon Rainforest

Deforestation, Biodiversity and Cooperation with the EU and International Forums
Abstract

For the largest tropical rainforest on Earth, an aggravated forest fire and deforestation regime in Amazonia put at risk the world’s richest biodiversity assets and a major climate regulator. For the EU27, it highlights the need to associate the question of embodied deforestation consumption by placing deforestation-free supply chains at the centre of negotiations surrounding the EU-Mercosur Association Agreement, given the volume of trade between these economic blocs in meat, leather, soy, coffee, rubber, wood pulp, biofuel and timber.

This document was provided by the Policy Department for Economic, Scientific and Quality of Life Policies at the request of the committee on the Environment, Public Health and Food Safety (ENVI).
CONTENTS

LIST OF ABBREVIATIONS 4
LIST OF FIGURES 7
LIST OF BOXES 7
EXECUTIVE SUMMARY 8

1. THE AMAZON BASIN AND ITS BIODIVERSITY 11
   1.1 Biodiversity, Ecosystem Services and Culture 11
   1.2 The Amazon River Basin and Forest Symbiosis 12
   1.3 Projected Biodiversity Loss 13

2. DEFORESTATION IN BRAZIL, WITH AN ANGLE ON THE AMAZON REGION 16
   2.1 Status of Brazilian Forests 16
   2.2 Forest Fires and Deforestation 17
   2.3 Deforestation Status and Drivers 18
   2.4 Monitoring Deforestation Embodied Trade 19
   2.5 Highways, Hydroelectric Dams, and Mining 21

3. ROLE AND RESPONSIBILITY OF LEADERSHIP IN BRAZIL, MEASURES TAKEN 24

4. INTERNATIONAL EFFORTS FOR THE PROTECTION OF AMAZONIA 26
   4.1 Grants and Partners 26
   4.2 After the 2019 Forest Fires 27
   4.3 United Nations 27

5. EU ACTION AND THE ENVIRONMENTAL IMPACT OF THE EU-MERCOSUR ASSOCIATION AGREEMENT 28
   5.1 Bilateral Assistance and EU Actions 28
   5.2 Union Civil Protection Mechanism 28
   5.3 FLEGT and EUTR 29
   5.4 EU-Mercosur Association Agreement, Challenges and the Way Forward 29

REFERENCES 31

Books and Publications 31
United Nations Resolutions and Documents 32
Web-based Publications 32
Media/Press 33
### LIST OF ABBREVIATIONS

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>€</td>
<td>Euro</td>
</tr>
<tr>
<td>km²</td>
<td>Square kilometre</td>
</tr>
<tr>
<td>Mha</td>
<td>Million hectares</td>
</tr>
<tr>
<td>R$</td>
<td>Brazilian Real</td>
</tr>
<tr>
<td>US$</td>
<td>US Dollar</td>
</tr>
<tr>
<td>ARPA</td>
<td>Amazon Region Protected Areas Program</td>
</tr>
<tr>
<td>BNDES</td>
<td>Brazilian Development Bank</td>
</tr>
<tr>
<td>CAR</td>
<td>Cadastro Ambiental Rural</td>
</tr>
<tr>
<td>CBD</td>
<td>Convention on Biological Diversity</td>
</tr>
<tr>
<td>CBRS</td>
<td>China-Brazil Resources Satellite</td>
</tr>
<tr>
<td>CCD</td>
<td>Convention to Combat Desertification</td>
</tr>
<tr>
<td>CDP</td>
<td>Carbon Disclosure Programme</td>
</tr>
<tr>
<td>CIAT</td>
<td>International Tropical Agriculture Centre</td>
</tr>
<tr>
<td>CO₂</td>
<td>Carbon dioxide</td>
</tr>
<tr>
<td>COP</td>
<td>Conference of the Parties</td>
</tr>
<tr>
<td>DETER</td>
<td>Near real-time deforestation detection system</td>
</tr>
<tr>
<td>DOF</td>
<td>Document of Forest Origin</td>
</tr>
<tr>
<td>EFI</td>
<td>European Forest Institute</td>
</tr>
<tr>
<td>EMBRAPA</td>
<td>National Enterprise for Agricultural and Cattle Research</td>
</tr>
<tr>
<td>ERS-1</td>
<td>European Remote Sensing Satellite</td>
</tr>
<tr>
<td>EU</td>
<td>European Union</td>
</tr>
<tr>
<td>EUTR</td>
<td>European Union Timber Regulation</td>
</tr>
<tr>
<td>FAO</td>
<td>Food and Agriculture Organisation of the United Nations</td>
</tr>
<tr>
<td>Acronym</td>
<td>Description</td>
</tr>
<tr>
<td>---------</td>
<td>-------------</td>
</tr>
<tr>
<td>FLEGT</td>
<td>Forest Law Enforcement Governance and Trade</td>
</tr>
<tr>
<td>FPS</td>
<td>Frontal Protection Systems</td>
</tr>
<tr>
<td>GATT</td>
<td>General Agreement on Tariffs and Trade</td>
</tr>
<tr>
<td>GDP</td>
<td>Gross Domestic Product</td>
</tr>
<tr>
<td>GEF</td>
<td>Global Environmental Facility</td>
</tr>
<tr>
<td>GIS</td>
<td>Geographic Information System</td>
</tr>
<tr>
<td>GM</td>
<td>Genetically modified</td>
</tr>
<tr>
<td>IBAMA</td>
<td>Brazilian Institute for Environment and Sustainable Development</td>
</tr>
<tr>
<td>IMazon</td>
<td>Institute for Amazonian Research</td>
</tr>
<tr>
<td>INPE</td>
<td>National Institute for Spatial Research</td>
</tr>
<tr>
<td>IUCN</td>
<td>Union for the Conservation of Nature</td>
</tr>
<tr>
<td>LAC</td>
<td>Development Bank for Latin America</td>
</tr>
<tr>
<td>NASA</td>
<td>National Aeronautics and Space Administration</td>
</tr>
<tr>
<td>NOAA</td>
<td>National Oceanic and Atmospheric Administration</td>
</tr>
<tr>
<td>OTCA</td>
<td>Amazon Cooperation Treaty Organization</td>
</tr>
<tr>
<td>PPCDAM</td>
<td>Action Plan for the Prevention and Control of Deforestation in the legal Amazon</td>
</tr>
<tr>
<td>PRODES</td>
<td>Programa de Cálculo do Desflorestamento da Amazônia</td>
</tr>
<tr>
<td>REDD+</td>
<td>Reduced Emissions from Deforestation and forest Degradation in developing countries Plus</td>
</tr>
<tr>
<td>SEI</td>
<td>Stockholm Environmental Institute</td>
</tr>
<tr>
<td>SFB</td>
<td>Brazilian Forest Service</td>
</tr>
<tr>
<td>SIPAM</td>
<td>Amazon Surveillance System</td>
</tr>
<tr>
<td>SM</td>
<td>Soy Moratorium</td>
</tr>
<tr>
<td>SPOT</td>
<td>Satellite for Earth Observation</td>
</tr>
<tr>
<td>Acronym</td>
<td>Description</td>
</tr>
<tr>
<td>---------</td>
<td>-------------</td>
</tr>
<tr>
<td>TRASE</td>
<td>Transparent supply chains for sustainable economies</td>
</tr>
<tr>
<td>TSD</td>
<td>Trade and Sustainable Development</td>
</tr>
<tr>
<td>UK</td>
<td>United Kingdom of Great Britain and Northern Ireland</td>
</tr>
<tr>
<td>UN</td>
<td>United Nations</td>
</tr>
<tr>
<td>UNCED</td>
<td>United Nations Conference on Environment and Development</td>
</tr>
<tr>
<td>UNFCCC</td>
<td>United Nations Framework Convention for Climate Change</td>
</tr>
<tr>
<td>US</td>
<td>United States of America</td>
</tr>
<tr>
<td>VPA</td>
<td>Voluntary Partnership Agreement</td>
</tr>
<tr>
<td>WTO</td>
<td>World Trade Organization</td>
</tr>
</tbody>
</table>
LIST OF FIGURES

Figure 1: Forest functionalities 14
Figure 2: Annual Deforestation in the Brazilian Amazon 18
Figure 3: Soy imports into EU from Brazil (2013-2017) 21

LIST OF BOXES

Box 1: A Forest Biodiversity Economy 15
EXECUTIVE SUMMARY

Background

The largest and most well preserved tropical rainforest on Earth, housed within the important Amazon River System, and containing one in ten of global species, Amazonia is shared by eight South American countries, and one European Union outermost region. The renewed intensity in 2019 of seasonal forest fires, and continuous overall deforestation numbers in the region, especially in Brazil and Bolivia, have been greeted by countries the world over with dismay. At stake are some of the most important issues affecting human life on Earth today: climate change and the conservation of natural systems essential to our survival as a species.

Two related issues are highlighted: forest fires and overall deforestation, both of which affect the global climate and weather patterns, and contribute to the depletion of assets in medicine, agriculture, and other key industries, as a result of an impoverished biodiversity regime. As the region’s second largest trade partner after China, the EU27 recognises that consumption patterns in its own domestic markets are drivers of ‘embodied deforestation’, ‘creating high pressure on forests in non-EU countries and accelerating deforestation.’ To curb this practice, it is required to secure trade in ‘products from deforestation-free supply chains.’

The finalisation of the EU-Mercosur Association Agreement poses an opportunity, where increased technology exchange and cooperation in science, research, and experience in governance may provide a change to environmental management in the Mercosur and neighbouring countries across South America, as well as increased awareness and adherence to environmental due diligence among the EU27. In parallel to the EU-Mercosur discussion, the world is poised to renew pledges on two legally binding international environmental commitments - the 2015 Conference of the Parties (COP21) to the UNFCCC, and the Convention on Biological Diversity (CBD). As these commitments provide the legal backdrop to comprehensive protection of the global environment, it is paramount to secure the buy-in of the Mercosur governments.

With 60% of the Amazon forest lying within its boundaries, and the primary Mercosur trade partner with Europe, Brazil was one of the first signatories of both the CBD and the Paris Declaration. But the current rate of Amazonian deforestation, and the country’s infringement of a longstanding pro-indigenous social compact challenge global trust in the country’s commitment to international agreements. Despite a drop in deforestation numbers from 2005 to 2014, recent figures issued by the Brazilian government show that by 2015 illegal logging, clear-cutting, and forest fires had already begun to gather momentum; in 2019 they contributed to a 46% increase in deforestation, compared to the 2012 deforestation rate which was the lowest in recorded history (see Figure 1). The forest fire figures also arrived at a key juncture in the battle to mitigate climate change, with global warming reaching 1.1°C. Quite seriously, accumulated drought and deforestation, and the consequent drop in forest-based photosynthesis undermines Amazonia’s role as a net intaker of CO₂ - predicted to drop to zero by 2030 -, and its fundamental function in temperature, humidity and rain pattern regulation, affecting the livelihood of millions in Latin America’s largely commodities-based economies. Moreover, forest depletion across South America’s biomes is already causing damage to valuable fresh water aquifers, and their symbiotic relationship to landscapes and weather patterns.

Far from a new phenomenon, fires in Amazonia are generally set intentionally, often for clearing of secondary growth forests by small producers and indigenous populations, as a tool to free cropping areas, and to release nutrients. Far more devastating are large-scale forest fires, which follow the illegal

---

1 The entire scope of the Amazon Basin, its forests and ecosystems is known as Amazonia.
3 UNFCCC news, ‘2017 Was Among Top Three Hottest Years On Record’, [https://unfccc.int/news/2017-was-among-top-three-hottest-years-on-record](https://unfccc.int/news/2017-was-among-top-three-hottest-years-on-record).
extraction of valuable timber to make way for cattle ranching and large-scale agriculture. In years of
drought, these fires may also consume old growth forests. Closely following this trend, for the first time
in more than three decades, deforestation reportedly increased during the rainy period from January
to April 2020. Known as the ‘winter months’, this is a normally quiet period for logging in Amazonia,
given the sheer logistical difficulties in operating logging equipment in the rain. In 2020, new data
released by the Brazilian National Spatial Research Institute (INPE), revealed a record 51% year-on-year
(December to March) increase in deforestation in the Amazon, equivalent to about 796.08 km², or
80,000 football pitches. The loss of ecosystem services associated to deforestation is of particular
concern. Thought to host 40,000 species of plants and trees, 2.5 million species of insects, and at least
2,000 species of mammals and birds⁴, Amazonia provides ecosystem services fundamentally
connected to its genetic diversity. Sometimes called ‘hotspots’ of genetic diversity, genetic centres of
high plant diversity such as Amazonia are the target of medicinal bioprospecting. This is because they
are ‘de facto’ live laboratories for the production of seeds and other vegetative propagules, which
ensure genetic adaptability in a changing environment (i.e. large gene pools to produce disease-
resistant and high-yielding seeds to counter famine), and adaptation to climate change, among
others.⁵,⁶

A closer examination of the issues reveals a troubling picture of regional governments, national and
international partners working at cross-purposes, polarised by the false dichotomy of nature
conservation versus poverty alleviation. Addressing the underlying causes of Amazonian depletion and
degradation and of other valuable South American forests, and achieving lasting livelihood solutions
for millions living in the region – most in urban settings – require historically contextualised actions,
conducive to increased national, regional and international partnerships and cooperation at all levels.
Programmes such as the World Bank’s Sustainable Landscapes programme, connect international
biodiversity conservation and management and climate change action to science-based solutions
designed to harness natural resources sustainably into the economy, valuing renewable natural
resources, biological and biomimetic assets, environmental services and materials. The EU-Mercosur
Association Agreement is seen by some as an opportunity for the EU to promote a new type of trade
policy, including provisions on labour rights and the environment. Complex issues such as biodiversity
depletion and climate change are often judged on non-objective criteria, and are thus unforeseen in
the current trade regime. Enhancing the importance of these issues requires changes in both mentality
and modus operandi. For example, aligning the General Agreement on Tariffs and Trade (GATT)
managed by the World Trade Organization (WTO) to instruments such as the Paris Declaration and the
CBD, provides the construct to legally binding trade relations that recognise and value ecosystem
services. In the meantime, a trade agreement, which contemplates embedded commercial cooperation
and private sector partnership models, guided by hybrid investment in nature conservation that
generates economic development may serve to curb embedded deforestation consumption within the
entire EU-Mercosur trade spectrum – domestic and international.

⁵ Pena-Venegas, C., Stomph, T., et al. Differences in Manioc Diversity Among Five Ethnic Groups of the Colombian Amazon. Diversity. 2014,
6, 792-826; doi: 10.3390/d6040792.
Aim

- To describe the value of ecosystem services provided by Amazonia;
- To describe the actions undertaken by the Brazilian government regarding Amazonian deforestation;
- To describe international and EU cooperation programmes in the region, and to describe the inherent challenges in adding environmentally conditional clauses to the Trade Agreement.
1. THE AMAZON BASIN AND ITS BIODIVERSITY

KEY FINDINGS

Host to at least 40,000 species of plants and trees, 2.5 million species of insects, and at least 2,000 species of mammals and birds, biodiversity conservation is conditional to maintaining Amazonia as a ‘hotspot’ of genetic diversity. Key to medicinal bioprospecting, this ‘hotspot’ is a virtual genetic laboratory/gene pool which produces disease-resistant and high-yielding seeds to counter famine, and adapted to climate change.

While essential to biodiversity conservation, a steep decrease in biodiversity is found even in so-called old growth forests, where no deforestation has been known to occur, mirroring biodiversity depletion in adjacent secondary forests and agricultural land.

Accumulated drought and deforestation and the consequent drop in forest-based photosynthesis undermines the Amazon’s role as a net intaker of CO₂, and its fundamental function in temperature, humidity and rain pattern regulation, and threatens valuable fresh water aquifers across South America.

1.1 Biodiversity, Ecosystem Services and Culture

Home to the largest river basin and rainforest on Earth, with 6-8 million km² of forest, the Amazon biome covers 40% of the South American continent, and includes parts of nine countries: Brazil, Bolivia, Peru, Ecuador, Colombia, Venezuela, Guyana and Suriname, and French Guiana, a department of France. Humid and warm, Amazonia is made up of a vibrant mosaic of terrestrial, water, underground and atmospheric ecosystems. Its vegetation types include rainforests, seasonal forests, deciduous forests, flooded forests, and savannahs. Containing one in ten of the world’s species, Amazonia’s ecosystems engage in a symbiotic inter-dependent relationship defined by connectivities, providing ecosystem services directly to over 33 million people in the region, in South America, and indeed the world. At least 17% of the Amazon basin’s primary forest is known to have been destroyed in the past 50 years; this figure rises to 20% in Brazil.

Where only a fraction of species has been catalogued and studied, Amazonia is believed to host 40,000 species of plants and trees, and 390 billion individual trees; 2.5 million species of insects, and 2,000 species of mammals and birds, at least half of which live in the forest canopy. Among many key ecosystem services, medicinal bioprospecting linked to ethnobotanical studies has achieved important findings in drugs for the treatment of cancers and associated diseases. One example is imidazole alkaloid pilocarpine, the main constituent of an antiglaucoma drug, which is taken from the Pylocarpus microphyllus tree, commonly known as Jaborandi. The engine for planetary resilience to crisis, three types of biodiversity work in synchronicity: ecosystem, species and genetic diversity. The Brazil nut tree (Bertholettia excelsa) is but one example of these three types of biodiversity acting together to provide income for riverine extractive communities: growing on one of the tallest trees in the Amazon and pollinated by orchid bees, the Brazil nut is dispersed by agoutis, a type of large rodent that is capable

---

7 The scientific term ‘biome’ is used to describe a geographic area that is notable for its species and geographic characteristics; it may contain several or a combination of ecosystems, as is the case of Amazonia.
8 Ecosystem services refer to the collection of benefits human beings derive from ecosystems - defined as the communities formed by the interaction between living - plants, animals and microbes - and non-living organisms, namely air, water, minerals and soil.
of breaking the hard pod containing the seed-nut with its sharp claws. Biodiversity is also essential to the agriculture industry - commercial farmers and crop breeders - which needs large gene pools to produce disease-resistant and high-yielding seeds to counter famine and feed an expanding world population. Contrary to what many believe, studies suggest that 11.8% of Amazonia’s terra firme forests are anthropogenic in nature, resulting from the management of biodiversity by indigenous peoples. Ethnobotanical and archeological studies of Amazonia demonstrate that sizable and sedentary societies of great complexity existed in the region at least 13,000 years ago; these population groups produced pottery, cleared land for agriculture, and managed forests to optimise the distribution of useful species.12

Centres of high plant diversity such as the Amazon are nicknamed ‘hotspots’ of genetic diversity. De facto live laboratories for the production of seeds and other vegetative propagules that ensure genetic resilience of species, their maintenance is an important strategic element in climate change mitigation. A number of important cultivated agricultural species such as, for example, the manioc or cassava root (Manihot esculenta crantz) come from Amazonia. Securing their genetic integrity and studying natural and induced hybridization provides information on crop performance, increased yields under different conditions, and adaptation to global climate change.13 Sixth most important crop in Asia, Africa and the Americas, and the Amazon region’s most important crop, the world manioc germplasm is partly kept at the International Tropical Agricultural Center (CIAT) in Colombia. Dozens of other varieties of the crop are cultivated and improved each planting season by indigenous communities across Amazonia, selected on the basis of agronomic performance. More than a crop, manioc is a reason for social exchange, conflict and territorial management, and communities such as the Piaroa of the Venezuelan Amazon, and the Amuesha shamans, in the Peruvian Amazon, among many, maintain their own germplasm databases of the species. Similarly, at least 420 indigenous groups – some remain uncontacted –, 86 languages and 650 dialects represent a repository of know-how of the Amazon biome and its ecosystems, and are a pole of human culture.15

1.2 The Amazon River Basin and Forest Symbiosis

The Amazon River is the lifeline of the forest. It is a complete system encompassing an underground aquifer, the on-the-surface river and an overhead permanent source of moisture. It is also the world’s largest river in terms of discharge, and the second longest in the world after the Nile, with a watershed made up of over 1,100 tributaries, 17 of these longer than the Congo River. Flowing through some 6,600 kilometres, accounting for 15-16% of the world’s total fresh water discharge into the World Ocean, equivalent to 17 billion tonnes a day, the Amazon River is home to thousands of unique fresh water fish, mammals, plant life and coral reefs. Known as one of the most important climate regulators on the Planet, the Amazon River acts as a ‘cooling’ system, where the hydrological patterns resulting from the relationship between river and forest help to regulate temperature, humidity, and climate. With the utmost efficiency, the tree roots suck up water from the ground and pump out billions of tonnes of water vapour a day - a process called evapotranspiration - into vast “flying rivers.” These in

11 ‘The Brazil Nut Story - Sustaining the Amazon Rainforest’, https://thebrazilnutstory.wordpress.com/pollination/.
16 ‘The largest river on Earth is invisible - and airborne’, https://ideas.ted.com/this-airborne-river-may-be-the-largest-river-on-earth/.
turn flow over the tree tops, releasing some 20 billion tonnes of water into the atmosphere every day. This airborne river returns to the soil as rain, replenishing the forest, only to rise again through the treetops in a virtuous cycle. Beneath the Amazon River lies the slow-moving ‘Hamza’ underground aquifer, forming a 6,000-kilometre ‘twin-river’ system discharging into the Atlantic Ocean. Almost half of the rainfall in Amazonia comes from moisture generated within the Amazon river basin, mostly transpired by trees. This moisture creates an enabling environment for crop production across South America, and as far as the United States.

As a whole integrated system, 9% of global carbon sequestration occurs in Amazonia, a direct consequence of the continuous volume of photosynthesis produced by the dense forest coverage. Unlike its reputation as the ‘world’s lungs,’ the oxygen produced by Amazonian photosynthesis is all-consumed within the forest. The near future tragic scenario is that the Amazon Basin’s capacity as a ‘carbon sink’ is projected to drop to zero by 2030. Recent data shows its decreasing capacity to absorb carbon dioxide, an issue that is closely tied to forest cover losses - deforestation - and climate change.

An increasingly severe forest fire regimen, for example, combination of slash and burn agriculture, land speculation and clearance, and natural fires, together with the disappearance of the forest mass responsible for photosynthesis-linked evapotranspiration causes imbalances in rainfall patterns essential to life in the forest. To put it simply, forest fires produce smoke and soot, keeping moisture particles in the air from bonding sufficiently to form raindrops. This absence of rainfall directly contributes to biodiversity degradation and the loss of associated ecosystem services, as does infrastructure development, forest conversion for agricultural commodities, illegal, and unsustainable logging practices. Pushed to the brink, this scenario of combined climate change and deforestation is likely to eventually cause the “Amazon dieback” phenomenon, where trees die due to warmer temperatures and water stress, removing valuable forest habitat for hundreds of thousands of species.

1.3 Projected Biodiversity Loss

Biodiversity losses do not occur in isolation and must be examined within a wider context. According to the International Union for the Conservation of Nature (IUCN), about 137 living species are driven into extinction each day in Amazonia. Much of this extinction is associated to habitat loss, because animals such as the ocelot (*Felis pardalis*) and many primates are unable to survive in small remnant patches of forest. Caused by the economic transformation of Amazonia since the early 1990s, the conversion and degradation of its natural habitat continues to gain momentum, causing biodiversity losses. Studies of plants, ants, birds, dung beetles and orchid bees in the Brazilian Amazon, for example, point to deforestation as a key - but not the only - cause of biodiversity loss, and remaining areas of undisturbed and recovering forest often provide the last refuge for species, which are unable to withstand the impact of human activity. Biodiversity loss in Amazonia may also vary according to the

---

18 Photosynthesis is the process by which green plants and certain other organisms transform light energy into chemical energy. During photosynthesis in green plants, light energy is captured to convert water (H₂O), carbon dioxide (CO₂), and minerals into oxygen (O₂) and energy-rich organic compounds.
type of deforestation, whether through illegal logging, fire or farming, in addition to pre-existing differences in the undisturbed forests.22

Figure 1: Forest functionalities

![Forest functionalities](source)

Even when deforestation has stopped, the combined effects of various human-driven disturbances in the forests can cause biodiversity losses on a scale similar to, or greater than, those caused by deforestation alone. For instance, the previous conversion of an ecosystem to farmland may result in biodiversity loss in adjacent forests, which become more vulnerable to edge effects, such as the hot and windy conditions that can ignite and drive forest fires. Within the remaining forest, biodiversity can be affected by bush meat hunting or selective logging.23, 24

New modelling shows that by 2050, climate and deforestation combined could cause a decline of up to 58% in Amazon tree species richness, whilst deforestation alone may cause 19–36% and climate change 31–37%. Because of differences in timescale and patterns of biodiversity loss, these figures were concluded as a result of overlaying species distribution models for current and future climate change scenarios with historical and projected deforestation.25 The depletion of the Amazon’s 14,000 species of trees may cause other species to lose an average of 65% of their ‘original environmentally suitable area,’ threatening with extinction more than half-53% of the region’s animal and plant species - according to the IUCN Red List criteria. While Amazonian protected area networks reduce these impacts, a worst-case combined scenario suggests that by 2050, the Amazonian lowland rainforest may be cut into two blocks: one continuous block with 53% of the original area and another severely fragmented block, home to the bulk of the region’s economic activity.26

It is of the utmost importance to examine the rationale behind the research, which observes the greater speed with which climate change—in relation to deforestation—affects forest depletion. By examining individual tree species, their temperature and precipitation limits, it is possible to map species adaptation and migration during hundreds if not thousands of years, with particular emphasis on the Holocene period, a geological period that started about 11,600 years ago, when climate change caused Amazonian tree communities to expand their distribution southward.27 Studies show that tree species took 3,000 years to advance nearly 100 kilometres through dispersers and pollinators such as wind, water and animals. Human-induced climate change, and barriers caused by large tracts of deforested areas occurring over a 30-50 year period, provide insufficient time for trees to adapt. Tree species are

---

22 Ibid.
26 Ibid.
27 Ibid.
unable to move the required 300 kilometres or more to areas possessing the most suitable climates for their survival, as compared to their current distribution areas. In a similar vein, other studies predict an imminent ‘tipping point’ for Amazonia - when 25% reduction is reached - for its conversion from forest to savannah. These studies highlight the importance of restoring the 23% of already destroyed - currently unoccupied - forest territory, composed of abandoned cattle ranches and croplands, and which currently lay fallow, adding to indigenous territories and protected areas.

Box 1: A Forest Biodiversity Economy

Human communities have lived and made use of the Amazon basin forests for thousands of years; products such as rubber, palm fruits, Brazil nuts, dyes, wood, and oils, as well as countless medicines are derived from these forests. However, habitat degradation and fragmentation intensified during the past 50 years have driven much of the extinction process of species, many which have never been catalogued or researched. Concerned that the current bipolar Amazonian occupation model – pure conservation vs resource-intensive development – is pushing Amazonian biodiversity and climate regime to their tipping points, scientists propose to harness the resources within the collection of ecosystems that compose the Amazon biome into net generators of high value products, towards a forest-biodiversity economy that values renewable natural resources, biological and biomimetic assets, environmental services and biodiverse molecules and materials. The idea is to expand already successful initiatives such as extractive and sustainable natural resources management reserves - closely tied to land use patterns and economic expansion - to extensive technological investment, skills and capacity development for local and indigenous communities.


On a separate but related note, biodiversity is also affected by issues such as species contraband, gold and silver mining, and the illicit drug trade. Many Amazonian species such as primates, macaws and panthers, for example, are traded illegally on the international market each year, wanted for their fur, as pets, or for scientific research. Parrots and macaws have also become popular pets; buyers will pay up to US$10,000 for one bird, while the commerce of colourful aquarium fish has resulted in a decline in fish stocks in the Amazon and Negro rivers. Quite dramatically, mercury poisoning from gold mining operations has caused tremendous health challenges, polluting the rivers and the vegetation, and jeopardizing Amazonian indigenous people, traditional and urban populations alike.

The Amazon system is also intrinsically related to the survival of adjacent biomes, such as the Pantanal – the world’s largest wetland - shared between Brazil and Paraguay, and the Chaco, South America’s second largest forest, bordering Argentina, Paraguay, and Bolivia. In common, these forests are slowly disappearing in the face of large-scale agriculture – mainly due to soybean plantations and cattle ranching, with consequences to the maintenance of the Guarani Aquifer, South America’s most important hydrogeological unit.  

---

2. DEFORESTATION IN BRAZIL, WITH AN ANGLE ON THE AMAZON REGION

KEY FINDINGS
Endowed with six biomes and a variety of forests, Brazil has undermined the ecosystem services provided by its forests, which have been under permanent pressure by agriculture, mining, and real estate speculation.

Brazil’s environmental agenda is polarised in a false dichotomy between nature conservation and poverty alleviation, i.e. part of society – headed by civil society organizations and some international agencies - focuses on command and control and strict nature conservation, while another part believes the forest must be cut down to make way for scenarios associated to wealth and development such as super highways and non-forest related industry.

There is a clear lack of commitment to nature conservation by the current administration in Brazil, with active dismantling of commercial due diligence, and command and control mechanisms in the environmental arena. Although there is some resistance by Congress, civil society, and the trade and economy sectors, the latter pressured by international commodities trade partners, the pattern of deforestation in Amazonia and other biomes is alarming.

2.1. Status of Brazilian Forests

Brazil is endowed with six kinds of key biomes covering 66% of its territory: the Pampas dominated by savannahs, the Pantanal where annual floods cover the tree cover and natural pastures, the semi-arid Cerrado, the Atlantic coastal forest, the unique dry Caatinga forests in the northeast, and the Amazon rainforest, the latter covering about 40% of the country. Despite their differences, these forest systems are inter-connected, providing seed production, repository, and dispersal services, and as endemic or occasional migratory shelters for dozens of birds and land species. Forests in both the south and southeast regions have suffered tremendous population and economic pressure, and much has been converted to agricultural land since Brazil’s colonial past.

Since the early twentieth century, native forest in the southern part of Brazil has also been substituted by large-scale tree plantations with alien species, namely eucalyptus (*Eucalyptus* spp.) and pine species (*Pinus* spp.), as part of the country’s agricultural and industrial development policy. These exotic tree plantations are under the jurisdiction of the Ministry of Agriculture and are located outside the legislation related to the protection and use of native forests. Brazil’s commercial forests are responsible for the country’s prominence as an international provider of wood pulp, woodchips and coal, and timber for the construction and furniture industries, as well as oils and resins, among other woody products. 31 Home to about 75% of Brazil’s population, the Atlantic coastal rainforest was the first and most devastated biome in the country. Of special ecological significance in and of itself, its tremendous biodiversity is under permanent siege, and is occupied by crops of all sorts, such as horticulture, fruticulture, coffee, sugarcane, exotic tree plantations that furnish coal to important ferrous metallurgy plants and by continuous aggressive real estate speculation. While only 7% of the original Atlantic forest remains, successful public-private partnerships, and a pro-forest civil society lobby, in partnership with landowners – all of whom recognise the importance of climate stabilization

---

forest services – have developed successful initiatives in agroforestry coffee and cocoa, some of which help sustain what is left of the ‘Mata Atlântica’.

Other forests are equally subject to the ins and outs of Brazil’s commodities-strong economy. This is true for the Cerrado, Pantanal and Pampas biomes, occupied by vast expanses of soya and corn fields, or cattle ranching. With about 46% remaining, the Caatinga is the most neglected forest, and was excluded from mention in the 1988 Constitution. Located in the drought-prone north-eastern states, a region characterised by high unemployment, rural and urban violence, and limited economic opportunity, over the past 25 years the Caatinga forest has been targeted by unsustainable charcoal production projects, as well as large-scale irrigation-based exotic fruit plantations for export. To address issues related to native vegetation management and livelihoods, the Brazilian Forest Service is currently promoting a number of forest management projects in the Caatinga, partly funded by GEF and the World Bank.32

2.2. Forest Fires and Deforestation

The issues of deforestation, forest fires and land tenure bear close association, and explain the rise in forest fires witnessed in 2019 across the Brazilian Amazon. With the end goal of clearing vacant lands for cattle production and large-scale soya monoculture, forest degradation by illegal logging often kick-starts deforestation, and is finished off by induced forest fires. In the first step, loggers hack rough tracks into the forest to remove valuable timber, sold within the domestic market but also exported as decking, or low processed planks. In this phase, most of the trees in the forest remain. But crisscrossed by logging access roads, the forest loses its primary forest or old-growth status. During the second step, landholders occupy and clear cut the remaining trees to make room for cattle and agriculture.33 More vulnerable to drought, degraded forests lose their resilience to induced or natural forest fires, and serve as forest fire ‘bridges’ to primary forests nearby. Adding to the complexity, deforestation is often the consequence of strategic land speculation interactions between landowners and squatters, i.e. land speculators encourage squatters to invade and clear forests, with the intent of occupying cleared vacant land to obtain property rights, subsequently selling the newly titled land to commercial farmers. Supported by credit and tax policy, investment in infrastructure and road networks and other deforestation-based commercial activities have been historically supported by federal development policies.34 In the past 34 years, from 1985-2019, Brazil lost 89 Mha of natural vegetation, 47 Mha in Amazonia, mostly attributed to landscape and forest conversion.35 Altogether, illegal logging, clear-cutting, and forest fires contributed to a deforestation rate in 2019 of 9,762 km², compared to 4,571 km² in 2012, based on data from Deter-B, the satellite system set-up to detect near real-time deforestation used by Brazil’s National Institute for Space Research (INPE) (see Figure 2).

32 Confidential Interview with the Brazilian Forest Service.
33 The 2012 Forest Code was a product of years of negotiations between agro groups, nature conservation civil society, and the government. Where 80% of land in the Amazon must be forested, this percentage decreases to 20% for the Atlantic coastal rainforest, and 30% for the Cerrado.
More recently, in March 2020, new data released by INPE, and analysed by civil society organization BioMapas, revealed a new record 51% year-on-year (December to March) increase in deforestation in the Amazon, about 796,08 km², equivalent to 80,000 football pitches. It is the first time since 1985 that deforestation at this scale has been witnessed during the rainy January to March ‘winter season’, normally known as a down time in logging, given the sheer logistical difficulties in operating logging equipment in the rain.36

2.3. Deforestation Status and Drivers

Extensive and sophisticated, Brazil’s deforestation monitoring is undertaken by a handful of nationally controlled institutes dedicated to geospatial monitoring by satellite, aerial and ground radar surveillance, and – where possible – ground truthing with personnel trained by IBAMA, the Brazilian Forest Service, or any of the state environmental agencies. Most of the GIS analysis is conducted with the support of federal institutes such as the Institute for Space Research, INPE, the Amazon Surveillance system – SIPAM, and Embrapa Territorial, part of the Brazilian parastatal agriculture research agency Embrapa. NASA, the U.S. Geological Survey Landsat 8, SPOT (Satellite pour l’Observation de la Terre), NOAA (National Oceanic and Atmospheric Administration), CBRS (China Brazil Resources Satellite) and the ERS-1 European Remote Sensing Satellite are all international partners and providers of information for Amazonian surveillance. Somewhat controversially, Amazonian surveillance is seen by many to serve larger geopolitical and commercial interests such as drug traffic monitoring, oil & gas and mineral prospection.37 Some science-based civil society organizations and initiatives, such as IMAZON and MapBiomas detain considerable GIS analysis and expertise, and collaborate with both national partners and the same international actors as the federal and state governments. Significantly, civil society has been excluded from a newly formed ‘Amazonian Commission,’ designed at the cabinet level to monitor the region. Despite these sophisticated systems, cloud coverage in the Amazon basin often blocks visibility, especially regarding illegal logging practices, which take time to stand-out.38 Data on logging

---


37 [https://www.oei.es/historico/divulgacioncientifica/reportajes_055.htm](https://www.oei.es/historico/divulgacioncientifica/reportajes_055.htm) - one example among a plethora of articles explaining and critical of SIVAM are available on the worldwide web.

analysed by IMAZON, shows that for each felled tree in the Amazon without forest management, another 27 trees with more than 10 cm in diameter are damaged, and another 40 metres of road are built. This example demonstrates the relevance of illegal timber extraction as a starting point for the subsequent devastation caused by cattle ranching and agriculture, and the need to improve forest management, and logging efficiency.

The Amazonian protected area federal programme PPCDAm, launched in 2004, was instrumental in securing the 75% drop in deforestation witnessed from 2003 to 2014. A forest governance model to curb deforestation, managed in cooperation with more than 70 federal, state and international actors, PPCDAm demarcated 25Mha of national parks, indigenous areas and extractive reserves. Working closely with satellite surveillance systems such as the DETER programme, central to PPCDAm was its law enforcement capability. For the private sector, lessons learned from PPCDAm led to the design of the nation-wide Rural Environmental Registry mechanism named CAR (Cadastro Ambiental Rural). Designed to address questions of land tenure, using verifiable satellite imagery, the CAR was designed to close the loop with existing control mechanisms for timber production and commercialization: CAR-holding timber trade operations received a Document of Forest Origin (DOF), a de facto timber production license. However, starting in 2012, encouraged by the federal government, landholders have postponed their adherence to CAR; resulting in 253,000 landholdings - representing 48% of all Amazonian properties - lying currently outside the law. By deliberately removing the legal anchor provided by CAR, the government has failed to enforce illegal logging legislation, simultaneously encouraging squatters to engage in illegal logging and deforestation activities, with the consequent spreading of forest fires and expansion of illegal logging, as witnessed in 2019 and 2020. In early 2020, for example, a shipment of tropical wood from the port of Belém to US and European markets, bearing no export authorization from IBAMA - DOF -, reportedly slipped through due diligence requirements built into the EUTR and the US Lacey Act. Ready to reject the cargo for lack of the appropriate paperwork, customs officials at ports of destination contacted their counterparts in Brazil. They were informed that IBAMA’s Superintendent in the Amazonian state of Pará - appointed by Minister of Environment Ricardo Salles - had allegedly ignored the legislation, authorising the issuance of an ex post facto export license. This made the timber shipment “legal” and thus saleable in international markets.

### 2.4. Monitoring Deforestation Embodied Trade

A net commodity exporter, deforestation embodied trade, namely sugarcane, soy beans, coffee and beef, represent a significant share of Brazil’s export market. Representing 27% of the global embodied deforestation consumption market, mostly related to animal feed and oils for the food industry, the EU27 were the destination for 50% of deforestation embodied trade from Brazil, i.e. 61% of Brazil’s soybean exports in natura, and 12% of the production of stimulants such as coffee and cocoa.
Proportionally speaking, illegal timber deforestation represents 0.2 Mha, against 9 Mha in deforestation embodied agricultural commodities' net imports from Brazil by the EU27.47 The EU also purchased 117,000 tons of beef, and 80,500 tons of leather from Brazil, about 20% of world imports of those products, much of it sourced from previously deforested areas. Tracing and tracking embodied deforestation consumption is a herculean task that cannot be managed by legislation alone. For example, EU legislation recognises the risk of deforestation from products such as soybean oil and timber, and requires due diligence on both ends of the trade cycle – origin and destination. European companies are slow to report progress on deforestation-related trade. Despite the reputational benefits that disclosure offer, reporting on forests is still poor. In 2019, 70% of more than 1,800 companies requested by CDP Europe (Carbon Disclosure Programme) failed to provide information to investors on their actions to eliminate deforestation from supply chains. Even so, also in 2019, over 500 investors and financial institutions, managing US$96 trillion in assets, put their name on the CDP Forests Disclosure request. This figure rose from 380 in 2017, and only 31 when the information request was first issued, a decade ago, in 2010.48

Breaking patterns of embodied deforestation entails breaking complex supply chains, sometimes involving thousands of small and medium independent producers, which makes it difficult for global corporations to trace deforestation. Using satellites and algorithms to track tree cover loss in near-real time, companies like Unilever, Cargill and Mondelēz are able to assess deforestation risks associated to their business. Similarly, Walmart, Carrefour and McDonalds self-declaredly map forests around beef supplier farms in the Amazon to identify risks and implement and monitor change. On the banking side, to comply with legal financing requirements against deforestation, Banco do Brasil and Rabobank have provided their clients with a mobile-based application.49 Another initiative, TRASE, a partnership with the Stockholm Environmental Institute (SEI), and the UK-based Global Canopy, funded by donors such as the Global Environmental Facility (GEF) and UKAID, provides contextualised maps of supply chain actors in the landscapes where a given commodity is produced. For example, it tracks the total export of a country’s soy production from specific municipalities of production to consumer markets, examining exporters, ports, shippers and importers that make up the supply chain. This is contrasted with environmental and social factors obtained from a variety of sources, and a deforestation timeline for each municipality, providing a time bound assessment and implication of production in the context of deforestation (Figure 3 demonstrates the system).

TRASE mapping shows that most deforestation risks associated with EU soy imports from Brazil is concentrated in the Cerrado biome (93% of all EU imports - 2013-2017), particularly in the region so-called Matopiba (an agriculture frontier) - composed of Maranhao, Tocatins and Bahia - the latter in the Atlantic forest. Amazonia - excepting transition states such as Mato Grosso - is covered by a multi-stakeholder agreement titled the Soy Moratorium (SM). Under the SM, the largest soy traders operating in Brazil agreed not to purchase and/or export soy grown in areas, which would have been deforested after July 2008. Despite some weaknesses, the SM has until now significantly contributed to reduce soy-driven deforestation in the Amazon biome.

---

47 East Asia is the largest net importer of wood and wood based products from Brazil.
48 “70% of companies fail to disclose impact on world’s forests”, https://www.cdp.net/en/articles/media/70-of-companies-fail-to-disclose-impact-on-worlds-forests.
2.5. Highways, Hydroelectric Dams, and Mining

Beginning in the 1960s, Brazil started the construction of a sprawling highway system connecting Amazonia to Brasília and other major distributions centres, thousands of kilometres away. Partly financed by the multilateral financial system, as part of its hinterland occupation policy, Brazil extended industrial, agricultural, cattle ranching and mining projects along especially constructed highways such as the Transamazônica, Porto Velho-Cuiabá and Cuiabá-Santarém.50

The expansion of the Amazonian highway system continues, and in March 2020, President Bolsonaro inaugurated the last stretch of the BR163 highway linking Cuiabá in soy producing Mato Grosso state and the Amazonian ports of Santarém and Itaituba. More than 30 years in the making, the BR163 links soya farmers to ports operated by large international agricultural and mining conglomerates such as Cargill, creating a second soy export hub in the southern Atlantic, as an alternative to Paranaguá port.

Financed by large supranational business conglomerates and banking houses, the expansion of the road network through the Amazon basin and adjacent river basins threatens forest coverage, but not just in Brazil. The highways endanger Amazonian forests and indigenous lands in the southwest and in the north, on Brazil’s borders with Peru, Bolivia, Guyana, Suriname and Venezuela.

Prone to invasions by lawless gold miners, illegal loggers and drug traffickers, the issue of indigenous territories is particularly sensitive, and several ethnicities are present cross-border, with territories within two countries. Among many examples, some indigenous groups are more resilient to invasions than others. Isolated indigenous groups such as the Yanomami, who live in the gold-rich Brazil-Venezuelan border, are particularly threatened by the roads, which open up their territories to mining, and real estate speculation, exposing communities to diseases to which they have no immunity.

A significant issue is the sheer size and landscape of indigenous lands, and the consequently challenging policing, command and control environment. For example, in Brazil, the Yanomami territory lies within the Raposa do Sol indigenous reservation, a 9.6 Mha territory about two times the

---

size of Switzerland in the northernmost Brazilian state of Roraima. This area is adjacent to the 8.2 Mha Alto Orinoco – Casiquiare Biosphere Reserve in Venezuela. Together, these two areas form the largest forested indigenous territory in the world, long contested by gold, diamond, oil and gas, and agro-cattle prospectors on either side of the border. Although the Bolsonaro administration has attempted to off-set the issue, by including in a recently proposed law royalty payments to indigenous communities for mining and land exploration, even if the indigenous communities were to agree, there is little doubt that new roads, real estate speculation and exploration of natural resources would eventually extinguish the capacity of indigenous groups to sustain their way of life. Indigenous communities are also faithful stewards of their ancestral lands, and studies show that indigenous land tenure across Amazonia has been a sure pathway to old-growth forest conservation.

The exploration of copper, tin, nickel, bauxite, manganese, iron ore, rare earths, uranium and gold in the Amazon is another strong economic argument for changing the demarcation status of indigenous areas, where large quantities of these minerals are found. Thought to have a 10% impact upon the rainforest where mines occur, mining leases, concessions and exploration permits cover 1.65 million km² of Brazil's territory, of which 60% is located in the Amazon Basin. Some of the most serious damage to the forest – in some cases up to 40% deforestation of an area under lease - happened in the states of Pará, Amapá and Amazonas, in lease areas for tin, gold, limestone and bauxite.

In cash terms, mineral production contributed in 2011 to 4% of Brazil's gross domestic product, and 25% of its foreign commercial balance, and is projected to increase four-fold by 2030. While the approval of new mines requires environmental licenses, current environmental impact assessments fail to consider off-lease, indirect or cumulative impacts, including social aspects. In fact, new legislation has been proposed to expedite approval for strategic mining projects, further undermining IBAMA's oversight and capacity to suspend operations based on environmental impacts, and enabling extraction within protected or indigenous areas.

Tapping into Amazonia's extensive waterways is another longstanding commitment by Brazilian governments since the 1950s, but only operationalized in the middle of the 1980s, starting with the Tucurui megadam, in Pará. Since the 1970s, 351 hydroelectric dams were proposed for the Amazon region, and 158 have been built, 23 mega dams in the Brazilian Amazon alone. President Bolsonaro reactivated in 2019 a semi-dormant 2013-2023 energy grid plan, and announced his intention to build further dams in at least three Amazonian locations considered of tremendous ecological and landscape importance. Located in the states of Roraima and Rondônia, all three dams had been previously blocked by the public prosecutor's office for failing to follow either minimum environmental standards, or the basic legal requirements for public consultations.

---

52 Mining project on indigenous lands could lead to the destruction of protected areas and the disappearance of peoples, says Attorney General, https://jornaldebrasilia.com.br/politica-e-poder/projeto-de-mineracao-em-terras-indigenas-pode-levar-a-destruicao-de-areas-protectidas-e-a-desaparecimento-de-povos-diz-procuradoria/.
Between 2003 and 2013, Brazil privatised a number of dams in the Amazon such as Belo Monte, Jirau, Santo Antônio, São Manoel, Teles Pires and Colíder. Belo Monte (the largest of its kind on the Xingú river) was responsible during the first five years of its construction for 1,793 km² of deforestation, causing incalculable damage to the largest indigenous park in the world, home to over 18 ethnicities, in addition to some 75,000 local non-indigenous inhabitants.56

Another significant issue is the impact of cocaine traffic on the health of Amazonian forests. As a net exporter of coca paste, Colombian cocaine trafficking relies on the laboratories nestled inside the Brazilian side of the jungle to produce the drug. In addition, the constant volume of goods traded from Amazonian ports make easy hiding places for drug shipments by sea, and by air, making use of hundreds of runways for small aircraft built in the forest, with air traffic to Europe, Africa, North America, the rest of Brazil, Central and South America. Ironically, the very command and control actions against the drug trade are often responsible for deforestation in the Amazon, in particular where drug cartels use agricultural projects to launder drug-money, and - on the side of law enforcement - the use of defoliants to destroy coca plantations, with far ranging effects on the forest.57

Although the current pace of deforestation in Brazil is cause for concern, it still lies below the figures registered in the 1990s. However, there is a sense among domestic and international stakeholders alike that lack of commitment by the government may result in the continued collapse of Brazil’s nature conservation system.58 However, market forces - including push-back from Brazil’s largest soya-based markets - may prevail, as witnessed by recent declarations made by Brazil’s Finance Minister during the World Economic Forum.

A panoramic view of Brazil’s environmental challenges is invariably clouded by an entangled and highly complex network of federal and state institutes, departments and autarchies. This entanglement is also witnessed in the polarisation of the Brazilian environmental agenda: part of society - headed by civil society organizations and some international agencies - focuses on command and control and strict nature conservation. On the opposite end of the spectrum, characterised by the current government, many believe that Brazil has ‘too much protected area’. Somewhere in the middle lies the reality of those who work within a fragmented and politically divisive perspective that it may still be possible to combine nature conservation and socio-economic development.

56 Ibid.
57 ‘War on drugs is driving deforestation’, https://www.sciencefocus.com/news/war-on-drugs-is-driving-deforestation/.
3. ROLE AND RESPONSIBILITY OF LEADERSHIP IN BRAZIL, MEASURES TAKEN

KEY FINDINGS

The increase in the rate of forest fires and deforestation in Amazonia in 2019 and 2020 has highly contrasted with the country’s record from 2005-2016, a tendency which is likely to continue, given the anti-nature conservation messaging provided to land speculators and illegal loggers by the highest echelons of government.

The administration has exonerated important players in the environmental arena, slashing budgets, and changing illegal logging regulations ex post facto, all of which encourage forest and – by extension – biodiversity depletion.

In response to criticism from national and international actors, the Brazilian government has formed committees and military-led command and control operations in the Amazon region, simultaneously dismantling previously established systems, and side-lining (or excluding) civil society. However, these systems do not appear to be in operation, as deforestation numbers continued to rise even during the rainy season, mostly associated to invasions of indigenous reservations and protected forests, and encroachment into federal old growth forests by land squatters and speculators.

The shift of the Brazilian Forest Service to the Ministry of Agriculture is seen by some as a positive development; i.e. it provides the forestry sector with much needed status, and increases visibility for forest concessions and landscape restoration with native species.

Brazil showed an 84% increase in the number of forest fires in the Amazon, in the year-on-year period between January and August 2019, mostly man-made and of a criminal nature. This increase, albeit lower than what was registered in 2004, sharply contrasted with drops in deforestation registered in 2012, the lowest over a 50-year period. Inconsistent at best, Brazil’s commitment to curbing deforestation was dismantled almost as soon as it showed signs of success, and in 2016 the federal government closed down 91 of 168 IBAMA offices in the Amazon region.

In 2019 President Bolsonaro further undermined IBAMA, eliminating or blocking 30% of the agency’s budget for fire prevention, and reducing inspection funds in the Amazon by a further 15%.

The administration removed 21 of 27 regional IBAMA directors, with the consequent reduction by 38% in fines pertaining to environmental crime and deforestation. President Bolsonaro removed from office - at the height of the 2019 forest fires - Dr Ricardo Galvão, a respected scientist and director of the National Institute for Space Research (INPE), which has from the 1980’s hosted Brazil’s Amazonian mapping unit.

Defiant of the criticism from international peers, Brazil’s president publicly declared his support to landholders setting fire to the Amazon. To show this support, the national environmental self-assessment and rural registry mechanism for landholders - CAR - was postponed ‘until further notice’. This measure was received by illegal squatters - many occupy officially forested public lands - as a green light to forego fiscal and environmental obligations associated with legal land ownership, i.e. the squatter remains outside the law, and any consequent responsibility for illegal deforestation.
President Bolsonaro and his environment minister have stated that 47% of the Amazon is protected under diverse categories, and no further protected area demarcations will take place.\(^{59}\) To highlight this point, the President declared that - with some pushback from Congress - permission would be granted for mining and large-scale commercial agriculture within demarcated indigenous territories.

On a more positive note, almost at the end of the fire season, the Brazilian government acted on the 2019 forest fire emergency, launching a law and order decree for the environment – Decreto da Lei e da Ordem Ambiental, the first in the country’s history, setting out measures for the intervention by the Armed Forces to firefight, with auxiliary forces to fight crime such as the burgeoning drug and endangered species traffic. The success of the operation compelled the Bolsonaro administration to launch in a joint operation between IBAMA and the armed forces, the first ‘Green Brazil Operation’. With the help of 8,170 operators, this militaristic coalition acted on 112 environmental violations, applying R$36.37 million (US$9 million)-worth in environmental fines, mostly related to deforestation or pollution caused by mining. Green Brazil has since been absorbed by army command units as a Joint Environmental Command in Manaus and Belém. However, since this initial operation, no other actions appear to have been undertaken, and from January to March 2020, the equivalent of 80,000 football pitches were deforested in the Amazon, large swathes in the state of Pará.

On international partnerships and funding, President Bolsonaro has virtually shut down the Amazon Fund - financed by Norway and Germany’s KfW - causing a rift in his relationship with both of these previous allies. He also rejected the offer of US$22 million by President Macron to combat forest fires in the Amazon, reflecting a much expressed mind-set in the current administration that international actions interfere with the country’s sovereignty.

In light of the vacuum in leadership caused by federal authorities, the nine Amazonian governors have taken up inspections and environmental management of state forests. Further, in response to funding gaps, in 2019 the Governors of the states of Pará, Amazonas, Rondônia, Roraima, Amapá, Acre, Maranhão, Tocatins, and Mato Grosso launched the Inter-state Consortium for Amazonia, anchored in a ten-year strategic document 2019-2030. Initially started with a view towards triggering investments in the region to meet UNFCCC low carbon economy targets, more recently the states entered legal agreements to cooperate in seven areas: security, environment and sustainable development, fiscal management, planning and strategic management, public communications, education and health. Part of the agenda is to shift the Amazon Fund towards a state-based project administration, bypassing the federal government. The initiative demonstrates a pro-environment change in culture, a sign that segments in Brazilian society are aware of the need to engage in the environmental sphere to ensure sustainable development.

There has been insufficient time to determine the impact of other measures. To the Brazilian Forest Service, for example, the move to the Ministry of Agriculture - considered strategic and of high value to the country - has secured resources to promote a sustainable native forest management programme enlarging the country’s public forest concession programme, and extensive land restoration initiatives in previously ignored biomes, such as the Caatinga. Without exception, none of the senior managers interviewed in confidence for this paper agreed to be quoted by name, fearing retaliation.

\(^{59}\) Out of Brazil’s 2,201 federal, state or municipal conservation areas, 698 are parklands or integral protection areas, managed by the federal or municipal governments. The remaining 1,503 are sustainable use areas, such as national forests, extractive reserves, sustainable development areas, environmental protection zones, and zones of ‘ecological’ interest. A database for the entire protected area system called SNUC - Portuguese acronym for National Conservation Unit System - is hosted by the Ministry of Environment.
4. INTERNATIONAL EFFORTS FOR THE PROTECTION OF AMAZONIA

KEY FINDINGS

International partners continue to work with Brazil and in Amazonia to mitigate and improve forest management and nature conservation, reconciling conservation versus exploitation decisions, many on a bilateral basis with states or civil society organisations.

The 2019 forest fires served as a rallying cry for international and national partners alike, and initiatives were launched to mitigate the issues. However, more must be done to harmonise or re-initiate former alliances to avoid duplication and increase pragmatism.

Actions that circumvent the national governments, and predict direct assistance at the state level in Amazonia have been successful. In this regard, at least during the current administration(s), support to civil society and international organisations may be the more practical way to ensure action will take to halt further depletion of the Amazon.

4.1. Grants and Partners

With respect to the ‘Year of Landscape Restoration’, a World Bank-managed grant from the Global Environmental Facility for the Amazon Sustainable Landscapes regional programme has been making headway across Amazonia. Valued at US$434 million for Brazil, US$54 million for Colombia, and US$72 million for Peru, it aims over a five-year period to expand the area under legal protection and improve management of protected areas, and increase the area under restoration and sustainable management. The Amazon Fund, banked by Norway and Germany, now at about €350 million, engaged over the past 10 years in 104 conservation, education, research, land use and regularization, afforestation and landscape restoration projects. However, emptied of staff within its managing unit located in the Brazilian Development Bank (BNDES), the Fund is imminently under threat. Another mechanism, REDD+ has also financed actions against deforestation, as a carbon compensation instrument - especially in Brazil, where assessment volumes are higher -, and has contributed towards Amazon Fund replenishment. Several international donors have supported research, publications and monitoring programmes in the Amazon. Among them are: Friedrich Herbert Stiftung, KfW, GIZ, WWF-International, DFID, SIDA, USAID, the Moore Foundation, the Oak Foundation, Conservation International, Rainforest Action, TRAFFIC, and many others. Less visibly, the OTCA - Amazon Cooperation Treaty Organization - a consortium of the Amazonian countries, received funding from the Amazon Fund for landscape monitoring and water resource management in Amazonia. Colombia, which between 2017 and 2018 cut down by 10% the deforestation in its Amazon regions, received a pledge over five years of US$360 million from several donors for Amazonian conservation. This funding was promised during UNFCCC COP25 in Spain, by a consortium composed of Norway, Great Britain and Germany, in line with terms of the Paris Agreement.60

---

4.2. **After the 2019 Forest Fires**

- The Letizia Pact was signed by seven countries in the Amazon basin in response to the 2019 forest fires. Criticised for repeating past commitments without a clear plan of action, the Pact nevertheless represents a renewed regional commitment to jointly monitor data, engage in green innovation to expand afforestation and other initiatives, including improving livestock productivity to avoid further deforestation, restoration of degraded areas, and women’s empowerment.

- The G7 Biarritz meeting in August 2019 discussed a US$22 million rescue package. This package was rejected by Brazil on the grounds that the amount - considered small - indicated the lack of understanding of President Macron of the size and scope of the Amazon region; the offer was perceived by the Bolsonaro administration as putting into question Brazil’s sovereignty over its Amazonian territory.

- In September 2019, in a meeting held under the auspices of the United Nations General Assembly, international donors agreed to provide Amazonian countries through the Development Bank for Latin America - LAC, with a US$500 million grant to combat deforestation, forest fires and for preparedness.

4.3. **United Nations**

A number of United Nations agreements and conventions address the issue of forest conservation and management, having as a basis the ‘Rio Declaration’ on Environment and Development, adopted by the 1992 UN Conference on Environment and Development, held in Brazil.

- Three conventions connected to the ‘Rio Declaration’ were simultaneously opened for signature: the UN Framework Convention for Climate Change (UNFCCC), the Convention on Biodiversity (CBD), and the Convention to Combat Desertification (CCD).\(^{61,62}\)

- Further instruments are: the Non-legally Binding Authoritative Statement of Principles for a Global Consensus on Management, Conservation and Sustainable Development of All Types of Forests (Forest Principles);\(^{63}\) chapter 11 of Agenda 21,\(^{64}\) and proposals for action embedded in a long list of panels and resolutions. In particular, discussions surrounding the Post-2020 Global Biodiversity Framework, currently in discussion in the context of the CBD, directly address some of the issues covered in this paper.\(^{65}\)

- The UN Decade of Restoration 2020-2030, focuses on bridging the gap between nature conservation and economic development, working with native forest plantations on formerly deforested and now fallow land, sustainable agriculture, and biofuel cultivation, among others.

---


\(^{63}\) See General Assembly Resolution 70/199, the non-legally binding instrument on all types of forests was renamed as the United Nations forest instrument.


5. EU ACTION AND THE ENVIRONMENTAL IMPACT OF THE EU-MERCOSUR ASSOCIATION AGREEMENT

KEY FINDINGS

Actions at bilateral level that circumvent the national governments, and predict direct assistance at state level in Amazonia have been successful.

Partnerships in the area of forestry, i.e. VPA-FLEGT, may leverage better timber trade practices, particularly if they are connected to technology exchange in the areas of forest harvesting and timber processing, in addition to landscape restoration.

Reducing embodied deforestation requires various actions: negotiating the inclusion of grievance mechanisms within the current trade regime; working closely with consumers and the private sector in the EU27 to create demand for deforestation-free supply chains; clarifying EU legislation to supply chains in tropical forest countries; closely implementing legislation, encouraging buyers to visit supply chains and markets to clarify requirements; encouraging investments in forest management, landscape restoration, and the bio-forest economy.

5.1. Bilateral Assistance and EU Actions

Several countries, such as Norway, Germany and the UK provide bilateral assistance to Brazil; this assistance becomes ever more important in the face of the federal government’s anti-nature conservation stance. As a bloc, the EU has provided valuable support, including funding for a São Paulo-based campaign entitled ‘Madeira É Legal’ (‘Wood is Legal’), to encourage Brazil’s largest construction industry to source wood responsibly, with direct results on the state policy level.

At the height of the 2019 forest fires, the Commission announced to step up EU action to protect and grow the world’s forest cover to improve people’s health and livelihoods, and ensure a healthy planet for future generations. In line with the EU’s objectives to halt world forest cover loss by 2030, this announcement responded to calls from the European Parliament and the Council. The Commission proposed a partnership approach based on close cooperation with producer and consumer countries, business and civil society. It established five priorities to step-up EU action against deforestation:

- Reduce the EU consumption footprint on land, and encourage the consumption of products from deforestation-free supply chains in the EU;
- Work in partnership with producing countries to reduce pressure on forests and to ‘deforest proof’ EU development cooperation;
- Strengthen international cooperation to halt deforestation and forest degradation to encourage restoration;
- Redirect finance to support more sustainable land use; and
- Support the availability of, quality of, and access to information on forest commodity supply chains; and support research and innovation.

5.2. Union Civil Protection Mechanism

During the 2019 Amazon wildfires, at the invitation of Bolivia, the European Union sent a team via the Union Civil Protection Mechanism to help the country combat the forest fires, which have been the worst in the country’s history. The EU-specialised multi-national team provided Bolivian firefighters with tents, water pumps, and an operation centre, as well as training for its future use. The team also

---

66 COM(2019)352, Communication from the Commission on ‘Stepping up EU Action to Protect and Restore the World’s Forests’.
Brazil and the Amazon Rainforest - Deforestation, Biodiversity and Cooperation

set up a remote basecamp, designed to shelter 200 people in tents with electricity and water. Even with the EU’s assistance, Bolivia lost more than six Mha of forest and grassland to forest fire, mostly induced to lay ground for cattle ranching and agriculture.

5.3. FLEGT and EUTR

Another important aspect of the EU’s commitment to curbing deforestation was the 2003 Forest Law Enforcement Governance and Trade (FLEGT) Action Plan, and the key pieces of legislation derived from that, the FLEGT Regulation and the EU Timber Regulation (EUTR). Those aimed at reducing illegal logging by strengthening sustainable and legal forest management, improving governance and promoting trade in legally produced timber through volunteer partnership agreements (VPAs) with tropical timber producing countries. In the Amazon region, a FLEGT-VPA has been initialled between the EU and Guyana. For Amazonian timber traders the most important aspect of FLEGT has been to ensure products are compliant with the terms of the EU Timber Regulation (EUTR), to secure timber sales in its second most important worldwide market. The EU-Mercosur Association Agreement presents an opportunity to revive conversations on FLEGT, with a greater focus on technology exchange, and addressing issues related to embodied deforestation consumption, as well as greater efficiency in logging practices and timber usage. Brazil, and other countries of the Amazon region received support from FLEGT for a number of projects related to information sharing, legal reform, timber legality assurance, transparency, monitoring and domestic markets. In Brazil, this support particularly addresses timber exporters’ concerns regarding EUTR requirements and compliance, and due diligence.

5.4. EU-Mercosur Association Agreement, Challenges and the Way Forward

The EU-Mercosur Association Agreement is seen by some as an opportunity for the EU to promote a new type of trade policy, which includes provisions on labour rights and the environment. To this end, negotiators have emphasised the inclusion of a sustainable development section - Section 14 - committing both parties to the 2015 Paris Agreement and to take action against deforestation. The justification for this arises from the general exception clause under World Trade Organization rules - Article XX of the GATT, whereby trade restriction measures may be taken ‘necessary to protect human, animal or plant life or health’ or related to the exhaustion of natural resources. However, no legal recourse is applicable unless the so-called violation “constitutes arbitrary and unjustified discrimination or a disguised restriction on trade.” Because complex issues such as biodiversity depletion and climate change are often judged on non-objective criteria, the challenge lies in finding a causal link between economic injury and non-compliance with the targets listed in the trade and sustainable development chapter (TSD).

---

The very sustainable development provisions which determine the Paris Agreement and CBD are unforeseen in the current trade regime; trade agreements are legally binding, but are not subject to punitive economic measures on non-compliance, relying only on cooperation and settlement through dialogue. One proposal is for members of the WTO to adopt a climate waiver, to minimise the economic and political risk of the collision between trade rules and climate ambitions, which would entail a waiver from trade rules for national measures that discriminate on the basis of carbon and other greenhouse gases used or emitted in making a product, among others. Although it would resonate with the public in many countries, working with the WTO to transform its largely diplomatic environmental agenda into a robust and applicable policy instrument may not be easily attainable. For the critics of the Paris Agreement and the CBD, for example, the WTO remains a bastion of neutrality, which promotes trade and commerce as the underlying solution to poverty alleviation. In this light, “the lack of dispute settlement between States with regard to sustainable development and the environment is due to the relative appetite of the parties to tighten the provisions on this matter.” On one side, the EU27 signal their political mandate to undertake the highest standards when entering any agreement, and in particular one containing such a plethora of climate change, biodiversity, and human rights challenges. On the other side, the climate in the Mercosur is one of recalcitrance towards sustainable development provisions as representing a ‘developed world’ perspective, with little to be gained on the side of the farmers, miners, loggers and producers.

20 years in the making, the EU-Mercosur Association Agreement text reflects long-standing global commitments where trade should both promote sustainable development and the manner in which each signatory achieves its multilateral environment treaties. On the side of Mercosur, it highlights – and addresses the concerns voiced by Brazil - the sovereign right of the signatories to “the enactment of laws to protect health and the environment, including in cases of inconclusive scientific information.” The EU argues that the circumstances surrounding deforestation of the Amazon region, and indeed all of Brazil’s forests, as well as the Argentine Chaco, pose a high risk that embodied deforestation products will be the norm in trade relations between the two economic blocs, in violation of domestic and international standards.

The EU’s insistence on the sustainability provision in the Agreement meets the expectations of its own public, and shows coherence with the bloc’s investments in multi-lateral fora such as the UNFCCC and environmental financing under the Bretton Woods institutions. It is key, however, that the EU is able to demonstrate its commitment to consolidate the environmental requirements that it applies within its own territory, i.e. pre-determined ‘red lines’ in the agreement must respect the principle of reciprocity. Although recent declarations by Brazil’s administration appear to contradict the country’s commitment to its international environmental agreements, the EU-Mercosur Association Agreement may be the right recipe to shift the focus within the sustainable development portfolio towards a commercial cooperation and private sector partnership model guided by hybrid investment in nature conservation that generates economic development.

---
REFERENCES

Books and Publications

- Neves E.G., Archaeological cultures and past identities in precolonial central Amazon. https://www.academia.edu/4912952/Archaeological_cultures_and_past_identities_in_prcoloni_central_Amazon
- Pena-Venegas, C., Stomph, T., et al. Differences in Manioc Diversity Among Five Ethnic Groups of the Colombian Amazon. Diversity. 2014, 6, 792-826; https://doi.org/10.3390/d6040792

• Sonter, Laura J., Herrera, Diego, Barrett, Damian J. et al. Mining drives extensive deforestation in the Brazilian Amazon. In Nature Communications. 2017 https://www.nature.com/articles/s41467-017-00557-w


United Nations Resolutions and Documents

• https://unfccc.int/process-and-meetings/the-convention/what-is-the-united-nations-framework-convention-on-climate-change


• https://unfccc.int/news/2017-was-among-top-three-hottest-years-on-record

Web-based Publications

• https://rainforests.mongabay.com/amazon/amazon-rainforest-facts.html

• https://www.nature.com/scitable/topicpage/hybridization-and-gene-flow-34546/

• https://thebrazilnutstory.wordpress.com/pollination/

• https://www.livescience.com/15849-underground-river-discovered-beneath-amazon.html


• https://mapbiomas.org/noticias


• https://www.cigionline.org/publications/content-wto-climate-waiver


• http://philip.inpa.gov.br/publ_livres/2015/Livro-Hidro-V2/Livro%20Hidrel%C3%A9tricas%20V.2.pdf
Media/Press

- [https://www.amazonfrontlines.org/chronicles/indigenous-conservation-amazon/](https://www.amazonfrontlines.org/chronicles/indigenous-conservation-amazon/)
- [https://ideas.ted.com/this-airborne-river-may-be-the-largest-river-on-earth/](https://ideas.ted.com/this-airborne-river-may-be-the-largest-river-on-earth/)
- [https://www.oei.es/historico/divulgacioncientifica/reportajes_055.htm](https://www.oei.es/historico/divulgacioncientifica/reportajes_055.htm) - one example among a plethora of articles explaining and critical of SIVAM are available on the world wide web
- [https://journals.openedition.org/confins/21176](https://journals.openedition.org/confins/21176)
- [https://www.sciencefocus.com/news/war-on-drugs-is-driving-deforestation/](https://www.sciencefocus.com/news/war-on-drugs-is-driving-deforestation/)
- [https://www.survivalinternational.org/tribes/yanomami](https://www.survivalinternational.org/tribes/yanomami)
- [http://www.flegt.org/map-of-projects/#countries/BRA](http://www.flegt.org/map-of-projects/#countries/BRA)
For the largest tropical rainforest on Earth, an aggravated forest fire and deforestation regime in Amazonia put at risk the world’s richest biodiversity assets and a major climate regulator. For the EU27, it highlights the need to associate the question of embodied deforestation consumption by placing deforestation-free supply chains at the centre of negotiations surrounding the EU-Mercosur Association Agreement, given the volume of trade between these economic blocs in meat, leather, soy, coffee, rubber, wood pulp, biofuel and timber.

This document was provided by the Policy Department for Economic, Scientific and Quality of Life Policies at the request of the committee on the Environment, Public Health and Food Safety (ENVI).