

An aerial photograph of a landscape. The top half shows a hilly area with significant deforestation, where brown, eroded soil is exposed in a network of paths and gullies, contrasting with the remaining green vegetation. The bottom half shows a dense, lush green forest. A black text box is overlaid on the bottom right of the image.

DEFORESTATION- AND CONVERSION- FREE SUPPLY CHAINS

A GUIDE FOR ACTION



Forest outside Sounga village in the Gamba district, Gabon. © WWF / James Morgan

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Cover photo
Aerial view of forest next to oil palm clearing in Sabah, Borneo, Malaysia.
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For further information, please visit our website at:
<https://deforestation-free.panda.org>

EXECUTIVE SUMMARY

The world's most valuable natural ecosystems – forests, savannahs, grasslands and peatlands, among others – are being destroyed at an alarming rate, endangering life and livelihoods around the globe. These crucial natural ecosystems help regulate the environment, maintain biodiversity, and support food security as well as human health, rights and livelihoods.

Much of this destruction can be attributed to just seven key commodities: cattle, soy, palm oil, wood fiber, cocoa, coffee and rubber. The first three of these alone are responsible for 53% of recent agriculture-driven deforestation (cattle, 37%; palm oil, 9%; soy, 7%) and play a key role for conversion of other natural ecosystems. These three commodities and timber, pulp and paper were the [focus of the Consumer Goods Forum \(CGF\) resolution, signed in 2010 to achieve zero net deforestation by 2020](#). Since then, only 56-66% of large companies have made commitments. These pledges are welcome and necessary. However, ten years later, there is still a large gap between aspiration and implementation.

Determining whether and how a company has put its pledge into action remains a struggle. For those companies that have made progress, documenting whether their actions actually reduce [deforestation and conversion](#) is even more difficult to gauge. Only 41-46% of companies report on the progress made toward their commitments, and the average progress reported against targets is only 55% – with a great share of this progress achieved through certification schemes that have varying standards and impacts on deforestation and conversion – and need complementary landscape actions to fully address the issue. Progress reported against targets, based on the reporting of commitments progress from Supply Change, varies among commodities: timber, pulp and paper sectors report 67% progress against targets, cattle 55%, palm oil 50% and soy 48%.

Continued high rates of deforestation and conversion demand stronger and more innovative corporate action and reporting, with systems and practices to bring smarter implementation and greater transparency in reporting progress against commitments. Businesses must modify individual supply chains to engage their suppliers more comprehensively, by buying only from those with a sustainable total footprint. More integrated approaches where corporate commitments work within policy frameworks and trade standards alongside increased financial incentives and governance are needed to enable a just transition to sustainable agricultural and forestry production.

With the ever increasing urgency to tackle the climate and nature crises, much greater leadership from the private sector is necessary, playing a proactive role in convening and working alongside other private sector stakeholders, governments and the finance sector. This includes direct advocacy toward supply- and demand-side governments, for example in the [European Union \(EU\)](#), UK and China, where there is strong momentum to build more ambitious legislation. Another crucial platform is UK and Indonesia-led [Forest, Agriculture and Commodity Trade \(FACT\) Dialogue](#) and its upcoming business platform. Other multi-stakeholder opportunities, sectoral or landscape/ jurisdictional approaches can deliver impact at scale and at pace, following the examples of the [Forest Positive Coalition](#) or the Amazon Soy Moratorium, in which civil society and the private sector worked together to rapidly scale their efforts.

Financial institutions also have an immense opportunity to help reduce deforestation and conversion by being proactive in the commodity supply chain. They can have a direct impact on activities that are linked to environmental degradation by developing and supporting viable economic models for smallholders at scale as well as removing companies with unsustainable practices from their portfolios.

Through stronger collaboration and by looking beyond their direct operations, these actors together have an important role to play in supporting local communities that need land and food security. They can also incentivize local actors to adopt sustainable models, receive financial and commercial guarantees through funding or benefit sharing, and get facilitated access to markets, tools, technology and quality goods.

Our planet and its inhabitants cannot wait another decade to see corporate commitments bear fruit. The dual impacts of climate change and nature loss are already being strongly felt, endangering biodiversity, human health, livelihoods, quality of life and the global economy.

In this report, we review the barriers to and requirements for progress, and explore the role that businesses can play in halting deforestation and conversion. While land degradation is not the focus of this report, it is important to note that degradation is often followed by land clearing and has detrimental impacts on natural ecosystems. Responses to address deforestation, conversion and degradation have to reinforce each other for more effective progress.



Fires in the state of Mato Grosso do Sul, Brazil, 2020. © WWF Brazil / Silas Ismael

OUR PLANET'S NATURAL ECOSYSTEMS ARE AT RISK MAINLY DUE TO UNSUSTAINABLE AGRICULTURAL PRODUCTION

Our natural ecosystems – forests, grasslands, and savannahs among others – are crucial not only for their climate-regulatory functions, but for maintaining biodiversity and supporting human health, rights and livelihoods. Yet the ongoing global rate of deforestation and conversion is staggering, especially along well-identified fronts where valuable natural ecosystems are being degraded or cleared and transformed at an accelerating pace.



Aerial view of the border between oil palm monoculture and native forest along the Ariari River on the border between the Departments of Meta and Caquetá in the Colombian Amazon, Colombia. 2016. © WWF Colombia / Cesar David Martinez

THE IMPORTANCE OF NATURAL ECOSYSTEMS

The world's forests currently cover 31% of the Earth's surface¹, down from the approximately 50% they covered 8,000 years ago², while rangelands – land on which vegetation is predominantly grasses, grass-like plants, forbs or shrubs – account for 54%³. These ecosystems are essential to sustaining a liveable climate, maintaining biodiversity and health, and as a source of subsistence for many humans.



Climate

The carbon stored by tropical rainforests, grasslands, savannahs and peatlands around the globe is estimated at 1,050 gigatonnes⁴. On average, natural ecosystems store 150-700 tonnes of carbon per hectare – excluding deserts and semi deserts – representing up to nine times the average carbon stored in croplands⁵. After oceans, forests are the world's largest storehouses of carbon and they alone provide a carbon sink that absorbs 7.6 billion tons of CO₂ per year – 1.5 times more carbon than the United States emits annually⁶. Global climate targets cannot be addressed without halting deforestation and conversion of natural ecosystems. Ending ecosystem conversion, preserving the forest and grassland carbon sink, and restoring forests, grasslands and savannahs⁷ – has the potential to avoid more than one-third of global emissions.

Biodiversity

These natural ecosystems also help purify our air, supply water and maintain biodiversity by offering habitats that support a multitude of species and sustain genetic variety. Forests are home to 80% of the world's amphibian species, 75% of bird species and 68% of mammal species⁸, including 10% in the Amazon⁹ and 5% in the Cerrado respectively¹⁰. Just between 2010 and 2013, more than 400 previously unknown species were discovered in the Amazon rainforest alone¹¹. Old-growth natural grasslands and savannahs also have extremely rich, biodiversity¹². In the Cerrado, 40% of the species are unique to that region¹³.

Health

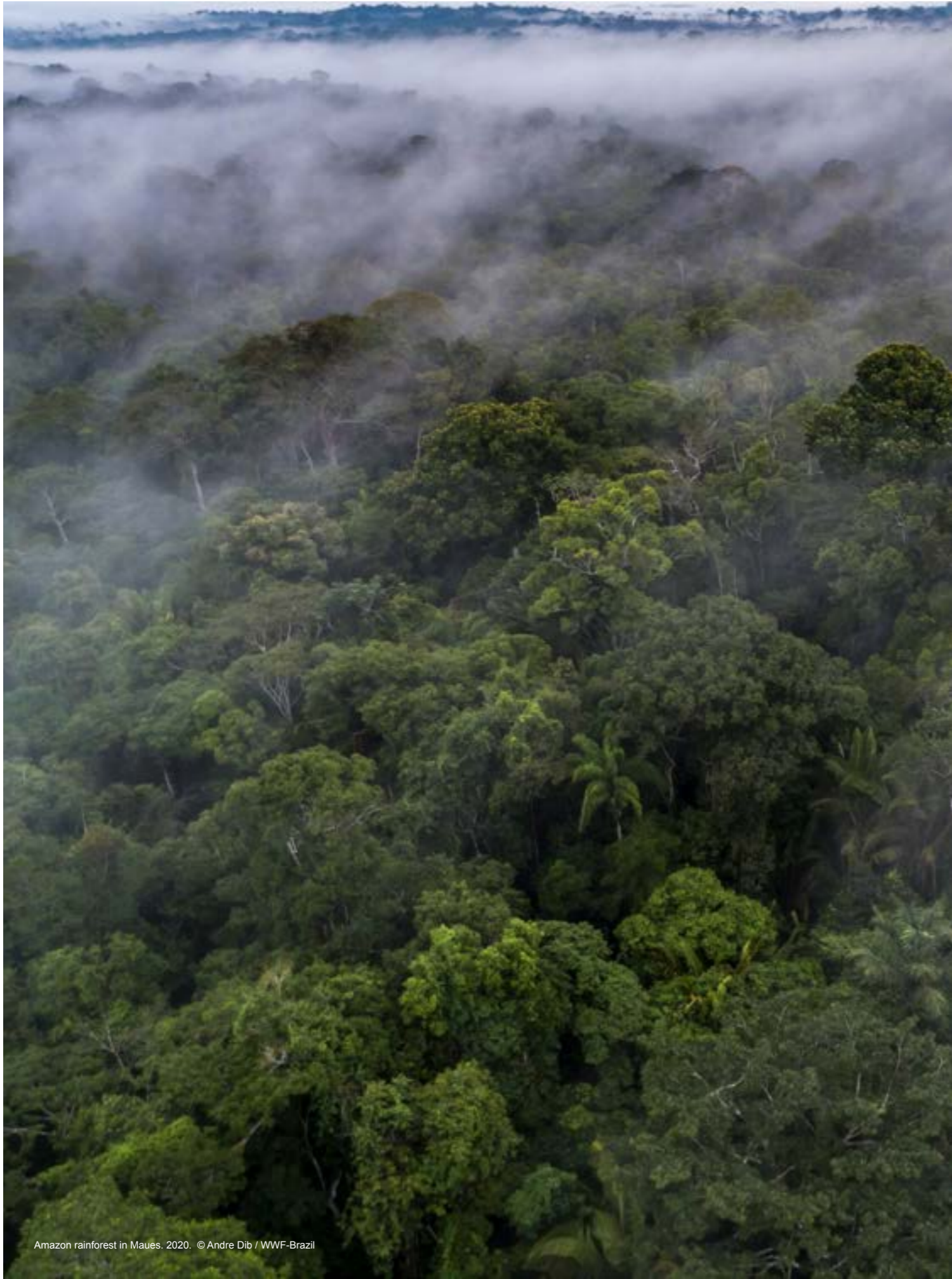
Healthy and stable natural ecosystems are critical to prevent the spread of zoonoses, infectious diseases caused by pathogens that have jumped from an animal to a human. Deforestation and conversion opens a Pandora's box by causing numerous issues that compound increased risk. Scientific studies have shown that fragmented habitats and hunting sites can alter ecosystems¹⁴, resulting in higher densities of certain types of animals, such as rodents, which can carry higher levels of zoonotic diseases¹⁵.

The World Health Organization has recorded over 200 such diseases, including Ebola, malaria, Lyme, Nipah, and Lassa, many of which have each been linked to deforestation. Several studies have also established a link between deforestation and emerging infectious [diseases similar to Covid-19](#)¹⁶. Moreover, a quarter of modern medicines, worth an estimated \$180 billion a year, originate from tropical forest plants¹⁷.

Food security, livelihoods & human rights

Over a billion people live in and around forests and rely on them for food, shelter, energy or revenue¹⁸, as well as millions in natural grasslands and savannahs¹⁹. Deforestation and conversion has resulted in the loss of rights, lands, culture, identity and territories of indigenous peoples and local communities as well as major environmental impacts.

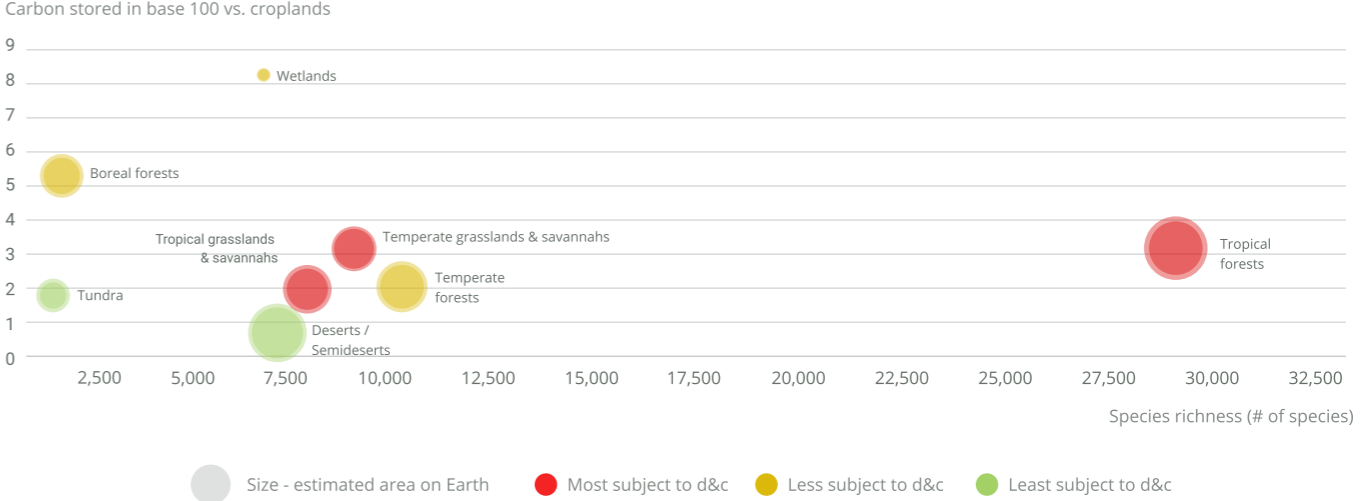
If one were to translate the overall value of ecosystems into economic indicators – although they are irreplaceable – they would be worth more than \$150 trillion, nearly double the value of global stock markets and ten times that of gold stocks²⁰. A transition to more sustainable use of the remaining natural ecosystems, as well as more sustainable food production systems, such as agroforestry and conservation agriculture, is needed to better integrate with natural systems and provide greater resilience against climate change and other shocks.



Amazon rainforest in Maues. 2020. © Andre Dib / WWF-Brazil

CARBON IN NATURAL ECOSYSTEMS

Tropical forests, tropical savannahs and temperate grasslands store, on average, 3.0, 1.8 and 3.0 times more carbon per hectare, respectively, than croplands. Protecting these ecosystems is critical to achieving global climate and biodiversity goals.



Source: IPCC and NASA Earth Observatory

DEFORESTATION AND CONVERSION RATES ARE STAGGERING

Despite the vital nature of the world's natural ecosystems, [deforestation and conversion](#) continue at an alarming rate.

In the last two decades, every year on average, about 13 million hectares of forest were destroyed, according to [data published by the Food and Agriculture Organization of the United Nations \(FAO\). Global Forest Watch \(GFW\)](#) data paints a similar picture, showing that every year on average 10 million hectares of forest loss was destroyed, driven primarily by agriculture. Most of this loss is in the tropics and sub-tropics. An area roughly twice the size of the UK has been lost to deforestation in just over a decade in the tropics and subtropics alone, according to WWF's recently released report, [Deforestation fronts: Drivers and responses in a changing world](#). Seven key agricultural and forest commodities are the main cause of this decline.

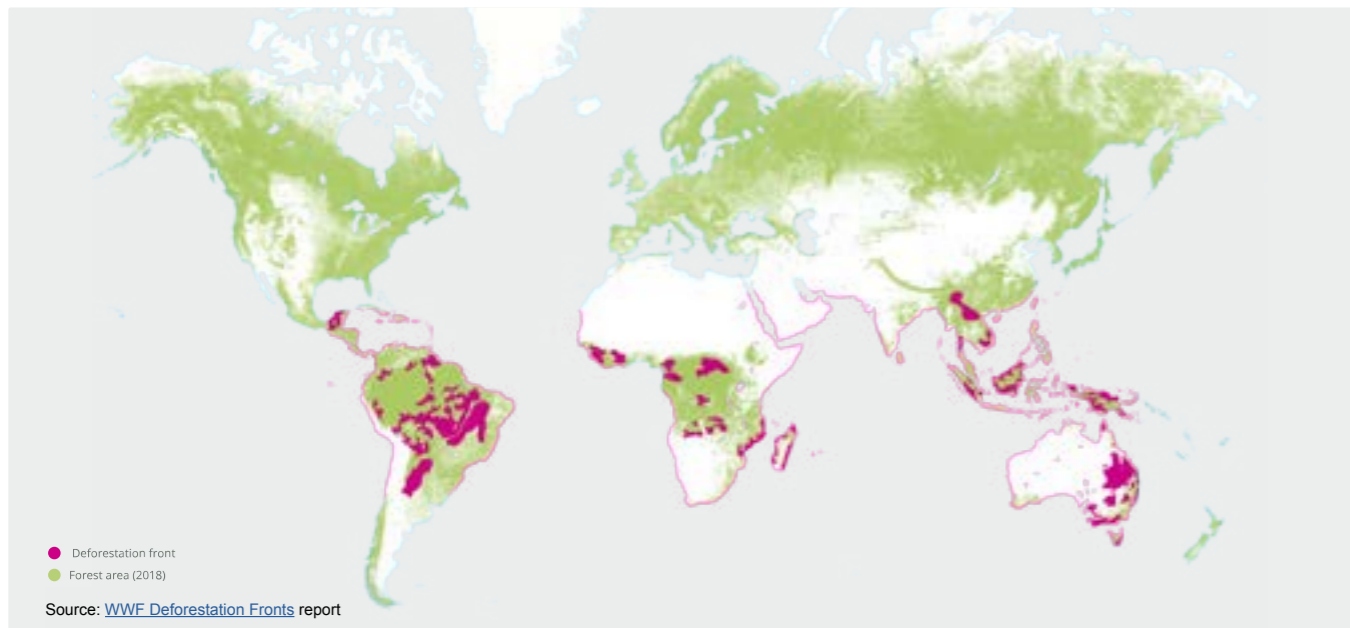
Deforestation and conversion is uneven across geographies. Based on WWF analysis, more than half of total deforestation in Latin America, Sub-Saharan Africa, Southeast Asia and Oceania has been concentrated in 24 deforestation fronts. Two-thirds of the forested area along these 24 fronts today is irreplaceable primary or intact forest²². It includes the Amazon, the world's largest tropical rainforest, where 8% of the total surface has been converted between 2000 and 2018, or 51 million hectares, an area as large as Spain²³.

There is less data available for other natural ecosystems as, until recently, land conversion assessments focused mainly on forests. However, the data that is available shows that conversion is increasing at an alarming rate. The Cerrado biome, the largest savannah region in Latin America, lost 15% of its total surface (29 million hectares) in just two decades, from 2001 to 2020²⁴. The North American Great Plains, another conversion hotspot, lost 5.6 million hectares of surface area to conversion between 2014 and 2018, leading to converted areas representing around 37% of the total surface of the Great Plains²⁵.

Deforestation and conversion tend to be preceded by fragmentation that leads to degradation, which is also increasing at a rapid pace²⁶. For example, the Amazon, the largest rainforest in the world, has been damaged by degradation as much as deforestation, leading it to releasing more carbon than it has stored over the past decade²⁷.

There are many contributing factors behind this, such as illegal harvesting of timber, unsustainable forest production and management, alongside an increasing number of fires, droughts, as well as pests and diseases that increase tree mortality, all of which are aggravated by climate change²⁸. And most of what remains of the world's savannahs and grasslands is also being steadily degraded, by wildfires and intensive use and management.

Deforestation fronts²⁹

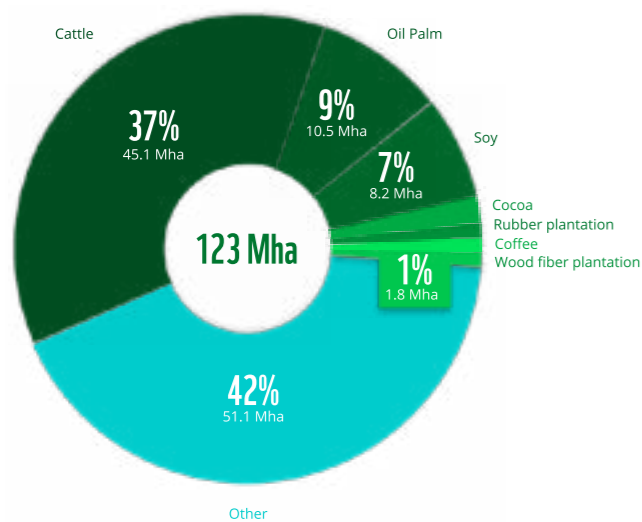


A FEW AGRICULTURAL COMMODITIES BEAR OUTSIZED RESPONSIBILITY

Between 2001 and 2015, agricultural commodities contributed to 39% of global tree-cover loss – including both deforestation and temporary losses, according to analysis published by the World Resources Institute (WRI)³⁰. Within the range of these agricultural commodities, three – cattle, palm oil, and soy – generated more than half of deforestation attributable to agriculture between 2001 and 2015. Wood fibre plantations were behind 1% of deforestation. Even these figures underestimate the total impact of these commodities on ecosystems as the data is restricted to forests and does not take into account the large-scale conversion of grasslands and savannahs.

A few agricultural and forest commodities bear outsized responsibility

Agriculture-driven deforestation per commodity (2001-2015, Goldman et al.)



Source: Goldman et al.

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This report spotlights four key commodities (soy, palm oil, beef and wood fibre plantations), which were the focus of CGF's zero net deforestation pledge in 2010. Cattle production has displaced the most forest by far, accounting for 37% of agriculture-driven deforestation between 2001 and 2015. It is also the leading force – with soy – behind conversion of grasslands and savannahs, such as Latin America's Chaco and Cerrado regions. Note that soy production – responsible for an estimated 7% of agriculture-generated deforestation through this proxy – might have a larger share in overall deforestation and conversion due to indirect land use change in certain countries such as Brazil.

Timber, pulp and paper, including wood fibre plantations, mainly play a key role in forest degradation. Illegal logging and unsustainable forest management can have a particularly detrimental impact on climate change and biodiversity since old growth forests have much greater carbon storage and biodiversity than newly planted trees. Among other issues, unsustainable wood fibre plantations can damage soil health, affect water availability, and lead to resource scarcity for local communities.

Note that coffee and cocoa are two additional contributing commodities, each causing 2% of agriculture-driven deforestation. Moreover, their levels of deforestation are increasing and their impacts are expected to become more pronounced in the near future due to increasing demand, climate change impacts and decreasing productivity. Rubber production is also accounting for 2% of agriculture-driven deforestation, with a deforestation rate stabilised since 2005.

The connection between these commodities and the leading deforestation and conversion fronts is clear. Beef and soy production are the main drivers of deforestation and conversion in Latin America, in which nine of the 24 most important fronts are found, while beef, coffee and cocoa production contribute to deforestation and conversion in eight fronts in sub-Saharan Africa – yet subsistence agriculture is also a major driver. Southeast Asia deforestation, in turn, with seven fronts, is primarily driven by the production of palm oil, and to a lesser extent the production of cocoa, coffee, rubber, pulp and paper and other commercial agricultural crops such as maize. In addition, beef production is driving deforestation and conversion in Southeast Australia. Wheat, corn and soy are major drivers of the large-scale conversion of the North American Great Plains.

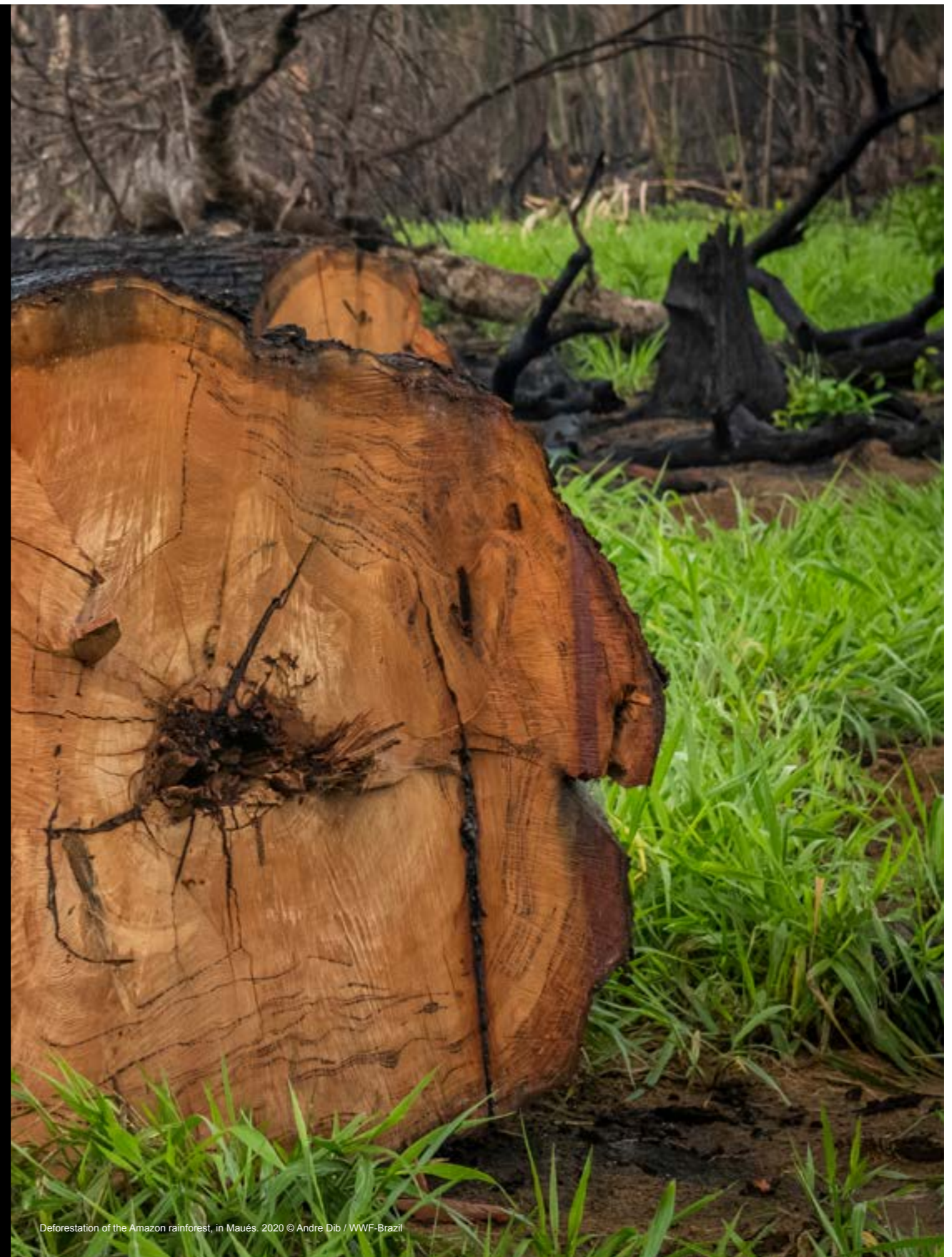


Two families at Bukit Garam, Kinabatangan, Sabah practicing BMP (Best Management Practice) for oil palm on their own land. 2017. © WWF-Malaysia / Mazidi Abd Ghani

EFFORTS BY THE PRIVATE SECTOR NEED TO SCALE UP CONSIDERABLY TO HALT THE DEFORESTATION AND CONVERSION CRISIS

An increasing number of companies have made voluntary commitments to reduce their negative impact on critical landscapes, prompted by multiple factors such as legislation, public awareness, or the need to mitigate sourcing and procurement risks. The 2010s showed encouraging momentum, illustrated by declarations to take action by groups of diverse stakeholders (CGF, NYDF) and by individual company commitments. But the gap between implementation and action remains wide. Much more needs to be done to achieve tangible impact in halting the destruction of natural ecosystems and to restore them while ensuring food security for everyone.

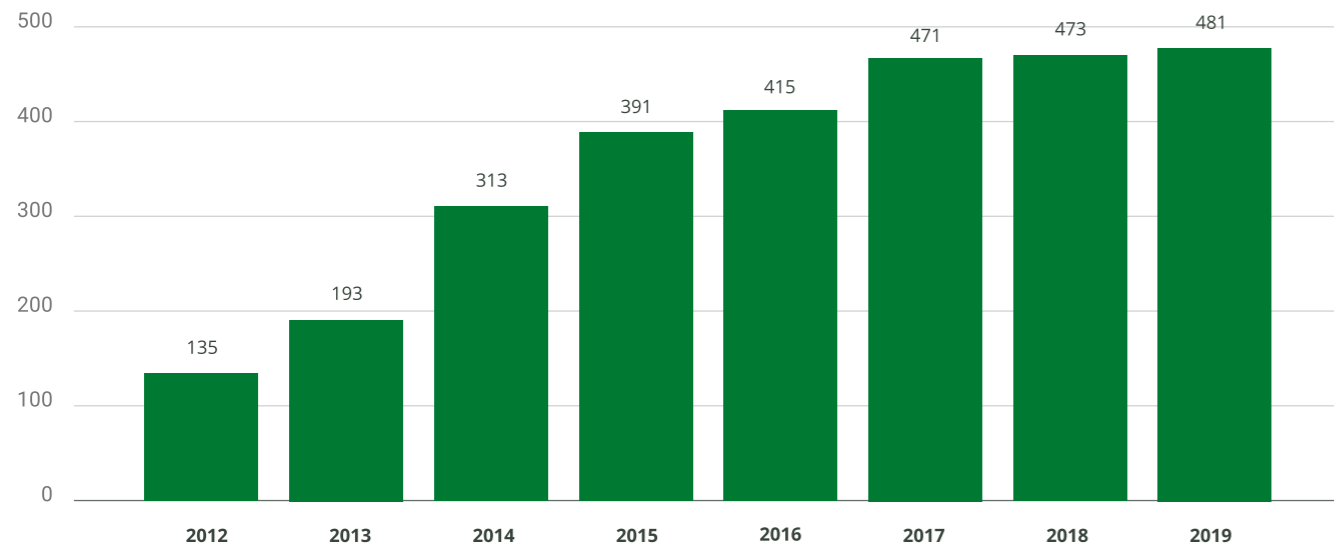
This section describes the current situation by commodity and the underlying reasons for slow progress on commitments.



Deforestation of the Amazon rainforest, in Maués. 2020 © Andre Dib / WWF-Brazil

DECLARATIONS HAVE LAID SOME GROUNDWORK

The number of companies is reaching a plateau



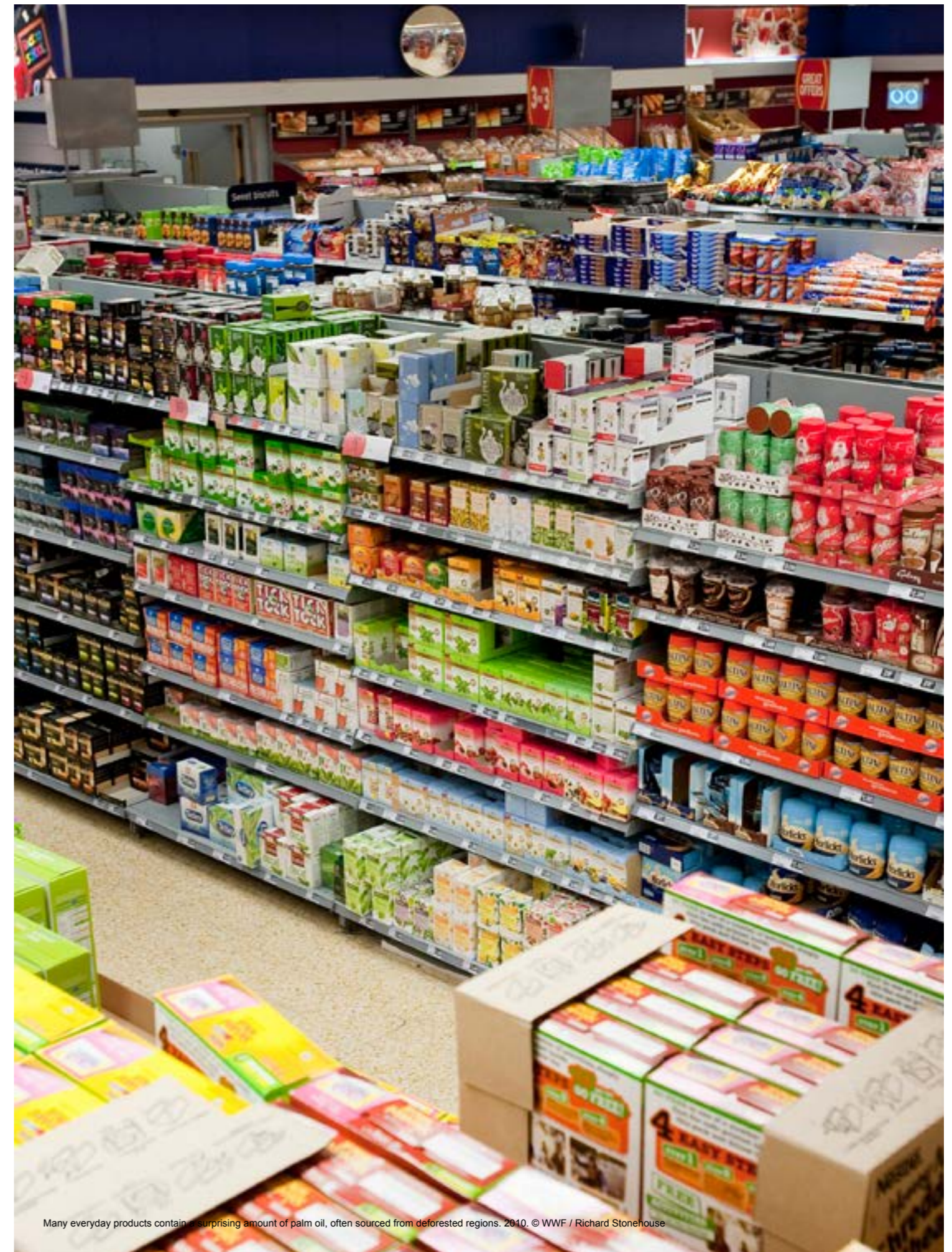
Source: Supply change

The CGF pledged in 2010 to mobilise its collective resources toward achieving zero net deforestation by 2020, with a focus on four key commodities: soy, palm oil, beef and timber, pulp and paper. Out of this CGF commitment was born the [Tropical Forest Alliance \(TFA\)](#), a multi-stakeholder partnership platform established to support companies through the ongoing global transition to deforestation-free supply chains for several commodities, including those targeted by the CGF.

Many stakeholders have since endorsed declarations to act. One example is the [New York Declaration on Forests \(NYDF\)](#), a voluntary declaration made at the United Nations Summit in 2014 and endorsed by 200 different entities. The NYDF set ambitious targets across three areas: ending natural forest loss and restoring degraded and deforested lands, supporting the private sector in eliminating deforestation from major agricultural supply chains and providing financial support for emissions reductions related to degradation and deforestation. However, the NYDF completely overlooked the conversion of other natural ecosystems.

Building on the NYDF and launched in the context of the Paris Climate Agreement in 2015, two Amsterdam Declarations were also created by coalitions of European governments – one on deforestation and one on palm oil – that together turned into an implementation partnership in 2016. This partnership aims to support the private sector in the fight against deforestation by expanding market demand for sustainable commodities. It is focused primarily on palm oil and, to a lesser extent, on cocoa and soy, but not on beef.

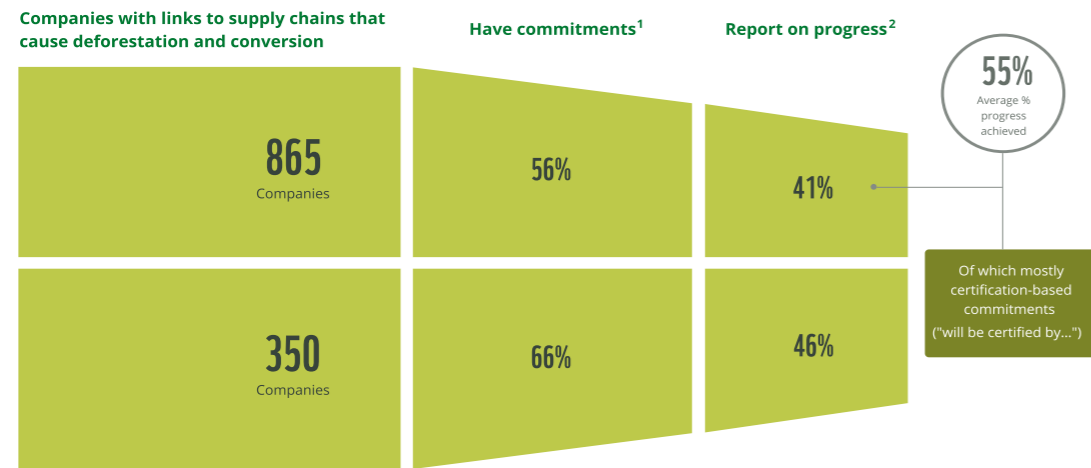
While there have been many commitments from large companies over the years, especially in the two years immediately following the NYDF endorsement, the rate of increase in these commitments has recently slowed. In addition, and most significantly, current commitments have had a limited impact and completely failed to meet targets, with deforestation and conversion continuing at alarming levels. It is clear that progress to date related to voluntary business commitments is not enough.



Many everyday products contain a surprising amount of palm oil, often sourced from deforested regions. 2010. © WWF / Richard Stonehouse

COMMITMENTS' SCOPE AND AMBITION ARE INSUFFICIENT AND ABOVE ALL, THERE IS A LARGE IMPLEMENTATION GAP

Business progress



1. Considering companies that have a deforestation and conversion commitment for at least one of the commodities that they are exposed to (it doesn't necessarily cover all operations)
 2. Based on the share of commitments with reporting. For Supply Change, it is included within the interval of 37% of companies reporting progress on all their commitments, and 46% of companies reporting progress on at least one commitment.

Source: Forest500, Supply Change

A number of companies with forest and ecosystem-risk commodities within their supply chain have committed to voluntarily address the issues of deforestation and conversion.

These commitments have varied in their scope, from commodity-specific commitments to overall gross or net zero deforestation and zero conversion. Overall, scope of commitments were limited, with a mere 2% of commitments including conversion of all natural ecosystems alongside forests. The schemes deployed to support these commitments have also varied – most company commitments to address commodity-driven deforestation and conversion rely heavily on certification schemes for specific commodities.

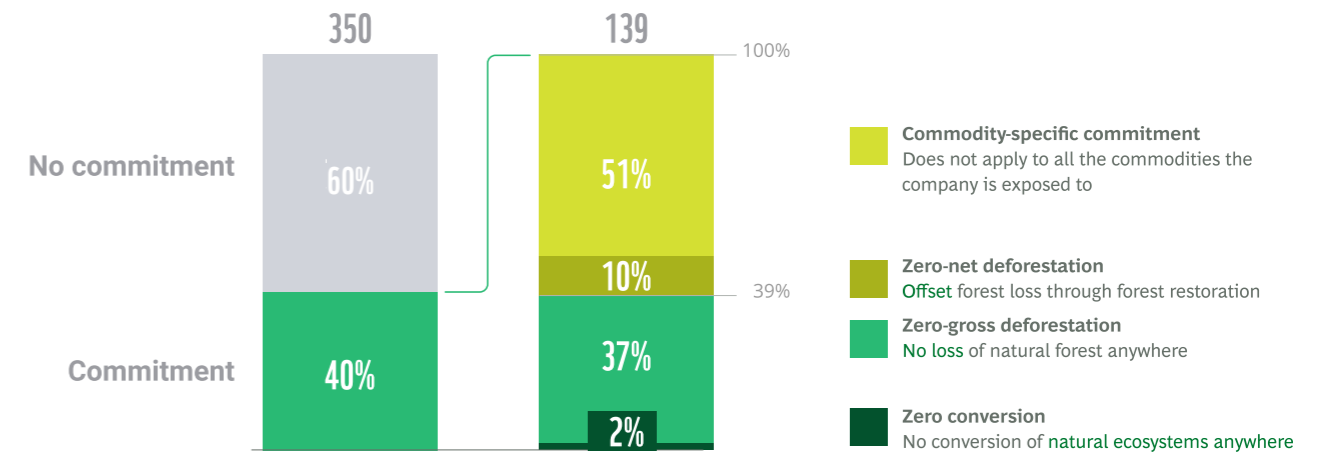
Out of 865 companies assessed by [Supply Change](#) in March 2020 that had forest-risk commodities within their supply chains – including members of the CGF, which committed to halting deforestation over ten years ago – just 56% had made one or more commitments, i.e., 489 companies with a total 759 commitments. Regarding [Forest 500](#) companies – many of which are also CGF members – out of the 350 assessed in January 2021, 66% had made commitments toward deforestation- and conversion-free supply chains.

For the companies that have made commitments, there is a clear implementation gap, as only about 46% of assessed companies report on their commitments in the Forest500 best-case scenario, compared to 41% for the Supply Change dataset. In the Supply Change set, the average progress in achieving those commitments is just 55%.

Note that these are best-case scenarios. Forest 500 and Supply Change include only large companies, and many medium-sized and smaller stakeholders are missing – companies that have likely not committed or acted publicly to eliminate deforestation or conversion. This is especially true given that these markets are highly fragmented, especially at the upstream end of the commodity supply chain.

The low levels of commitments, reporting and achievements are directly reflected in the commitment-compliant volumes of the various commodities. In the end, both committed volumes and commitment-compliant volumes are very low compared to estimated global production of beef, palm oil, soy and timber, pulp and paper. Except for beef, which reached 21% of commitment-compliant volumes, the share of commitment-compliant volumes is below 10% for all other commodities – 9%, 6% and 9% respectively for palm oil, soy and timber, pulp and paper.

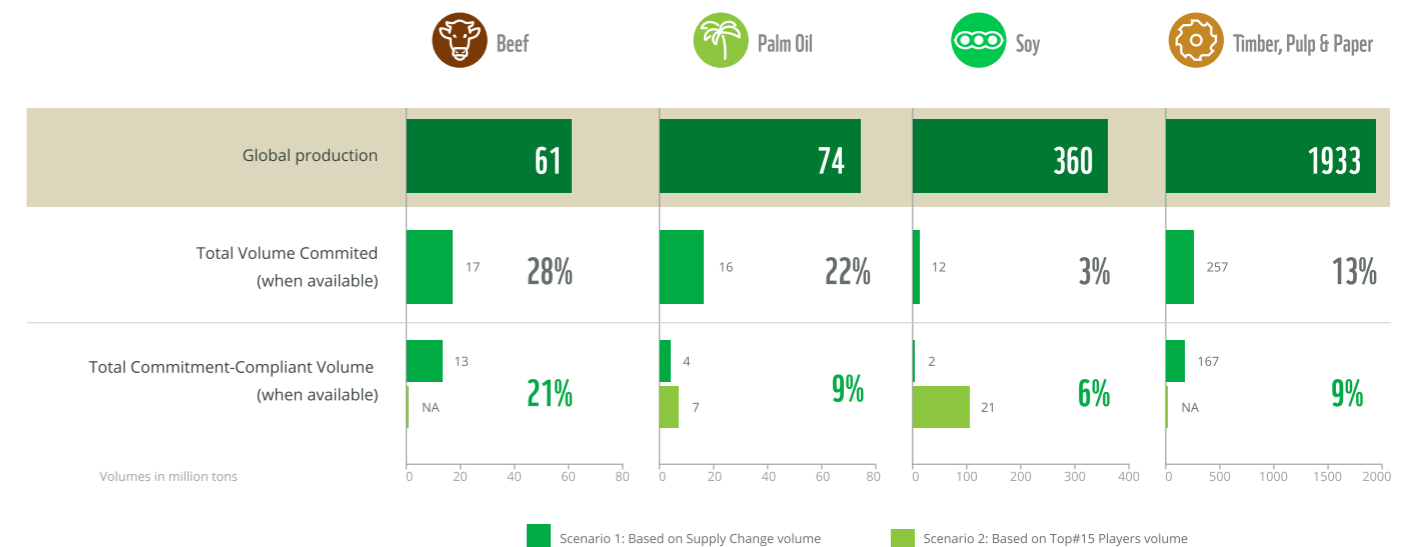
Company-wide commitments by large companies



Note: Forest500 uses the Accountability Framework definitions

Source: Forest500, Supply Change

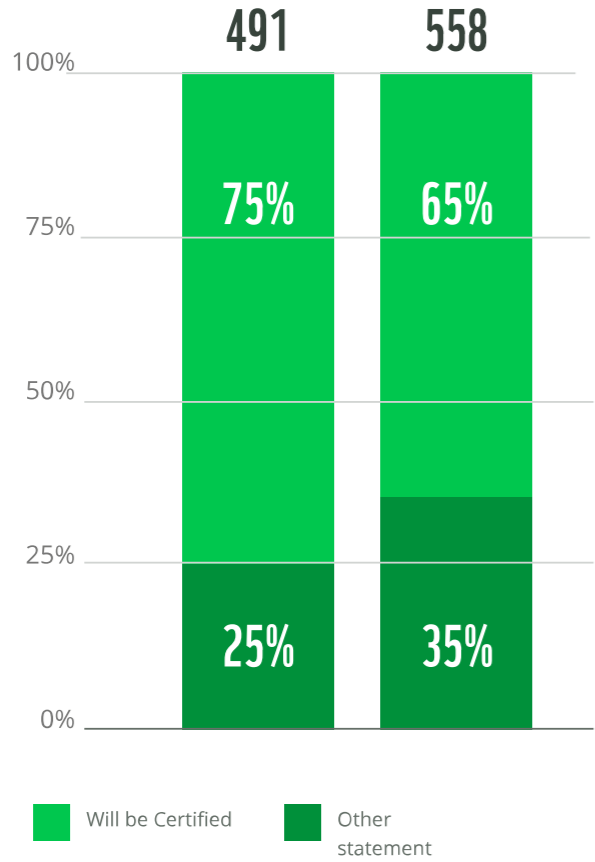
Both committed volumes and progress made for each commodities are very low compared to estimated global production



Source: Supply Change (March 2020), USDA, Trase Earth, Chain Reaction Research

CERTIFICATION IS THE MOST COMMON SCHEME TO SHOW PROGRESS, DESPITE VARIANCES IN CREDIBILITY

Split of commitment statements per scheme, certifications vs. others



Source: Forest500, Supply Change

Most company commitments to address commodity-driven deforestation and conversion rely heavily on certification schemes. In fact, among companies with deforestation- and conversion-free commitments, 65-75% have committed through relevant certification systems.

Certification schemes, when effectively implemented and complemented by other approaches and strong governance, can help hold businesses accountable to a set of critical environmental and social standards. However, there are notable differences in how robust and credible different certification schemes are. And while the purchase of certified materials signifies a contribution to supporting commitments, in the agricultural sector in particular, it is not sufficient to fully demonstrate that materials in the supply chain are deforestation-free, conversion-free or produced with respect to human rights. Certification of agricultural commodities is only one tool, which if used in isolation, cannot address all of the social and environmental issues associated with commodity production at a landscape scale.



Drone view of the Cerrado landscape, Brazil. 2020. © Andre Dib / WWF-Brazil

DIFFERENT COMMODITIES HAVE DIFFERENT REALITIES

We find variations in the percentage of companies in each sector or supply chain making commitments, the commitment types and the reporting on progress.

Such variations are worth exploring to understand the challenges and potential resolutions for each commodity. Note that a high number of commitments does not mean a high share of committed volumes, as companies controlling a high share of volumes may not commit, and companies may make a commitment on only a fraction of their volumes.

Beef

The US and Brazil are the largest global producers of beef, and in Brazil, it is the primary cause of deforestation and conversion. About 20% of total beef production in Brazil during 2017 was exported, and 80% consumed in the country, which shows that the domestic market is playing a big role in driving the expansion of the beef sector. But not all Brazilian states are equally connected to the international markets, and four states have the largest share of exports (Rondonia, Mato Grosso, São Paulo and Mato Grosso do Sul). Three companies (i.e. JBS, Minerva, and Marfrig) control about 70% of Brazil beef exports.

Compared to other commodities, companies involved in beef supply chains are lagging behind in their progress toward

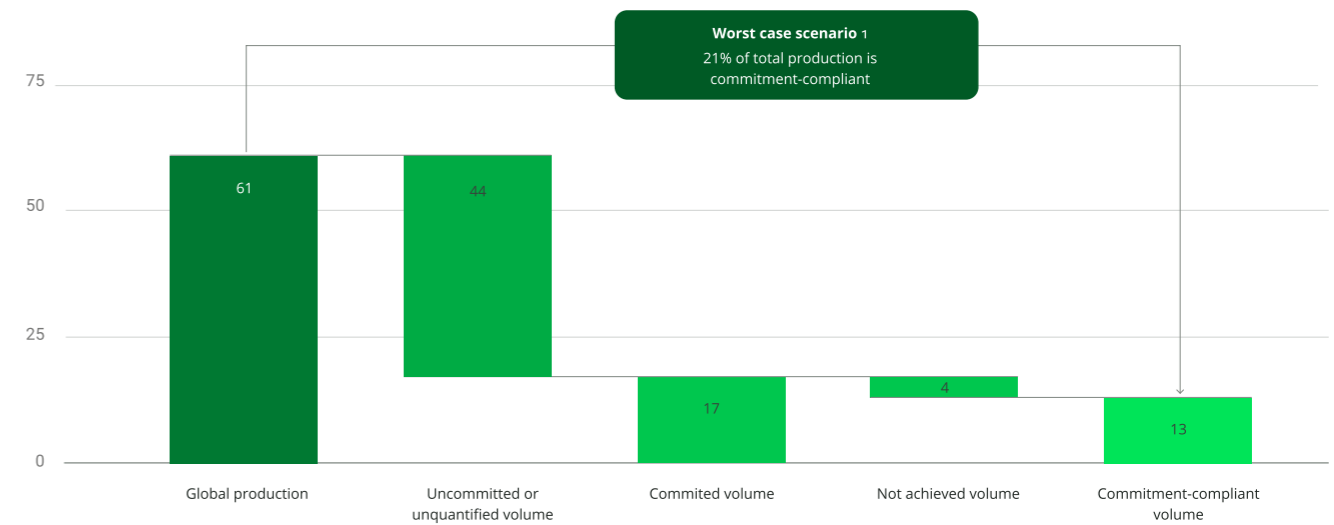
halting the destruction of essential biomes, with the lowest commitment levels among the four commodities selected here. It is also important to note that there is no certification scheme for beef, unlike other commodities. Instead, two cattle agreements – one legally binding and another voluntary – involving the largest meatpacking companies were signed in 2009 to contain beef-related deforestation in the Brazilian Amazon. The agreements have only achieved partial outcomes. Deforestation driven by land speculation is also indirectly associated with the expansion of pastures since cattle is still the cheapest way to justify land ownership. In addition, the difficulty in tracing indirect suppliers and practices of cattle laundering have worked against traceability and transparency of the beef supply chain.

The leading hurdle in the path of progress is the lack of traceability along the path between smallholder and mid-size ranchers who supply producers holding contracts with slaughterhouses and meat packing plants. Many companies that directly supply beef to processors are just playing an intermediary role, as they purchase cattle from indirect suppliers who may themselves be buying from the original

producers – the ones that can affect real and significant change in sustainable sourcing. In fact, Marfrig estimated that indirect suppliers represented 53% of its sourced cattle in 2019. Full traceability right across the supply chain is fundamental to eliminating deforestation and conversion from the beef supply chain.

PRODUCTION VOLUME

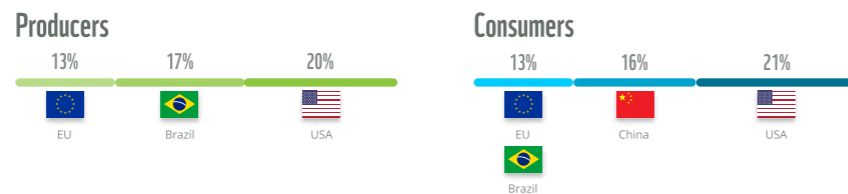
Beef production volume by commitment and progress (million tons)



Source: USDA, Supply Change (March 2020)
1. Worse case scenario based on Supply Change volume

61 M tons

Source: USDA



ZOOM ON BRAZIL

Brazil

48%

Of global beef related deforestation

75%

Of production is consumed domestic

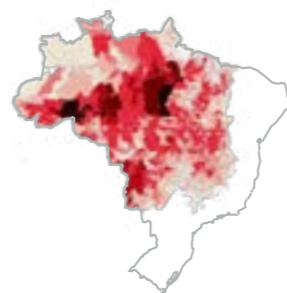
25%

Of production is exported

Brazilian beef exports are mainly driven to China (30%)

Exports are concentrated with 3 companies (JBS, Minerva and Marfrig) handling 72% of exports

Pasture deforestation



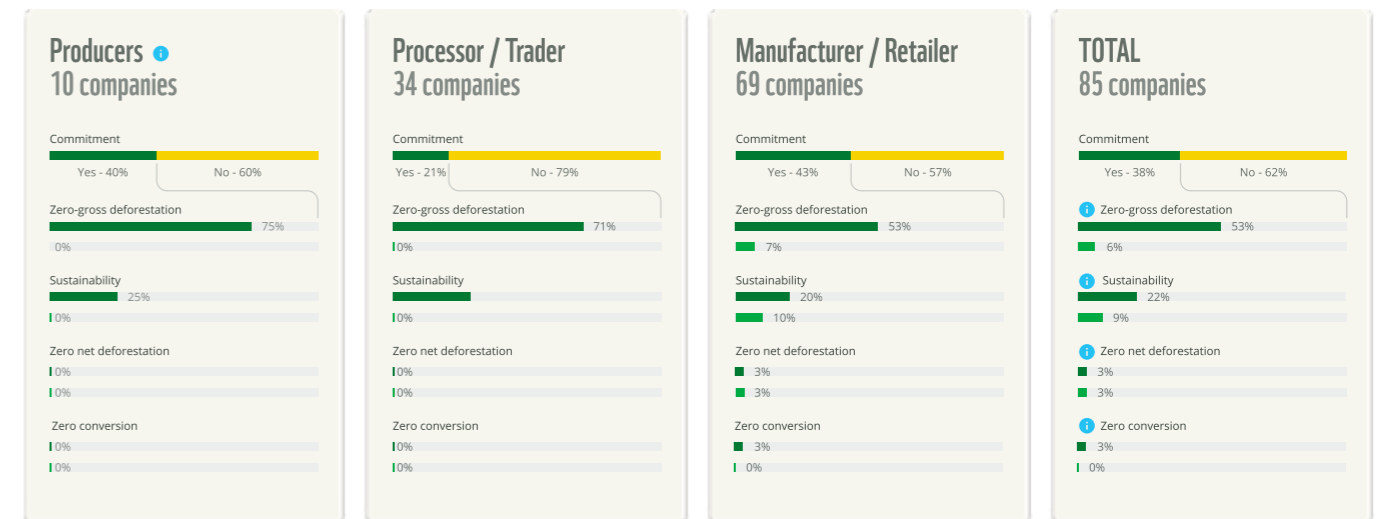
Source: trase

Pasture area



Source: trase

GLOBAL VALUE CHAIN



Note: Net - offset ecosystem loss, Zero-gross def. - no loss of forest, Sustainability - incl. primary forests Deforestation - only includes forest, Conversion - includes all other natural ecosystems

Source: Supply Chain & Forest 500



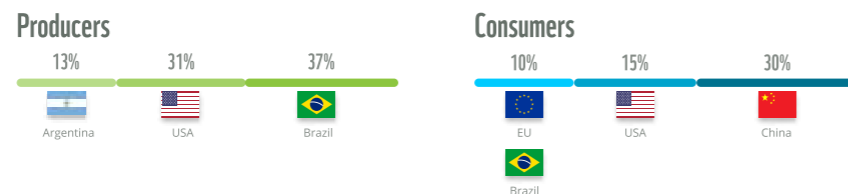
Soy

Soybean production has more than doubled over the past decade due to accelerating global demand for animal proteins – 75% of the world’s soybean crop is used as animal feed for poultry, pigs, livestock, and farmed fish. Nearly all the deforestation and conversion generated by this commodity has been in South America, primarily in Brazil, and just five companies are responsible for over a third of Brazil’s soy global trade.

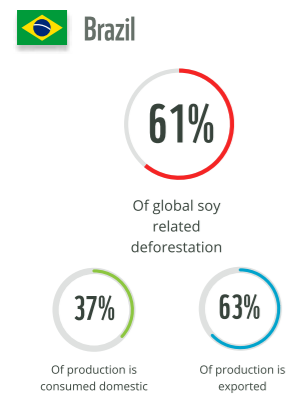
Relative to the other three key commodities, soy is among the lowest achievers in the fight against agricultural deforestation and conversion, both in terms of commitment scope and compliance. While commitment levels are above those for beef, the traceability of compliant volumes is dramatically low.

360M tons

Source: USDA



ZOOM ON BRAZIL



Source: WRI

Brazilian soy exports are mainly driven to China (58%)

Production is relatively concentrated with Top#5 producers contributing to 55% of production

Soy deforestation



Source: trase

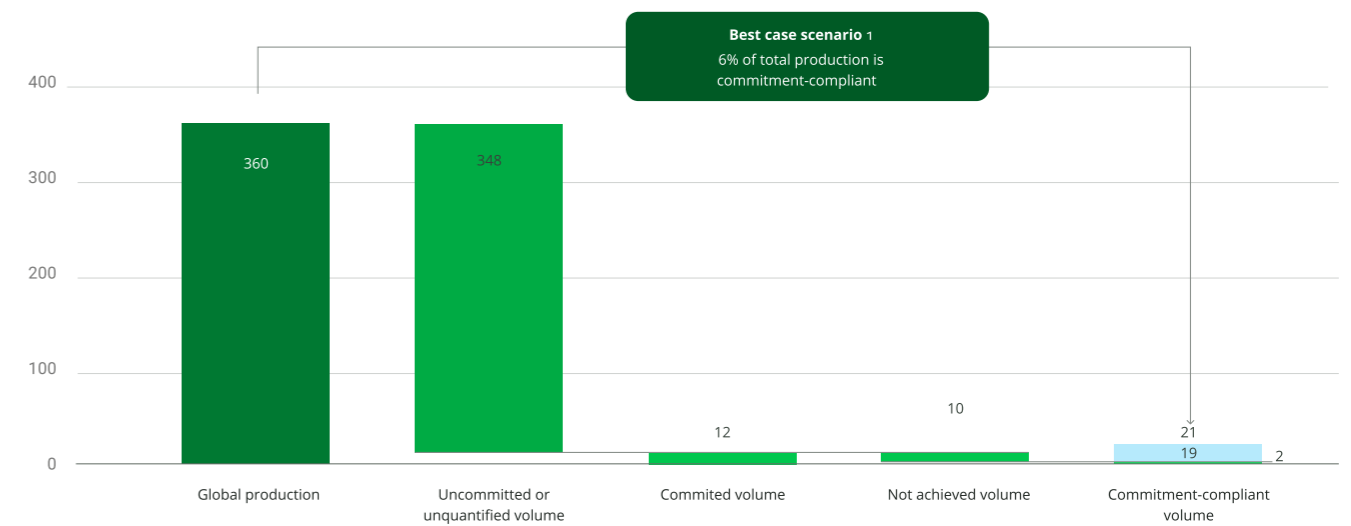
Production of soy



Source: trase

PRODUCTION VOLUME

Soy production volume by commitment and progress (million tons)



Source: USDA, Trase Earth, Supply Change (March 2020)

1. Best case scenario including export volume for major players from additional sources

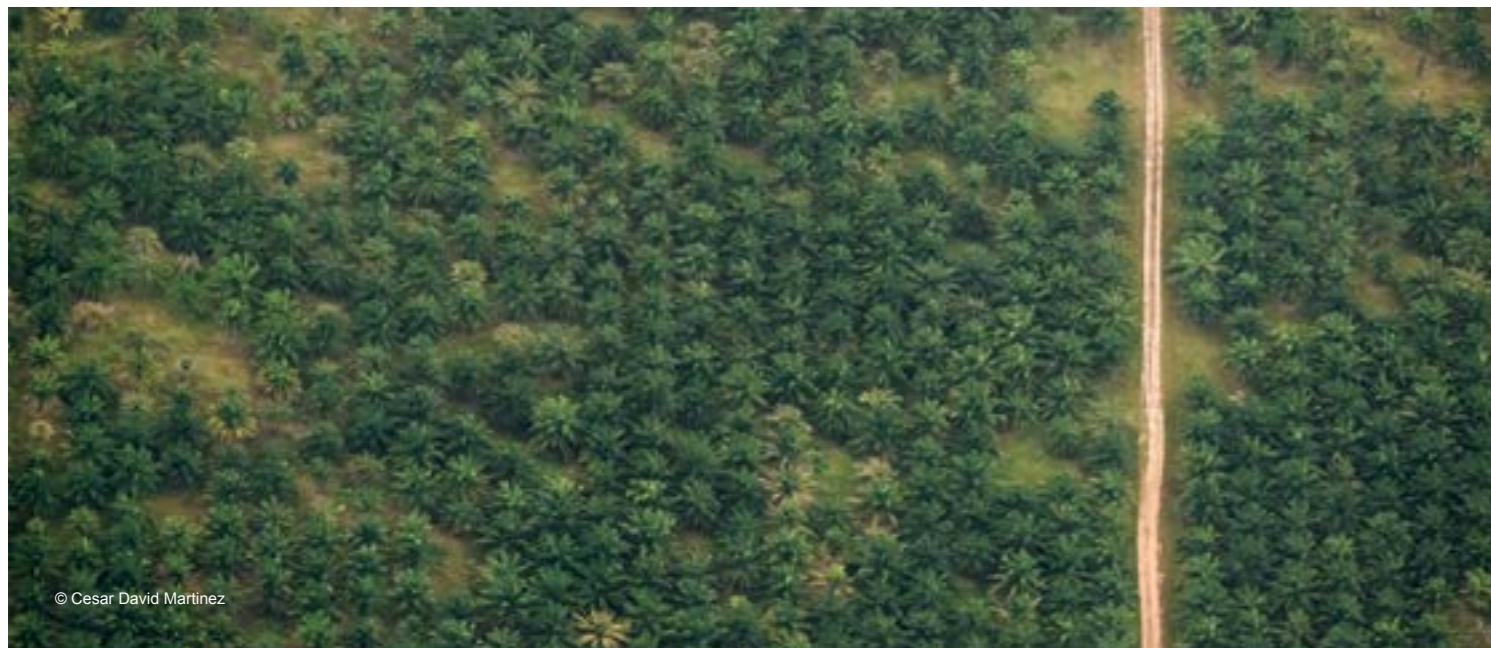
GLOBAL VALUE CHAIN



Note: Net – offset ecosystem loss, Zero-gross def. – no loss of forest, Sustainability – incl. primary forests Deforestation – only includes forest, Conversion – includes all other natural ecosystems

Source: Supply Chain & Forest 500

Certification



© Cesar David Martinez

Palm oil

Indonesia and Malaysia are the leading global producers of palm oil, contributing 85% of the total supply. The expansion of palm oil has been driven by a sustained growth in global demand, which has placed pressures in biodiversity-rich tropical landscapes.

The palm oil sector in these two countries is dominated by a handful of conglomerates involved in production, processing and trade. These groups source palm oil from their own plantations as well as from a large number of third-party suppliers. About three quarters of palm oil production

originates from industrial plantations, with the remainder produced by smallholders whose participation in the total share tends to grow over time. For example, in Indonesia, smallholders currently constitute 38% of palm oil production, while covering nearly half – 46% – of the country’s area of oil palm cultivation.

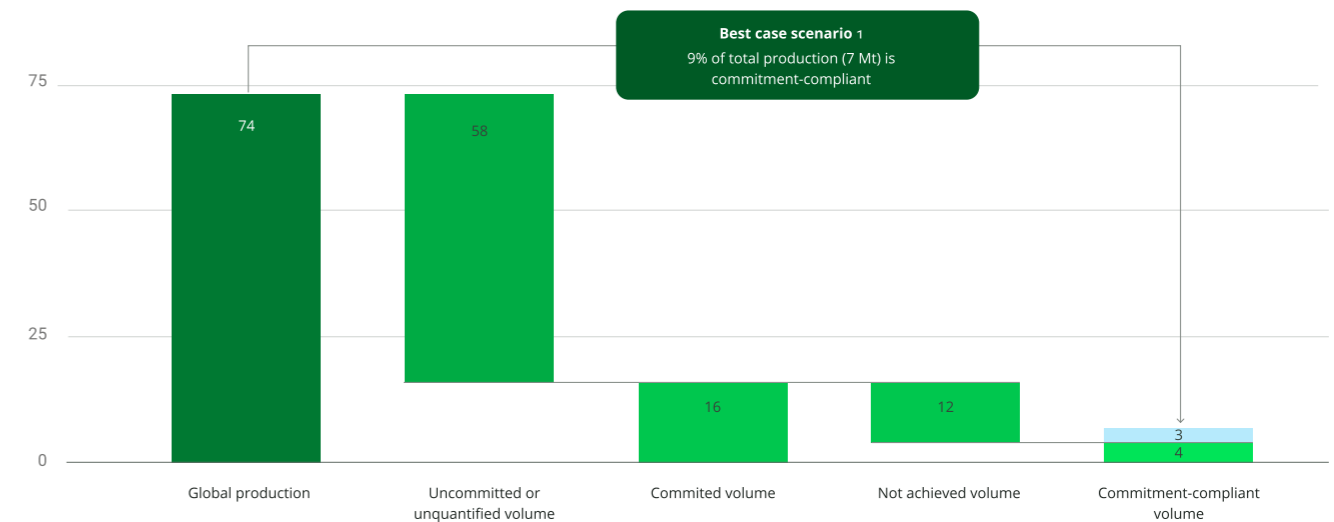
Industrial plantations obtain 40% higher minimum yields than smallholders, suggesting that there is potential to reduce the pressures on forests by improving the yields in smallholder lands.

Palm oil is primarily for export markets and trade is relatively concentrated among the major integrated palm oil companies and agricultural international traders. Yet, the growing number of independent smallholders, as well as an unknown number of independent mills, add important layers of complexity to the market that operates through a large number of intermediaries upstream in the supply chain linked to primary processing.

Companies with palm oil in their supply chain have the highest commitment levels in percentage terms of the four key commodities, with a focus on adherence to certification systems, and a majority are reporting on their progress.

PRODUCTION VOLUME

Palm oil production volume by commitment and progress (million tons)

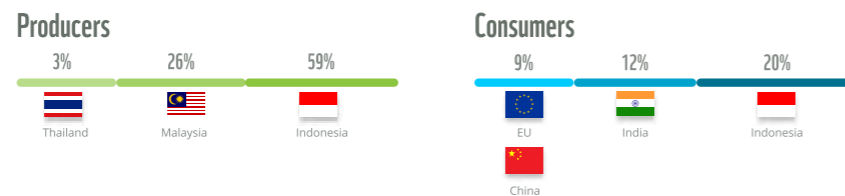


Source: USDA, Chain Reaction Research, Supply Change (March 2020)

1. Best case scenario including capacity volume for major players from additional sources

74M tons

Source: USDA



ZOOM ON INDONESIA

Indonesia

66%

Of global palm oil related deforestation

36%

Of production is consumed domestic

64%

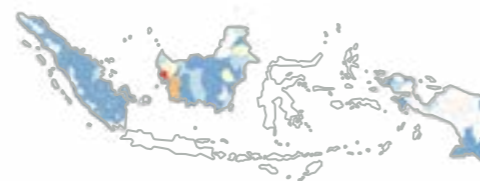
Of production is exported

Source: WRI

Indonesian palm oil exports are mainly driven to India (19%)

Production is very fragmented with numerous small scale and Top#5 producers (Golden agri-res, Sime Darby, Wilmar, K.I kepong and IOI) contributing to 27% of raw materials

Palm Oil deforestation

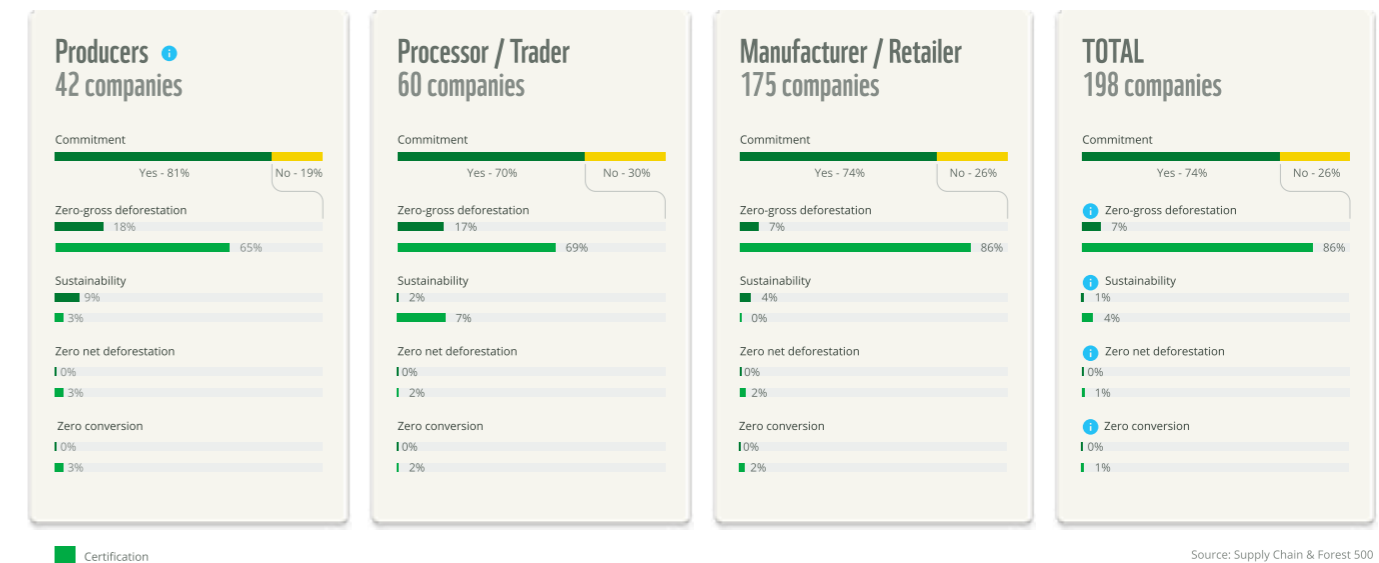


Production of palm oil



Source: trase

GLOBAL VALUE CHAIN



Source: Supply Chain & Forest 500



© Theodore Kaye / WWF China

Timber, pulp and paper

The production of timber and pulpwood is distributed among all the continents and highly fragmented, but the bulk of deforestation and conversion that is due to timber, pulp and paper plantations is taking place in Indonesia, PNG, Southern Mekong and Brazil. The sector is currently undergoing several acquisitions and mergers. Nonetheless, there are several ongoing investments in pulp, paper, and packaging mills, many of them in Indonesia and Brazil, which may increase the pressure on natural forests and other natural ecosystems.

The industry still uses a relatively low percentage of recycled material, and the recent global trend toward avoiding plastic use as well as rising e-commerce has increased demand for forest-based products. While many companies in this sector have made commitments, principally through certification, compliant volumes are still low.

1,933M tons

Source: USDA

ZOOM ON BRAZIL



NA

Of global pulp related deforestation

10%

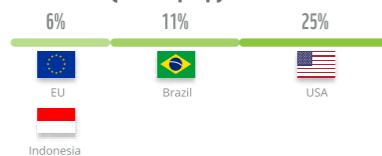
Of production is consumed domestic

90%

Of production is exported

Source: WRI

Producers (Wood pulp)



Consumers



Brazilian wood pulp exports are mainly driven to China (39%)

Upstream value chain is relatively concentrated with Top#5 exporters contributing to 75% of Brazilian volumes

Deforestation



Source: trase

Production



Source: trase

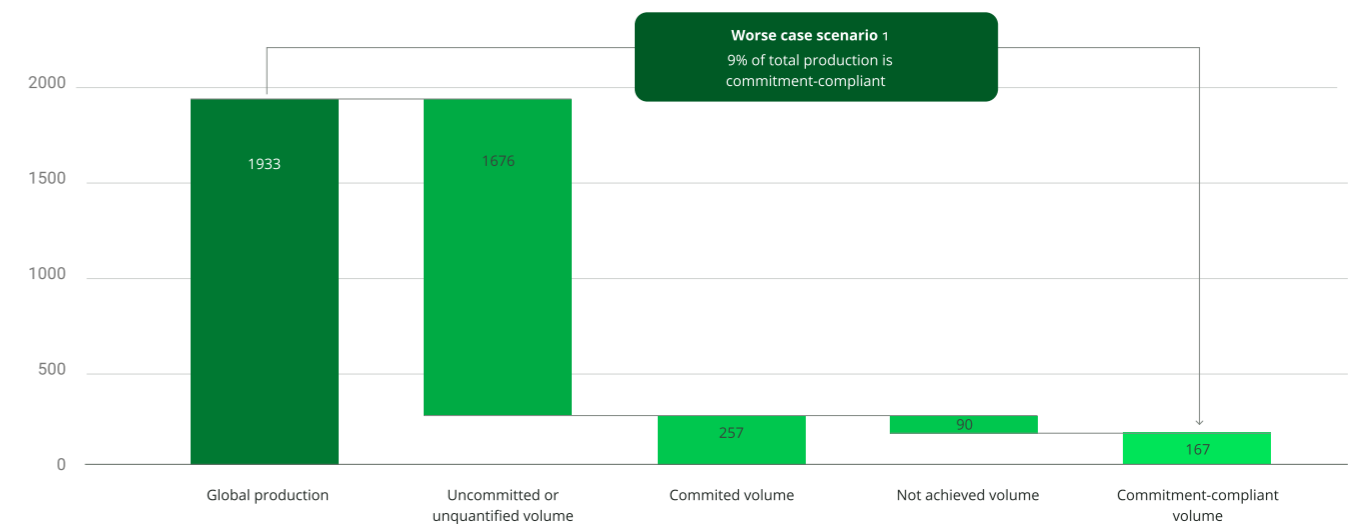
Cocoa & Coffee

The leading cocoa-production countries are found in West Africa and production is increasing steadily, already displacing millions of hectares of forest. Indonesia and Côte d'Ivoire make up the largest part of this destruction. Cocoa is also becoming a major driver of deforestation in the Congo Basin, the world's second largest rainforest.

Coffee production, in contrast, takes place primarily in Brazil, Vietnam, Colombia, and Indonesia, with the bulk of coffee-related deforestation and land conversion in Brazil, Indonesia and Peru.

PRODUCTION VOLUME

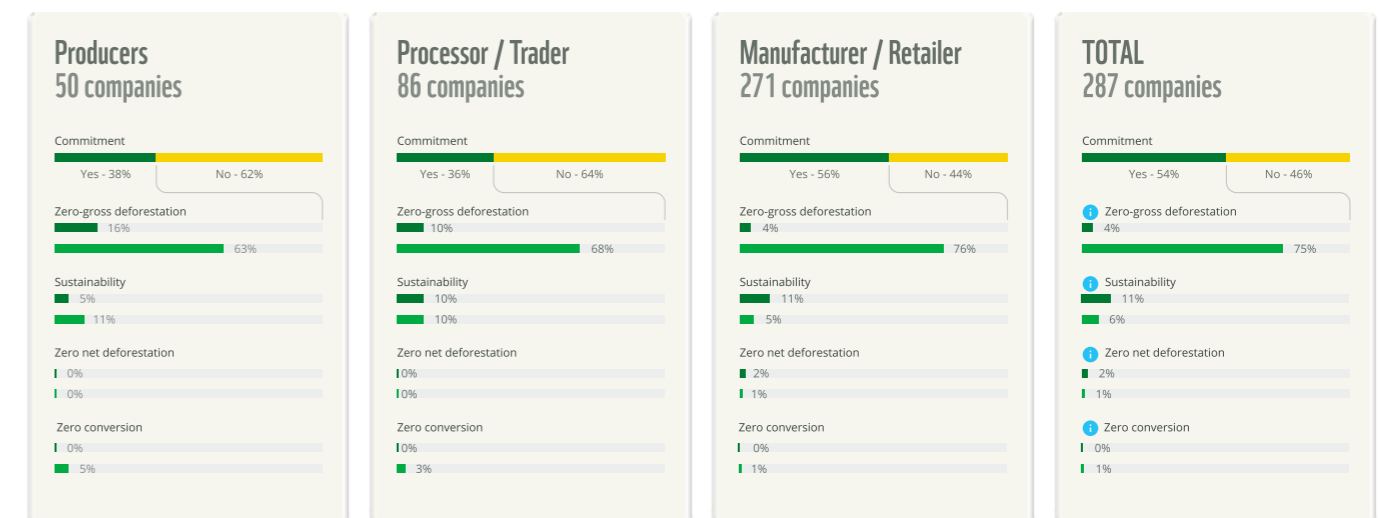
Timber, pulp and paper production volume by commitment and progress (million tons)



Source: FAO, Supply Change (March 2020)

1. Worse case scenario based on Supply Change volume

GLOBAL VALUE CHAIN



Note: Net - offset ecosystem loss, Zero-gross def. - no loss of forest, Sustainability - incl. primary forests Deforestation - only includes forest, Conversion - includes all other natural ecosystems

Source: Forest 500

THERE ARE SOME COMMON ISSUES AMONG COMMODITIES

Upstream fragmentation and lack of incentives hinder traceability

All commodity supply chains are fragmented in the upstream segment, i.e., in their production-related activities. These upstream players typically have limited individual power. Investment and support for traceability systems at production level are hampered by the lack of assurance of financial returns, lack of access to capital, as well as lack of sustainable or certified products.

The traceability gaps between indirect and direct suppliers in the Brazilian beef supply chain, as well as between mills and refineries for Indonesian palm oil, illustrate this challenge to put in place traceability systems when there are complex intermediation systems and often a lack of long-term contracts. In both cases, there are thousands, or even tens of thousands, of upstream players.

Business commitments today do not target these small upstream players directly, but instead focus on larger companies in the supply chain. Companies therefore need to build their traceability systems right through the entire supply chain, and find ways to improve the performance of their suppliers and improve market efficiency.

Aggregators – e.g., traders – aren't using their leverage

Some value-chain segments are much more concentrated than others, with large players aggregating a major part of volumes in those segments. It gives them influence and financial power that makes them more accountable to drive change than actors in other segments. These larger companies are primarily traders and processors – forming by far the most concentrated piece of the supply chain. The top five palm oil traders represent 87% of the volumes, for example, while the top five producers and retailers represent just 27% and 25%, respectively. The six largest soy traders – Bunge, Cargill, ADM, COFCO, Louis Dreyfus and Amaggi – account for roughly 57% of all soy exports from Brazil. For cocoa, the four largest grinders – Barry Callebaut, Cargill, Blommer and Olam Cocoa – account for 65% of the grinding capacity. These few large actors have a large role to play and must step up to enforce stricter mechanisms to ensure traceability. Yet processors and traders – the only parts of the supply chain that have the power to affect the greatest change – have made the fewest commitments to date.

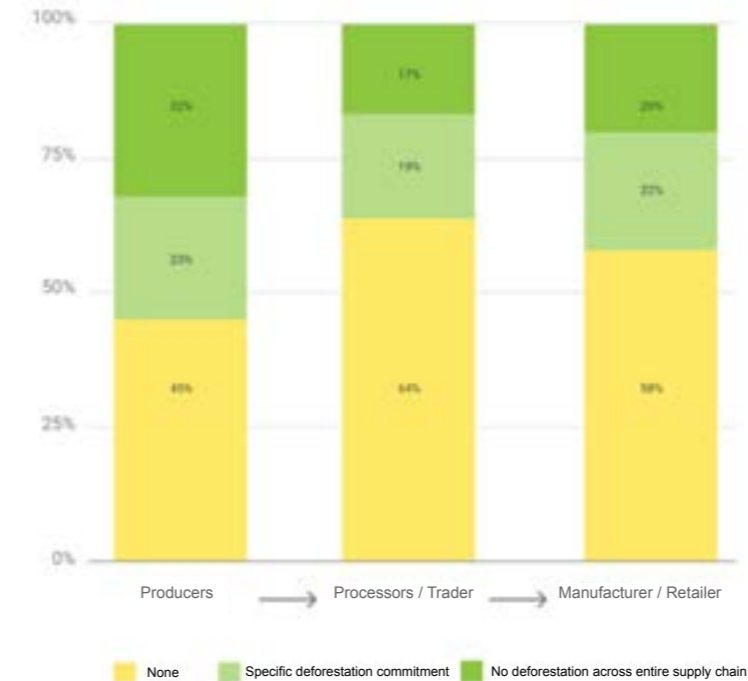
Financial institutions need to be more proactive

Financiers, whether investors or lenders, must also be more proactive in all commodity supply chains. First, as lenders, they have direct roles in financing companies and activities that can be directly or indirectly linked to deforestation and conversion. They also have the ability to develop and support viable economic models for producers and smallholders at scale and support a fair and just transition to sustainable models of commodity production. Yet only half of the financial institutions in the Forest 500 have made commitments to halting deforestation and conversion to date. And just 7% of those that have committed have done so through zero deforestation and conversion commitments.



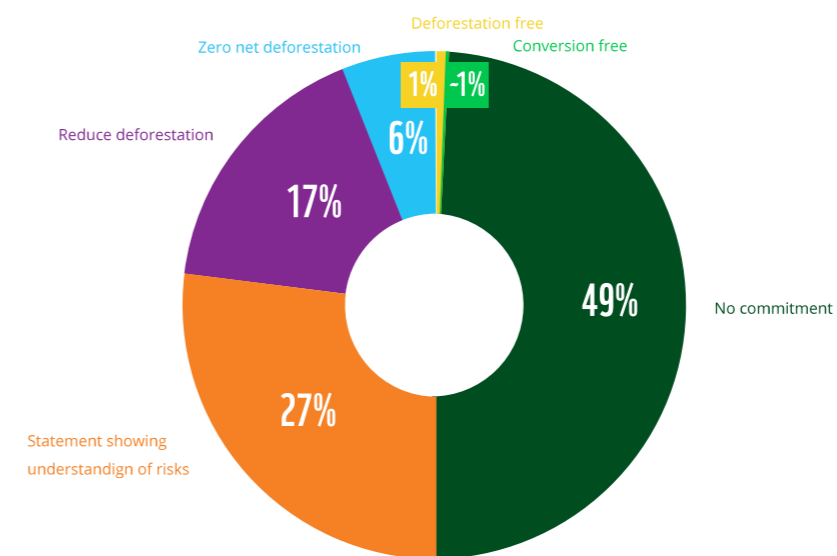
© Aaron Gekoski / WWF-US

Processors and traders are most likely to have no commitments



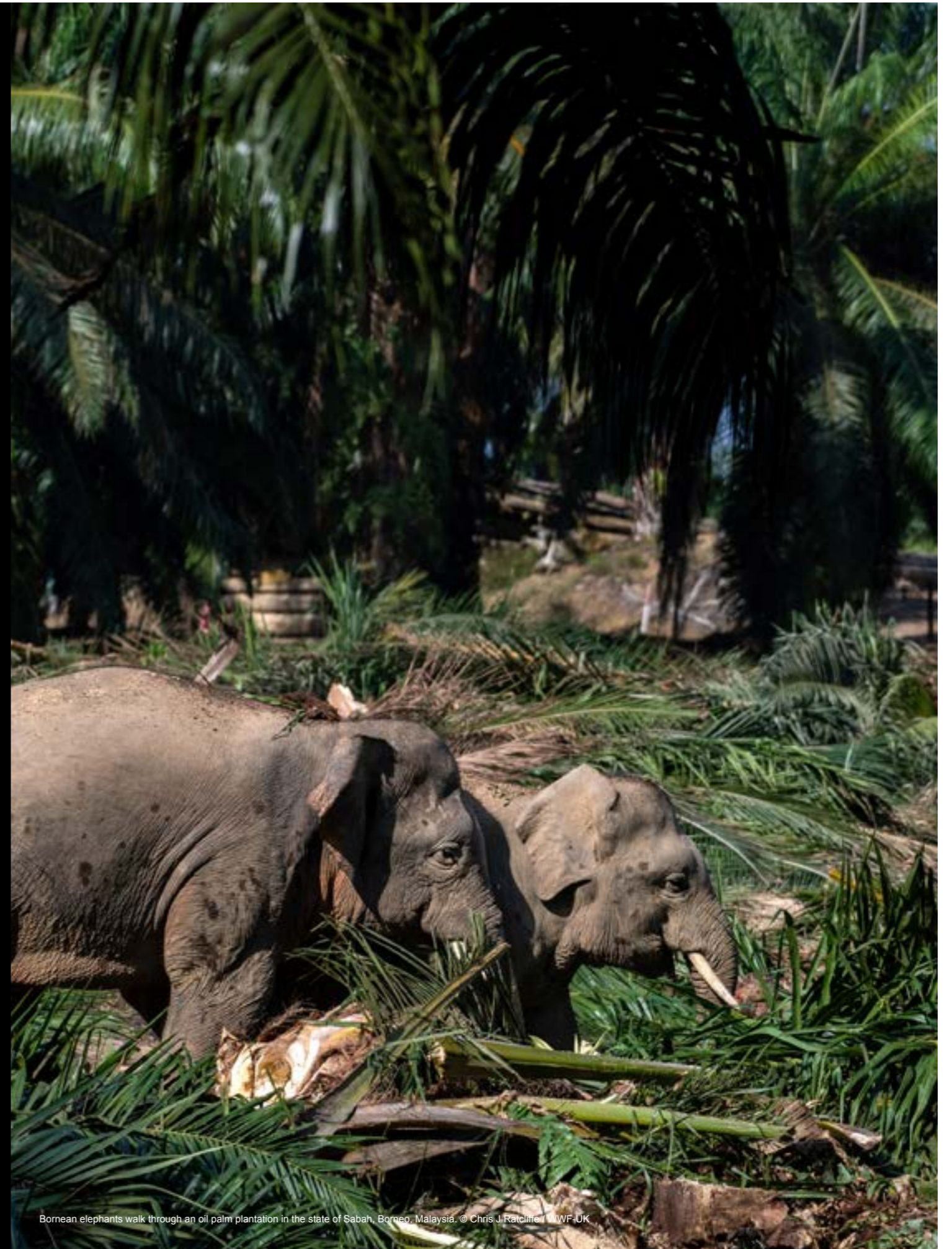
source : Forest500

Less than 10% of financial institutions have D/C free commitments according to Forest500



source : Forest500

**THE ACTIONS OF PRIVATE,
PUBLIC, AND FINANCE
SECTOR ORGANIZATIONS AT
EVERY LEVEL ARE CRITICAL**



Bornean elephants walk through an oil palm plantation in the state of Sabah, Borneo, Malaysia. © Chris J. Ratcliffe / WWF-UK

TURN COMMITMENTS INTO ACTIONS AND ENHANCE COLLECTIVE INITIATIVES

As deforestation and conversion continue to surge, the private sector must demonstrate much greater leadership in tackling the problem and reversing the trend. Reasons for the limited impact of business' voluntary commitments are multiple. For one, buyers have not sufficiently invested in the reporting capacity and the traceability and transparency systems to appropriately manage their supply chains in a way that meets their commitments. For another, they rely too heavily on unilateral approaches and commodity-specific initiatives to achieve success at scale. Equally, producers lack incentives, technical support and sound governance to transition to deforestation and conversion-free production. Finally, fragmentation in the upstream part of the supply chain makes any approach highly complex, with businesses tending to limit their focus on their direct suppliers.

This report highlights the need for enhanced private-sector actions across the board, with more ambitious commitments, implementation and transparent reporting and verification. In this important decade ahead where we must tackle the combined climate and nature crises, addressing the implementation gap is particularly critical.

More comprehensive and larger scale approaches are needed, such as broad direct and indirect supplier engagement and broad sectoral agreements, to establish deforestation and conversion-free as core value and baseline requirements, establishing cutoff dates and transparent, monitoring, verification and reporting (MVR) systems for the conversion-risk landscapes, using the [Accountability Framework's](#) core principles, definitions and guidance as a key common reference.

We need greatly enhanced action from businesses at every level of the supply chain, and globally -- not just in the more traditional consumer markets in the global north. Businesses must act not only in removing deforestation and conversion from their individual supply chains, but also by ensuring that their suppliers, and not just their supplies, are sustainable in all their operations, as well as engaging in broad sectoral agreements and landscape approaches on the ground and proactively collaborating with public and financial institutions.

The private sector needs to advocate for and contribute towards holistic, integrated approaches where corporate action on zero deforestation and conversion is nested within appropriate legislative and policy frameworks and trade standards in producing and consuming countries, along with strong governance, and supporting financial instruments and incentives to enable a just transition to sustainable

agricultural production. With the ever increasing urgency to tackle the climate and nature crises, much greater leadership from the private sector is necessary, playing a proactive role in convening and working alongside other private sector players, local communities, governments and the finance sector.

This should be done through direct advocacy toward supply- and demand-side governments, for example in the EU and UK and China where there is strong momentum to build more ambitious legislation. Another crucial platform is UK and Indonesia-led [Forest, Agriculture and Commodity Trade \(FACT\) Dialogue](#) and its upcoming business platform. Other multi-stakeholder opportunities, sectoral or landscape/ jurisdictional approaches can deliver an impact at scale and at pace, following the example of the Soy Moratorium, in which civil society and the private sector worked together to rapidly scale their efforts.

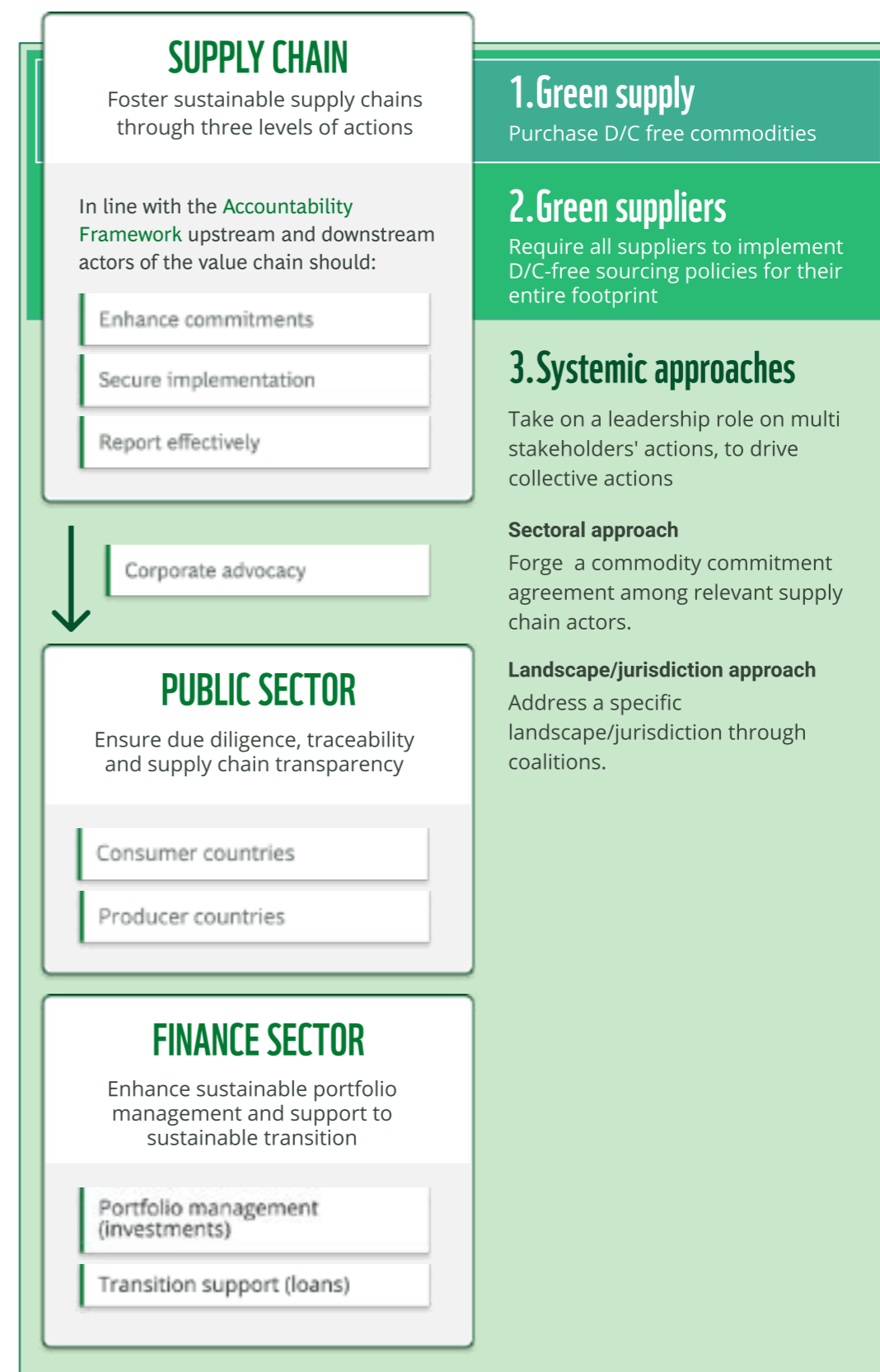
Financial institutions also have an immense opportunity to help reduce deforestation and conversion by being proactive in the commodity supply chain. They can have a direct impact on activities that are linked to environmental degradation by developing and supporting viable economic models for smallholders at scale as well as removing companies with unsustainable practices from their portfolios.

Through stronger collaboration and looking beyond their direct operations these actors together have an important role to play in supporting local communities that need land and food security, and incentivizing local actors to adopt sustainable models, receive financial and commercial guarantees through funding or benefit sharing, and get facilitated access to markets, tools, technology and quality goods.

Another important message is that business should seek a new positive impact on all natural ecosystems, not limited to forests. Private sector commitments and actions must include all the natural ecosystems threatened by the expansion of commodity production and trade. This perspective has been built into the following call for action, which includes both deforestation and conversion.

Along the journey toward zero deforestation and conversion, businesses might at some point decide to encourage restoration and reforestation, as well as the sustainable economic use of natural forests and other ecosystems. These efforts, however, need to complement efforts to stop the deforestation and conversion of natural ecosystems.

Private actors need to raise ambition and honor individual commitments, while demonstrating leadership to engage governments and financial institutions





PRODUCERS NEED TO TRANSITION TO DEFORESTATION AND CONVERSION-FREE PRODUCTION

Producers should take the following steps to eliminate deforestation and conversion from their operations:

- Produce and expand production exclusively on lands that were deforested or converted prior to any agreed cut-off date.
- Rehabilitate degraded land and preserve ecosystem services through responsible production practices on already converted land.
- Reduce the need for expansion into natural ecosystems by improving smallholders' yields through the implementation of more sustainable and efficient agricultural practices.
- Report individually on compliance – or progress toward compliance – with deforestation and conversion policies and requirements from buyers.

For producers to implement these requirements, buyers, governments and financial institutions need to provide technical and financial incentives to producers.



BUYERS NEED TO RAISE THEIR AMBITIONS AND HONOUR INDIVIDUAL COMMITMENTS

As businesses begin to tackle the issues of deforestation and conversion more forcefully, they should first fill in the gaps in their current commitments to clean up their individual supply chains, whether in ambitions, monitoring or implementation. Building on existing tools such as the Accountability Framework, they need to not only honour their commitments but be transparent about how they are implementing them, what their progress has been and what protocols they have put in place to address any lack of progress.

Deforestation in Cerrado Pantanal Bolivia. 2012. © Marius Brants / WWF-Netherlands

THE ACCOUNTABILITY FRAMEWORK INITIATIVE

The AFi provides a common reference for targets, progress and monitoring of deforestation and conversion commitments, as well as human rights. Established in 2019 by a coalition of dozens of NGOs and experts, it defines a common set of norms, definitions and guidance. The objective is to support companies in achieving an ethical and sustainable supply chain.

Raise ambition

To date, just 56% to 66% of relevant companies have made commitments regarding deforestation and conversion, with only 4% including the conversion of all natural ecosystems. Following the Accountability Framework's key principles, buyers should elevate their commitments, publicly declaring clear targets and time-bound milestones that reflect the urgency of addressing the deforestation and conversion crisis. These commitments should be based on standardised definitions. Additionally, buyers should take the following actions.

- Commit to "green supplies" through group-level corporate policies that enforce the elimination of deforestation and conversion from the company's entire supply chain.
- Commit to "green suppliers" by cascading these policies and their implementation to all suppliers, ensuring they also produce and selling only deforestation- and conversion-free commodities within their global footprint, independent of who the final customer may be.

implementation of their commitments in an effective manner. Buyers should take the following actions.

- Provide suppliers with the tools and technical support they need to become fully compliant with company standards.
- Include contractual clauses with explicit cut-off dates in all purchasing contracts with direct suppliers.
- Implement a measurement and verification system with direct suppliers as well as policies to ensure that direct suppliers develop such processes with indirect suppliers.
- Require the traceability of commodity volumes sourced from direct and indirect suppliers, including identifying the geographic origin of imported commodities.
- Enforce a policy that identifies and engages all non-compliant suppliers in requiring and monitoring the enactment of efficient corrective and remedial actions; any recurrent non-compliers should be removed from the supply base.

Secure implementation

To date, companies voluntarily reporting their progress toward achieving their commitments indicate average progress of only 55%. To fill this implementation gap, buyers should establish systems and processes that will promote and facilitate the

Report effectively

At present, just 41% to 46% of large companies are reporting progress on their commitments. Buyers should follow the Accountability Framework to publicly report their progress and outcomes on a regular basis. They

should base this reporting on routine monitoring conducted relative to the time-bound targets associated with each commitment and assessed through credible, rigorous and independent practices. Buyers should also report on individual and group actions using credible and accepted reporting standards or indicators.

Corporate advocacy

Strong and vocal collective business voices are needed to stop deforestation and land conversion such that it is impossible for policymakers and business leaders to ignore. Businesses need to:

- Call on governments for ambitious regulatory measures to remove deforestation and conversion from supply chains and increase supply chain transparency and traceability to level the playing field.
- Work together with governments to achieve deforestation- and conversion-free supply chains, including policy mechanisms and incentives that support upstream players to transition to a forest positive approach.
- Back their policy asks with credible action on the ground through implementation of jurisdictional/ landscape approaches and sectoral collaboration models.

BUSINESSES NEED TO DEMONSTRATE LEADERSHIP IN MULTI-STAKEHOLDER APPROACHES

To achieve deforestation- and conversion-free supply chains, businesses should generate engagement among a variety of stakeholders and rightsholders, pushing other businesses as well as governments and financial institutions to help. They can do this by playing a leading role in systemic approaches, whether in their own sector, through landscape and jurisdictional approaches or through advocacy for due-diligence mechanisms and policy regulations from governments.

Sectoral approach

Companies of all types should push for the creation of sectoral communities that can forge commitment agreements along the entire supply chain of a given commodity, involving all actors along the chain. Sectoral actors should take inspiration from successful sectoral approaches, notably within the soy-based salmon-feed supply chain.

EUROPEAN SALMON: A SECTORAL APPROACH FROM BRAZILIAN SOY-BASED SALMON-FEED SUPPLIERS

In 2021, three Brazilian salmon-feed growers, CJ Selecta, Caramuru and Impoca/ervejaria Petropolis, decided that anything they produce and harvest must be part of a deforestation- and conversion-free soybean supply chain. All three companies had already begun providing segregated deforestation-free products to European markets; however, this new commitment represents significant progress in a sectoral approach – from ensuring green supply to working only with green suppliers.

Under the new commitment, the entirety of their soybean operations, including portions external to the salmon supply chain, must meet the same standards in all markets. Any soybean produced on land converted after August 2020 will not be allowed into these companies' supply chains. Given that 75% of global soy production is used for animal feed, such sectoral approaches for other animal-protein industries are essential to preserving our forests, savannahs and grasslands.

Landscape and jurisdictional approach

Companies should address specific geographical issues by working with coalitions of local stakeholders and rightsholders, taking either a landscape or a jurisdictional approach. In a landscape approach, stakeholders within a defined geography, whether a natural ecosystem or an official territory, collaborate to build consensus across different sectors in the hope of reconciling competing social, economic and environmental goals. The jurisdictional approach has certain similarities, with the main difference being a dependence on the active involvement of sub-national or national governments. Some even engage

multiple jurisdictions within an ecosystem or geography. These initiatives need to reach sufficient scale and be comprehensive of all the conversion-risk geographies, in order to achieve meaningful impact and avoid creating restricted niche deforestation and conversion-free supply chains, while their own operations and of their suppliers' generate high deforestation and conversion risks in other jurisdictions. Businesses should provide support to, and demonstrate leadership in, any landscape and jurisdictional approaches that complement their individual efforts to clean up their supply chain.



SOY MORATORIUM: ILLUSTRATING THAT COORDINATED SECTORAL AND LANDSCAPE APPROACHES ARE ESSENTIAL

Signed in 2006, the Amazon Soy Moratorium aims to stop the direct conversion of Amazon forests to soy production. The agreement's signatories have long proclaimed its success to drastically reduce the soy expansion in the Amazon biome. After 15 years of existence this is still considered the greatest and most effective zero-gross conversion agreement ever.

Since 2006, soy in the Amazon biome has expanded by over 4 million hectares - from 1.1 million hectares in 2006 to over 5.1 million hectares in 2020 – with only approximately 100 thousand hectares of deforestation. Moreover, the Moratorium is co-signed by over 80% of the Brazilian traders (by market share).

However, the Moratorium still needs to improve some internal procedures, especially those related to monitoring indirect and intermediary suppliers, transparency for external stakeholders (non-signatories), monitoring of areas not yet covered by official governmental systems, and illegal deforestation outside of soy areas within farms. It is also crucial to expand the Moratorium to other critical supply chains, such as beef, cotton and corn. Solutions should also be co-developed for other under-risk biomes, especially the Cerrado, where half of the Brazilian soy plantations take place. As this case study shows, for multi-stakeholder actions to be successful, it is essential to coordinate the messages and objectives of sectoral and landscape approaches. When looking at a given geography, businesses must think across commodities. And when focusing on one commodity, they must think across all geographies. Moreover, they should look at the issues from a value-chain angle to avoid transferring commodity-related operations from one region to a neighboring one.



Corporate advocacy

Private companies need to use their influence to bring governments along on the journey toward deforestation- and conversion-free supply chains. It is in their own interest to do so, leading by example and advocating for new policies and their implementation through company or multi-company statements. In addition, the more that businesses build alliances with other companies, governments and financial institutions, the better that all involved will understand the context, challenges and opportunities surrounding deforestation- and conversion-free supply chains.

CORPORATE ADVOCACY FOR EU DUE-DILIGENCE REGULATION

In May 2021, several multinational companies signed a statement to [support an effective EU law to halt the trade in commodities and products linked to deforestation and conversion](#).

This EU legislation is a unique opportunity for companies to step up and shape the level of ambition of the regulatory measure that will be adopted. Ultimately, the EU due diligence legislation will protect companies committed to acting responsibly and level the playing field. Reasons and opportunities for the private sector to accelerate this legislative process have never been more evident.

CHINA MEAT DECLARATION

The [China Meat Association](#), with its 8,000 member companies, represents roughly half of the whole Chinese meat market (the 64 co-signatories are sector leaders).

On May 12th 2021, the China Meat Industry Green Trade and Global Sustainable Meat Supply Chain Summit was held in Beijing. At the meeting, WWF-China and the China Meat Association (CMA) jointly issued the China Specification for Meat Industry Green Trade to promote the sustainable development of China's meat industry. The "Specification" is formally the benchmark of the Accountability Framework guidance into China.

At the summit, 11 companies became the first batch of signatories who promised to abide by the Specification "and play a key and active role in leading the industry". WWF-China and CMA will work to promote and implement the specification.

GOVERNMENTS NEED TO DEMONSTRATE LEADERSHIP

Public actors are essential to eliminating deforestation and conversion from supply chains. Voluntary commitments from businesses alone are insufficient, as contextual governance factors such as subsidies, existing land use practices, property rights and coherence between public and corporate policies affect supply chain practices, influencing companies' ability to successfully transform their commitments into real impact. By cooperating with and creating commitments that are complementary to local laws and regulations, companies can increase the impact of their commitments.

Public actors in consumer and producer countries should therefore support businesses by providing a framework for ensuring deforestation- and conversion-free supply chains – supporting due diligence, traceability and supply chain transparency.

Consumer countries

Consumer countries should demonstrate leadership in tackling deforestation and conversion by taking several steps, including the following:

- Adopt or support ambitious and binding national and regional legislation to eliminate deforestation and the conversion of natural ecosystems from commodity supply chains.
- Adopt complementary rules, policies, incentives and technical support that facilitate the practical application of deforestation- and conversion-free commitments and requirements.
- Engage in a dialogue with producer countries to mobilise financial and technical cooperation and support, especially for smallholders.
- Integrate explicit requirements for zero deforestation, zero conversion and the prevention of human rights violations into trade and other bilateral and multilateral agreements.
- Adopt long-term policies and incentives to eliminate overall demand for commodity production that results in deforestation, conversion or human rights abuses.

Producer countries

Countries in which production takes place should work with businesses to halt deforestation and conversion in the following ways:

- Establish a technical base and policies for competitive, conversion-free economic alternatives and incentives for conversion-free production in the short-term.
- Establish legislation that aligns with a common set of standards across geographies to avoid spillover effects at subnational, national and international levels.
- Design and implement land-use planning to ensure that expansion of commodity production takes place on already converted or degraded land
- Implement concrete financial support, such as affordable credit and technical incentives for deforestation and conversion-free producers.

- Support consumer information and awareness on the impact of consumption on land and promote consumption of products that are free from deforestation and conversion.
- Promote and implement policies for conversion-free, nature-based development pathways in regions with high risks of deforestation, conversion and human rights abuses.

- Support agricultural development to improve yields and smallholder performance.
- Develop policies to reduce or eliminate informal market networks and land-speculation schemes.
- Implement subsidies for sustainable production.
- Designate protected areas in high-risk landscapes.
- Support consumer information and awareness on the impact of consumption on land and promote consumption of products that are free from deforestation and conversion.

To efficiently tackle deforestation and conversion issues, public sector actors should therefore agree on the scope of the effort, including conversion and deforestation at every level, and should include additional measures to support smallholders. To support this work, it will be important to set standards and get public-stakeholder agreement on them, both locally and nationally.

FINANCIAL INSTITUTIONS MUST ASSUME A MORE PROMINENT ROLE

Financial actors have a key role to play in moving toward sustainable investments and providing financial support to producers – especially smallholders – as they transition to sustainable production. .

Green loans and investments

Financial institutions should eliminate deforestation and conversion of all natural ecosystems from their investments and portfolios. In this purpose, finance actors should:

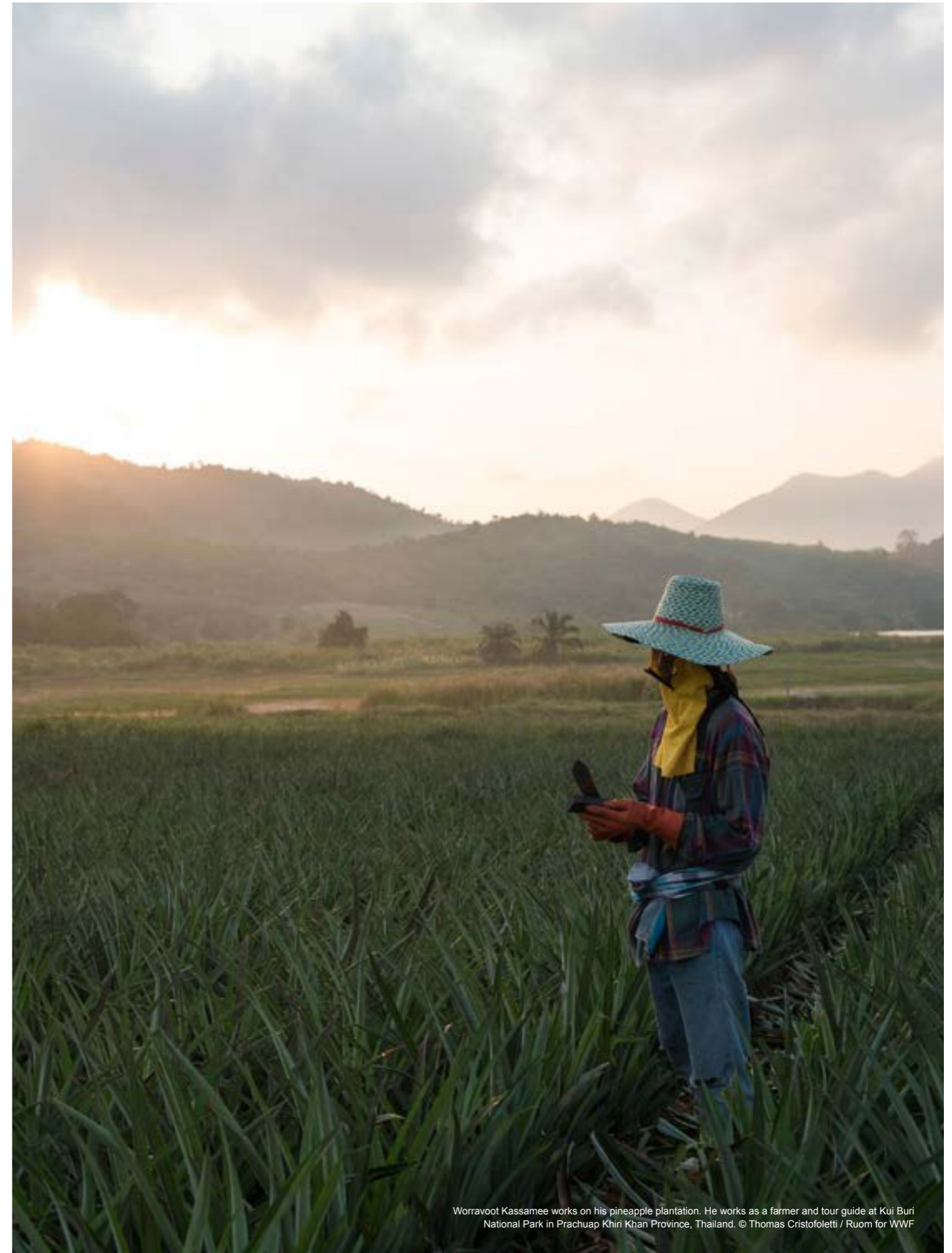
- Assess deforestation and conversion risk in their portfolio, explicitly using common definitions, criteria and indicators aligned with the Accountability Framework.
 - Engage all invested companies to mainstream deforestation- and conversion-free supply chains and ensure that companies engaged in commodities trade in high risk regions develop a roadmap with milestones to a 100% traceable supply chain and transparency of asset level data.
 - Adopt clear zero deforestation and conversion criteria in trade financing requirements.
 - Engage traders and buyers to adopt comprehensive deforestation- and conversion-free sourcing policies.
 - Develop individual or precompetitive investments frameworks insuring zero deforestation and conversion.
 - Disclose climate related and deforestation/conversion risks in their portfolios, following recommendations by the Task Force on Climate-related Financial Disclosures (TCFD), and include those related to scope 3 GHG emissions particularly those associated with land use change.
- Support the work of the Taskforce on Nature-related Financial Disclosures (TNFD), which is expected to provide a set of recommendations to disclose nature-related risks.
 - Set up grievance mechanisms and confidential processes for whistle-blowers who have identified exposure to illegal and legal deforestation and conversion.

Transition support

They should also support the transition of producers to sustainable supply chains and systemic approaches, especially smallholders with limited means, including:

- Design and offer financial products to incentivise deforestation- and conversion-free production, trade and sourcing (e.g., loans, green bonds), as well as to sustainable economic use of natural ecosystems, and research into sustainable production and traceability mechanisms.
- Provide micro-loans to support producers' transition to sustainable practices.
- Establish relationships with Development Finance Institutions and government bodies to develop “de-risk” financing mechanisms and crowd-in further private finance.

Joint and coordinated efforts from all these actors are crucial to achieve sustainable and fair commodity supply chains.



Worravoot Kassamee works on his pineapple plantation. He works as a farmer and tour guide at Kui Buri National Park in Prachuap Khiri Khan Province, Thailand. © Thomas Cristofolletti / Ruom for WWF

REFERENCES

1. Food and Agriculture Organization of the United Nations (FAO) (2020). The State of the World's Forests. Available at: <http://www.fao.org/documents/card/en/c/ca8642en>
2. Convention on Biological Diversity (CBD). Available at: <https://www.cbd.int/forest/problem.shtml>
3. International Livestock Research Institute (ILRI) with technical contributions from FAO, IUCN, WWF, UNEP and ILC Rangelands Initiative (2021). Rangelands Atlas. Available at: <https://www.rangelandsdata.org/atlas/sites/default/files/2021-05/Rangelands%20Atlas.pdf>
4. Epple, C., García Rangel, S., Jenkins, M., & Guth, M. (2016). Managing ecosystems in the context of climate change mitigation: A review of current knowledge and recommendations to support ecosystem-based mitigation actions that look beyond terrestrial forests. Available at: <https://www.cbd.int/doc/publications/cbd-ts-86-en.pdf>
5. Intergovernmental Panel on Climate Change (IPCC) (2000). IPCC Special Report on Land Use, Land-Use Change and Forestry. Available at: https://www.grida.no/climate/ipcc/land_use/index.htm
6. Harris N.L., Gibbs D.A., Baccini A. et al. (2021). Global maps of twenty-first century forest carbon fluxes. Nature Climate Change (234-240). Available at: <https://doi.org/10.1038/s41558-020-00976-6>
7. Mongabay (2017). Carbon sequestration role of savanna soils key to climate goals. Available at: <https://news.mongabay.com/2017/11/carbon-sequestration-role-of-savanna-soils-key-to-climate-goals/>
8. FAO (2020). Available at: <http://www.fao.org/3/ca8642en/CA8642EN.pdf>
9. WWF. Inside the Amazon. Available at: https://wwf.panda.org/discover/knowledge_hub/where_we_work/amazon/about_the_amazon/
10. Critical Ecosystem Partnership Fund (2017). Cerrado Biodiversity Hotspot. Available at: <https://www.cepf.net/sites/default/files/cerrado-ecosystem-profile-summary-english-revised-2017.pdf>
11. World Wide Fund for Nature (WWF) (2017). New Species of Vertebrates and Plants in the Amazon 2014-2015.
12. Murphy Brett P., Andersen Alan N. and Parr Catherine L. (2016). The underestimated biodiversity of tropical grassy biomes. Available at: <https://royalsocietypublishing.org/doi/10.1098/rstb.2015.0319>
13. Critical Ecosystem Partnership Fund (2017). Cerrado Biodiversity Hotspot. Available at: <https://www.cepf.net/sites/default/files/cerrado-ecosystem-profile-summary-english-revised-2017.pdf>
14. Morand S. and Lajaunie C. (2021). Outbreaks of Vector-Borne and Zoonotic Diseases Are Associated With Changes in Forest Cover and Oil Palm Expansion at Global Scale. Available at: https://www.frontiersin.org/articles/10.3389/fvets.2021.661063/full?utm_source=fweb&utm_medium=nblog&utm_campaign=ba-sci-fvets-outbreaks-of-vector-borne-and-zoonotic-diseases-associated-with-changes-in-forest-cover-and-oil-palm-expansion-at-global-scale
15. Jordan R. (2020). Stanford researchers show how forest loss leads to spread of disease. Available at: <https://news.stanford.edu/press/view/33295>
16. Boston Consulting Group (BCG) (2020). Fighting Deforestation to Prevent Pandemics.
17. United Nations (UN) (2011). Forests for People. Available at: https://www.un.org/esa/forests/wp-content/uploads/bsk-pdf-manager/83_FACT_SHEET_FORESTSANDPEOPLE.PDF
18. World Wide Fund for Nature (2020). Deforestation Fronts: Drivers and Responses in a Changing World. Available at: https://wwf.panda.org/discover/our_focus/forests_practice/deforestation_fronts_/
19. International Livestock Research Institute (ILRI) with technical contributions from FAO, IUCN, WWF, UNEP and ILC Rangelands Initiative (2021). Rangelands Atlas. Available at: <https://www.rangelandsdata.org/atlas/sites/default/files/2021-05/Rangelands%20Atlas.pdf>
20. Boston Consulting Group (BCG) (2020). The Staggering Value of Forests – and How to Save Them. Available at: <https://www.bcg.com/fr-fr/publications/2020/the-staggering-value-of-forests-and-how-to-save-them>
21. Intergovernmental Panel on Climate Change (IPCC) (2000). IPCC Special Report on Land Use, Land-Use Change and Forestry. Available at: https://www.grida.no/climate/ipcc/land_use/index.htm
22. World Wide Fund for Nature (2020). Deforestation Fronts: Drivers and Responses in a Changing World. Available at: https://wwf.panda.org/discover/our_focus/forests_practice/deforestation_fronts_/
23. Red Amazonia de Informacion Socioambiental Georreferenciada (RAISG) (2018). Deforestacion en la Amazonia. Available at: <https://www.amazoniasocioambiental.org/en/publication/technical-note-deforestation-in-the-amazon-2000-2018/>
24. PRODES TerraBrasilis (2020). Available at: <http://terrabrasilis.dpi.inpe.br/app/dashboard/deforestation/biomes/cerrado/increments>
25. World Wide Fund for Nature (WWF) (2020). The Plow Print Report. Available at: https://c402277.ssl.cf1.rackcdn.com/publications/1359/files/original/PlowprintReport_2020_FINAL_08042020.pdf?1596569610
26. Vancutsem et al., (2021). Long-term (1990-2019) Monitoring of forest cover Changes in the Humid Tropics. Available at: <https://advances.sciencemag.org/content/7/10/eabe1603>
27. Qin, Y., Xiao, X., Wigneron, JP. et al. (2021). Carbon loss from forest degradation exceeds that from deforestation in the Brazilian Amazon. Nature Climate Change (442-448). Available at: <https://www.nature.com/articles/s41558-021-01026-5#citeas>
28. Food and Agriculture Organization of the United Nations (FAO) (2020). The State of The World's Forests. Available at: <http://www.fao.org/3/ca8642en/ca8642en.pdf>
29. World Wide Fund for Nature (2020). Deforestation Fronts: Drivers and Responses in a Changing World. Available at: https://wwf.panda.org/discover/our_focus/forests_practice/deforestation_fronts_/
30. World Resources Institute (WRI) (October 2020). Estimating the Role of Seven Commodities in Agriculture-Linked Deforestation: Oil Palm, Soy, Cattle, Wood Fiber, Cocoa, Coffee, and Rubber. Available at: <https://files.wri.org/d8/s3fs-public/estimating-role-seven-commodities-agriculture-linked-deforestation.pdf>