



Deforestation

Definitions, Trends, and Policies for Forests and Forest Products

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Executive Summary

Deforestation - *the conversion of forested lands to other land use* - is a recognized environmental, social, and economic concern. Global trade is a factor contributing to deforestation, and there is increased awareness of supply chain impacts. Claims of 'deforestation free' supply chains and recent policy announcements by the European Union have sparked discussions about corporate accountability, supply chain transparency, the role of government, and effective voluntary or regulatory actions. The advancement of monitoring tools, including remote sensing and satellite imagery, raise new challenges and opportunities for understanding deforestation, its causes, and the most effective mitigations.

This report explores our understanding of deforestation - starting with the terminology - and examines recent global trends and policy actions. Effective strategies to address the negative impacts of deforestation require a greater shared understanding of long term land use trends, robust and elegant cross-commodity policies (i.e., linking food and forest production systems), and scalable actions, including substantial investment, from diverse public and private sector leaders at all levels. Unfortunately deforestation continues for social and political reasons to be a significant global problem, and there are limits to our measurement processes. We can observe, count, and record land conditions - but to understand change we also need to know the intentions of landowners, policy makers, and other influencers. A great deal of work is underway to address deforestation. From private companies reducing their impacts, to policy actions and investment in restoration activities, there are many working models of success to build from. With continued global collaboration and innovation there is good reason to be optimistic about the future of the world's forests.

Key Definitions

What is a forest? - a seemingly simple question, but when definitions for 'forest' were recently reviewed, more than 1,700 alternatives were identified from around the world.¹ Forests have small trees, big trees, a few trees, or lots of trees crowded together. A forest may not even have trees - there are bamboo forests, mangrove forests, and other types of vegetation that comprise forests. Land may be administratively defined as a forest even if the land is currently being used for other purposes. Similarly, land with tree cover may be zoned or planned for development or conversion to other uses and therefore classified as mining or agricultural land.

What is a forest, and conversely, when is a forest no longer a forest? Is a forest gone if most of the trees (or vegetation) are dead? Is a forest gone after a wildfire, hurricane, or timber harvest? Can we separate the identification of a forest from the presence, absence, or condition of trees? To support global monitoring of land use and the related constructive dialogue and collaboration around these efforts, it is essential to have common definitions for the terms being used. The United Nations provides 75 years of experience with the definitions applied in periodic global forest and deforestation assessments.

¹Lund, Gyde. (2018). 2018 Definitions of Forest, Deforestation, Afforestation, and Reforestation. 10.13140/RG.2.2.31426.48323.

Food and Agriculture Organization of the United Nations (FAO) Definitions for “Forest” and “Deforestation”

The Food and Agriculture Organization of the United Nations (FAO) conducts periodic global forest monitoring at intervals of five to ten years. The FAO Global Forest Resources Assessment (FRA) reports the extent of forest resources, their condition, management and uses. In 1946, the year following its founding, FAO conducted its first global forest survey. The oldest global forest assessment available from FAO is from 1948 (Figure 1). The assessment published in 1948 was based on questionnaire responses from 101 countries representing about 66 percent of the world’s forests. The questionnaire addressed forest area, forest types, growth, and harvesting.² The most recent FAO report, FRA 2020, examined more than 60 forest-related variables in 236 countries and territories for the period 1990–2020. The data for the FRA 2020 report were collected using internationally agreed upon terms and definitions and through a transparent, traceable reporting process utilizing a network of officially nominated national correspondents.³

For the assessment of forests around the world and trends and impacts from deforestation, the following definitions, with explanatory notes, for “forest” and “deforestation” are used by the FAO and the participating reporting countries.⁴

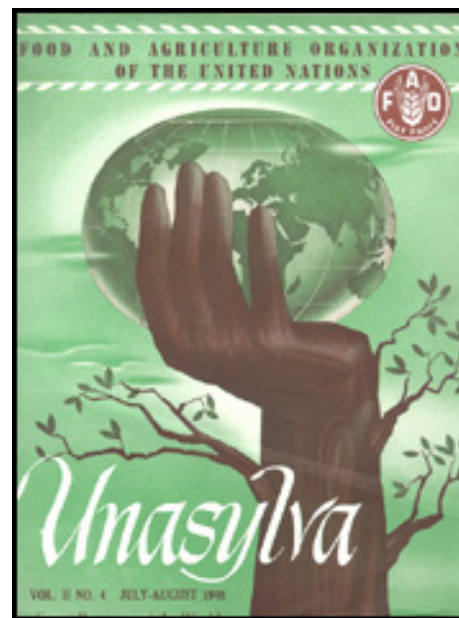


Figure 1. 1948 Report on the Forest Resources of the World (FAO, 1948).

FAO FRA 2020 Definitions for “Forest” and “Deforestation”:

FOREST: Land spanning more than 0.5 hectares with trees higher than 5 meters and a canopy cover of more than 10 percent, or trees able to reach these thresholds in situ. It does not include land that is predominantly under agricultural or urban land use.

Explanatory notes

1. Forest is determined both by the presence of trees and the absence of other predominant land uses. The trees should be able to reach a minimum height of 5 meters in situ.
2. Includes areas with young trees that have not yet reached but which are expected to reach a canopy cover of 10 percent and tree height of 5 meters. It also includes areas that are temporarily unstocked due to clear-cutting as part of a forest management practice or natural disasters, and which are expected to be regenerated within 5 years. Local conditions may, in exceptional cases, justify that a longer time frame is used.
3. Includes forest roads, firebreaks and other small open areas; forest in national parks, nature reserves and other protected areas such as those of specific environmental, scientific, historical, cultural or spiritual interest.
4. Includes windbreaks, shelterbelts and corridors of trees with an area of more than 0.5 hectares and width of more than 20 meters.
5. Includes abandoned shifting cultivation land with a regeneration of trees that have, or are expected to reach, a canopy cover of 10 percent and tree height of 5 meters.

²Forest Resources of the World 1948, available at: <https://www.fao.org/docrep/x5345e/x5345e00.htm> For other past assessments, see: <https://www.fao.org/forest-resources-assessment/past-assessments/en/>

³For more information about FRA 2020 and the reporting process, see: <https://www.fao.org/forest-resources-assessment/en/>

⁴The FRA assessment includes a number of other definitions for Other Wooded Land, Naturally Regenerating Forest, Planted Forest, Plantation Forest, Afforestation, Reforestation, and more. These definitions can be viewed in the document [FRA 2020 Terms and Definitions](#).

6. Includes areas with mangroves in tidal zones, regardless whether this area is classified as land area or not.
7. Includes rubber-wood, cork oak and Christmas tree plantations.
8. Includes areas with bamboo and palms provided that land use, height and canopy cover criteria are met. 9. Includes areas outside the legally designated forest land which meet the definition of “forest”.
9. Excludes tree stands in agricultural production systems, such as fruit tree plantations, oil palm plantations, olive orchards and agroforestry systems when crops are grown under tree cover. (Note: The FAO does track these land areas, see: <https://fra-data.fao.org/AF/fra2020/otherLandWithTreeCover/>) Note: Some agroforestry systems such as the “Taungya” system where crops are grown only during the first years of the forest rotation should be classified as forest.

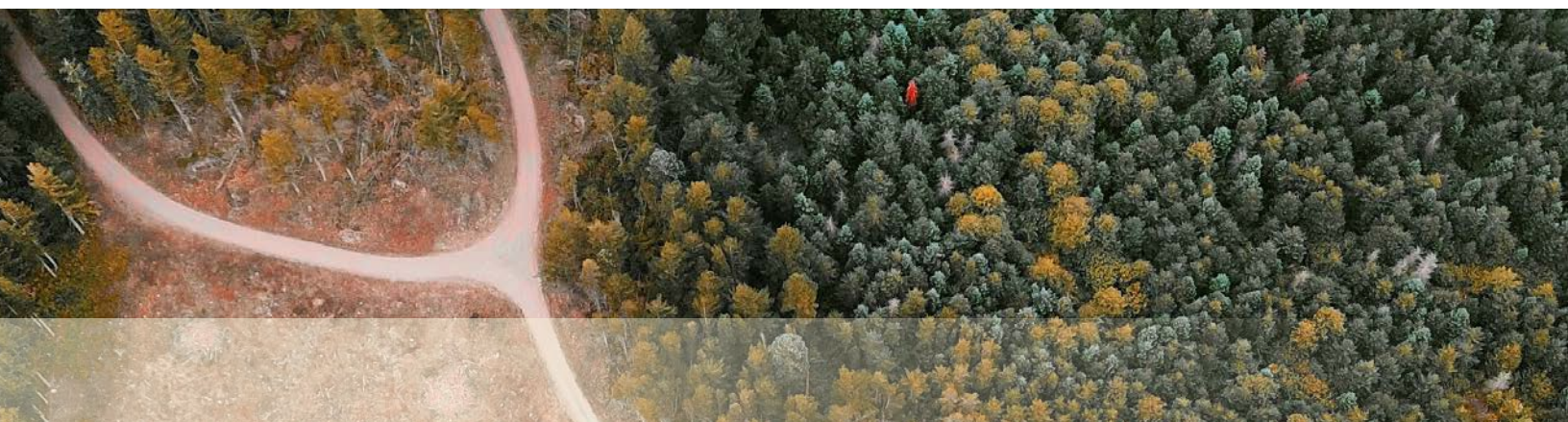
DEFORESTATION: *The conversion of forest to other land use independently whether human-induced or not.*

Explanatory notes

1. Includes permanent reduction of the tree canopy cover below the minimum 10 percent threshold.
2. It includes areas of forest converted to agriculture, pasture, water reservoirs, mining and urban areas.
3. The term specifically excludes areas where the trees have been removed as a result of harvesting or logging, and where the forest is expected to regenerate naturally or with the aid of silvicultural measures.
4. The term also includes areas where, for example, the impact of disturbance, over-utilization or changing environmental conditions affects the forest to an extent that it cannot sustain a canopy cover above the 10 percent threshold.

Source: FRA 2020 Terms and Definitions, <https://www.fao.org/3/I8661EN/i8661en.pdf>

The FAO’s unifying definitions are used by the more than 230 countries and territories participating in the FRA and were developed through international negotiations. The FAO approach allows for worldwide collaboration in mapping and evaluating the world’s forests in a consistent, comprehensive, and repeatable manner. The FAO definition of deforestation focuses on the land use, recognizing that after planned forest management activities the land will be replanted and a forest regrown, so the land remains “forested”. This is similar to how agricultural land remains accounted for as cropland during a fallow season or following harvest.⁵ Advancements in remote sensing technology (see sidebar) as well as political interests influence the definitions used in forest resource assessments.⁶ Modifications in these definitions impact what is classified as forest area, how deforestation trends are calculated, and influence perceptions of environmental conditions.



⁵Both forestland and farmland change their land use classification if following a harvest the intention is to convert the land use to other forms of development such as mining or housing rather than continue a cycle of producing renewable biomaterials.

⁶The FAO FRA 1980 was the first assessment to use a technical definition of forests that included measurable parameters. FRA 1980 employed the following minimum criteria for defining forest: 10 percent canopy cover density, tree height of 7 m, and area of 10 ha. <https://www.fao.org/forest-resources-assessment/past-assessments/fra-1980/en/>

Technology Systems to Advance Land Use Change Detection

Remote sensing, digital technologies, and the analysis of satellite imagery allow us to gather information at various points in time and to detect the change that has occurred over time. They are great advancements for being able to look at the entire planet quickly and repeatedly. These technologies continue to advance with the development of artificial intelligence (AI) and other innovations. The limits and value of their change detection are determined by the quality and precision of the information that is gathered as well as the parameters applied in the analysis. For example the resolution of the data to a 30, 10, or 1 meter pixel size will influence what can be detected. Height detection is also an important variable. Being able to detect vegetation that is less than 5 meters (16 feet) is important for knowing if a forest is regenerating following a wildfire or timber harvest. With current technology, additional information derived from ground-truthing and country-level reporting remains essential to relate the observed changes to underlying causes and to determine mechanisms for supporting the desired outcomes. (For an example of current forest evaluation data sets and their resolution, see [Global Forest Watch](https://research.wri.org/gfr/data-methods) and their methods described at: <https://research.wri.org/gfr/data-methods>.)

Fully understanding deforestation requires an examination of the entire landscape and interactions between forestry, agriculture, urban development, mining, and other land uses as well as impacts from ecological disturbances such as wildfires, hurricanes, monsoons, and earthquakes. It is increasingly helpful for global monitoring systems to be capable of detecting and accurately identifying a greater range of activities across the surface of the planet. A constructive step in this direction is the [Forest Data Partnership](https://forestdatapartnership.org) that is working to “develop a consistent geospatial data ecosystem that will enable companies, governments, NGOs, researchers and civil society to access open source, validated data that can be used for the monitoring, verification and disclosure of progress in reducing deforestation and advancing restoration.”⁷ The joint initiative led by FAO and the World Resources Institute (WRI) is supported by USAID and the US State Department. Other partners include NASA-SERVIR, Google and Unilever.



⁷<https://forestdatapartnership.org>

Beyond the FAO assessment and reporting, there are other approaches to defining forest areas that have been adopted by major international environmental and forestry organizations (Table 1).⁸

Table 1. Forest definitions adopted by major international environmental and forestry organizations other than the FAO

<p><i>United Nations Framework Convention on Climate Change (UNFCCC; 2002)</i> A minimum area of land of 0.05–1.0 ha with tree crown cover (or equivalent stocking level) of more than 10–30 % with trees with the potential to reach a minimum height of 2–5 m at maturity in situ. A forest may consist either of closed forest formations where trees of various storeys and undergrowth cover a high proportion of the ground or open forest. Young natural stands and all plantations which have yet to reach a crown cover of 10–30 % or tree height of 2–5 m are included under forest, as are areas normally forming part of the forest area which are temporarily unstocked as a result of human intervention such as harvesting or natural causes but which are expected to revert to forest</p>
<p><i>United Nations Convention on Biological Diversity (UN-CBD; 2010)</i> A land area of more than 0.5 ha, with a tree canopy cover of more than 10%, which is not primarily under agriculture or other specific non-forest land use. In the case of young forest or regions where tree growth is climatically suppressed, the trees should be capable of reaching a height of 5 m in situ, and of meeting the canopy cover requirement</p>
<p><i>United Nations Convention to Combat Desertification (UN-CCD; 2000)</i> Dense canopy with multi-layered structure including large trees in the upper story</p>
<p><i>International Union of Forest Research Organizations (IUFRO; 2002)</i> A land area with a minimum 10 % tree crown coverage (or equivalent stocking level), or formerly having such tree cover and that is being naturally or artificial-ly regenerated or that is being afforested</p>

Source: Chazdon, R.L., Brancalion, P.H.S., Laestadius, L. et al. When is a forest a forest? Forest concepts and definitions in the era of forest and landscape restoration. *Ambio* 45, 538–550 (2016). <https://doi.org/10.1007/s13280-016-0772-y>

Approximately 300 varying definitions of deforestation have been identified.⁹ The differences in terminology include consideration of a change in land cover, a change in land use, or both. Some deforestation definitions in use today describe it as only a human-caused activity.¹⁰

As concluded by Lund in 2018:

“Rather than getting embroiled with definitions of forests, etc.,...What is important is the kind, amount (extent and size), and relative permanence of the woody vegetation. The kind and amount can be determined from remote sensing. The relative permanency depends, in part, on the landowners’ management objectives.”¹¹

In this statement, Lund acknowledges the limits of our measurement processes. We can observe, count, and record land conditions - but to understand change we also need to know the intentions of landowners, policy makers, and other influencers. In other words, there is a time dimension and social and economic factors to deforestation that must be considered. Efforts should continue to be made to eliminate differences in key definitions. It is also essential that studies, reports, and policies are fully transparent in disclosing the definitions that are applied to avoid misinterpretations of their results and invalid comparisons.

⁸Chazdon, R.L., Brancalion, P.H.S., Laestadius, L. et al. When is a forest a forest? Forest concepts and definitions in the era of forest and landscape restoration. *Ambio* 45, 538–550 (2016). <https://doi.org/10.1007/s13280-016-0772-y>

⁹Lund, Gyde. (2018). [2018 Definitions of Forest, Deforestation, Afforestation, and Reforestation](https://doi.org/10.13140/RG.2.2.31426.48323). 10.13140/RG.2.2.31426.48323.

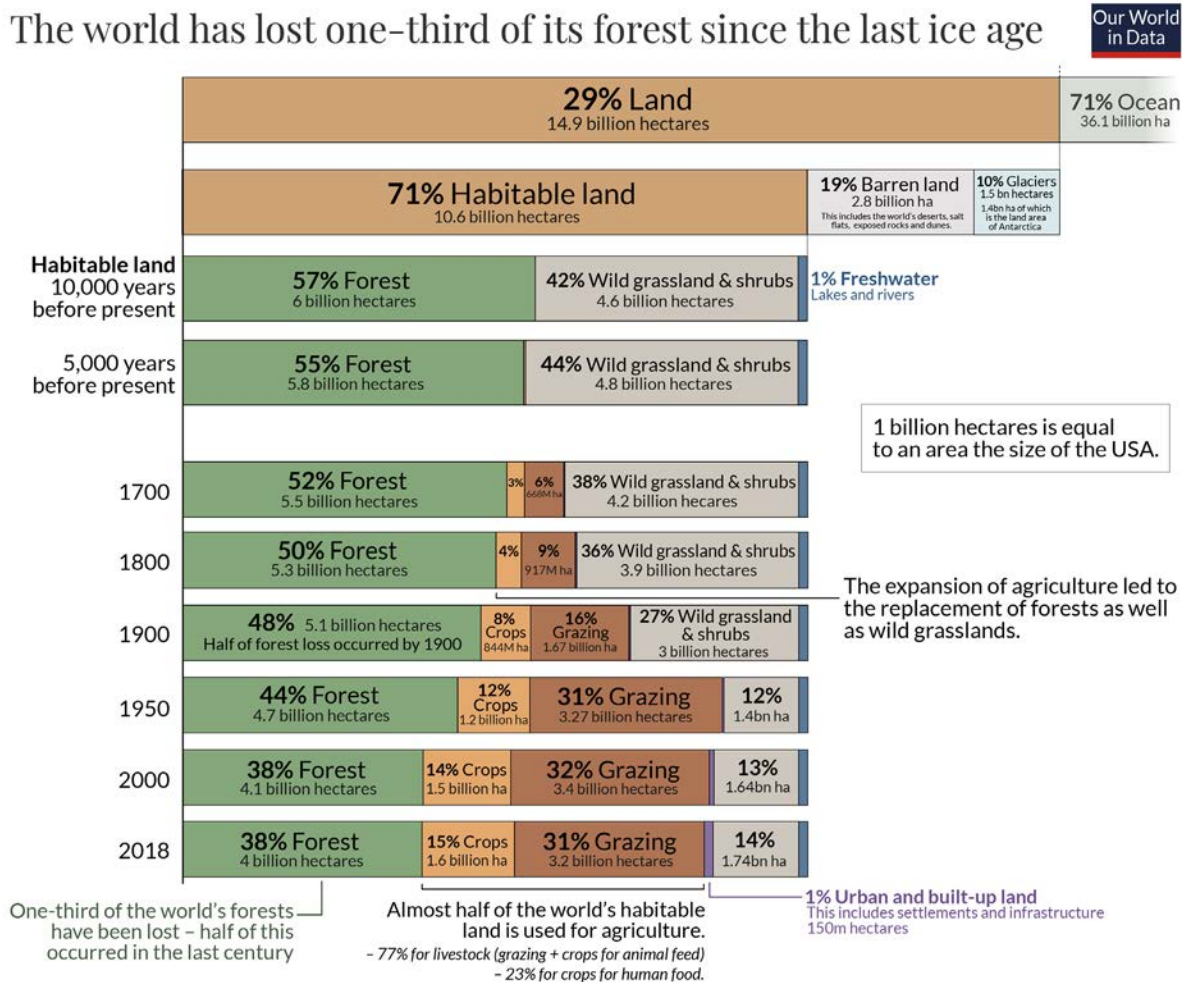
¹⁰For examples, see: “Deforestation is the purposeful clearing of forested land.” Source: <https://education.nationalgeographic.org/resource/deforestation> and “deforestation, the clearing or thinning of forests by humans.” Source: <https://www.britannica.com/science/deforestation>

¹¹Lund, Gyde. (2018). [2018 Definitions of Forest, Deforestation, Afforestation, and Reforestation](https://doi.org/10.13140/RG.2.2.31426.48323). 10.13140/RG.2.2.31426.48323.

Trends in Global Forests and Deforestation

From the FAO reporting, it is shown that forests cover 31 percent of the global land area.¹² The total global forest area is 4.06 billion hectares, or approximately 5,000m² (or 50 x 100m) per person.¹³ It is estimated that at the end of the last ice age, forests may have represented as much as 57% of the planet's habitable land area (Figure 2).¹⁴ As shown in Figure 2, land use change has been occurring for a very long time (even when human populations were much smaller than they are today), and the expansion of cropland and grazing land comes at the expense of forests and wild grassland and shrubs. While it may be easy to imagine the expansion of cities and towns as major drivers of land use change, urban land accounts for just 1% of global habitable land.¹⁵

Figure 2. Global Land Use Change Since the Last Ice Age



Data sources: Forests data from UN Food and Agriculture Organization (FAO); and Williams, M. (2003). Deforesting the earth: from prehistory to global crisis. Agriculture data post-1950 from UN FAO; pre-1950 data from The History Database of the Global Environment (HYDE)

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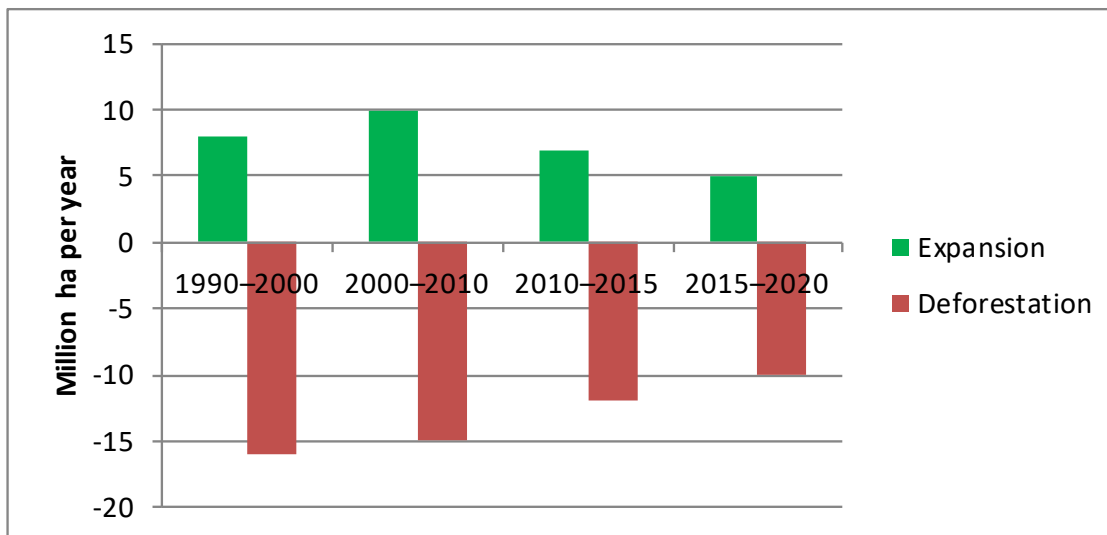
¹²The State of the World's Forests, 2020 <https://www.fao.org/documents/card/en/c/ca8642en>; The State of the World's Forests, 2022 <https://www.fao.org/3/cb9360en/online/cb9360en.html>

¹³Noting that forests are not equally distributed around the globe. Source: <https://www.fao.org/state-of-forests/en/>

¹⁴Hannah Ritchie and Max Roser (2021) - "Forests and Deforestation". Published online at OurWorldInData.org. Retrieved from: '<https://ourworldindata.org/forests-and-deforestation>' [Online Resource]

¹⁵Urban land includes cities, towns, villages, roads and other human infrastructure. Source: Hannah Ritchie and Max Roser (2013) - "Land Use". Published online at OurWorldInData.org. Retrieved from: '<https://ourworldindata.org/land-use>' [Online Resource]

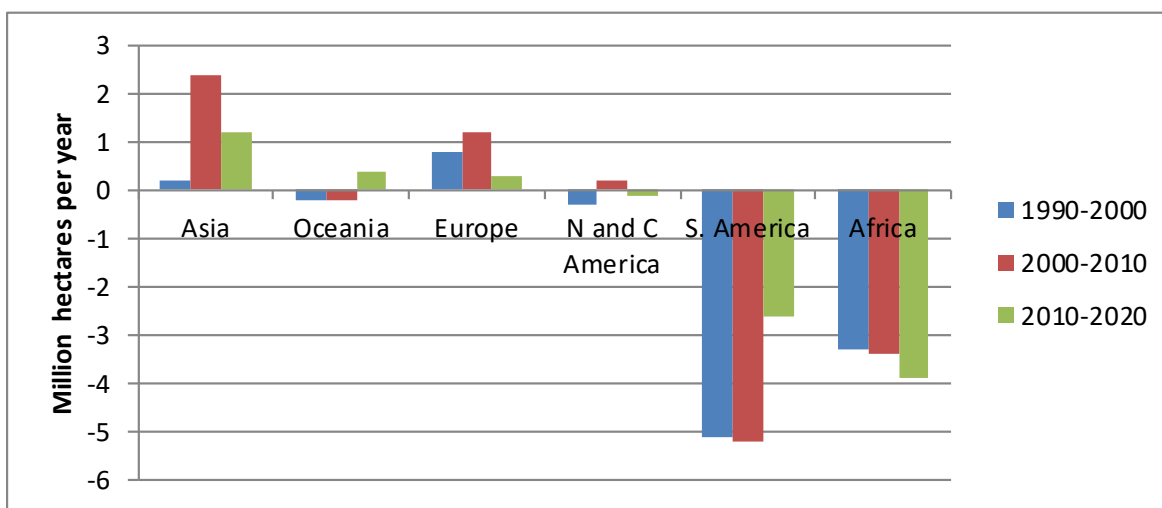
Figure 3. Forest expansion and deforestation, 1990-2020.



Source: FAO, 2023. <https://fra-data.fao.org/>

The FAO defines “forest area net change” as the sum of all forest losses (deforestation) and all forest gains (forest expansion) in a given period. Net change, therefore, can be positive or negative, depending on whether gains exceed losses, or vice versa.¹⁶ The rate of net forest loss decreased substantially over the period 1990-2020 due to a reduction in deforestation in some countries, plus increases in forest area in others through afforestation and the natural expansion of forests (Figure 4). The rate of net forest loss declined from 7.8 million ha per year in the decade 1990-2000 to 5.2 million ha per year in 2000-2010 and 4.7 million ha per year in 2010-2020. The rate of decline of net forest loss slowed in the most recent decade due to a reduction in the rate of forest expansion.

Figure 4. Annual forest area net change by decade and region, 1990-2020



Source: FAO, 2023. <https://fra-data.fao.org/>

As shown in Figure 4, negative changes in forest area remain significant in South America and Africa while other parts of the world have stable to increasing forest areas. The intersection between agriculture and deforestation is clear in history (Figure 2) and in the most recent FAO assessments. Nearly 90 percent of deforestation between 2000 and 2018 was related to agriculture.¹⁷ An estimated 95% of global deforestation occurs in tropical regions and 60% of tropical forest loss is associated with expansion of three crops - beef, soy, and palm oil.¹⁸

¹⁶Global Forest Resources Assessment 2020 Key Findings. <https://www.fao.org/3/ca8753en/ca8753en.pdf>

¹⁷State of the World’s Forests, 2022. <https://www.fao.org/3/cb9360en/online/src/html/deforestation-climate-mitigation-biodiversity.html>

¹⁸<https://ourworldindata.org/drivers-of-deforestation>

Expansion of commercial forest production and tree plantations also contribute to losses of specific forest types and forest degradation. Although agricultural commodities are the major drivers of deforestation and often operate beyond the control of foresters and forest product companies, the continued loss of forests around the world negatively impacts the reputation of the forest and forest products sector and makes it something the sector must continue to take action to address.

Understanding Deforestation - Past, Present and Future

Tackling deforestation requires an understanding of the drivers, causes, and agents. Identifying drivers and agents of deforestation is complicated and disputes over definitions and rates of deforestation remain because measurement processes are not just technical but social and political.¹⁹ Along with diverse drivers and factors contributing to deforestation, many strategies are available to address the impacts of deforestation (Table 2).²⁰

Table 2. Drivers of deforestation, contributing factors, and strategies for change

Drivers of deforestation and factors contributing to deforestation	Strategies to avoid, reduce, or reverse deforestation impacts
<ul style="list-style-type: none"> ● Small- and large-scale agriculture, both temporary and permanent ● Conversion to palm oil or other agricultural or biomass or bioenergy crops ● Livestock grazing ● Mining, minerals, and fossil fuel production ● Fuelwood consumption ● Illegal logging ● Commercial, legal logging ● Demographics, affluence, and population growth ● Demand for wood and paper products ● Demand for non-wood goods 	<ul style="list-style-type: none"> ● Limit agricultural production to existing cleared lands (No net gain) ● Source foods from intact ecological systems (wild crafting, gathering, in-forest cultivation, permaculture systems, etc) ● Agroforestry and perennial production systems (forest farming) ● Soil protection and restoration for degraded soils to regain productivity (including the use of biochar) ● Changes in the human diet (focus on greater nutrition; lower impact food choices) ● Reduce food loss and waste ● More efficient use of fuelwood or greater use of other renewable energy sources ● Land tenure and use rights, including effective regulation and enforcement of responsible logging ● Decoupling population growth and consumption growth (i.e, the I=PAT equation²¹ and a more circular economy²²)

Source: Dovetail Partners, 2023.

¹⁹The role of women in deforestation and forest degradation in Liberia: A case study of women's perception in Gbarplu County. African Women's Network for Community Management of Forests. ITTO. https://www.itto.int/files/itto_project_db_input/3047/Technical/Rapport_Liberia_FINAL_Mai14.pdf, 2014

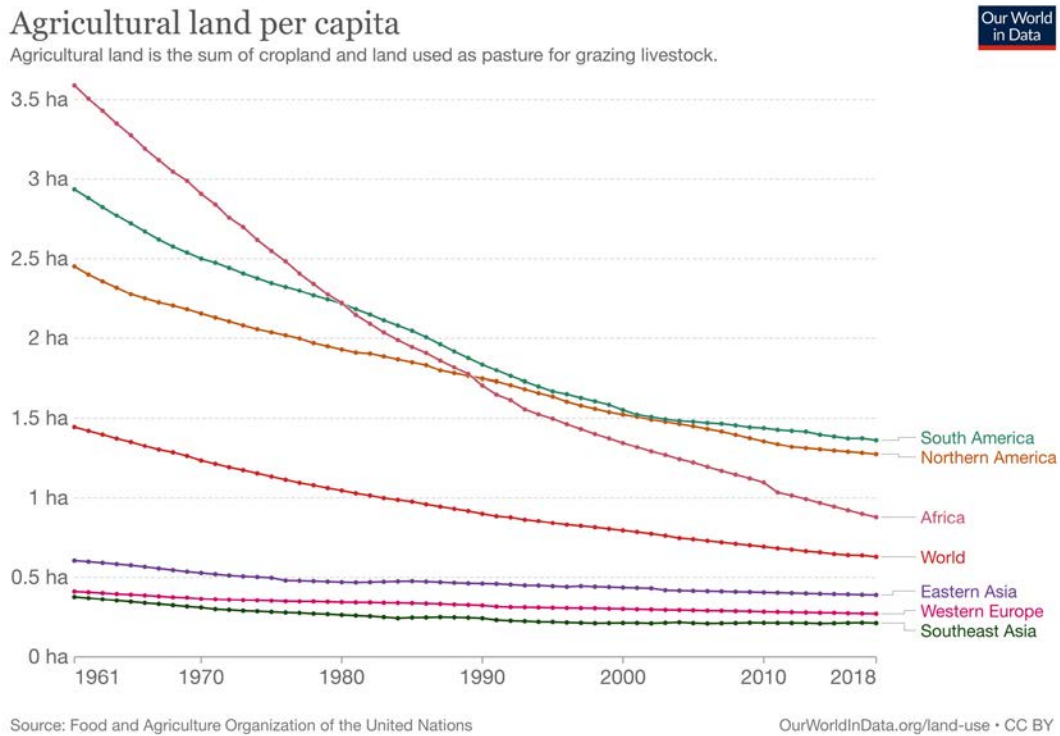
²⁰Many additional strategies could be included in this table, including solutions that may not be obviously connected to forests. For example, Project Drawdown determined that empowering women and girls represents the most impactful tool for achieving a climate-safe future. Among the 80 solutions evaluated for their potential to reverse global warming, educating girls and ensuring women have access to family planning resources ranked No. 6 and 7, respectively. For further discussion, see: [The case for raising up women in climate tech | Greenbiz and Project Drawdown Solutions](https://drawdown.org/solutions); <https://drawdown.org/solutions>

²¹For further discussion, see: Chertow, M.R. (2000), The IPAT Equation and Its Variants. *Journal of Industrial Ecology*, 4: 13-29. <https://doi.org/10.1162/10881980052541927>

²²For further discussion, see: An Introduction to the Circular Economy. 2020. Dovetail Partners. <https://dovetailinc.org/portfoliodetail.php?id=5e6f6fff64cb3>

Although strategies to reduce deforestation through changes to agriculture may seem difficult to achieve, the process is well underway. Since 1961, the global human population has increased by 147% but the amount of land used for agriculture has increased by only 7%. The per capita amount of agricultural land has been steadily declining (Figure 5). Previous figures have already shown that deforestation rates are slowing (Figure 3), land uses may be stabilizing (Figure 2), and some regions have net forest gains (Figure 4).

Figure 5. Agricultural land per capita, 1961 - 2018.



The changes that have decoupled population growth and agricultural land expansion include dramatic gains in agricultural productivity and crop yields.²³ Advancements in food preservation, processing, and storage also contribute to these trends. Reductions in food waste could improve the balance.²⁴

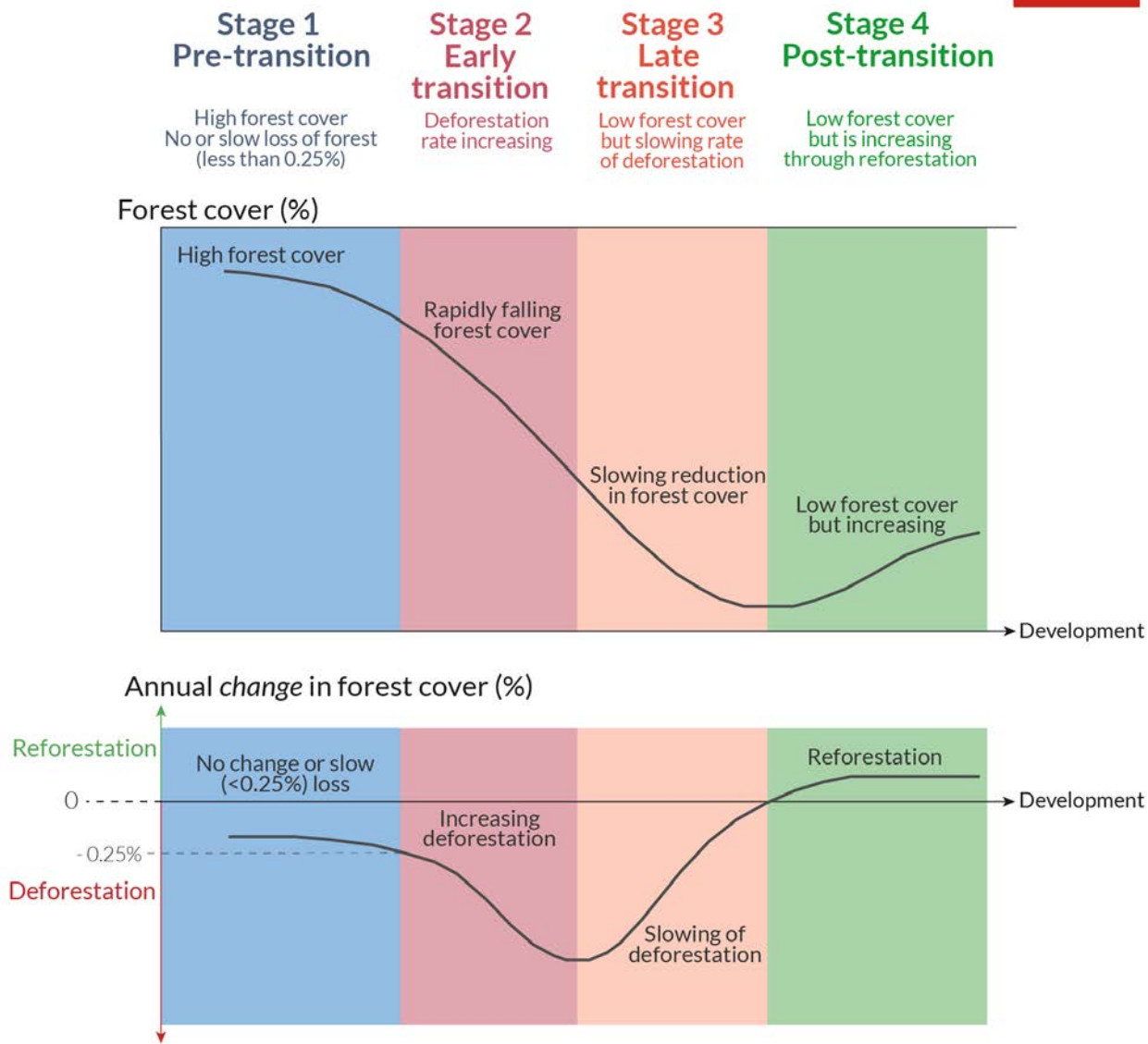


²³Amid concerns about environmental impacts from some agricultural production systems, there is also growing interest in regenerative agriculture. For further discussion, see: Defining Regenerative Agriculture and the Intersection with Sustainable Forestry. Dovetail Partners. 2022. <https://dovetailinc.org/portfoliodetail.php?id=62fe2c22062ae>

²⁴For further discussion of food waste, see: Consumer Food Waste: Environmental Impacts and Changing Course. Dovetail Partners. 2019. <https://dovetailinc.org/portfoliodetail.php?id=5e25febb32b39>

Figure 6. Forest Transition Model, 4 Stages and the Forest Transition Point

Forest Transition Model: How forests change over time



Adapted from Hosonuma et al. (2012). An assessment of deforestation and forest degradation drivers in developing countries. *Environmental Research Letters*. OurWorldinData.org - Research and data to make progress against the world's largest problems. Licensed under CC-BY by the author Hannah Ritchie.

Research shows that countries have been following a predictable pattern for their forest lands. These patterns occur in response to population trends as well as agricultural patterns and other economic and social factors.

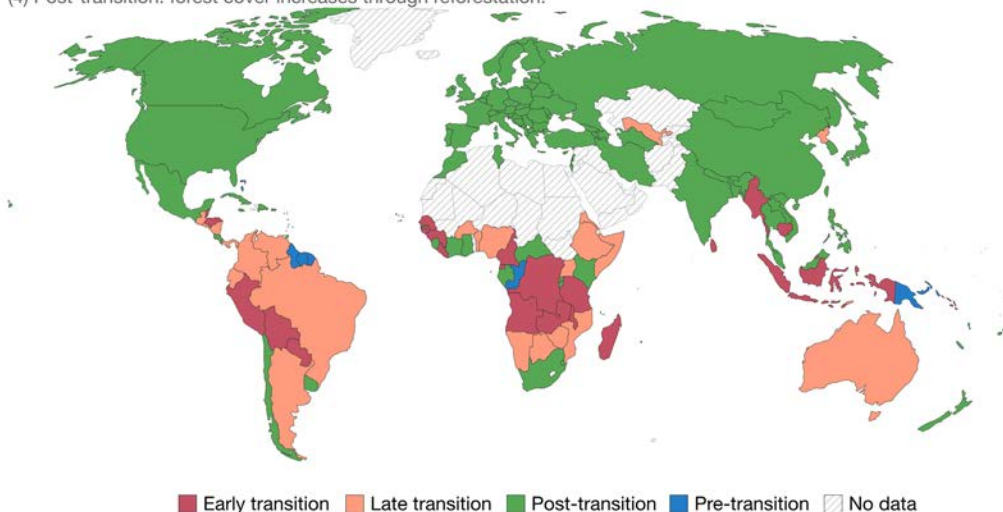
As shown in Figure 6, there is a 'forest transition point' when forest regrowth gains the upper hand. Today there are a number of regions of the world where trends for forest land have transitioned and reforestation is occurring at a rate that exceeds deforestation (net forest gains) (Figure 4). Today, most of the global north (predominantly the temperate forest region) is in the Stage 4 post-transition with forest cover increasing, while Stages 2 and 3 are common in other regions of the world (Figure 7).

Figure 7. Global Mapping of the Forest Transition Model Stages, 2013.

Forest transition phase, 2013

Countries are grouped into four forest transition phases which tend to represent a sequence of development.

- (1) Pre-transition: high forest cover and low deforestation rates;
- (2) Early-transition: forests lost at an increasingly rapid rate;
- (3) Late-transition: small fraction of remaining forest but slowing of deforestation;
- (4) Post-transition: forest cover increases through reforestation.



Source: Pendrill, F., Persson, U. M., Godar, J., & Kastner, T. (2019). Deforestation displaced: trade in forest-risk commodities and the prospects for a global forest transition. *Environmental Research Letters*, 14(5), 055003.
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The Forest Transition Model shown in Figures 6 and 7 can be criticized in many ways, including consideration of the impact of global trade. Some countries may protect their own forestlands from deforestation, but rely on importing agricultural and mined products from other regions that drives deforestation in those counties. It is also unclear if reforestation trends will continue to follow this pattern if population and consumption growth continues and if gains in agricultural productivity are more limited in the future. To balance these impacts and trade-offs it is necessary to approach deforestation from a multi-national, global, and cross-commodity perspective.

Private Sector Approaches to Avoiding Deforestation

There are several approaches to address global forest resources and the impacts of deforestation, including private sector actions (i.e., “zero-deforestation” pledges), timber and trade legality legislation, and certification. Advocacy from social and environmental organizations play a role in developing these actions as well as government capacities and frameworks.

Government capacity to control deforestation may be limited due to lack of enforcement mechanisms and insufficient regulatory and legal frameworks. In some countries there may be a lack of political will, corruption, and injustices towards forest-dependent peoples to consider. Sustainability certification is a tool that corporations and governments use to avoid sourcing from deforested areas. Certification programs (e.g., for forest products, food, biofuel, and other consumer goods) typically include restrictions on deforestation at the source and due diligence requirements to keep products from deforestation out of supply chains.²⁵

In addition to certification systems, there are many private sector pledges and commitments to no-deforestation, including targets to achieve deforestation reduction goals in the coming years. A report by Accountability Framework initiative (AFi) found that 75% of company-wide no-deforestation/no-conversion commitments disclosed by companies in 2021 had target dates of 2025 or earlier.²⁶

²⁵For further discussion, see: Responsible Sourcing Of Forest Products: The Roles For Government Licensed Timber And Third-Party Certification, Dovetail Partners, 2018. Available at: <https://dovetailinc.org/portedetail.php?id=5e260b333c589>

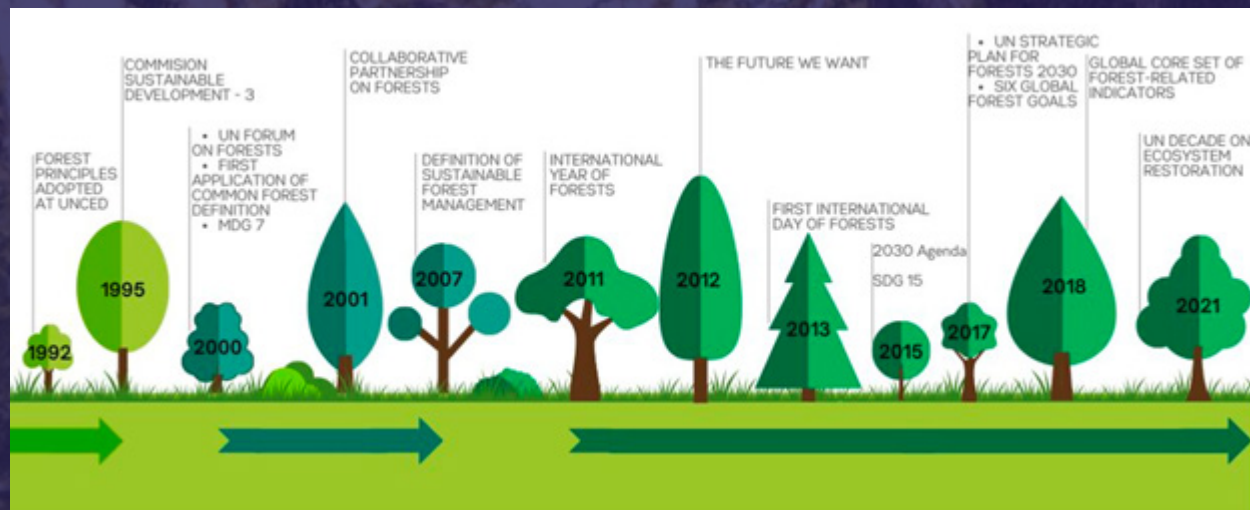
²⁶A report by Accountability Framework initiative (AFi), see: <https://accountability-framework.org/the-afi-recommends-a-target-date-of-2025-or-sooner-to-eliminate-deforestation-and-conversion-in-supply-chains/>

Whereas a variety of corporations and financial institutions have made commitments to eliminate deforestation, it is recognized that these voluntary commitments are difficult to enforce or scale in a way that will create broad sector change and benefit. To the extent that voluntary commitments may create a market disadvantage (i.e., higher production costs), the outcome of these initiatives may not be entirely successful in changing the dominant production models.

Addressing Deforestation through Greater Economic Sustainability

The State of the World's Forest Report in 2022²⁷ took a close look at solutions to deforestation and strategies for greater economic sustainability. These strategies build upon nearly 30 years of experience with global assessments of forest-related issues (Figure 8). The analysis identified a significant need for greater forest investment, including an estimate that a fourfold increase in financing is needed by 2050 to meet global goals for climate, biodiversity, and land conditions. These investments could include funds for reforestation and afforestation projects, restoration activities, and other conservation and protection measures that align with sustainable development goals. The means to reach this level of investment would include diversified public and private sector funding, finance for small-scale producers, repurposing existing supports and subsidies, and expansion of investment mechanisms like ecological fiscal transfers.²⁸ The report further defines three interrelated pathways for forests and trees to support economic resiliency: 1) halting deforestation and maintaining forests; (2) restoring degraded lands and expanding agroforestry; and (3) sustainably using forests and building green value chains. The recognition of the value of green value chains and the importance of wood and forest products is also related to the predicted doubling of global consumption of natural resources by 2060 as the world seeks more renewable materials and less reliance on high-carbon emitting, non-renewable products.²⁹ For additional analysis and summary information related to the intersection between forests and forest product economies, see: *Global Forest Resources and Timber Trade. 2021 Dovetail Partners.* <https://dovetailinc.org/upload/tmp/1632318719.pdf>

Figure 8. Milestones of forest-related issues in the global international agenda 1992-2021



Source: Policy Brief: Criteria and Indicator Based International Monitoring, Assessment, and Reporting. UNECE/FAO, 2021. (<https://bit.ly/3Haolbu>)

²⁷The State of the World's Forests, 2022: Forest pathways for green recovery and building inclusive, resilient and sustainable economies. <https://www.fao.org/3/cb9360en/online/cb9360en.html> Also see, Key Messages: <https://www.fao.org/3/cb9360en/online/src/html/key-messages.html>

²⁸Ecological fiscal transfers (EFT) are an economic instrument used to compensate for opportunity costs associated with land-use restrictions for biodiversity conservation, watershed protection, and landfills, as well as to promote the creation of new municipal protected areas and programs. Source: Felipe Luiz Lima de Paulo, Pedro Jorge Sobral Camões, The adoption of ecological fiscal transfers: An empirical analysis, *Land Use Policy*, Volume 88, 2019, 104202, ISSN 0264-8377, <https://doi.org/10.1016/j.landusepol.2019.104202>

²⁹State of the World's Forests, 2022. Chapter 3. <https://www.fao.org/3/cb9360en/online/src/html/deforestation-climate-mitigation-biodiversity.html>

Government Policy Actions

Incorporating targets or requirements to avoid deforestation into international law and trade agreements could contribute to establishing common practices among producers of a variety of commodities. However, these policies can also be utilized as protectionist measures for domestic producers and represent a step away from globalization of trade which diminishes the market influence of these relationships. A key consideration with the development of deforestation regulation by the governments of major trading nations is the evolving role of public sector action to address the impacts of global commodity production.

The G7

The G7 includes Canada, France, Germany, Italy, Japan, UK, and the US. The G7 Ministers responsible for Climate, Energy and the Environment met in Berlin in May 2022 and agreed to accelerate the transition to sustainable supply chains that decouple trade and agricultural production from deforestation and forest degradation and to promote sustainably produced wood and wood products. In their communiqué they stated that “land-use change, including deforestation, and loss of habitats to agriculture as well as unsustainable agriculture practices are key drivers of biodiversity loss, land degradation, climate change, increasing water scarcity and pollution.”³⁰

The ministers highlighted the importance of investment in climate-smart and nature-positive agriculture innovation and pledged to “develop regulatory frameworks or policies, which may include the introduction of due diligence requirements for commodities associated with the risk of deforestation and forest degradation, and review our progress by the end of 2023.”

EU Deforestation Regulation

In late 2022, the European Union (EU) announced the next steps in plans for greater regulation of products associated with deforestation. The EU Deforestation Regulation (EUDR) (Document 52021PC0706) includes proposals for required due diligence to comply with deforestation-free objectives.³¹ The proposed regulation builds from the EU’s 2003 Forest Law Enforcement, Governance and Trade (FLEGT) Action Plan, coupled with the EU Timber Regulation (EUTR).³² The proposal references specific commodities to be regulated, including cattle, cocoa, coffee, oil palm, soya and wood.³³ Some countries where these commodities are produced have had strong negative reactions to the proposed regulation and other attempts by high consuming countries to determine global development patterns.³⁴ While recognizing the value and importance of the issues being addressed, the proposed regulation currently includes a requirement for identifying the source of materials to a high level of detail (e.g., geolocation requirements for all “plots of land”) that in its current form is onerous and likely discriminatory against products derived from smallholders and producers, including non-industrial landowners in the US. Providing this detailed information would be logistically challenging and could create a barrier to market participation for specific products, including US hardwoods that rely on sourcing from tens of thousands of private woodland owners. A solution to this may be to modify the definition for “plot of land” or remove the geolocation requirement when sourcing from a region that has been determined to be low risk.³⁵

³⁰G7 Climate, Energy and Environment Ministers’ Communiqué, <https://www.g7germany.de/resource/blob/974430/2044350/84e380088170c69e6b6ad45dbd133ef8/2022-05-27-1-climate-ministers-communiqué-data.pdf?download=1>, 27 May 2022, Berlin

³¹Proposal for a REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on the making available on the Union market as well as export from the Union of certain commodities and products associated with deforestation and forest degradation and repealing Regulation (EU) No 995/2010 COM/2021/706 final Available at:

<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52021PC0706>

³²For background on FLEGT and EUTR, see: Responsible Sourcing of Forest Products: The roles for government licensed timber and third-party certification programs. 2018. Dovetail Partners. <https://dovetailinc.org/portfoliodetail.php?id=5e260b333c589>

³³The proposal is part of a broader plan of actions to tackle deforestation and forest degradation first outlined in the [2019 Commission Communication on Stepping up EU Action to Protect and Restore the World’s Forests](#); later confirmed by the [European Green Deal](#), the [EU Biodiversity Strategy for 2030](#) and the [Farm to Fork Strategy](#). For additional background, see: https://environment.ec.europa.eu/topics/forests/deforestation/regulation-deforestation-free-products_en

³⁴For example: Growing tensions between Asian palm oil producers and the European Union (01/13/2023) <https://www.euronews.com/next/2023/01/13/malaysia-palm-oil-eu-timeline>; Shades of OPEC loom over global carbon market (01/10/2023) [Hinrich Foundation](#).

³⁵For further discussion of this concern, see: American Hardwood Export Council (AHEC) Trade Policy Alert <https://hmr.com/news/ahec-trade-policy-alert-eu-deforestation-legislation/> and the full comment letter available here: <https://hmr.com/wp-content/uploads/2022/07/AHEC-Comment-on-EU-Deforestation-Law.pdf>

A great deal of additional work is needed to fully implement the proposed EU regulation, including refinement of key terminology and definition of procedures. The proposal uses a risk-based approach that was also the basis of EUTR and can be effective for evaluating global trade considerations. However, continued careful consideration of the impacts of the regulation is necessary to avoid unintended consequences, marginalization of responsible producing regions, and erosion of market influence.

US

In the United States, the Fostering Overseas Rule of Law and Environmentally Sound Trade (FOREST) Act was introduced in 2021 to address deforestation associated with imported palm oil, soybeans, cocoa, cattle, rubber, and wood pulp.³⁶ The bill was supported by a number of environmental organizations.³⁷

China

In addition to the EU and US, China also has a significant role to play in addressing global deforestation. China is a major wood and paper products consumer, producer, and exporter. China's domestic production of wood grew 50% from 1998-2018; at the same time the nation's imports of wood grew six times. About two-thirds of the world's tropical logs went to China in 2018. In 2019, the Chinese government revised regulations for domestically produced timber to address illegal logging and provide requirements for domestic and exporting timber industries. However, China's regulations for imported timber are not as well-defined.³⁸



Human Health and Deforestation

The recent global pandemic has brought to light the potential connections between human health and deforestation and may be of increasing importance in future policy actions and global monitoring systems. As reported by FAO:

Deforestation and forest fragmentation also bring people and livestock into closer contact with wildlife, increasing human-wildlife conflicts and the risk of disease transmission between them. Deforestation is an important factor in the spread of vector-borne diseases (i.e. diseases, such as malaria, that are transmitted by vector species between susceptible species). A recent study found that 15 percent of about 250 analyzed emerging infectious diseases (EIDs) were linked to forests, several of which (e.g. Ebola and human immunodeficiency virus infection/acquired immunodeficiency syndrome) are particularly harmful to human health and economies. Deforestation, particularly in tropical regions, has been associated with an increase in infectious diseases such as dengue fever, malaria and yellow fever.

Source: Wilcox, B.A. & Ellis, B.R. Forests and emerging infectious diseases of humans. *Unasylva*, 224: 11–18. (also available at <https://www.fao.org/3/a0789e/a0789e03.htm>) 2006.

³⁶The full text of the bill is [available here](#). A one page summary is [available here](#), and a section by section summary can be [found here](#). Also see: <https://www.govinfo.gov/app/details/BILLS-117hr5508ih/summary>

³⁷See letter of support here: <https://www.forest-trends.org/blog/forest-act-support-letter/>

³⁸China's Unique Opportunity to Tackle Deforestation. June 2022. <https://www.weforum.org/agenda/2022/07/china-deforestation-biodiversity/>

Bottom Line

Deforestation continues to be a major problem, especially regionally, with extensive consequences for production and trade of agricultural commodities and forest products, climate change, biodiversity, sustainable development and livelihoods of forest-dependent peoples. Another consequence is the tarnished image of the forest sector. Improvements of forest resource monitoring tools, for example remote sensing and satellite imagery, enable greater precision in measuring the developments as well as in forecasting changes. Deforestation has a direct negative economic impact on the global trade of wood- and non-wood forest products.

Understanding the developments, causes and results of deforestation are a basis for public and private actions for effective mitigations. International leaders, e.g. the G7, international organizations and governments are aware, enacting policies and pledging action. Coordinated, effective action necessitates cross-commodity policies (i.e. linking food and forest production systems), and actions, including substantial continued investment from both the public and private sector. With continued global collaboration and innovation we have optimism for continued reductions in deforestation and for the future of the world's forests.





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