Committee: Environmental Commission Sub-Commission 1 (EC1)

**Topic:** Promoting Sustainable Forest Management and Combating Deforestation

Student Officer: Cecilia Passa

**Position:** Deputy President

#### **Topic Introduction**

Currently, many of the world's forests are not being managed sustainably, particularly in the Amazon Basin, Central Africa, and Southeast Asia. This is primarily because many countries lack appropriate forest legislation and incentives to promote Suitable Forest Management (SFM). They have inadequate funding and human resources for the implementation of forest management plans, and they lack mechanisms to ensure the participation of all stakeholders in forest planning. <sup>1</sup>

Meanwhile, the rapid acceleration of the rate of deforestation is alarming. More specifically, practices such as excessive logging and agricultural expansion deplete forest resources faster than they can regenerate. It is evident that the unsustainable management of forests explicitly contributes to deforestation, which is responsible for approximately 17.5% of all greenhouse gas emissions.<sup>2</sup>

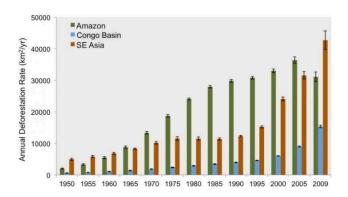


Figure 1: A bar chart showing the Annual Deforestation Rate from 1950-2009<sup>3</sup>



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<sup>&</sup>lt;sup>1</sup> "Sustainable Forest Management." Food and Agriculture Organization of the United Nations, www.fao.org/sustainable-forests-management/en/.

<sup>&</sup>lt;sup>2</sup> "Sustainable Forest Management." Internal Market, Industry, Entrepreneurship and SMEs, www.single-market-economy.ec.europa.eu/sectors/raw-materials/related-industries/forest-based-industries/s ustainable-forest-management en .

<sup>&</sup>lt;sup>3</sup> CellPressNews. "Effects of Past Tropical Deforestation Will Be Felt for Years to Come." EurekAlert!, www.eurekalert.org/news-releases/701770.

Nevertheless, the critical role that forests play in soil and biodiversity conservation and climate-change mitigation are well recognized. Therefore, it is crucial that we strive towards sustainable forest management, and forest restoration. Currently, the United Nations Decade on Ecosystem Restoration provides the opportunity to restore hundreds of millions of hectares of degraded forests.<sup>4</sup>

#### Definition of key concepts

#### Sustainable Forest Management (SFM)

According to the Helsinki resolution, it is: "The use of forests in a way, and at a rate, that maintains their biodiversity, regeneration capacity, and their potential to fulfill, now and in the future, relevant ecological, economic and social functions, at local, national, and global levels"<sup>5</sup>

#### Deforestation

"Deforestation is the purposeful clearing of forested land." It occurs because of the unsustainable management of forests, through agricultural expansion and illegal logging.

#### Reforestation

"Re-establishing forest that have either been cut down or lost due to natural causes" which is done through establishing tree plantations.



<sup>&</sup>lt;sup>4</sup> "Un Decade on Ecosystem Restoration." Wikipedia, Wikimedia Foundation, 27 May 2024, www.en.wikipedia.org/wiki/UN Decade on Ecosystem Restoration.

<sup>&</sup>lt;sup>5</sup> "Sustainable Forest Management - Forest Europe." FOREST EUROPE - Ministerial Conference on the Protection of Forests in Europe, 20 Mar. 2024, <a href="https://www.foresteurope.org/workstreams/sustainable-forest-management/#:~:text=According%20to%20the%20Helsinki%20resolution.and%20social%20functions%2C%20at%20local">www.foresteurope.org/workstreams/sustainable-forest-management/#:~:text=According%20to%20the%20Helsinki%20resolution.and%20social%20functions%2C%20at%20local</a>.

<sup>&</sup>lt;sup>6</sup> "Deforestation." Education, <u>www.education.nationalgeographic.org/resource/deforestation/</u>.

<sup>&</sup>lt;sup>7</sup> "Forest Management." Wikipedia, Wikimedia Foundation, 25 June 2024, www.en.wikipedia.org/wiki/Forest management#Sustainable forest management.

#### Afforestation

"The establishment of a forest in an area where there was no recent tree cove ... Its main goals are to expand forested areas, improve biodiversity, stop soil erosion, offer sustainable wood resources, and reduce climate change."<sup>8</sup>

#### Forest Restoration

"Actions to re-instate ecological processes, which accelerate recovery of forest structure, ecological functioning and biodiversity levels towards those typical of climax forest."

#### The Ecosystem Approach

"A strategy for the integrated management of resources that promotes conservation and sustainable use in an equitable way." The Malawi Principles were developed to support the implementation of the Ecosystem Approach by providing a framework for the integrated management of forest resources. 11

#### Logging

"Logging involves cutting trees for sale." <sup>12</sup>This practice can occur both legally and illegally. In both conditions, logging can have equally disastrous effects for forests, leading to more deforestation.

#### Forest degradation

"Forest degradation refers to the reduction in a forest's capacity to provide goods and services due to human activities or natural disasters." <sup>13</sup>

#### Photogrammetry

Photogrammetry is a technique used to assess the health of forests in national monitoring projects. This could be used to examine the long-term impacts of initiatives taken to reduce deforestation.



<sup>&</sup>lt;sup>8</sup> "Afforestation." Wikipedia, Wikimedia Foundation, 25 June 2024, <u>www.en.wikipedia.org/wiki/Afforestation</u>.

<sup>&</sup>lt;sup>9</sup> Forest restoration - Wikipedia, <a href="https://en.wikipedia.org/wiki/Forest restoration">https://en.wikipedia.org/wiki/Forest restoration</a>.

The Ecosystem Approach - UK Parliament, www.parliament.uk/globalassets/documents/post/postpn 377-ecosystem-approach.pdf .

<sup>&</sup>lt;sup>11</sup> Annex 1: Malawi Principles for the Ecosystem Approach, www.fao.org/3/Y4773E/y4773e0e.htm ..

<sup>&</sup>lt;sup>12</sup> Butler, Rhett A. "What Is Logging?" WorldRainforests.Com, WorldRainforests.com, 9 Apr. 2019, www.worldrainforests.com/kids/lesson\_plans/lisa\_algee/logging.html .

<sup>&</sup>quot;LiveEO: What Is Forest Degradation? Definition, Causes, and Mitigation under EUDR." RSS, www.live-eo.com/article/what-is-forest-degradation-definition-causes-and-mitigation-under-eudr.

#### **Background Information**

#### Reasons for deforestation's occurrence

Deforestation has been occurring for centuries, primarily to clear land for crops or livestock. The combination of agricultural expansion, wood extraction (through logging or wood harvest for domestic fuel or charcoal), and infrastructure expansion (such as road building and urbanization)<sup>14</sup> causes deforestation.

Deforestation methodsThe three direct causes of deforestation that are previously mentioned typically occur in a chain reaction, with one factor leading to the next. Frequently, countries build roads into remote areas to improve transportation of goods. This road development itself causes a limited amount of deforestation because it separates the forest into distinct areas, causing habitat fragmentation by creating isolated patches of species that can eventually lead to a decline in biodiversity as species struggle to adapt to these confined environments. Through this development, roads also provide entry to previously inaccessible land, thereby making it easier for loggers to enter and extract timber, leading to more extensive deforestation. Particularly, when the slash-and-burn technique is used, which consists of cutting down and burning trees to prepare for the cultivation of the land, the danger of uncontrolled wildfires increases. Furthermore, the burning releases carbon dioxide, contributing to greenhouse gas emissions and climate change. At the same time, forests that have been degraded through this process become prone to fires and are eventually deforested by repeated accidental wildfires from adjacent farms. To Over time, once the forest cover is lost, the land is often repurposed for agricultural expansion, which perpetuates the cycle of deforestation.

#### Impacts of Deforestation

https://earthobservatory.nasa.gov/features/Deforestation/deforestation\_update3.php.

www.earthobservatory.nasa.gov/features/Deforestation/deforestation\_update3.php.



<sup>&</sup>lt;sup>14</sup>Tropical Deforestation - NASA Earth Observatory,

<sup>&</sup>lt;sup>15</sup> Deforestation Causes | EROS - USGS, https://eros.usgs.gov/earthshots/deforestation-causes .

<sup>&</sup>lt;sup>16</sup> Butler, Rhett A. "Road Construction in the Rainforest." WorldRainforests.Com, WorldRainforests.com, 16 July 2020, <a href="https://www.worldrainforests.com/kids/elementary/505.html">www.worldrainforests.com/kids/elementary/505.html</a>.

<sup>&</sup>lt;sup>17</sup>"Tropical Deforestation." NASA, NASA,

#### **Environmental impacts**

Deforestation destroys the natural habitats of countless species which disrupts ecosystems, potentially leading to the extinction of plant and animal species. In addition, because forests act as carbon sinks by absorbing carbon dioxide from the atmosphere and storing it, when trees are cut down, the stores release carbon back into the atmosphere, thereby increasing the concentration of greenhouse gases and exacerbating global warming.

#### **Social impacts**

At the same time, deforestation can severely impact local communities such as indigenous groups who depend on forests for their food, shelter and cultural practices. When deforestation occurs, this threatens their cultural heritage, often forcing them to relocate and lose their traditional practices.

#### **Economic impacts**

While deforestation can provide land for agriculture in the short-term, it can eventually lead to soil erosion, loss of nutrients and decreased soil fertility which negatively impacts crop yield. Moreover, the destruction of forests reduces ecosystem services such as pollination and water purification which can have significant economic costs. The loss of pollinators can aggravate water quality and increase the cost of water treatment.

#### Balancing Sustainability in Diverse Ecosystems

Sustainable Forest Management works with the three pillars of sustainability, creating outcomes that are socially just, ecologically sound, and economically viable. Sustainable forestry practices aim to maintain and improve the productivity, diversity, and resilience of forest ecosystems. However, due to the existence of diverse types of forest, ranging from tropical rainforests in the Amazon to eucalyptus forests in Australia, the management of forests differs because of their physical properties. Sustainable Development Goal 15 addressing "Life on Land" is also a global initiative aimed at promoting the implementation of sustainable forest management. This project aims to

<sup>19</sup> What is sustainable forestry and what are the benefits? - EcoTree <a href="https://ecotree.green/en/blog/what-is-sustainable-forestry-and-what-are-the-benefits">https://ecotree.green/en/blog/what-is-sustainable-forestry-and-what-are-the-benefits</a>.



<sup>&</sup>quot;What Is Sustainable Forest Management?" PEFC, www.pefc.org/what-we-do/our-approach/what-is-sustainable-forest-management.

19 What is sustainable forestry and what are the benefits? - FcoTree.

"Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss". <sup>20</sup>

#### Further reading:

- https://www.parliament.uk/globalassets/documents/post/postpn\_377-ecosystem-approach.
   pdf
- https://en.wikipedia.org/wiki/Sustainable Development Goal 15
- <a href="https://ecotree.green/en/blog/what-is-sustainable-forestry-and-what-are-the-benefits">https://ecotree.green/en/blog/what-is-sustainable-forestry-and-what-are-the-benefits</a>

#### Major countries/ organizations and alliances

#### Brazil

Brazil is one of the countries that has been affected by deforestation the most, since approximately 17% of the total area of the Amazon biome that it houses has been deforested.<sup>21</sup> Managed by the Brazilian Development Banks<sup>22</sup>, the Amazon Fund uses financial initiatives to prevent, monitor and combat deforestation as well as promote sustainable forest use in the Amazon biome.<sup>23</sup> However, under President Jair Bolzano's administration (2019-2022), there were significant damages to environmental regulations. For example, the Brazilian Institute of Environment and Renewable Natural Resources (IBAMA)<sup>24</sup> and the Chico Mendes Institute for Biodiversity Conservation (ICMBio)<sup>25</sup>, agencies that are crucial for monitoring and enforcing environmental laws, faced substantial budget cuts. Furthermore, Bolsonaro's government supported measures to legalize land claims in national forests which could lead to increased deforestation. Finally, proposals were made to open indigenous lands to commercial mining, which would lead to further deforestation and environmental degradation.<sup>26</sup>



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<sup>&</sup>lt;sup>20</sup> "Goal 15 | Department of Economic and Social Affairs." United Nations, United Nations, www.sdgs.un.org/goals/goal15.

<sup>&</sup>lt;sup>21</sup> "Perguntas Frequentes." INPE, <a href="www.inpe.br/faq/index.php?pai=6">www.inpe.br/faq/index.php?pai=6</a> ...

<sup>&</sup>lt;sup>22</sup> "BNDES - Brazilian Development Bank." www.bndes.gov.br, www.bndes.gov.br/SiteBNDES/bndes/bndes\_en/.

<sup>&</sup>lt;sup>23</sup> Home, <u>www.amazonfund.gov.br/en/home/</u>.

<sup>&</sup>lt;sup>24</sup> "Brazilian Institute of Environment and Renewable Natural Resources (IBAMA)." Www.abc.gov.br, www.abc.gov.br/training/informacoes/InstituicaoIBAMA en.aspx.

<sup>&</sup>lt;sup>25</sup> "IW:LEARN | Projects - Organizations - Chico Mendes Institute for Biodiversity Conservation (ICMBio), Brazil." Www.iwlearn.net, <u>www.iwlearn.net/iw-projects/organizations/1028</u>.

<sup>&</sup>lt;sup>26</sup> Menezes, Roberto Goulart, and Ricardo Barbosa Jr. "Environmental Governance under Bolsonaro: Dismantling Institutions, Curtailing Participation, Delegitimising Opposition." Zeitschrift Für Vergleichende

#### Indonesia

Logging and the burning of forests to clear land for cultivation has made Indonesia the world's third largest emitter of greenhouse gases.<sup>27</sup> To tackle this, Indonesia is an active participant in the REDD+ program which allows people who protect forests to be financially rewarded<sup>28</sup>. Indonesia has managed to reduce the annual rate of deforestation over the last 20 years by facilitating payments from the Green Climate Fund (GCF) to locals who carried out REDD+ activities.<sup>29</sup> Through this measure, Indonesia aims to incentivize local citizens to contribute to SFM practices and avoid deforestation.

#### Spain

The National Forestry Plan (Plan Forestal Nacional) is a comprehensive plan that addresses deforestation.<sup>30</sup> Through this plan, Spain has initiated several large-scale forest management projects, such as the Life + Climate Initiatives project funded by the European Union, which plants native tree species to improve forest resilience to climate change<sup>31</sup> and encourages owners to obtain certifications such as the Forest Stewardship Council Certification for Spanish Forests. Furthermore, the Spanish Forest Law (Ley de Montes) outlines the responsibilities of both government authorities and private landowners in SFM. One of the key components of this is the Emergency Civil Protection Plan for Forest Fires, which creates firebreaks and establishes rapid response teams for wildfire emergencies since forest fires are a major cause of deforestation in Spain.<sup>32</sup> The Subsidies for Forest

Politikwissenschaft, Springer Fachmedien Wiesbaden, 2021, <a href="https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8358914/">www.ncbi.nlm.nih.gov/pmc/articles/PMC8358914/</a>



<sup>&</sup>lt;sup>27</sup> Deforestation in Indonesia - Wikipedia, <a href="https://en.wikipedia.org/wiki/Deforestation">https://en.wikipedia.org/wiki/Deforestation</a> in Indonesia .

Indonesia Long-Term Strategy for Low Carbon and Climate ... <a href="https://www.unfccc.int/sites/default/files/resource/Indonesia\_LTS-LCCR\_2021.pdf">https://www.unfccc.int/sites/default/files/resource/Indonesia\_LTS-LCCR\_2021.pdf</a> ...

<sup>&</sup>lt;sup>29</sup> Un-Redd. "Unredd Programme." UNREDD Programme, <u>www.un-redd.org/</u>..

<sup>&</sup>lt;sup>30</sup> User, Super. "Home." Ministerio de Ambiente y Desarrollo Sostenible, www.archivo.minambiente.gov.co/index.php/bosques-biodiversidad-y-servicios-ecosistematicos/desarrollo-sos tenible-de-bosques/plan-nacional-de-desarrollo-forestal.

<sup>&</sup>quot;¿Qué Es Life?" Ministerio Para La Transición Ecológica y El Reto Demográfico, www.miteco.gob.es/es/ministerio/servicios/ayudas-subvenciones/programa-life/que-es-life.html

Plan Estatal de Protección Civil Para Emergencias Por ..., www.interior.gob.es/opencms/pdf/archivos-y-documentacion/documentacion-y-publicaciones/publicaciones-descargables/proteccion-civil/Plan Estatal Emergencias Incendios Forestales 126150857.pdf.

Improvement offers subsidies to landowners who engage in reforestation and forest management planning.<sup>33</sup>

#### Food and Agricultural Organization (FAO)

The FAO plays a significant role in promoting SFM. Firstly, the FAO developed the Global Forest Resources Assessment (FRA) which provides comprehensive data on the state of the world's forests. In addition, it published the Voluntary Guidelines for the Responsible Governance of Tenure of Land, Fisheries and Forests (VGGT) which provides principles for sustainable forest management. Furthermore, it coordinates global initiatives such as the Global Forest Observations Initiative (GFOI) which collects, analyses, and disseminates information in collaboration with other countries. It also organizes educational programs such as the Forest and Landscape Restoration Program (FLR). Finally, the FAO Forestry Knowledge Platform offers e-learning resources related to SFM.<sup>34</sup>

Further reading: <a href="https://www.fao.org/forestry-fao/sfm/85083/en/">https://www.fao.org/forestry-fao/sfm/85083/en/</a>

#### Previous attempts to solve the issue

#### The Bonn Challenge

The Bonn Challenge is a global effort to restore 350 million hectares of land by 2030. This initiative allows nations to discuss and share expertise to facilitate forest restoration.<sup>35</sup> It has been a successful initiative in raising awareness for forest restoration and achieving notable achievements in restoration processes, however, for it to be fully effective, efforts need to be made to improve monitoring and reporting of forests to ensure that restoration efforts are sustainable in the long term.

#### Further reading:

- https://www.bonnchallenge.org/
- https://unece.org/fileadmin/DAM/timber/meetings/2019/20191216/FLR-backgrounder2019
   .pdf



<sup>&</sup>lt;sup>33</sup> "Subvención Para Inversiones En Montes de Utilidad Pública Con Cargo al Fondo de Mejoras." Subvención Para Inversiones En Montes de Utilidad Pública Con Cargo al Fondo de Mejoras - Juntaex.Es, <a href="https://www.iuntaex.es/w/5876">www.iuntaex.es/w/5876</a>.

<sup>&</sup>lt;sup>34</sup> "Sustainable Forest Management." Food and Agriculture Organization of the United Nations, www.fao.org/sustainable-forests-management/en/.

<sup>&</sup>lt;sup>35</sup> "The Bonn Challenge." The Bonn Challenge | Bonchallenge, <u>www.bonnchallenge.org/</u>.

#### Forest Concessions Initiative (FCI)

Forest Concessions are legal instruments between a state and a private entity that give rights to the latter to harvest forest products in the short term or manage forest resources in the long term in exchange for payment or the provision of services.<sup>36</sup> This initiative creates guidelines that enable all stakeholders to assess if sustainable forest concessions are taking place. Through this initiative, forest concessions were made more transparent, accountable, and inclusive since there is continuous monitoring to ensure compliance with the concessions, and so the over-exploitation of forests is minimized.

#### Further reading:

https://www.researchgate.net/publication/330280064 Forest Concessions and the United
 Nations Sustainable Development Goals Potentials Challenges and Ways Forward

# The European Union Forest Law Enforcement, Governance and Trade Action Plan (EU FLEGT Action Plan)

The EU FLEGT Action Plan aims to reduce the demand for illegal timber in the EU, thereby directly mitigating the impacts of deforestation by addressing the root causes of illegal logging. As part of this Action Plan, EU countries participate in the pan-European reporting under the Ministerial Conference on the Protection of Forests in Europe (MCPFE) process which has developed criteria and indicators for assessing if forests are sustainably managed.<sup>37</sup> Furthermore, the annual "forest condition" of the EU is also assessed through the Forest Focus reporting system. This monitoring system is centered around creating disincentives for the illegal trade of timber. This initiative has been proved to be successful, as Saskia Ozinga of the NGO FERN describes it as "the EU's best-ever policy on tropical forests, since it's the first scheme of its kind to address the root causes of illegal logging".<sup>38</sup>



<sup>&</sup>lt;sup>36</sup> Natural Forest Management, <a href="https://www.fao.org/forestry-fao/sfm/85083/en/">https://www.fao.org/forestry-fao/sfm/85083/en/</a>.

<sup>&</sup>lt;sup>37</sup> "Sustainable Forest Management." Internal Market, Industry, Entrepreneurship and SMEs, www.single-market-economy.ec.europa.eu/sectors/raw-materials/related-industries/forest-based-industries/sustainable-forest-management\_en.

<sup>&</sup>quot;EU FLEGT Action Plan." Wikipedia, Wikimedia Foundation, 19 Feb. 2024, <a href="https://www.en.wikipedia.org/wiki/EU FLEGT Action Plan#:~:text=The%20European%20Union%20Forest%20Law,the%20Action%20Plan%20in%202003">https://www.en.wikipedia.org/wiki/EU FLEGT Action Plan#:~:text=The%20European%20Union%20Forest%20Law,the%20Action%20Plan%20in%202003</a>.

#### Further reading:

- https://environment.ec.europa.eu/topics/forests/deforestation/eu-rules-against-illegal-logging en
- https://single-market-economy.ec.europa.eu/sectors/raw-materials/related-industries/forest
   -based-industries/sustainable-forest-management en

#### Plum Creek Timber Company's Forest Management Practices in the 1990s

In the 1990's, Plum Creek Timber Company managed millions of acres of forest land across the United States of America. During this time, the company used practices such as clear-cutting operations to increase the maximum yield of timber production. This resulted in the destruction of diverse forest habits and threatened plant and animal species.<sup>39</sup> The removal of trees increased soil erosion in rivers, which affected water quality. Furthermore, the company's management decision had minimal input from local communities, resulting in indigenous groups feeling excluded from decisions affecting their land. The approach was focused on short-term financial gains from timer production rather than long-term forest health, depleting forests of resources.<sup>40</sup> Consequently, this indicates that to sustainably manage forests, SFM must go beyond economic objectives to incorporate robust environmental criteria, engage stakeholders and adopt long-term planning.

#### Possible solutions

#### National Monitoring and Reporting Programs

Through creating national monitoring and reporting programs on the state of forests by using tools such as Geographic Information Systems <sup>41</sup> and photogrammetry <sup>42</sup>, scientists can assess the health of forests and their responses to environmental shifts. Using this data, experts can develop global



<sup>&</sup>lt;sup>39</sup> "Timber Company Agrees to Pay \$375,000 to Resolve Overharvesting Claims." Timber Company Agrees to to Resolve Overharvesting \$375,000 Claims Vermont **Business** Magazine, www.vermontbiz.com/news/2017/july/17/timber-company-agrees-pay-375000-resolve-overharvesting-claims Inventory." "Timber Timber Inventory an Overview ScienceDirect Topics, www.sciencedirect.com/topics/earth-and-planetary-sciences/timber-inventory.

<sup>&</sup>quot;Geographic Information System." Wikipedia, Wikimedia Foundation, 7 July 2024, <a href="https://www.en.wikipedia.org/wiki/Geographic information system">www.en.wikipedia.org/wiki/Geographic information system</a>.

<sup>42 &</sup>quot;Photogrammetry." Wikipedia, Wikimedia Foundation, 8 July 2024, www.en.wikipedia.org/wiki/Photogrammetry.

criteria and indicators that allow for the assessment of forests to ensure that they are sustainably managed. To increase accountability and transparency, nations could report their deforestation activities annually in an officially published report. However, it is important to mention that one significant issue is the potential technological disparities between countries, which is why it would be necessary to partner with NGOs to provide technical assistance to eliminate this issue.

#### Incorporating Indigenous Knowledge and Consent

Developing national sustainable forest management requirements is crucial for the responsible use of forest resources. However, this approach must recognize the principle of free, prior, and informed consent of indigenous people, to allow the voices of those who are most directly connected with forests to be heard.

#### Reforestation and Afforestation Strategies

Finally, reforestation and afforestation are critical strategies for restoring degraded ecosystems, but there are major disadvantages to consider because such practices can have devastating effects if not matched with research and careful considerations. For example, one major challenge is the selection of appropriate tree species, which, if not done efficiently, can lead to increased vulnerability to pests and diseases.

#### Further reading:

- https://foresteurope.org/wp-content/uploads/2016/08/Pan-EuropeanAfforestationReforestationGuidelines.pdf
- <a href="https://www.pefc.org/what-we-do/our-approach/what-is-sustainable-forest-management">https://www.pefc.org/what-we-do/our-approach/what-is-sustainable-forest-management</a>
- <a href="https://www.greenmatters.com/p/pros-cons-reforestation">https://www.greenmatters.com/p/pros-cons-reforestation</a>

#### **Bibliography**

Aichi Target 15 - Convention on Biological Diversity, <a href="www.cbd.int/aichi-targets/target/15">www.cbd.int/aichi-targets/target/15</a>.

"Aichi Target 15:By 2020, Ecosystem Resilience and the Contribution of Biodiversity to Carbon Stocks Has Been Enhanced, T." Aichi Target 15:By 2020, Ecosystem Resilience and the Contribution of Biodiversity to Carbon Stocks Has Been Enhanced, t | Sudan Biodiversity, <a href="https://www.sd.chm-cbd.net/implementation/targets/aichi-target-15by-2020-ecosystem-resilience-and-contribution-biodiversity">www.sd.chm-cbd.net/implementation/targets/aichi-target-15by-2020-ecosystem-resilience-and-contribution-biodiversity</a>.



"Afforestation." Wikipedia, Wikimedia Foundation, 25 June 2024, www.en.wikipedia.org/wiki/Afforestation.

Annex 1: Malawi Principles for the Ecosystem Approach, <a href="https://www.fao.org/3/Y4773E/y4773e0e.htm">www.fao.org/3/Y4773E/y4773e0e.htm</a>

"BNDES - Brazilian Development Bank." *Www.bndes.gov.br*, www.bndes.gov.br/SiteBNDES/bndes/bndes en/.

"Brazilian Institute of Environment and Renewable Natural Resources (IBAMA)." Www.abc.gov.br, www.abc.gov.br/training/informacoes/InstituicaoIBAMA en.aspx.

Butler, Rhett A. "Road Construction in the Rainforest." WorldRainforests.Com, WorldRainforests.com, 16 July 2020, <a href="https://www.worldrainforests.com/kids/elementary/505.html">www.worldrainforests.com/kids/elementary/505.html</a> .

"CellPressNews. "Effects of Past Tropical Deforestation Will Be Felt for Years to Come." EurekAlert!, <a href="https://www.eurekalert.org/news-releases/701770">www.eurekalert.org/news-releases/701770</a>.

"Deforestation." Education, <u>www.education.nationalgeographic.org/resource/deforestation/</u>.

Deforestation Causes | EROS - USGS, www.eros.usgs.gov/earthshots/deforestation-causes .

Deforestation in Indonesia - Wikipedia, www.en.wikipedia.org/wiki/Deforestation\_in\_Indonesia.

"EU FLEGT Action Plan." Wikipedia, Wikimedia Foundation, 19 Feb. 2024, <a href="https://en.wikipedia.org/wiki/EU">https://en.wikipedia.org/wiki/EU</a> FLEGT Action Plan#:~:text=The%20European%20Union%20Forest%20Law,the%20Action%20Plan%20in%202003.

"EU Rules against Illegal Logging." Environment, <a href="https://www.environment.ec.europa.eu/topics/forests/deforestation/eu-rules-against-illegal-logging\_en">www.environment.ec.europa.eu/topics/forests/deforestation/eu-rules-against-illegal-logging\_en</a>

Food and Agriculture Organization of the United Nations. Natural Forest Management, <a href="https://www.fao.org/forestry-fao/sfm/85083/en/">www.fao.org/forestry-fao/sfm/85083/en/</a>.

"Forest-Based Industries." Internal Market, Industry, Entrepreneurship and SMEs, <a href="https://www.single-market-economy.ec.europa.eu/sectors/raw-materials/related-industries/forest-based-industr

"Forest Concessions and the United Nations Sustainable Development Goals." Forest Concessions and the United Nations Sustainable Development Goals | European Forest Institute, <a href="https://www.efi.int/publications/forest-concessions-and-united-nations-sustainable-development-goals-2019-01-28">https://www.efi.int/publications/forest-concessions-and-united-nations-sustainable-development-goals-2019-01-28</a>.

"Forest Management." Wikipedia, Wikimedia Foundation, 25 June 2024, <a href="https://www.en.wikipedia.org/wiki/Forest\_management#Sustainable\_forest\_management">www.en.wikipedia.org/wiki/Forest\_management#Sustainable\_forest\_management</a>.



Forest restoration - Wikipedia, www.en.wikipedia.org/wiki/Forest\_restoration .

"Geographic Information System." Wikipedia, Wikimedia Foundation, 7 July 2024, www.en.wikipedia.org/wiki/Geographic information system.

"Goal 15 | Department of Economic and Social Affairs." United Nations, United Nations, www.sdgs.un.org/goals/goal15.

Home, www.amazonfund.gov.br/en/home.

How Unsustainable Forest Management Can Have, www.gwp.org/globalassets/global/gwp-med-files/list-of-programmes/see-nexus/dec-2020/forest -management-cb/agricultural-university-of-tirana--unsustainable-forest-management-and-its-im pacts.pdf .

"Indonesia Long-Term Strategy for Low Carbon and Climate ..., www.unfccc.int/sites/default/files/resource/Indonesia LTS-LCCR 2021.pdf .

"IW:LEARN | Projects - Organizations - Chico Mendes Institute for Biodiversity Conservation (ICMBio), Brazil." Www.iwlearn.net, www.iwlearn.net/iw-projects/organizations/1028.

"Menezes, Roberto Goulart, and Ricardo Barbosa Jr. "Environmental Governance under Bolsonaro: Dismantling Institutions, Curtailing Participation, Delegitimising Opposition." Zeitschrift Für Vergleichende Politikwissenschaft, Springer Fachmedien Wiesbaden, 2021, www.ncbi.nlm.nih.gov/pmc/articles/PMC8358914/.

Natural Forest Management, <a href="https://www.fao.org/forestry-fao/sfm/85083/en/">www.fao.org/forestry-fao/sfm/85083/en/</a>.

"Perguntas Frequentes." INPE, <a href="www.inpe.br/faq/index.php?pai=6">www.inpe.br/faq/index.php?pai=6</a>. Accessed 10 July 2024. "Photogrammetry." Wikipedia, Wikimedia Foundation, 8 July 2024, <a href="www.en.wikipedia.org/wiki/Photogrammetry">www.en.wikipedia.org/wiki/Photogrammetry</a>.

Plan Estatal de Protección Civil Para Emergencias Por ..., www.interior.gob.es/opencms/pdf/archivos-y-documentacion/documentacion-y-publicaciones/publicaciones-descargables/proteccion-civil/Plan Estatal Emergencias Incendios Forestales 126 150857.pdf .

"Sustainable Development Goal 15." Wikipedia, Wikimedia Foundation, 13 Feb. 2024, www.en.wikipedia.org/wiki/Sustainable Development Goal 15."

"Sustainable Forest Management." Food and Agriculture Organization of the United Nations, <a href="https://www.fao.org/sustainable-forests-management/en/">www.fao.org/sustainable-forests-management/en/</a>.

"Sustainable Forest Management." Internal Market, Industry, Entrepreneurship and SMEs, www.single-market-economy.ec.europa.eu/sectors/raw-materials/related-industries/forest-base d-industries/sustainable-forest-management en



"Sustainable Forest Management - Forest Europe." FOREST EUROPE - Ministerial Conference on the Protection of Forests in Europe, 20 Mar. 2024, <a href="https://foresteurope.org/state-of-europes-forests/">https://foresteurope.org/state-of-europes-forests/</a>.

"Sustainable Forest Management." Food and Agriculture Organization of the United Nations, <a href="https://www.fao.org/sustainable-forests-management/en/">www.fao.org/sustainable-forests-management/en/</a>.

"Sustainable Forest Management." Internal Market, Industry, Entrepreneurship and SMEs, <a href="https://www.single-market-economy.ec.europa.eu/sectors/raw-materials/related-industries/forest-base">www.single-market-economy.ec.europa.eu/sectors/raw-materials/related-industries/forest-base</a> d-industries/sustainable-forest-management en.

"Subvención Para Inversiones En Montes de Utilidad Pública Con Cargo al Fondo de Mejoras." Subvención Para Inversiones En Montes de Utilidad Pública Con Cargo al Fondo de Mejoras - Juntaex.Es, <u>www.iuntaex.es/w/5876</u>.

"The Bonn Challenge." The Bonn Challenge | Bonchallenge, www.bonnchallenge.org/.

"The Ecosystem Approach - UK Parliament, www.parliament.uk/globalassets/documents/post/postpn 377-ecosystem-approach.pdf.

"Timber Company Agrees to Pay \$375,000 to Resolve Overharvesting Claims." <a href="https://vermontbiz.com/news/2017/july/17/timber-company-agrees-pay-375000-resolve-overharvesting-claims">https://vermontbiz.com/news/2017/july/17/timber-company-agrees-pay-375000-resolve-overharvesting-claims</a>.

"Timber Inventory." Timber Inventory - an Overview | ScienceDirect Topics, www.sciencedirect.com/topics/earth-and-planetary-sciences/timber-inventory.

"Tropical Deforestation." NASA, NASA, www.earthobservatory.nasa.gov/features/Deforestation/deforestation\_update3.php.

 $\label{thm:continuous} \begin{tabular}{ll} Tropical Deforestation - NASA Earth Observatory, \\ \underline{www.earthobservatory.nasa.gov/features/Deforestation/deforestation\_update3.php} \ . \\ \end{tabular}$ 

"Un Decade on Ecosystem Restoration." Wikipedia, Wikimedia Foundation, 27 May 2024, <a href="https://www.en.wikipedia.org/wiki/UN\_Decade\_on\_Ecosystem\_Restoration">www.en.wikipedia.org/wiki/UN\_Decade\_on\_Ecosystem\_Restoration</a>.

"United Nations Forum on Forests" Un Strategic Plan for Forests." United Nations, United Nations, www.un.org/esa/forests/documents/un-strategic-plan-for-forests-2030/index.html .

Un-Redd. "Unredd Programme." UNREDD Programme, www.un-redd.org/.

User, Super. "Home." Ministerio de Ambiente y Desarrollo Sostenible, www.archivo.minambiente.gov.co/index.php/bosques-biodiversidad-y-servicios-ecosistematicos/ desarrollo-sostenible-de-bosques/plan-nacional-de-desarrollo-forestal.



What is sustainable forestry and what are the benefits? - EcoTree, <a href="https://www.ecotree.green/en/blog/what-is-sustainable-forestry-and-what-are-the-benefits">www.ecotree.green/en/blog/what-is-sustainable-forestry-and-what-are-the-benefits</a> .

"What Is Sustainable Forest Management?" PEFC, <a href="https://www.pefc.org/what-we-do/our-approach/what-is-sustainable-forest-management">www.pefc.org/what-we-do/our-approach/what-is-sustainable-forest-management</a> .

"¿Qué Es Life?" Ministerio Para La Transición Ecológica y El Reto Demográfico, www.miteco.gob.es/es/ministerio/servicios/ayudas-subvenciones/programa-life/que-es-life.html

