Protecting Biodiversity From Harmful Financing:

No Go Areas For The International Banking Sector

Briefing Paper 04

Intact Primary and Vulnerable Secondary Forests

March 2023

Friends of the Earth United States

TuK INDONESIA

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DOGWOOD ALLIANCE

Environmental Paper Network

Acknowledgements

This paper is a co-publication with Friends of the Earth US, Biofuel Watch, Dogwood Alliance, Environmental Paper Network, and Tuk Indonesia.

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We also thank Robin Chazdon, Jeff Conant, Ladd Connell, Hannah Greep, Beibei Yin, Chelsea Matthews, Kari Hamerschlag, and Douglas Norlen for their review and feedback.

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Cover image caption:
Scientists have confirmed that the Amazon is now emitting more carbon than it is absorbing. Unless deforestation is stopped, this phenomena in the Amazon could become a pattern for other forests around the world.

About the Banks and Biodiversity Briefing Paper Series

The Banks and Biodiversity Initiative advocates that banks and financiers strengthen their biodiversity policies and practices. In order to halt and reverse biodiversity loss, the Initiative calls on banks and financiers to adopt eight proposed No Go areas as an important step towards improving their biodiversity policies and practices. This briefing paper series aims to explain the importance of why banks and financiers must exclude harmful direct and indirect financing to industrial, unsustainable, and extractive activities which may negatively impact these critical areas. **This briefing paper discusses No Go area 4 on intact primary forests and vulnerable secondary forests, which is Paper 04 of the series.**

Proposed Banks and Biodiversity No Go Areas

In order to safeguard the rights of Indigenous and local communities in formally, informally, or traditionally held conserved areas – such as Indigenous and community conserved areas (ICCA), Indigenous Territories (TIs) or public lands not yet demarcated – as well as to better address and reflect the current crises of climate change, biodiversity loss, and emergence of zoonotic diseases, the Banks and Biodiversity Initiative calls on banks and financial institutions to adopt a No Go policy which prohibits any direct or indirect financing related to unsustainable, extractive, industrial, environmentally, and/ or socially harmful activities in or which may potentially impact the following areas:

AREA 1: Areas recognized by international conventions and agreements including but not limited to the Bonn Convention, Ramsar Convention, World Heritage Convention and Convention on Biological Diversity, or other international bodies such as UNESCO (Biosphere Reserves, UNESCO Global Geoparks, etc) or Food and Agricultural Organization (vulnerable marine ecosystems), International Maritime Organization (particularly sensitive areas), IUCN Designated Areas (Categories IA – VI)

AREA 2: Nature, wilderness, archaeological, paleontological and other protected areas that are nationally or subnationally recognized and protected by law or other regulations/policies; this includes sites which may be located in or overlap with formally, informally, or traditionally held conserved areas such as Indigenous and community conserved areas (ICCA), Indigenous Territories (ITs) or public lands not yet demarcated

AREA 3: Habitats with endemic or threatened species, including key biodiversity areas

AREA 4: Intact primary forests and vulnerable, secondary forest ecosystems, including but not limited to boreal, temperate, and tropical forest landscapes

AREA 5: Free-flowing rivers, defined as bodies of water whose flow and connectivity remain largely unaffected by human activities

AREA 6: Protected or at-risk marine or coastland ecosystems, including mangrove forests, wetlands, reef systems, and those located in formally, informally, or traditionally held areas, Indigenous Territories (ITs), or public lands not yet demarcated, or Indigenous and community conserved areas (ICCA)

AREA 7: Any Indigenous Peoples and Community Conserved Territories and Areas (ICCAs), community-based conservation areas, formally, informally, traditionally, customarily held resources or areas, Indigenous Territories, sacred sites and/ or land with ancestral significance to local and Indigenous communities' areas where the free, prior, informed consent (FPIC) of Indigenous and Local Communities have not been obtained

AREA 8: Iconic Ecosystems, defined as ecosystems with unique, superlative natural, biodiversity, and/or cultural value which may sprawl across state boundaries, and thus may not be wholly or officially recognized or protected by host countries or international bodies. Examples include but are not limited to the Amazon, the Arctic, among other at-risk ecosystems

Other international bodies have already recognized the value of developing No Go Areas, such as the World Heritage Committee and the UN Environment's Principles for Sustainable Insurance Initiative (PSI). The Banks and Biodiversity No Go Policy also aligns with banks and financial institutions' current practice of following institutional Exclusion Lists for sensitive industries or areas, as well as global goals of preventing further biodiversity loss. Projects that do not fall within Exclusion Lists should still be subject to rigorous environmental and social due diligence, assessment, screening, planning, and mitigation policies and procedures[I].

I For more information on the Banks and Biodiversity Initiative, please see: www.banksandbiodiversity.org.

Intact Primary and Vulnerable Secondary Forests

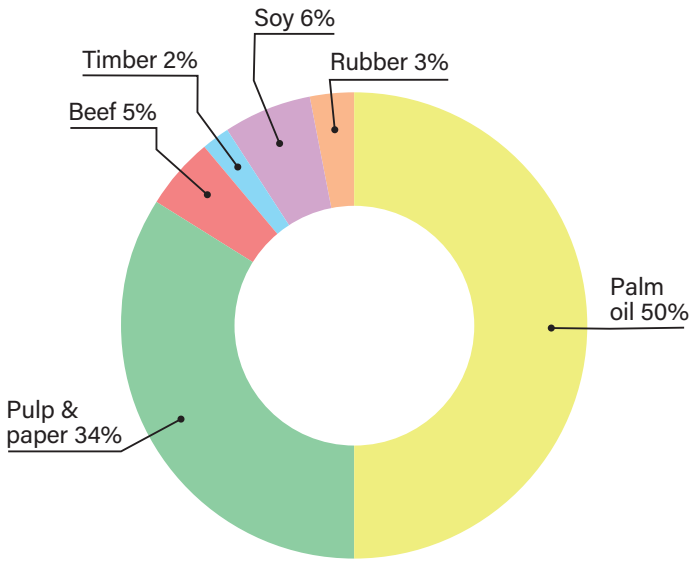
Briefing Paper 04

Introduction

Banks and financiers are a major driver of deforestation

From 2016-2021, banks have provided $238 billion USD in credit to sectors which are well established as key drivers deforestation and forest degradation[1]. **Sectors with high forest risks include beef, soy, palm oil, pulp and paper, rubber, biomass, and logging[II]. In particular, the rapid expansion of industrial agricultural production is devastating primary and recovering forests[2], especially in tropical regions.** According to a recent literature review, scientists found that 90% of deforested land occurred in landscapes where agriculture drove forest loss[3], [4]. In 2021, 11.1 million hectares of tree cover was lost, in which 3.75 million hectares were tropical forests[5]. Replacing natural forests and subsistence farmlands with crops for bio-energy and monoculture plantations will "have negative impacts on biodiversity and can threaten food and water security as well as local livelihoods, including by intensifying social conflict", according to the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES)[6].

Investments in forest-risk sectors (2016-2022)



This chart, which is based on data from the Forests & Finance Coalition, shows bank investments in sectors that are well established as key drivers of deforestation and forest degradation, with the palm and pulp and paper industries receiving the majority of investments from 2016 to 2022. Sourced from Forests & Finance Coalition.

Furthermore, forests are essential for sustaining livelihoods and cultures of local and Indigenous communities. The Food and Agriculture Organization (FAO) estimates that over 90% of those living in poverty depend on forests for part of their livelihoods[7], and studies have shown that the presence of Indigenous Peoples simultaneously protects biodiversity and prevent deforestation[8]. In fact, **recent trends show that the "lands of indigenous peoples are becoming islands of biological and cultural diversity surrounded by areas in which nature has further deteriorated"[9]. Compellingly, Indigenous communities have been found to be more effective in protecting biodiversity and ecosystems than protected areas[10, 11].**

Protecting both primary and vulnerable secondary forests is critical to fighting climate change and conserving biodiversity. **This briefing paper explains why banks and financiers should prohibit harmful financing to activities which may negatively impact natural, primary forests as well as vulnerable, secondary forests due to the multiple values forests possess in curbing climate change, preserving biodiversity, sustaining ecosystem functions, supporting Indigenous and community livelihoods, among others.**

In advocating that banks and financiers prohibit harmful financing to sectors tied to forest degradation and deforestation, this paper offers practical definitions of primary and vulnerable secondary forests, as forest definitions can be fraught. These definitions take into account the historical controversies associated with over-relying upon divergent forest definitions among international norms and sectoral standards. In doing so, we hope these functional, practical definitions can be used as an important foundation in developing and implementing banks' forest protection related policies. In addition, this paper identifies complex challenges banks face in ensuring their financing does not cause or exacerbate deforestation and negative community impacts, as well as suggests alternative pathways towards how banks and financiers can support sustainable and equitable forest management in protecting impacted communities and biodiversity.

II Other sectors, such as cocoa, coffee, sugar, and mining, are also known to have negative environmental and social impacts in forest areas. However, for the purposes of this paper and due to length constraints, we focus on beef, soy, palm oil, pulp and paper, rubber, biomass, and logging sectors.

When is a Forest a Forest?

In developing robust forest policies, banks and financiers must clearly understand how forest terms and issues are complicated by the variety of definitions across sectoral, national, and even international contexts. Terms like "forests" and "deforestation" can have several definitions, and their meanings may change dramatically depending on which concept is being referenced in which fora, which in turn, can have major policy consequences.

Defining forests is thus extremely challenging as various forest definitions and concepts tend to reflect the different objectives and interests of different actors. As a result, it is critical that banks have strong forest related policies rooted in scientific findings rather than vested, political interests.

It is also important for banks and financiers to be aware and account for how forest protection policies should not be siloed but must be designed to complement other thematic bank policies. This is because forest issues and forest management policies are inherently cross-cutting, in which their success and outcomes inexorably impact a bank's performance on protecting climate, biodiversity, communities, and Indigenous Peoples.

In light of these complexities, within the context of the Banks and Biodiversity Initiative this paper proposes a practical working definition of primary and vulnerable, secondary forests, which banks and financiers can draw from when evaluating clients exposed to high forest risks across various sectors and regions.

A primary forest is a natural forest ecosystem that is the result of biological and evolutionary processes and that has not been significantly degraded by industrial, human driven activities. A key characteristic of primary, natural forests is that mature trees dominate the canopy and contains most or all of its native plant and animal species. Primary, natural forests include patches representing all successional age classes (young to old-growth) having no industrial human activities, including primary forests regenerating after wildfire. Primary, natural forests cover a range of related terms including "old growth forest", "ancient forest", "primeval forest", "mature forest", and "intact forest landscapes"[III]. **Given the range of regeneration rates among different forest types, the exact age of a primary forest is less relevant than whether its natural, ecological processes have reached its climax. This detail is particularly important in cases where even if a forest has been previously disturbed or logged, if the forest still predominantly functions and retains the key characteristics of a primary forest at its climax, it should still be considered a primary, intact, natural forest and be protected.**

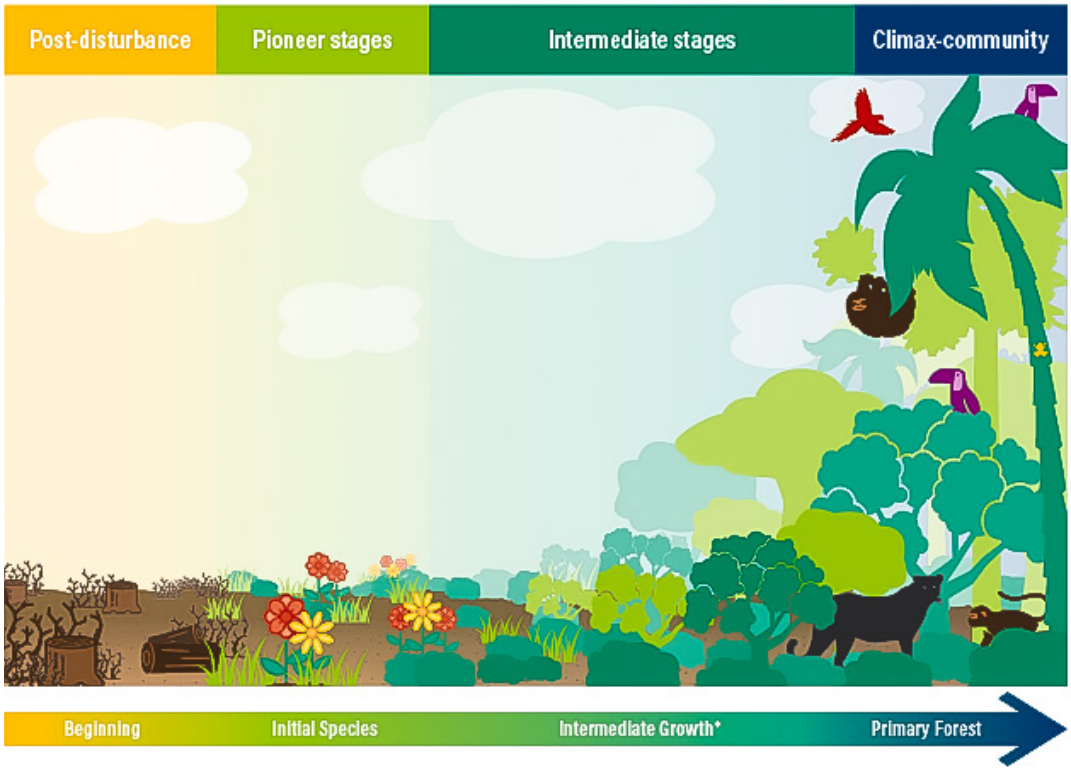
III This definition of primary forests is adapted from Wild Heritage. For more information, please see: "Saving Earth's last primary forests," Wild Heritage, (n.d.), https://wild-heritage.org/our-work/saving-primary-forests/primary-forest-overview/

It is well established that protecting primary, natural forests and intact forest landscapes are crucial for stopping climate change, biodiversity loss, as well as supporting the rights and wellbeing of Indigenous Peoples and local communities. At the same time, secondary forests, which are sometimes termed as "degraded", "regrowth," "young," "regenerating," or "recovering" forests, also have great conservation, climate, and biological value, even though their significance is often overlooked.

The Banks and Biodiversity Initiative defines **vulnerable, secondary forests as forests of native species regenerating largely through natural processes after significant human and/or natural disturbance of the original forest vegetation at a single point in time or over an extended period[12]. In protecting the ability of secondary forests to recover and regrow, secondary forests should be considered as vulnerable when at risk of further degradation or destruction by planned or future harmful activities, which may include but are not necessarily limited to sectors driving deforestation and the expansion of monoculture plantations.** Examples include but are not limited to the beef, soy, palm oil, rubber, biomass, and logging sectors.

Ensuring general alignment of definitions is additionally important if a bank has not developed its own baseline definition of "forest", especially when considering terms like "forests", "sustainable", and "deforestation" have multiple

Succession pathway to primary forest



*Note: *This process can take several decades or several hundreds of years*

This image depicts the long process of forest generation and re-generation. Given the range of regeneration rates among different forest types, the exact age of a primary forest is less relevant than whether its natural, ecological processes have reached its climax. This detail is particularly important in cases where even if a forest has been previously disturbed or logged, if the forest still predominantly functions and retains the key characteristics of a primary forest at its climax, it should still be considered a primary, intact, natural forest and be protected. Sourced from Global Forest Watch under Creative Commons CC BY 4.0 license

definitions, in which their meaning shifts based on who is using them, local legal contexts, and international norms.

For instance, when a pulp and paper company may discuss a "forest", the reference is likely to large scale monoculture plantations of non-indigenous trees[13]. Furthermore, the legal definitions of forests within host country law can also be complex and confusing. In the case of Indonesia, for example, the term "forests" can indicate a: "forested" (berhutan) area; an area not covered by forest; a "not forested" area (tidak berhutan); areas which can be "forested" and "not forested" (Areal Penggunaan Lain)[14]. These definitions are further complicated given the multiple definitions and terms related to "forests", which are often categorized according to the government's political or economic interests rather than their biological or ecological value or significance. According to Article 1 of Indonesia's Forestry Law Number 39, Year 1999, there are at least 12 categories of "forests"[15],[IV]. This can be very confusing and misleading for stakeholders, be they financiers, investors, or others.

Even forests as defined by international bodies can be counterintuitive and heavily contested. For example, the UN Food and Agricultural Organization defines forest as "*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"[16]. However, this definition has been long challenged for effectively fostering and enabling the conversion of primary, natural forests into monoculture plantations, in which the negative environmental, social, and biodiversity impacts of monoculture plantations are rendered invisible[17, 18].

Notably, the FAO definition emphasizes *land*, which narrowly focuses on generic characteristics such as the number, height and canopy cover of trees on an area while ignoring the biodiversity, ecosystem functions, and social significance of forests[19]. This counterproductive definition remains extremely contentious because it effectively normalized and sanitized the destruction of primary, natural forest into monoculture plantations, which are well established as harmful to the environment, biodiversity, and communities[20, 21]. Troublingly, the FAO definition perversely allows monoculture plantations to be deemed as "forests", which ignores the fact that a forest is destroyed in the conversion of primary forests into plantations. In other words, **the destruction of natural forests in exchange for monoculture plantations became invisible under the FAO definition.**

This problem of definition reappears in the United Nations Framework Convention on Climate Change (UNFCCC) definition. **The UNFCCC defines forests as forest cover, not the species richness nor the carbon density. This approach ignores the biodiversity values of a forest, as it also does not differentiate between a primary, natural forest and a large-scale monoculture plantation.** Notably, the required forest cover in the UNFCCC definition can be extremely sparse – countries can choose between a mere 10% to 30% tree crown cover as the minimum threshold for a place to be defined as a forest[22].

Further, trees in such a place don't have to be more than seedlings – they simply have to be capable of growing to a minimum height of 2-5 meters at maturity[23]. Whether the seedlings actually reach maturity is not considered. Similarly, the sparse tree cover and immature trees don't even have to physically exist under the UNFCCC definition. It is sufficient that a company or government merely intends for young seedling trees to grow in the future, in order to meet this forest definition. As a result, areas where there are in fact no forests could still perversely qualify as a forest under the UNFCCC definition[24].

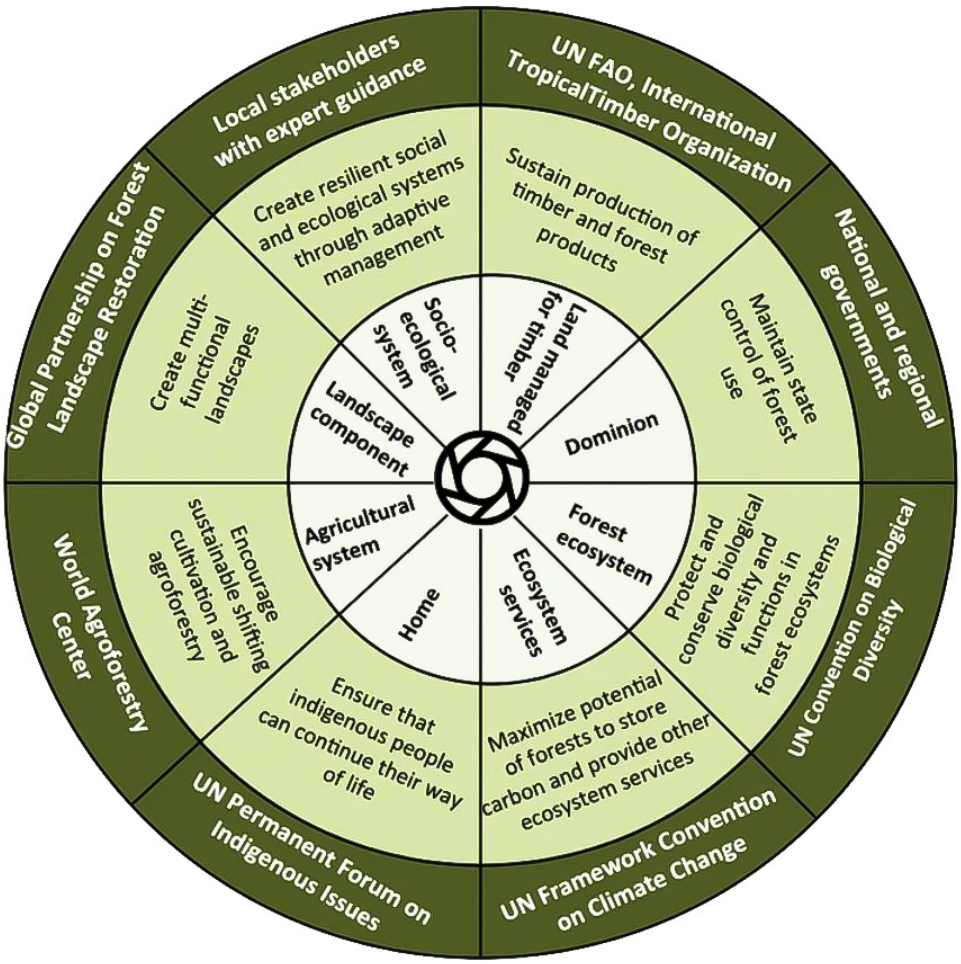
IV For instance, according to Indonesia's Forestry Law Number 39 Year 1999, forests may be defined and based on political or economic purposes, as seen in the definition that a forest area "shall be a certain area which is designated and or stipulated by government to be preserved as permanent forest". At the same time, some forest terms under Indonesian law refer to whether there are communities which bear titled land rights (titled forest), or forests under "communal law community" (Communal forests). On the other hand, "state forests" are lands deemed with no ownership rights. Given the complexity of Indigenous and local communities in Indonesia, these legal forest terms are often inexorably linked to community rights and ownership to forest areas, and exemplify the challenge of aligning forest definitions in bank policy amidst different industrial norms, complex national contexts, and international interpretations.

Forest Definitions Reflect Different Forest Management Objectives

As seen in the FAO and UNFCCC examples, defining forests can be challenging as different forest definitions reflect different forest management objectives and interests. In the FAO example, there is an emphasis of forests management for food and timber production, and in the UNFCCC example, there is an emphasis on the capacity of present and future carbon storage. The critical role forests play in sustaining ecosystem health, alleviating poverty, and sustainable development was only recently established by policymakers in the past decade[25], and the evolving and sometimes conflicting forest definitions reflect these changes. **Historically, timber management was the primary lens for defining and managing forests by Western colonial and industrial interests. Forests slowly became recognized for their conservation value in the 1960s; it was only in 1988 where forests were acknowledged for their climate regulatory value[26].**

Based on these examples, it becomes clear that over-relying on one definition of "forest" can be politically and practically fraught for banks and financiers seeking to anticipate and address potentially negative forest impacts caused by their financing.

This is also why we hope this paper's proposed definition of forests can serve as a baseline reference for banks and financiers in establishing, accounting, and protecting the multiple environmental, social, biodiversity, climate, and ecosystem functions forests have, even if all these values are not currently or fully reflected or captured across diverse host country and international contexts.



Different forest definitions often reflect different forest management objectives. As described by the authors of this figure, "The inner circle shows how a forest can be viewed through different lenses, emanating from the different management objectives shown in the middle circle. Each objective provides a perspective from which specific definitions are created. The outermost circle describes institutions whose mission is associated with each management objective and forest definition." Sourced from Chazdon et al.'s 2016 paper, "When is a forest a forest? Forest concepts and definitions in the era of forest and landscape restoration," under Creative Commons Attribution 4.0 International License.

Notable Forest Concepts and Tools

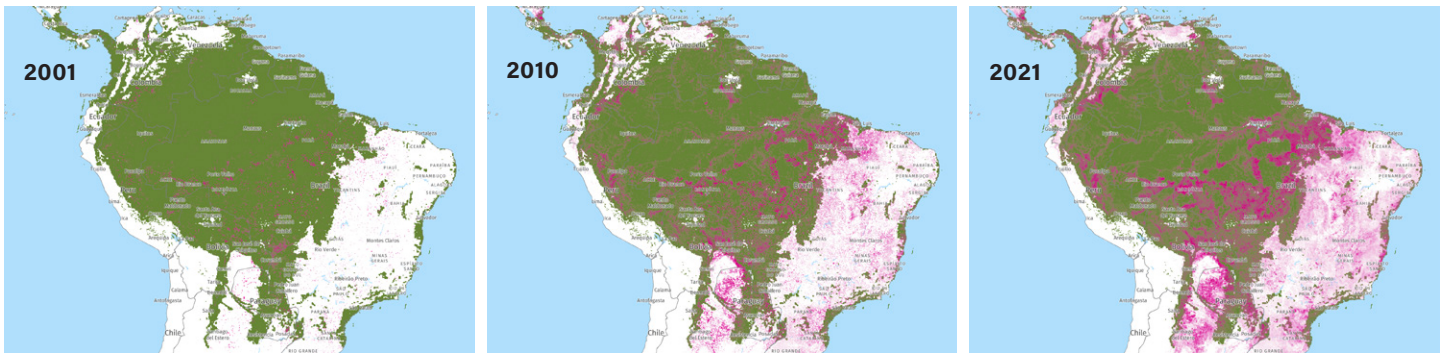
In addition to the definition of a forest itself, there are further nuances with other related forests terms, concepts, and tools, which are useful for banks to be aware of, particularly if such terms are not defined or clarified in banks' institutional policies. Some examples include:

DEFORESTATION: Deforestation is defined in the Marrakesh Accord Decision as "the direct human-induced conversion of forested land to non-forested Land"[27]. In practice, this means a complete land use change, in which a forest is totally destroyed and replaced by another land use such as industrial agriculture, monoculture plantations, or other large-scale development.

Notably, there may also be national definitions of deforestations. In Indonesia, the definition of deforestation is the conversion of areas which are officially determined and/or classified as officially gazetted "state forest" areas. This means that the destruction of secondary forest is not considered deforestation if it is not located inside an official "state forest", and excludes all forest areas that are in concessions, even if they are considered to be High Conservation Value or High Carbon Stock areas. Many projects and certification schemes exploit this loophole. A particular project's definition of "deforestation free" may thus not be accurate let alone meaningful in certain contexts. In other words, the destruction of forest vegetation outside officially designated forest areas is not considered as deforestation. It is perceived as a planned forest clearing, and therefore not deforestation. An example of this perverse dynamic is the Forests and Climate Change Programme (FORCLIME) in Indonesia, which is being implemented with the support of KfW. In a complaint sent to the German program sponsors and KfW, Indonesian and international groups alleged that a FORCLIME officer acknowledged that deforestation in the program area would not count as deforestation as it occurred outside the designation forest area, even though deforestation did occur[28].

SUSTAINABLE FOREST MANAGEMENT: This term typically refers to wood supply. Although some international definitions include environmental and social impacts, "sustainability" in forest management, especially among industry definitions and in practice, tends to refer to the economic "sustainability" of wood supply, and does not account for the sustainability of ecology, biodiversity, or social aspects in forest management[29]. Nor does it account for forests' "territoriality," which can be defined as the broad and profound sociocultural role that forests and land play in the lives of local individuals and communities.

Primary forests and forest cover loss in the Amazon Basin



These maps show the increasing degradation of forests in the Amazon basin from 2001 to 2021. The pink-shaded area indicates the rate of tree cover loss, which, over time, is occurring more and more in primary forests, which are shown in green. Sourced from Global Forest Watch under Creative Commons CC BY 4.0 license.

Forests shelter most of the world's terrestrial biodiversity, providing habitat for 80 percent of amphibian species, 75 percent of bird species, and 68 percent of mammal species.

GLOBAL FOREST WATCH: Global Forest Watch is an online tool which offers "near real-time information about where and how forests are changing around the world"[30]. Launched by World Resources Institute in 1997, this tool maps forests, land cover, as well as carbon impact areas and high biodiversity areas. It maps the current scope of tropical peatlands, mangrove forests, IFLs, conservation areas, among others.

INTACT FOREST LANDSCAPES: Developed by World Resources Institute, Wilderness Conservation Society, Greenpeace, among others, Intact Forest Landscapes are mosaics of forest and naturally treeless ecosystems, which exhibit no detected signs of human activity or habitat fragmentation[31]. An IFL should be large enough to maintain all native biological diversity, including viable populations of wide-ranging species. IFLs are maps are hosted by Global Forest Watch, and are best used to "enable and catalyze practical conservation planning and action with regard to large undeveloped forest landscapes"[32]. IFLs are simply one tool in identifying current intact forests in order to preempt potential forest loss; they do not comprehensively cover or identify existing fragmented forests. In representing large forest and naturally treeless ecosystems which remain untouched from industrial activities, they potentially overlap with numerous forests, endangered species habitats, or other No Go areas under the Banks and Biodiversity Initiative.

HIGH CONSERVATION VALUE: High Conservation Value (HCV) areas are identified by the HCV methodology based on six values, which for instance includes IFLs (as referenced above) and community needs as key values[33]. HCV areas are natural habitats where these six values are used in determining outstanding significance or critical importance. They may be forest, a grassland, a watershed, or a landscape-level ecosystem where these values are found. HCV areas need to be appropriately identified and managed in order to maintain or enhance the identified values. Since they are identified by paid assessors, these experts need to be trusted, licensed by the HCV Network, and their assessments need to be peer-reviewed. HCV areas which are prioritized are those globally "which are current or potential future sites

for commodity production (e.g., wood, pulp and paper, oil palm, sugarcane, cotton, rubber, and cocoa) – in other words –areas which still harbor important values which may be at risk from land-use change"[34]. This tool can be helpful for banks in identifying forest ecosystems which remain undeveloped and untouched by industrial activities, and should thus be off limits to harmful financing. It should also be noted that HCV assessments should be conducted prior to any deforestation or forest degradation occurs.

HIGH CARBON STOCK APPROACH: The High Carbon Stock Approach is a methodology that was developed "with the aim to ensure a practical, transparent, robust, and scientifically credible approach that is widely accepted to implement commitments to halt deforestation in the tropics, while ensuring the rights and livelihoods of local peoples are respected", based on free, prior, informed, consent principles[35]. This tool focuses on tropical forests, and has developed maps covering Indonesia, Malaysia and Philippines, as well as other South-East Asia dense forests[36]. As this approach prioritizes identifying forests with high carbon stores and biodiversity, it is less efficient in capturing environmental values in forest mosaics with low carbon density (e.g. including bush, grasslands and swamps).

DEFORESTATION FRONTS: Mapped by WWF, these areas aim to identify areas where deforestation is likely to occur in the coming years[37]. This tool can be helpful for banks in identifying forest areas which should be excluded from harmful financing. However, they only cover areas in the tropics. Deforestation Fronts areas currently includes 24 areas at risk of significant deforestation. As a developing dataset, however, it is not necessarily comprehensive in mapping all areas at current risk of deforestation. They also include data on fragmented forests, as well as new and old deforestation hotspots.

Protecting Forests is Critical to Safeguarding Community Rights, Solving Climate Change, and Halting Biodiversity Loss

Forests are essential to sustaining life on earth. Managing both primary and vulnerable secondary forests sustainably and equitably is critical for meeting other interdependent objectives, including safeguarding community rights, mitigating and adapting to climate change, and halting biodiversity loss. As a result, it is vital that banks and financiers do their part to prohibit financing to sectors and clients tied to deforestation and forest degradation in both primary and vulnerable secondary forests. Successful forest protection outcomes will likely lead to positive outcomes in protecting the climate, biodiversity, and community rights.

The Importance of Protecting Primary, Natural Forests

In supporting high concentrations of biological diversity, primary, natural forests are the most stable and resilient to natural disturbances. This resilience is correlated with a forest's level of complexity, such as diversity of species, genetic variability within species, and the size and connectivity of forest ecosystems (i.e. larger and less fragmented forests are more resilient)[38, 39].

Particularly in comparison to monoculture plantations, more complex and species rich forest ecosystems can store more carbon[40]. This complexity is achieved over long-term evolution, which is why primary, natural forests cannot be substituted with the reforestation of mixed-species or monoculture plantations, which has long been falsely promoted as a solution to deforestation[41]. Monoculture forests have been shown to have less than half the species richness as native forests, meaning they are less resilient and have less carbon storage capacity[42, 43]. This is why the destruction of primary, natural forests cannot be fully accounted or compensated for in mitigation measures calling for reforestation, and why preserving standing primary, natural forests maximizes climate and biodiversity benefits. While allowing secondary forests time to regrow is necessary in global efforts to address climate change and biodiversity loss, the preservation of primary, natural forests yields superior climate and biodiversity benefits, which younger, newly planted forests cannot immediately replicate.

Primary forests store massive amounts of carbon and are a critical solution to climate change. Allowing forests to mature also increases their capacity to store carbon stored in the soil. The overall carbon stock of a forest is thus not just the result of carbon capture by tree growth, but is also due to the duration that the carbon stays locked in the tree. In fact, one study states that "tree longevity, rather than growth rate, controls the carbon capital of forests"[44]. Furthermore, the majority of carbon stored by forests worldwide is stored in soils. Depending on the type of soil, this means that deforestation and forest degradation may release significant quantities of soil carbon, too.

Primary, natural forests are quickly disappearing, making up only 36% of the world's remaining forests[45].

From 2001 to 2019, forests absorbed 7.6 billion metric tonnes of CO2 per year, which is 1.5 times more carbon than the United States emits annually[46, 47]. However, **when destroyed, these vital carbon sinks become carbon emitters and accelerate climate change.**

The transformation of primary forests from carbon sinks to carbon emitters is unfortunately already true for the Amazon. Scientists have confirmed that the Amazon is now emitting more carbon than it is absorbing, producing more than one billion tonnes of carbon dioxide each year[48]. In just one decade, the amount of carbon that the Amazon is storing has decreased by one third – an amount that is more than double the United Kingdom's annual emissions[49]. Unless deforestation is stopped, this phenomena in the Amazon could become a pattern for other forests around the world. For instance, **deforestation is the Congo Basin is not far behind a climate tipping point, in which the loss of Africa's rainforests are already spurring food and water crises, in addition to exacerbating climate change[50]. This is concerning as the Congo Basin represents one of the world's largest remaining tropical forest ecosystems.**

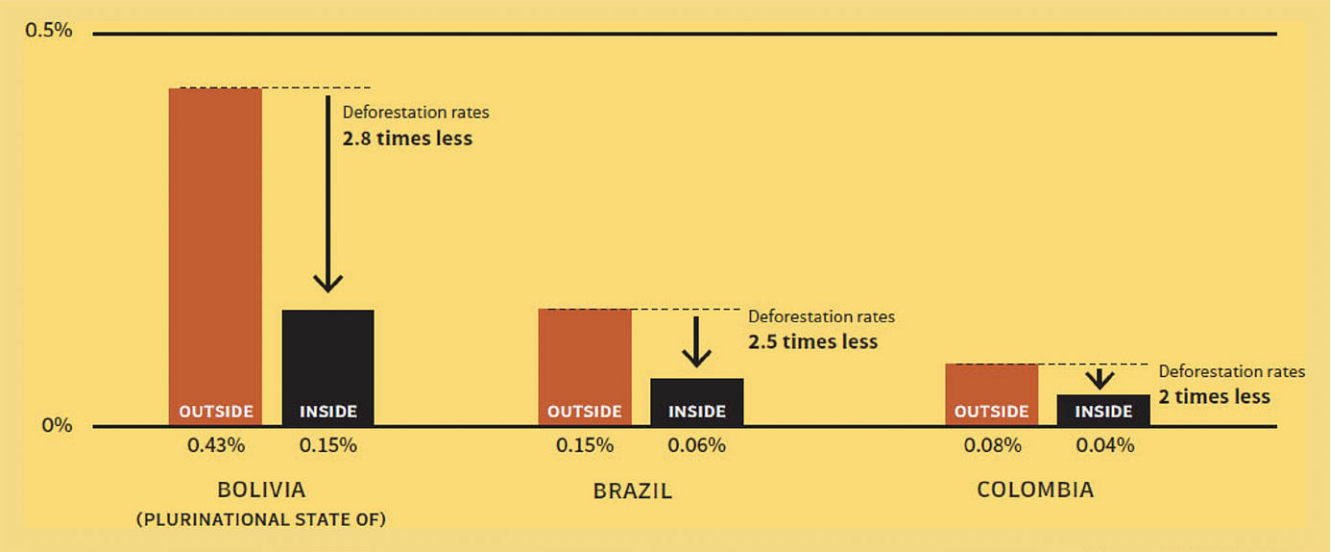
Furthermore, many local and Indigenous communities live in many of the world's remaining primary (or substantially intact and healthy) forests and possess territorial and customary rights over their land.

The sustenance, livelihoods, and cultures of many local communities and Indigenous Peoples may oftentimes be inseparable from the forest itself, in which the destruction of their forest effectively constitutes the destruction of their culture and way of life, as well as the infringement of their rights[51, 52].

Recently, more and more research is establishing and confirming how Indigenous People are highly effective forest stewards. Although Indigenous Peoples make up just less than 5% the world's population, they protect more than 80% of the world's biodiversity[53]. **In the Amazon from 2000 to 2012, annual deforestation rates on tenured Indigenous forestlands were two to three times lower than that in similar forests[54]. Across seven of the nine Amazonian countries, studies found that at least 50% of the countries' carbon was stored between Indigenous Territories and protected natural areas[55].**

At the same time, their rights and territories are under increasing threat. According to the United Nations Permanent Forum on Indigenous Issues (UNPFII), there has been a rise in reprisals against human rights

Deforestation rates, inside and outside Indigenous woodlands where land property has been ensured



The presence of Indigenous Peoples in forest areas is associated with lower deforestation rates. Between 2000 and 2012, the deforestation rates in titled Indigenous territories were at least half than deforestation rates found in other Amazon forests. Sourced from the Food and Agriculture Organization of the United Nations (FAO) under Creative Commons 3.0 IGO license

defenders, including Indigenous Peoples "protesting the harms caused by projects funded by international financial institutions"; notably, **UNPFII underlined the fact that "Despite their role as protectors of biodiversity and nature, indigenous human rights defenders are often presented as obstacles to progress, anti-development or even as enemies of the State or terrorists"[56]. In addition to the increasing threats to Indigenous Peoples protecting their rights and way of life, Indigenous and customary knowledge of caring for ecosystems is being rapidly and often violently eroded[57].** According to the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), protecting the rights and tenure of Indigenous and local communities is crucial for achieving successful biodiversity outcomes[58].

The Importance of Vulnerable Secondary Forests

Although oftentimes described as "degraded", secondary forests still possess significant conservation, biological, and social values, and have the potential to increase these values over time if they are protected. Secondary forests can recover and regrow into mature forests over time, and are being increasingly recognized as an overlooked albeit significant means to address biodiversity loss[59, 60].

In addition to preserving primary, natural forests, allowing forests to regrow via secondary succession, which is a series of stages in which a disturbed forest may undergo before reaching maturity, should be a critical aspect of plans for addressing climate change given the tremendous carbon sequestration potential of recovering forests[61,62].

For instance, one study found that if we allowed secondary forests to grow, they could sequester 120 billion metric tons of carbon by 2100[63]. This is equal to twelve years of global fossil fuel emissions[64]. **Ensuring primary forests are protected from degradation and destruction should indeed be prioritized by default, but in light of the global challenge of biodiversity loss and climate change, banks and financiers should additionally prioritize protecting vulnerable, secondary forests as part of their institutional climate or biodiversity policies, both by prohibiting harmful financing to those areas, and by actively financing forest integrity or resiliency activities.**

Furthermore, secondary forests are becoming increasingly relevant given the increasing rate of deforestation in primary forests, particularly in tropical forests[65]. According to the FAO and academic studies, secondary forests make up two thirds of the global forested area[66]. At the same time, while some primary forests may be protected by age or legal status, secondary forests are predominantly not. For instance, within the United States, primary old, growth forests only account for an estimated 6% of the country's forests, meaning that most forests in the US are secondary forests[67]. Within the US, vulnerable secondary forests are technically defined as being at least one acre, less than eighty years old, and ranked as 3 or 4 based on the Gap Analysis Project criteria published by the US Geological Survey[68, 69]. The United States has 304 million hectares of forest land, representing immense potential for carbon sequestration[70].

However, secondary forests are often unable to fully recover and regenerate due to sectoral pressures, such as agrocommodities, logging, and others, such as the spread of invasive species or poor dispersal of native species. Secondary forests may be cleared twice or more over the course of a century, depending on landowner interests. There are also negative social impacts of repeated forest clearances, as pollution in degraded areas disproportionately impact low-income rural communities and people of color[71, 72]. This dynamic is not unique to the US. Research has also pointed out the need to better protect secondary forests in Brazil, Indonesia, and Latin American countries for their climate and biodiversity value[73, 74, 75].

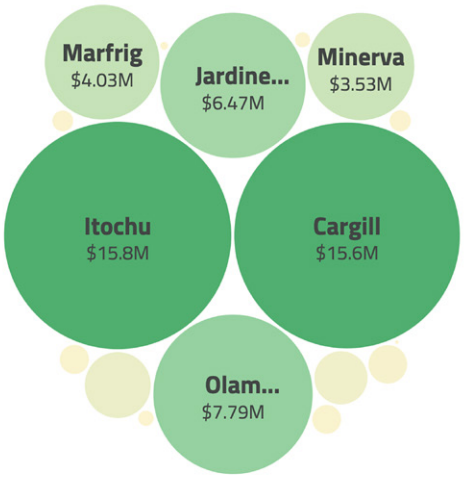
Key Sectors Driving Deforestation and Forest Degradation

Deforestation occurs in both primary and vulnerable secondary forests, and banks and financiers should prohibit financing which causes, enables, or accelerates deforestation and forest degradation. Given the environmental, climate, social, and biodiversity benefits of primary and vulnerable secondary forests, banks and financiers should protect primary and vulnerable secondary forests by prohibiting harmful financing to activities which negatively impact these areas.

If fully safeguarded, primary and vulnerable secondary forests offer irreplaceable, positive benefits for climate regulation, biodiversity conservation, as well as for protecting and enabling the rights of forest dwelling communities. However, many forests are being threatened and destroyed by key sectors driving deforestation and forest degradation. Below are examples of key sectors, which are intended to be illustrative rather than exhaustive due to length constraints.

JP Morgan's lending deals with companies that are linked to deforestation

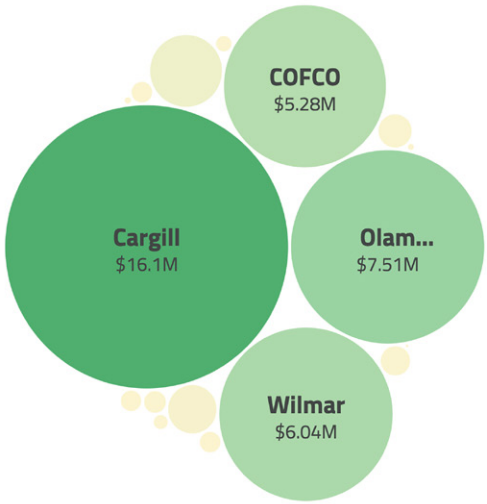
Deforestation-linked agribusinesses invested in (/20)	18
Value of deals	$9.38 billion
Estimated proceeds (adjusted)	$56.9 million
Most lucrative relationship	Itochu



JP Morgan has made deals with 18 out of the 20 companies that were analyzed in a Global Witness 2022 report. The bank has made deals worth an estimated USD 9.38 billion with firms accused of deforestation, making JP Morgan "the biggest deforestation lender in the US, EU, UK and China," according to Global Witness. Sourced from Profundo/Global Witness

BNP Paribas' lending deals with companies linked to deforestation

Deforestation-linked agribusinesses invested in (/20)	19
Value of deals	$5.71 billion
Estimated proceeds (adjusted)	$37.3 million
Most lucrative relationship	Cargill



BNP Paribas invests in 19 out of the 20 companies that were analyzed in a Global Witness report. According to the Global Witness' findings, the bank's investment in Cargill is the most lucrative for BNP Paribas. Sourced from Profundo/Global Witness

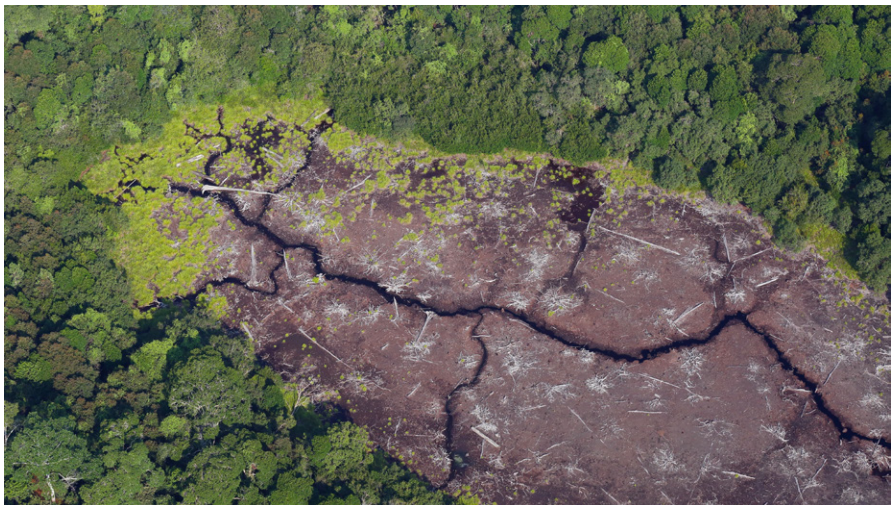
Palm Oil and Pulp and Paper

The palm oil and the pulp and paper industries are major drivers of deforestation. **According to the Forests and Finance coalition, banks provided US$69,077 million to the palm oil industry, and US$68,680 million to the pulp and paper industry from 2013 to 2022[76].** These figures account for palm oil and pulp and paper expansion in Brazil, Democratic Republic of Congo, and Southeast Asia alone. Forests in North and Latin America and Africa are not reflected in these figures, meaning that bank financing to these sectors is likely even higher. **Both industries rely upon the destruction of primary forests, including carbon rich peatlands, which are often slashed and burned. This destruction not only causes habitat loss and fragmentation, but also releases huge amounts of greenhouse gas emissions.**

The largest companies in both industries are often owned by the same conglomerates, and frequently operate adjacent concessions in regions such as Latin America and Southeast Asia[V]. In particular, Indonesia provides an unfortunate example of how the palm oil and pulp and paper industries have repeatedly devastated forests. Like monoculture plantations generally, industrial-scale palm oil development impoverishes forest biodiversity.

According to one study, "oil palm plantations have reduced species richness compared with primary and secondary forests, and the composition of species assemblage changes significantly after forest conversion to oil palm plantation", further noting that reduced biodiversity negatively impacts ecosystem functions[77]. In other words, the development of monoculture plantations like those that dominate the palm oil sector directly drive habitat loss and fragmentation, which as a result transforms a once rich primary tropical forest into a barren landscape with minimal biodiversity. In Indonesia, pulp plantations located on peatlands alone extend over 1.1 million hectares[78]. Even if based on a conservative figure of 70 tonnes of CO2 per hectare per year (as based on the IPCC quantification of emissions from Acacia plantations on drained peatlands),[79, 80] the pulp and paper industry in Indonesia releases more than 80 million tonnes of CO2 every year[81]: that's more GHG than Finland produces a year[82]. In spite of these concerning figures, pulp and paper companies have nonetheless claimed it is able to meet a zero net emissions target, even as it expands its production base[83]. According to environmental organizations, this fuzzy math is predicated on ignoring and obscuring actual emissions caused by changes in land use, such as pulp plantations located on dried peatlands[84].

In the past thirty years, palm oil and pulp and paper plantations in Indonesia have expanded into peatlands[85]. In addition to tropical forests, swamp forests like peatlands are a formidable carbon sequestrator: when biomass falls in the water, instead of returning to the atmosphere, it transforms into carbon stored in the ground. It is estimated that as much as 50 billion tonnes of carbon is stored in Indonesia's peat bogs[86]. However, to make peatlands suitable for agriculture, water must be drained to a depth of around 70 cm using drainage canals. After



Agricultural industries, such as palm oil and pulp and paper, are responsible for draining peatlands, as shown here. This destroys the peatland ecosystem and releases massive amounts of carbon into the atmosphere.

V Examples of conglomerates operating in the palm oil and pulp and paper sectors known for their negative forest impacts include Sinar Mas and Asia Pacific Resources International Holdings Limited (APRIL). For more information, please see: Martin, J., "Flushing the Climate: Which U.S. Stores are Still Selling the World's Most Destructive Toilet Paper?" Environmental Paper Network, 3 August 2022, https://environmentalpaper.org/tag/sinar-mas/ and "Asia Pacific Resources International Limited," Environmental Paper Network, https://environmentalpaper.org/april/

drainage, the peat oxidizes, releasing carbon in the form of CO2 into the atmosphere. Drained peat in Indonesia is releasing up to 80 tonnes CO2 per hectare every year into the atmosphere, a total of 500 tonnes of CO2 for the whole of Indonesia every year, excluding emissions from fires[87]. **The combined destruction of peatlands from palm oil and pulp and paper projects has resulted in Indonesia becoming one of the world's highest GHG emitters.** Conversely, dried peat is a formidable fuel. When burned, regardless of whether such fires are accidental or induced, the fires become virtually unstoppable. In 2015, more than 100,000 fires occurred in Indonesia, releasing 1.75 billion tonnes of CO2[88]; the fires led to more than 100,000 premature deaths in the region[89]. Fire seasons occurred again in 2017 and 2018, and they are expected to occur again if the peat will not be rewetted. The only way to protect dried peat is to re-wet it by permanently blocking drainage canals and letting the water cover the peat again. However, the palm oil and the pulp and paper conglomerates are typically reluctant to rewet peatlands on a large scale as palm oil and tree plantations must be kept dry.

Beef and Soy

The beef and soy industries are major drivers of deforestation in both primary and vulnerable secondary forests globally. In the beef sector, deforestation is caused by the conversion of land for cattle pasture, which, from 2001 to 2015, resulted in an estimated 45.1 million hectares (Mha) of deforestation globally[90]. Deforestation caused by cattle rearing releases 340 million tons of carbon each year, which equates to 3.4% of global greenhouse gas emissions [91].

Conversely, the soy industry is often considered to be an indirect driver of deforestation. This is because as cattle rearing is pushed farther into forested lands, soy crops are planted in former cattle pastures, which includes vulnerable secondary forests[92]. More than 75% of all soy is fed to animals, mostly to poultry and pigs[93]. This means that pork and poultry sectors that rely heavily on soy are also indirectly driving deforestation globally. This not only devastates forest ecosystems, but also contributes massively to climate change.

The majority of global beef and soy production is being supported by the banking sector. For instance, HSBC, Barclays, Santander, Deutsche Bank, and JP Morgan are funders of JBS, which is the world's largest meat company[94] and has been linked to deforestation and human rights abuses in the Amazon[95, 96, 97, 98].

Banks with exposure to these sectors are becoming increasingly liable to financial risks[99], including material, regulatory, operational, and reputational. To avoid risks to both nature and the sustainability of their business, banks need to establish deforestation policies that consider the interrelation between multiple commodities, such as how soy production and related pig and poultry production compounds deforestation in the beef industry. For instance, it is estimated that 70 percent of cleared lands in the Amazon are used for cattle pastures[100] and nearly half of the forest area replaced by soy in Brazil, from 2001 to 2015, occurred in the Amazon.[101]

In order to reduce emissions driving climate change, banks and financiers must adopt an exclusion policy for industrial animal agriculture and ensure no new financing of projects or corporations that would expand livestock or animal feed production.

Banks should also require that their clients disclose their full greenhouse gas emissions profile, including 100 percent of scope 3 emissions, and set Paris-aligned absolute emissions reductions targets and plans based on current climate science.

Rubber

In addition to agrocommodities, rubber is a major driver of deforestation of both primary and vulnerable secondary forests. Since 2016, banks provided USD$15,111 million to the rubber industry[102].

In the case of the rubber industry, the expansion of these tree plantations come at the expense of primary forests or result in the further degradation of already logged, vulnerable secondary forests. For instance, a 2022 Global Witness report found that over 500km2 of deforestation had taken place in connection to the expansion of such plantations since 2000 in Central and West Africa[103].

For example, Halycon Agri's controversial Sudcam rubber plantation in Cameroon is adjacent to the Dja Faunal Reserve, a UNESCO World Heritage site noted for its rich biodiversity[104]. In 2019, a UNESCO mission to the area reported that Dja is one of the last examples of a "primary forest"[105]. However, the Sudcam plantation cleared 8751 ha of forests in the area, which the UNESCO mission described as "an important habitat for wildlife such as elephant, gorilla and chimpanzee. The Sudcam plantation also decreases the connectivity between the Dja [Faunal Reserve] and other protected areas"[106]. In response to concerns following a Global Witness investigation, Halycon Agri justified the expansion, stating that, "the land [...] cleared had already been logged meaning it was not primary forest"[107].

In addition to Halycon Agri, Olam and Socfin responded similarly to Global Witness' concerns, alleging that forest areas cleared for plantations were "degraded" secondary forest, implying that since these were not primary forests, they did not have any environmental value[108]. However, as referenced above, even "degraded", secondary forests have significant impacts o n climate emissions. According to one study, "coupled with avoided deforestation and sustainable forest management, natural regeneration of second-growth forests provides a low-cost mechanism that yields a high carbon sequestration potential with multiple benefits for biodiversity and ecosystem services"[109].

Most of the deforestation identified in the report was linked to plantations currently owned by just three companies – Olam, Halcyon Agri and Socfin – all of which have links to major European and Asian banks[110].

Rubber production nearby Cameroon's Dja Faunal Reserve, which is a UNESCO World Heritage site, is threatening the critically endangered African forest elephant. While this forest area was degraded prior to the plantation's construction, it still holds significant value for preserving species' habitats and sequestering carbon, and thus should be off limits to unsustainable, harmful activities.

Logging and Biomass

Logging and biomass are also driving forest degradation. Because biomass energy is generated by burning organic matter, typically wood, this sector overlaps with the logging industry. In response to increasing pressure to develop renewable energy sources, banks have recently increased financing to biomass, but have not seemed to consider how the biomass energy industry may cause negative impacts to the climate and forests[111]. **Perceiving biomass energy as a renewable resource is often based on the assumption that burning trees is carbon-neutral since trees can grow back and replace the ones that have been chopped down. However, this assumption does not account for any fossil fuel emissions involved in the process of growing, processing, or transporting wood, let alone the climate impacts of the inherent delay in waiting for trees to regrow and recapture their maximum carbon storage potential. It also does not account for the fact that logged forests are frequently replaced with monoculture tree plantations that store far less carbon.** Destroying forests inhibits carbon storage potential, and this in turn creates a negative feedback loop in which the intensifying impacts climate change further jeopardizes and constrains the ability of forests to regenerate naturally in the long-term.

The North Atlantic Coastal Plain in the United States was recently named a global biodiversity hotspot by the Critical Ecosystem Partnership Fund. Although few intact primary forests are left in the Southeast, the region and its secondary forests have been found to contain more species of birds, amphibians, reptiles, fish, and trees than other parts of the country. Examples include Louisiana black bears, hellbenders, and swallow-tailed kites (photographed here), among beautiful wetland and bottomland hardwood forests. However, these forests are increasingly being threatened by the biomass industry.

In addition, a carbon accounting loophole renders the actual emissions impact of biomass energy invisible. **According to analysis from Environmental Paper Network, "The carbon emissions released when biomass is burned to produce energy are not reported nor accounted for in the energy sector accounts of the country where the biomass is consumed. This is in stark contrast to how emissions are recorded for all other energy sources, which are accounted for in the energy sector of the country where they are consumed...**Instead of counting biomass emissions at the smokestack, the GHG emissions from biomass energy are supposedly accounted for in the Land Sector where the biomass is logged. However, in the land sector, the emissions sources are never broken down to show emissions resulting from biomass burning for energy, instead they show only the overall change in forest cover from all causes"[112]. In other words, **only the overall change in carbon stock is accounted for, and the emissions caused by burning biomass is never shown.**

Both of the world's largest wood pellet manufacturers, Enviva[113] and Drax, operate in the Southeastern United States to manufacture pellets. The biodiverse and carbon-rich forests across the United States' Southern Coastal Plain—a region that encompasses coastal North and South Carolina, southern Georgia and Alabama, and northern Florida— is now the world's largest regional producing and exporting wood pellets[114, 115]. The intensity of logging in the U.S. South is even visible from space satellite images of global forest cover loss documented from 2000 to 2012, in which the rate of disturbance of southern U.S. forests from logging was four times the rate of South American rainforests[116].

In the case of Drax Power, numerous banks have provided financing to the company, including Bank of New York Mellon, Barclays, JP Morgan Chase, Natwest, Santander, and Royal Bank of Canada[117]. Drax Power imported over 8 million metric tonnes of wood pellets to burn at its power plant in 2021 alone[118]. **Wood entering Drax's supply chain routinely comes from clear-cuts of old and biodiverse forests around the world that are home to a host of species, including rare birds, and serve as vital carbon sinks[119, 120]. Even more concerningly, in 2021 Drax acquired Pinnacle Renewable Energy, a large pellet producer in Canada, and took over their sourcing area of almost 845,000 hectares of unprotected primary forests in British Columbia[121]. These haul zones overlap with critical primary forests and habitat for the threatened woodland caribou. In its latest Annual Report, Drax even admitted to sourcing wood from old growth forests British Columbia and Alberta for its pellet production[122].** Since then, investigative journalists for the BBC and CBC have shown that Drax has been clearcutting primary forest in at least one of its own logging concessions[123].

Furthermore, the forest degradation and pellet production causes harmful social impacts, in which communities living near the wood pellet mills are losing forests that protect them from flooding and extreme weather. They also suffer serious health impacts from constant air, water, and noise pollution from the pellet mills[124]. For example, in 2021 Drax was fined $2.5 million for major air pollution violations at its Amite facility in Mississippi summing nine years[125]. In another example, Drax was required to pay $3.2 million USD for a string of air pollution violations at their Louisiana Urania and Bastrop facilities[126].

Deforestation Drives Community Rights Violations: Lessons from Indonesia's Palm oil sector

In addition to climate and biodiversity impacts, deforestation is deeply tied to systemic human rights abuses and Indigenous rights violations. Because of the complexity in monitoring palm oil supply chains, it is particularly important that banks develop forestry policies based on free, prior, informed consent principles to ensure that clients are not involved in, causing, or exacerbating social conflicts[VI].

Given the country's extensive experience in deforestation, Indonesia offers illustrative examples of how deforestation directly drives community rights violations, and how banks are exposed to these abuses via their financing.

The following examples are instructive accounts of how forest policies should account for the inexorably linked social impacts caused by sectors driving deforestation, as well as how protecting community rights and free, prior, informed consent are worth embedding into any bank policies related to forest management. These cases illustrate how the palm oil sector has historically led to deforestation and negative community impacts, and the ongoing need for banks to hold clients accountable for their role in driving forest and community related risks.

Sulawesi Communities in North Morowali

Corporate Landgrabs Criminalize Communities

Companies: PT Agro Nusa Abadi (PT ANA), subsidiary of Astra Agro Lestari/Jardine Matheson

Financing and Investors of PT ANA include but are not limited to: Bank Mandiri, Bank Central Asia; Bank Pan Indonesia, Overseas-Chinese Banking Corporation, Mizuho Financial, Bank of China, HSBC, ANZ, Citigroup, JPMorgan Chase, among others[127]

Palm oil producer PT ANA has been condemned by local communities for encroaching on their lands since 1994. Affected rights holders include migrant settlers, farmers, and residents of the Polanto Jaya Village and Molino Village in North Morowali, Central Sulawesi[128]. For instance, communities from the Molino Village have claimed that PT ANA violently grabbed 996 hectares of land in 2006-2007 through the use of illegal and fraudulent location permits. They have also alleged that PT ANA has mobilized state military personnel to intimidate, repress, and stop farmer protests[129].

In response, PT ANA has repeatedly taken legal measures in order to criminalize community members by accusing them of stealing company's fresh palm oil fruit bunches which were grown on community owned land[130]. These disputes have resulted in the criminalization of land and human rights defenders, multiple land conflicts, public protests, and violent suppression by the police, military, and PT ANA's private security[131].

VI A forthcoming briefing paper in this series delves deeper on the importance of ensuring free, prior, informed consent in bank financed activities, and how it can help insulate against contentious, protracted social conflicts.

Dayak Hibun Indigenous Communities in Kerunang and Entapang

Corporate Palm Producers May Renege on Agreements with Communities

Companies: PT Mitra Austral Sejahtera (PT MAS), subsidiary of Sime Darby/PT Inti Nusa Sejahtera/PT CAPITOL[132]

Financiers and investors of PT MAS include but are not limited to: Credit Agricole, Credit Suisse, Deutsche Bank, HSBC, JP Morgan Chase, Standard Chartered, among others

In 1996, PT Mitra Austral Sejahtera (PT MAS), a subsidiary of the Sime Darby Group, entered into an unwritten agreement to borrow-cultivate (pinjam pakai) 1462 hectares of the Dayak Hibun Indigenous peoples who hold customary rights to their territory. In persuading Dayak Hibun Indigenous communities to lend their lands for palm oil cultivation, PT MAS promised better jobs, roads, access to electricity, clean water, scholarships, religious buildings, among other benefits[133].

Based on the promised benefits, the Dayak Hibun Indigenous peoples agreed to have their customary lands planted with oil palm plantations, in accordance with the agreement that PT MAS could develop palm oil and then return the land to the original customary landowners after 25 years. In 2000, without consent or approval from Dayak Hibun communities, however, PT MAS applied for a Hak Guna Usaha (HGU), an Indonesian land use right that can legally be issued if no rightsholders are identified. Obtaining the HGU thus legally erased and extinguished the customary land rights held by the Dayak Hibun Indigenous Peoples. PT MAS did not notify or inform Dayak Hibun communities of the HGU. As a result, the communities were effectively dispossessed of their land rights and left in the dark as to the long-lasting consequences on their legal, economic, social, cultural and environmental rights to their land.

Dayak Hibun communities have reported that there are many sacred sites within the disputed land where prayers are offered up and rituals performed. These include Pedagi Abae Pengehan Abung, Nek Hatu Aye and Abae Luncak Lancik. Ancestral spirits are believed to inhabit all of these sites, as well as a mass graveyard at Kubur masal Pulau Batongk, and smaller graveyards at Kubur Pulau Mojik and Kubur Tak Klotok.

Since PT MAS has reneged on their agreement with Indigenous communities, four villagers have been unlawfully arrested and jailed. This is in addition to the continuing criminalization and intimidation PT MAS has inflicted on affected communities.

Batu Ampar Village in Sarolangun, Jambi

Voluntary Sectoral Initiatives like the RSPO Fail to Resolve Complaints

Companies: PT Kresna Duta Agrindo (PT KDA), a subsidiary of Golden Agri Resources/ PT Sinar Mas Agro Resources and Technology (PT SMART)

Financiers and Investors include but are not limited to: Credit Suisse; Bank Negara Indonesia, Bank Pan Indonesia, Bank Mandiri, Rabobank, Citigroup, China Development Bank, ABN Amro, Société Générale, among others[134]

PT Kresna Duta Agrindo (PT KDA), the sister company of Sinarmas-Golden Agri Resources, failed to deliver promised benefits to Batu Ampar Communities after taking 500 hectare of their land[135]. The Batu Ampar Communities agreed to a partnership with PT KDA, which would allow the company to use their community land for oil palm plantation. PT KDA promised that the communities would receive 30% of the profits from the plantation, yet even after ten years of operation, the communities have never received this income[136]. The communities from Batu Ampar Village have lodged complaints and appealed for compensation via the Roundtable on Sustainable Palm Oil in Singapore and Medan in 2013, yet PT KDA continues to neglect their requests for the return of their land[137]. Golden Agri Resources is a member of the Roundtable

on Sustainable Palm Oil since 2005, and has faced numerous community complaints regarding their operations over the years[138], [139]. This case exemplifies unfortunately how voluntary sectoral initiatives like the Roundtable on Sustainable Palm Oil (RSPO) often fail to hold palm oil companies accountable for their negative impacts in resolving community grievances.

Notably, several active complaints have been lodged against GAR and PT SMART via the RSPO Complaints and Appeals Procedures, including a complaint on illegal forest uses and corruption cases in Central Kalimantan. Four Indonesian legislators — Borak Milton and Punding L.H. Bangkan, as well as Edy and Arisavanah — have already been charged in the case. Several other legislators have been arrested[140].

Re-Aligning Climate and Forest Priorities

Forest management outcomes are closely tied with climate outcomes. Historically, international climate actions based on forests have narrowly prioritized tree planting and reforming agrocommodity or logging practices. This misguided tendency, however, has overshadowed the longstanding need to restrict the expansion of sectors with high forest risks, prioritize the sustainable conservation, management, and protection of primary forests, and to allow vulnerable secondary forests to regenerate.

As a result, international climate efforts related to forests have largely made the climate problem worse while simultaneously overlooking the interdependent relationship between climate and biodiversity issues. The IPCC has attempted to address this failure by re-confirming that existing carbon rich ecosystems like "primary forests provide high synergies between carbon and biodiversity"[141]. Furthermore, **the IPCC has noted that carbon rich ecosystems such as forests are "irrecoverable through restoration" by 2050", in which the immediate protection of such ecosystems offers the highest total and per hectare mitigation benefit of any action** in the Agriculture, Forestry and Other Land Use (AFOLU) sector[142]. In addition, both IPCC and IPBES have recognized and recommended the simultaneous protection of species and carbon rich ecosystems as an important approach to maximize both biodiversity and climate benefits[143].

Today, successfully managing the biodiversity and climate crisis will require the simultaneous protection of primary and secondary forests vulnerable to sectors driving deforestation and forest degradation. This is especially true for ensuring primary forests are able to continue serving as carbon sinks, and allowing secondary forests to regenerate. IUCN policy and recent peer reviewed literature confirms that primary forests in all biomes – tropical, temperate and boreal – deliver the highest integrity and lowest risk long term carbon storage[144, 145]; conversely, monoculture plantations deliver the lowest integrity and highest risk, short term carbon storage.[146]

Furthermore, ensuring forest ecosystems stay intact is critical, as naturally evolved patterns of biodiversity are the most stable and resilient. Within their system limits, intact forests possess natural resistance and resilience to threats that are increasing with climate change such as pests, disease, drought, and fire. This means that efforts to reduce forest fragmentation and restore all components of biodiversity will maximize ecosystem integrity, and in turn lower the risk of releasing carbon to the atmosphere. **If banks are to do their part in fighting climate change and biodiversity loss, they should closely evaluate and monitor clients in industries which are known drivers of deforestation, forest loss, and fragmentation, and exclude financing to clients operating in critical, carbon rich ecosystems such as primary and vulnerable secondary forests.**

Forest Solutions: Proforestation

In 2018, increasing evidence showed that contrary to commonly espoused views on the superior carbon sequestration in young forests, natural forests actually absorb more carbon later in life. The optimum age for carbon sequestration varies with forest type and composition, but it is commonly well after the average age at which forests would normally be logged. **A US study published in 2019 coined the term "proforestation", which is the practice of allowing and enabling continuous forest growth that is uninterrupted by active management or timber harvesting[147]. The study concluded that "Stakeholders and policy makers need to recognize that the way to maximize carbon storage and sequestration is to grow intact forest ecosystems where possible", as it is the "most effective solution" to climate change and biodiversity loss[148].** Other notable conclusions of the study were:

- Preventing carbon loss from logging natural forests is an important climate mitigation option. In the USA, for instance, logging accounts for 85% of the total carbon lost from forests each year.
- A study of 48 undisturbed primary or mature secondary forest plots worldwide found that on average the largest 1% of trees disproportionately accounted for half the above ground living biomass.
- Ecosystem functions continuously accrue as forests age. For instance, the study noted, "Far from plateauing in terms of carbon sequestration (or added wood) at a relatively young age as was long believed, older forests (e.g. greater than 200 years of age without intervention) contain a variety of habitats, typically continue to sequester additional carbon for many decades or even centuries and sequester significantly more carbon than younger and managed stands."
- Forestry models often underestimate the carbon content of older, larger trees; it is increasingly understood that trees can continue to remove atmospheric carbon at increasing rates for many decades beyond 100 years of age.
- The superior value of old forests for biodiversity – greater tree diversity, and structural complexity (such as tree hollows, fallen trees, coarse woody debris on the forest floor, etc) – create vastly improved habitat for forest species such as plants, invertebrates, mammals and birds. This in turn greatly improves ecosystem integrity and the functions forests provide.

These findings are particularly relevant to banks and financiers since although industrial logging and agrocommodity conglomerates may misguidedly describe themselves as carbon neutral or carbon negative, their expansion and operations depends on continued destruction of forests, whether they are primary forests or vulnerable secondary forests.

The myth that logging natural forests is carbon neutral has been fostered by accounting rules that allow emissions from logging in any given year to be offset from growth in the whole forest estate – i.e. the scientifically false assumption that the maximum carbon stock in a forest is the same as the stock at the age the forest is scheduled to be logged. Net accounting means the actual emissions from logging are never revealed.

This means that even if a logging or agrocommodity conglomerate claims to be carbon neutral the actual long term climate impacts of a young vs mature forest are asymmetrical. Understanding the climate benefits of young vs mature forests is further obscured since young re-growth and monoculture plantations can be misguidedly used to "offset" damage and loss to primary and other natural forests that are irrecoverable by 2050. Ultimately, these findings underscore the clear need to prohibit harmful financing which may negatively impact primary forests and vulnerable secondary forests, and the prudence of banks adopting forestry based policies based on proforestation.

The importance of maintaining and restoring ecosystem integrity and connectivity has been emphasized in the Convention on Biological Diversity post 2020 Global Biodiversity Framework. The need to retain areas of High ecological integrity (such as primary forests) is emphasized in the very first 2030 target on preventing harm to biodiversity, namely:

TARGET 1:. – *Ensure that all areas are under participatory integrated biodiversity inclusive spatial planning and/or effective management processes addressing land and sea use change, to bring the loss of areas of high biodiversity importance, including ecosystems of high ecological integrity, close to zero by 2030, while respecting the rights of indigenous and local communities.*

Just as banks and financiers have recognized the obligation to reflect international climate agreements in their policies and financing, it is equally important that banks and financiers evolve quickly in reflecting urgent international biodiversity commitments in their policies and financing as well.

Conclusion

Primary and vulnerable secondary forests are threatened by unsustainable, high risk sectors which are driving deforestation and forest degradation, many of which are facilitated if not enabled by bank financing. This paper explains why primary forests and vulnerable secondary forests should thus be off limits to harmful direct and indirect financing. Both types of forests should be protected due to the multiple, simultaneous values they possess in curbing climate change, preserving biodiversity, sustaining ecosystem functions, and supporting Indigenous and community livelihoods.

In short, banks and financiers should prohibit financing to clients whose operations harm and threaten the conservation of primary and vulnerable secondary forests. Given the unique importance of forests in meeting international global climate and biodiversity targets, banks and financiers should adopt no deforestation and no forest degradation policies, and coordinate and complement their institutional forestry policies holistically with other thematically crosscutting issues such as climate, biodiversity, and Indigenous Peoples.

KEY TAKEAWAYS:

- Banks and financiers are driving global deforestation and forest degradation by supporting high forest risk sectors
- Deforestation occurs in both primary and vulnerable secondary forests - banks and financiers should prohibit financing which causes, enables, or accelerates deforestation and forest degradation.
- Key sectors driving global deforestation and forest degradation include but are not limited to palm oil, pulp and paper, beef, soy, logging, biomass, and rubber
- Banks and financiers should exclude financing to clients and sectors which may negatively impact intact primary, natural forests and vulnerable secondary forests
- A primary forest is a natural forest that is the result of biological and evolutionary processes and that has not been degraded by significant industrial, human driven activities. A key characteristic of primary, natural forests is that mature trees dominate the canopy and contains most or all of its native plant and animal species. Primary, natural forests include all successional age classes (young to old-growth) having no industrial human activities, including primary forests regenerating after wildfire. Primary, natural forests covers a range of related terms including “old growth forest”, “ancient forest”, “primeval forest”, “mature forests”, and “intact forest landscapes”

- Given the range of regeneration rates among different forest types, the exact age of a primary forest is less relevant than whether its natural, ecological processes have reached its climax. This detail is particularly important in cases where even if a forest has been previously disturbed or logged, if the forest still predominantly functions and retains the key characteristics of a forest at its climax, it should still be considered a primary, natural forest and be protected
- Vulnerable, secondary forests are forests which are regenerating largely through natural processes after significant human and/or natural disturbance of the original forest vegetation at a single point in time or over an extended period. In protecting the ability of secondary forests to recover and regrow, secondary forests should be considered as vulnerable when at risk of further degradation or destruction by planned or future harmful activities
- Defining forests can be challenging as different forest definitions reflect different forest management objectives and interests
- Banks and financiers should be aware of the complex dynamics of various forest management objectives and interests, and not over-rely on narrow forest definitions and assessments of third party or industry assessors in conducting their own due diligence
- Banks and financiers must be aware of the controversial legacy of forest definitions across international, regional, and local contexts, and develop forestry policies which are rooted in the basic, overarching aim to stop deforestation and protect forest dwelling local and Indigenous communities
- Banks and financiers should coordinate and complement institutional forestry policies holistically with other thematically crosscutting policies on climate, biodiversity, and Indigenous Peoples
- Managing both primary and vulnerable secondary forests sustainably and equitably is critical for meeting other interdependent objectives, including safeguarding community rights, solving climate change, and halting biodiversity loss
- Banks and financiers should adopt no deforestation policies, and establish policies which favor proforestation, which is the concept of allowing and enabling continuous forest growth that is uninterrupted by active management or timber harvesting
- Banks and financiers should embed the principles of free, prior, informed consent in their forestry policies

References

1 "Financial Flows And Policy Assessments Key Findings," Forests&Finance, 8 November 2021, https://forestsandfinance.org/news/financial-flows-and-policy-assessments-key-findings/

2 "COP26: Agricultural expansion drives almost 90 percent of global deforestation," Food and Agriculture Organization of the United Nations, 11 June 2021, https://www.fao.org/newsroom/detail/cop26-agricultural-expansion-drives-almost-90-percent-of-global-deforestation/en

3 Pendrill, F. et al., "Disentangling the numbers behind agriculture-driven tropical deforestation," Science, 9 September 2022, https://www.science.org/doi/10.1126/science.abm9267

4 Lapola, D. M. et al., "The drivers and impacts of Amazon forest degradation," Science, 27 January 2023, https://www.science.org/doi/10.1126/science.abp8622

5 Weisse, M., and Goldman, E., "Forest Pulse: The Latest on the World's Forests," World Resources Institute and Global Forest Watch, (n.d.), https://research.wri.org/gfr/latest-analysis-deforestation-trends

6 "The global assessment report on biodiversity and ecosystem services," IPBES, 2019, https://www.ipbes.net/global-assessment

7 "The state of the world's forests," Food and Agriculture Organization, 2020, https://www.fao.org/state-of-forests/en/#:~:text=Between%202015%20and%202020%2C%20the,80%20million%20hectares%20since%201990

8 "The global assessment report on biodiversity and ecosystem services," IPBES, 2019, https://www.ipbes.net/global-assessment

9 "The global assessment report on biodiversity and ecosystem services," IPBES, 2019, https://www.ipbes.net/global-assessment

10 "Territories of Life," ICCA Consortium, 2021, https://report.territoriesoflife.org/

11 Jones, B., "Indigenous people are the world's biggest conservationists, but they rarely get credit for it," Vox, 11 June 2021, https://www.vox.com/22518592/indigenous-people-conserve-nature-icca

12 This definition of secondary forests is based on the research of scientists such as Robin Chazdon, as reflected in Chazdon, R., "Second Growth: The Promise of Tropical Forest Regeneration in the Age of Deforestation," University of Chicago Press, 2014, https://press.uchicago.edu/ucp/books/book/chicago/S/bo17407876.html

13 Lewis, S., Wheeler, C., Mitchard, E., and Koch, A., "Restoring natural forests is the best way to remove atmospheric carbon," Nature, 2 April 2019, https://www.nature.com/articles/d41586-019-01026-8

14 "How does the FAO Forest definition harm people and forests? An open letter to the FAO," World Rainforest Movement, 21 September 2016, https://www.wrm.org.uy/action-alerts/how-does-the-fao-forest-definition-harm-people-and-forests-an-open-letter-to-the-fao

15 "The law of the Republic of Indonesia concerning forestry," Republic of Indonesia, 1999, http://www.flevin.com/id/lgso/translations/Laws/Law%20No.%2041%20of%201999%20on%20Forestry.pdf

16 "Global forest resources assessment," Food and Agriculture Organization, 2022, https://www.fao.org/3/I8661EN/i8661en.pdf

17 Lewis, S., Wheeler, C., Mitchard, E., and Koch, A., "Restoring natural forests is the best way to remove atmospheric carbon," Nature, 2 April 2019, https://www.nature.com/articles/d41586-019-01026-8

18 Pearce, F. "Why green pledges will not create the natural forests we need," Yale Environment, 16 April 2019, https://e360.yale.edu/features/why-green-pledges-will-not-create-the-natural-forests-we-need

19 "FAO definition must recognise that plantations are not forests!" Redd-Monitor, 21 March 2017, https://redd-monitor.org/2017/03/21/fao-definition-must-recognise-that-plantations-are-not-forests/

20 "Monocultures in America: A system that needs more diversity," University of Massachusetts, Amherst, 5 December 2017, https://blogs.umass.edu/natsci397a-eross/monocultures-in-america-a-system-that-needs-more-diversity/

21 "Mono-a-Mono: The Threat of Today's "Green Deserts" to Tomorrow's Food Production," The Nature Conservancy, 28 February 2019, https://www.nature.org/en-us/what-we-do/our-insights/perspectives/todays-green-deserts-to-tomorrows-food-production/

22 Gilbert, N., "Forest definition comes under fire," Nature, 19 August 2009, https://www.nature.com/articles/news.2009.842

23 Gilbert, N., "Forest definition comes under fire," Nature, 19 August 2009, https://www.nature.com/articles/news.2009.842

24 Putt, P., "The good, the bad and the ugly: Logging Loophole at the heart of glasgow declaration," Environmental Paper Network, 23 November 2021, https://environmentalpaper.org/2021/11/the-good-the-bad-and-the-ugly-logging-loophole-at-the-heart-of-glasgow-declaration/

25 Chazdon, R. et al., "When is a forest a forest? Forest concepts and definitions in the era of forest and landscape restoration," Ambio, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4980317/

26 Chazdon, R. et al., "When is a forest a forest? Forest concepts and definitions in the era of forest and landscape restoration," Ambio, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4980317/

27 "Afforestation and reforestation," IPCC Good Practice Guidance for Land Use, Land-Use Change, and Forestry, November 2003, https://www.ipcc-nggip.iges.or.jp/public/gpglulucf/gpglulucf_files/Chp4/Chp4_25_to_4210.pdf

28 "Concerns with GIZ-FORMCLIME," Letter sent from AMAN Kalbar, WALHI Kalbar, Lanting Borneo, Forest Peoples Programme, et al, to GIZ Indonesia, Ministry of Foreign Affairs and International Cooperation, Germany, KfW,on May 2, 2018.

29"Sustainable forest management," Food and Agriculture Organization, (n.d.) https://www.fao.org/sustainable-forests-management/en/; https://environmentalpaper.org/2021/11/the-good-the-bad-and-the-ugly-logging-loophole-at-the-heart-of-glasgow-declaration/

30 Global Forest Watch, (n.d.), https:/www.globalforestwatch.org/

31 Intact Forest Landscapes, (n.d.), https://intactforests.org/

32 Intact Forest Landscapes, (n.d.), https://intactforests.org/

33 "HCV Approach," HCV Network, (n.d.), https://www.hcvnetwork.org/hcv-approach

34 "HCV Approach," HCV Network, (n.d.), https://www.hcvnetwork.org/hcv-approach

35 High Carbon Stock Approach, (n.d.), https://highcarbonstock.org/

36 Lang, N., Schindler, K., & Wegner, J. D., "High carbon stock mapping at large scale with optical satellite imagery and spaceborne LIDAR," Earth Engine, 2021, https://nlang.users.earthengine.app/view/canopy-height-and-carbon-stock-southeast-asia-2020

37 "Deforestation Fronts," WWF, (n.d.) https://wwf.panda.org/discover/our_focus/forests_practice/deforestation_fronts_/

38 "Forest resilience, biodiversity, and climate change: A synthesis of the biodiversity/resilience/ stability relationship in forest ecosystems," Secretariat of the Convention on Biological Diversity, 2009, https://www.cbd.int/doc/publications/cbd-ts-43-en.pdf

39 Ruiz, S., "What are Primary Forests and Why Should We Protect Them?" Global Forest Watch, 18 May 2020, https://www.globalforestwatch.org/blog/data-and-research/primary-forests-definition-and-protection/

40 "Species-rich forests store twice as much carbon as monocultures," University of Zurich, 4 October 2018, https://www.sciencedaily.com/releases/2018/10/181004143905.htm

41 "IPBES-IPCC co-sponsored workshop: Biodiversity and climate change," IPBES and IPCC, 10 June 2021, https://ipbes.net/sites/default/files/2021-06/20210609_scientific_outcome.pdf

42 Pearce, F., "Why Green Pledges Will Not Create the Natural Forests We Need," Yale Environment, 16 April 2019, https://e360.yale.edu/features/why-green-pledges-will-not-create-the-natural-forests-we-need

43 Lewis, S., Wheeler, C., Mitchard, E., and Koch, A., "Restoring natural forests is the best way to remove atmospheric carbon," Nature, 2 April 2019, https://www.nature.com/articles/d41586-019-01026-8

44 Korner, C., "A matter of tree longevity," Science, 13 January 2017, https://www.science.org/doi/abs/10.1126/science.aal2449

45 "Convening experts to move forward on primary forests: IUCN's Primary Forests Task Team at Congress," IUCN, (n.d.), https://www.iucn.org/news/forests/201610/convening-experts-move-forward-primary-forests-iucn%E2%80%99s-primary-forests-task-team-congress

46 Harris, N., and Gibbs, D., "Forests Absorb Twice As Much Carbon As They Emit Each Year," World Resources Institute, 21 January 2021, https://www.wri.org/insights/forests-absorb-twice-much-carbon-they-emit-each-year

47 Harris, N., et al., "Global maps of twenty-first century forest carbon fluxes," Nature Climate Change, 21 January 2021, https://www.nature.com/articles/s41558-020-00976-6

48 Gatti, L. et al., "Amazonia as a carbon source linked to deforestation and climate change," Nature, 14 July 2021, https://www.nature.com/articles/s41586-021-03629-6?utm_medium=affiliate&utm_source=commission_junction&utm_campaign=CONR_PF018_ECOM_GL_PHSS_ALWYS_DEEPLINK&utm_content=textlink&utm_term=PID100090912&CJEVENT=5026f56432bb11ed83332b390a82b82c

49 Mcsweeney, R., "Amazon rainforest is taking up a third less carbon than a decade ago," Carbon Brief, 18 March 2015, https://www.carbonbrief.org/amazon-rainforest-is-taking-up-a-third-less-carbon-than-a-decade-ago/

50 Bergen, M., "Congo Basin Deforestation Threatens Food and Water Supplies Throughout Africa," World Resources Institute, 9 July 2019, https://www.wri.org/insights/congo-basin-deforestation-threatens-food-and-water-supplies-throughout-africa

51 Martin, J., "Old Growth Forests Are Vital to Indigenous Cultures. We Need to Protect What's Left," Ancient Forest Alliance, 28 January 2020, https://ancientforestalliance.org/old-growth-forests-are-vital-to-indigenous-cultures-we-need-to-protect-whats-left/

52 Baffoni, S., "Pulp & paper industry expansion in Cerrado risks fires, water shortage and climate damage, says new EPN report," Environmental Paper Network, https://environmentalpaper.org/2022/12/tres-lagoas-paper/

53 Raygorodetsky, G., "Indigenous peoples defend Earth's biodiversity—but they're in danger," National Geographic, 16 November 2018, https://www.nationalgeographic.com/environment/article/can-indigenous-land-stewardship-protect-biodiversity-

54 Ding, H., Veit, P., Blackman, A., Gray, E., Reytar, K., Carlos Altamirano, J., and Hodgdon, B., "Climate Benefits, Tenure Costs: The Economic Case For Securing Indigenous Land Rights in the Amazon," World Resources Institute, 6 October 2016, https://files.wri.org/d8/s3fs-public/Climate_Benefits_Tenure_Costs.pdf

55 Walker, W., et al., "The role of forest conversion, degradation, and disturbance in the carbon dynamics of Amazon indigenous territories and protected areas," PNAS, 27 January 2020, https://www.pnas.org/doi/10.1073/pnas.1913321117

56 "Indigenous Human Rights Defenders," The United Nations Permanent Forum on Indigenous Issues, (n.d.), https://www.un.org/development/desa/indigenouspeoples/wp-content/uploads/sites/19/2016/08/Indigenous-Human-Rights-Defenders.pdf

57 "Global Assessment Report on Biodiversity and Ecosystem Services," IPBES, 2019, https://ipbes.net/global-assessment

58 "Global Assessment Report on Biodiversity and Ecosystem Services," IPBES, 2019, https://ipbes.net/global-assessment

59 Rozendaal, D., et al., "Biodiversity recovery of Neotropical secondary forests," Science Advances, 6 March 2019, https://www.science.org/doi/10.1126/sciadv.aau3114

60 Hughes, E., Edwards, D., Sayer, C., Martin, P., Thomas, G., "The effects of tropical secondary forest regeneration on avian phylogenetic diversity," Journal of Applied Ecology, 16 April 2020, https://besjournals.onlinelibrary.wiley.com/doi/full/10.1111/1365-2664.13639

61 Paniagua-Ramirez, A., Krupinska, O., Jagdeo, V., Cooper, W., "Carbon storage estimation in a secondary tropical forest at CIEE Sustainability Center, Monteverde, Costa Rica," Nature, 6 December 2021, https://www.nature.com/articles/s41598-021-03004-5

62 Chazdon, R. et al., "Carbon sequestration potential of second-growth forest regeneration in the Latin American tropics," Science Advances, 13 May 2016, https://www.science.org/doi/10.1126/sciadv.1501639

63 Houghton, R. and Nassikas, A., "Negative emissions from stopping deforestation and forest degradation, globally," Global Change Biology, 21 August 2017, https://onlinelibrary.wiley.com/doi/abs/10.1111/gcb.13876

64 Houghton, R. and Nassikas, A., "Negative emissions from stopping deforestation and forest degradation, globally," Global Change Biology, 21 August 2017, https://onlinelibrary.wiley.com/doi/abs/10.1111/gcb.13876

65 Prance, G., "Amazon Ecosystems," Reference Module in Life Sciences, 2017, https://www.sciencedirect.com/topics/agricultural-and-biological-sciences/secondary-forests

66 Pain, A., Marquardt, K., Lindh, A., and Hasselquist, N., "What Is Secondary about Secondary Tropical Forest? Rethinking Forest Landscapes," Human Ecology, 14 December 2020, https://link.springer.com/article/10.1007/s10745-020-00203-y

67 Kevin Barnett, et al, "Classifying, inventorying, and mapping mature and old-growth forests in the United States", Frontiers in Forests and Global Change, January 2023.

68 "The Gap Analysis Process and Importance," USGS, 13 February 2019, https://www.usgs.gov/programs/gap-analysis-project/science/gap-analysis-process-and-importance

69 "USA Protected Areas_ GAP Status Code," ARCGIS, 14 December 2022, https://www.arcgis.com/home/item.html?id=8e681a7d02f54933b65f9414b762afbb

70 Tidwell, T., "State of Forests and Forestry in the United States," USDA, 4 September 2016, https://www.fs.usda.gov/speeches/state-forests-and-forestry-united-states-1

71 "Voices from front-line communities," Dogwood Alliance, 2013, https://media.dogwoodalliance.org/wp-content/uploads/2013/05/Voices-from-Frontline-Communities.pdf

72 Quaranda, S., "Impacted communities mobilize to stop expansion," Dogwood Alliance, 18 August 2022, https://www.dogwoodalliance.org/2022/08/communities-mobilize-to-stop-expansion/

73 Lennox, G. et al., "Second rate or a second chance? Assessing biomass and biodiversity recovery in regenerating Amazonian forests," Global Biology Change, 14 September 2018, https://onlinelibrary.wiley.com/doi/full/10.1111/gcb.14443

74 "Scientists call upon Indonesia to recognize value of secondary forests," Mongabay, 18 November 2010, https://news.mongabay.com/2010/11/scientists-call-upon-indonesia-to-recognize-value-of-secondary-forests/

75 Edwards, F., Massam, M., Cosset, C., Cannon, P., Haugassen, T., Gilroy, J., Edwards, D., "Sparing land for secondary forest regeneration protects more tropical biodiversity than land sharing in cattle farming landscapes," Current Biology, 22 March 2021, https://www.sciencedirect.com/science/article/pii/S0960982220318820

76 "Quick View," Forests & Finance, 2022, https://forestsandfinance.org/data/data-quick-view/

77 Savilaakso, S., et al., "Systematic review of effects on biodiversity from oil palm production," Environmental Evidence, 25 February 2014, https://environmentalevidencejournal.biomedcentral.com/articles/10.1186/2047-2382-3-4

78 Miettinen, J., Shi C., Chin Liew, S., "Land cover distribution in the peatlands of Peninsular Malaysia, Sumatra and Borneo in 2015 with changes since 1990," Global Ecology and Conservation, April 2016, https://www.sciencedirect.com/science/article/pii/S2351989415300470

79 "2013 Supplement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories: Wetlands," IPCC, 2013, https://www.ipcc-nggip.iges.or.jp/public/wetlands/pdf/Wetlands_separate_files/WS_Chp2_Drained_Inland_Organic_Soils.pdf

80 "2015 Fire Season, Indonesian fire season progression," Global Fire Data, 16 November 2015, http://www.globalfiredata.org/updates.html#2015_indonesia

81 Jauhiainen, J., Hooijer, A., Page, S.E., "Carbon dioxide emissions from an Acacia plantation on peatland in Sumatra, Indonesia," Biogeosciences, 4 January 1012, https://helda.helsinki.fi/bitstream/handle/10138/34598/Jauhiainen_etal_2012_bg_9_617_2012.pdf

82 Baffoni, S., Miettinen, O., Tinhout, B., Supartinah, W., Haggith, M. "Too Much Hot Air The failure of the Indonesian pulp and paper industry to reform its management of peatlands," Environmental Paper Network, April 2017, https://environmentalpaper.org/wp-content/uploads/2019/10/Too-much-hot-air-20170426.pdf

83 Hicks, R., "Asia Pulp & Paper eyes 2060 net-zero emissions target," Eco-Business, 25 May 2022, https://www.eco-business.com/news/asia-pulp-paper-eyes-2060-net-zero-emissions-target/?sw-signup=true

84 Jauhiainen, J., Hooijer, A., Page, S.E., "Carbon dioxide emissions from an Acacia plantation on peatland in Sumatra, Indonesia," Biogeosciences, 4 January 1012, https://helda.helsinki.fi/bitstream/handle/10138/34598/Jauhiainen_etal_2012_bg_9_617_2012.pdf

85 Miettinen, J., Shi C., Chin Liew, S., "Land cover distribution in the peatlands of Peninsular Malaysia, Sumatra and Borneo in 2015 with changes since 1990," Global Ecology and Conservation, April 2016, https://www.sciencedirect.com/science/article/pii/S2351989415300470

86 Pearce, F., "Indonesian wildfires spark global warming fears," New Scientist, 6 Noveber 2022, https://www.newscientist.com/article/dn3024-indonesian-wildfires-spark-global-warming-fears/

87 Jauhiainen, J., Hooijer, A., Page, S.E., "Carbon dioxide emissions from an Acacia plantation on peatland in Sumatra, Indonesia," Biogeosciences, 4 January 2012, https://helda.helsinki.fi/bitstream/handle/10138/34598/Jauhiainen_etal_2012_bg_9_617_2012.pdf

88 "2015 Fire Season: Indonesian fire season progression," Global Fire Data, 16 November 2015, http://www.globalfiredata.org/updates.html#2015_indonesia

89Carrington, D., "Indonesian forest fires on track to emit more CO2 than UK," The Guardian, 7 October 2015, https://www.theguardian.com/environment/2015/oct/07/indonesian-forest-fires-on-track-to-emit-more-co2-than-uk

90 "Deforestation Linked to Agriculture," World Resources Institute and Global Forest Watch, (n.d.), https://research.wri.org/gfr/forest-extent-indicators/deforestation-agriculture?utm_medium=blog&utm_source=insights&utm_campaign=globalforestreview#how-much-forest-has-been-replaced-by-cattle

91 "Cattle Ranching," Greenpeace, (n.d.), https://www.greenpeace.org/usa/forests/issues/agribusiness/#:~:text=Cattle%20Ranching&text=Around%2090%25%20of%20soy%20is,comes%20from%20the%20Amazon%20region

92 "Deforestation Linked to Agriculture," World Resources Institute and Global Forest Watch, (n.d.), https://research.wri.org/gfr/forest-extent-indicators/deforestation-agriculture?utm_medium=blog&utm_source=insights&utm_campaign=globalforestreview#footnote-11

93 Hannah Ritchie and Max Roser, "Soy", Our World in Data. https://ourworldindata.org/soy

94 "Annual Sustainability Report," JBS, 2019, https://www.jbs.com.br/relatorioanual2019/en/jbs-a-global-food-company/profile/

95 Hofmeister, N., Campos, A., Harari, I., Jordan, L., "JBS admits to buying almost 9,000 cattle from 'one of Brazil's biggest deforesters'," Unearthed, 11 November 2022, https://unearthed.greenpeace.org/2022/11/11/jbs-cattle-brazils-biggest-deforester-amazon/

96 Moye, C., "Cash cow," Global Witness, 23 June 2022, https://www.globalwitness.org/en/campaigns/forests/cash-cow/

97 "JBS," BankTrack, 15 December 2022, https://www.banktrack.org/company/jbs

98 Brice, J., "How big beef is fueling the Amazon's destruction," Bloomberg, 21 January 2022, https://www.bloomberg.com/graphics/2022-beef-industry-fueling-amazon-rainforest-destruction-deforestation/

99 Kuepper, B., and Rijk, G., "Financial Materiality in Latin American Soy and Beef Supply: A Profit Chain Analysis of Key Downstream Actors," Profundo, July 2022, https://www.profundo.nl/download/profit-chain-analysis-soy-and-beef-latam-nvf-2207

100 Eduardo Pellegrino Cerri, C. et al., "Reducing Amazon Deforestation through Agricultural Intensification in the Cerrado for Advancing Food Security and Mitigating Climate Change," Sustainability, 27 March 2018, https://www.mdpi.com/2071-1050/10/4/989/htm

101 "Deforestation Linked to Agriculture," World Resources Institute and Global Forest Watch, (n.d.), https://research.wri.org/gfr/forest-extent-indicators/deforestation-agriculture?utm_medium=blog&utm_source=insights&utm_campaign=globalforestreview#footnote-11

102 "Data quick view," Forests&Finance, (n.d.), https://forestsandfinance.org/data/data-quick-view/

103 "Rubbed out," Global Witness, 16 June 2022, https://www.globalwitness.org/en/campaigns/forests/rubbed-out/

104 "UNESCO fails to protect Cameroon's Dja Reserve from multiple threats including the Sudcam rubber plantation," Greenpeace Africa, 23 August 2016, https://www.greenpeace.org/africa/en/blogs/430/unesco-fails-to-protect-cameroons-dja-reserve-from-multiple-threats-including-the-sudcam-rubber-plantation/

105 "Rubbed out," Global Witness, 16 June 2022, https://www.globalwitness.org/en/campaigns/forests/rubbed-out/

106 "UNESCO fails to protect Cameroon's Dja Reserve from multiple threats including the Sudcam rubber plantation," Greenpeace Africa, 23 August 2016, https://www.greenpeace.org/africa/en/blogs/430/unesco-fails-to-protect-cameroons-dja-reserve-from-multiple-threats-including-the-sudcam-rubber-plantation/

107 "UNESCO fails to protect Cameroon's Dja Reserve from multiple threats including the Sudcam rubber plantation," Greenpeace Africa, 23 August 2016, https://www.greenpeace.org/africa/en/blogs/430/unesco-fails-to-protect-cameroons-dja-reserve-from-multiple-threats-including-the-sudcam-rubber-plantation/

108 "Rubbed out," Global Witness, 16 June 2022, https://www.globalwitness.org/en/campaigns/forests/rubbed-out/

109 Chazdon, R., "Carbon sequestration potential of second-growth forest regeneration in the Latin American tropics," Science Advances, 13 May 2016, https://www.science.org/doi/10.1126/sciadv.1501639

110 "Rubbed out," Global Witness, 16 June 2022, https://www.globalwitness.org/en/campaigns/forests/rubbed-out/

111 "Bank financiers of harmful wood biomass have no policies addressing impacts, shows new study," BankTrack, 21 October 2022, https://www.banktrack.org/article/bank_financiers_of_harmful_wood_biomass_found_to_have_no_policies_addressing_impacts

112 Bastable, S., "How UNFCCC carbon accounting has created a biomass delusion and is contributing to climate change and global inequity," Environmental Paper Network, 8 November 2022, https://environmentalpaper.org/2022/11/how-unfccc-carbon-accounting-has-created-a-biomass-delusion-and-is-contributing-to-climate-change-and-global-inequity/

113 "Enviva," BankTrack and Environmental Paper Network, 7 October 2022, https://www.banktrack.org/company/enviva

114 "Wood Pellet Market Report 2022: Companies, Market Size, Prices and Forecast to 2030 – IndexBox," Global Newswire, 17 March 2022, globenewswire.com/en/news-release/2022/03/17/2405536/0/en/Wood-Pellet-Market-Report-2022-Companies-Market-Size-Prices-and-Forecast-to-2030-IndexBox.html

115 The overwhelming majority of wood pellet production in the US is located in the southeast. Source: "U.S. Pellet Plants," Biomass Magazine, 3 January 2023, biomassmagazine.com/plants/listplants/pellet/US/

116 "Forests and Climate Change: What we know," Dogwood Alliance, (n.d.), https://www.dogwoodalliance.org/our-work/forests-climate/

117"Drax Group," BankTrack and Environmental Paper Network, 28 June 2022, https://www.banktrack.org/company/drax_group/pdf

118 "Innovating for a positive future," Drax Group, 2021, https://www.drax.com/wp-content/uploads/2022/03/Drax_AR2021_2022-03-07.final_.pdf

119"Global Markets for Biomass Energy are Devastating U.S. Forests," NRDC, 2022, https://www.nrdc.org/sites/default/files/global-markets-biomass-energy-devastating-us-forests-202209.pdf

120 "Enviva Partners, LP: Business Overview," Enviva, 1 March 2021, https://www.envivabiomass.com/wp-content/uploads/1.EVA-Investor-Presentation_Feb-2021_Final.pdf

121 "Risk Map: Pellet Facility Threatens Primary Forest and Caribou Habitat," Stand.earth, 23 March 2021, https://stand.earth/resources/risk-map-pellet-facility-threatens-primary-forest-and-caribou-habitat/

122 "Innovating for a positive future," Drax Group, 2021, https://www.drax.com/wp-content/uploads/2022/03/Drax_AR2021_2022-03-07.final_.pdf

123 "BBC and CBC expose Canada subsidy scheme that chops whole trees for fuel export," Stand.earth, 7 October 2022, https://stand.earth/press-releases/bbc-and-cbc-expose-canada-subsidy-scheme-that-chops-whole-trees-for-fuel-export/

124 "Search results for: pellets," Environmental Integrity Project, (n.d.), https://environmentalintegrity.org/?s=pellets

125 "UK-owned pellet plant in US fined $2.5m over air quality breaches," BBC 19 February 2021, https://www.bbc.co.uk/news/uk-england-york-north-yorkshire-56130166

126 "Drax popped for record $3.2M pollution fine by DEQ," Business Report, 12 October 2022, https://www.businessreport.com/business/drax-popped-for-record-3-2m-pollution-fine-by-deq

127 Griffiths, T., and Jiwan, N., "Demanding accountability: Strengthening corporate accountability and supply chain due diligence to protect human rights and safeguard the environment," TuK Indonesia, June 2021, https://www.tuk.or.id/wp-content/uploads/210611_FPP_Demanding-Accountability_Bahasa-Indonesia-1_compressed.pdf

128 Ibid.

129 Griffiths, T., and Jiwan, N., "Demanding accountability: Strengthening corporate accountability and supply chain due diligence to protect human rights and safeguard the environment," TuK Indonesia, June 2021, https://www.tuk.or.id/wp-content/uploads/210611_FPP_Demanding-Accountability_Bahasa-Indonesia-1_compressed.pdf; "No Consent Astra Agro Lestari's land grab in Central and West Sulawesi, Indonesia," Friends of the Earth US and Walhi, March 2022, https://foe.org/resources/astra-agro-lestari/

130 Griffiths, T., and Jiwan, N., "Demanding accountability: Strengthening corporate accountability and supply chain due diligence to protect human rights and safeguard the environment," TuK Indonesia, June 2021, https://www.tuk.or.id/wp-content/uploads/210611_FPP_Demanding-Accountability_Bahasa-Indonesia-1_compressed.pdf

131 Griffiths, T., and Jiwan, N., "Demanding accountability: Strengthening corporate accountability and supply chain due diligence to protect human rights and safeguard the environment," TuK Indonesia, June 2021, https://www.tuk.or.id/wp-content/uploads/210611_FPP_Demanding-Accountability_Bahasa-Indonesia-1_compressed.pdf

132 "Media release: New report documents multiple human rights abuses in the Indonesian palm oil industry supplying the world's biggest companies", Forest Peoples Programme, June 15, 2021. https://www.forestpeoples.org/en/private-sector/press-release/2021/media-release-new-report-documents-multiple-human-rights-abuses

133 Griffiths, T., and Jiwan, N., "Demanding accountability: Strengthening corporate accountability and supply chain due diligence to protect human rights and safeguard the environment," TuK Indonesia, June 2021, https://www.tuk.or.id/wp-content/uploads/210611_FPP_Demanding-Accountability_Bahasa-Indonesia-1_compressed.pdf

134 Griffiths, T., and Jiwan, N., "Demanding accountability: Strengthening corporate accountability and supply chain due diligence to protect human rights and safeguard the environment," TuK Indonesia, June 2021, https://www.tuk.or.id/wp-content/uploads/210611_FPP_Demanding-Accountability_Bahasa-Indonesia-1_compressed.pdf

135 Griffiths, T., and Jiwan, N., "Demanding accountability: Strengthening corporate accountability and supply chain due diligence to protect human rights and safeguard the environment," TuK Indonesia, June 2021, https://www.tuk.or.id/wp-content/uploads/210611_FPP_Demanding-Accountability_Bahasa-Indonesia-1_compressed.pdf

136 Griffiths, T., and Jiwan, N., "Demanding accountability: Strengthening corporate accountability and supply chain due diligence to protect human rights and safeguard the environment," TuK Indonesia, June 2021, https://www.tuk.or.id/wp-content/uploads/210611_FPP_Demanding-Accountability_Bahasa-Indonesia-1_compressed.pdf

137 "Continuing Tough, Mediation Of PT KDA And The Sarolangun Community," Dinamika Jambi, 10 March 2020, https://dinamikajambi.com/berlangsung-alot-mediasi-pt-kda-dan-masyarakat-sarolangun/

138"Forest Peoples Programme complaint against Golden Agri Resources upheld," Forest Peoples Programme, 9 March 2015, https://www.forestpeoples.org/en/topics/agribusiness/news/2015/03/forest-peoples-programme-complaint-against-golden-agri-resources--0

139 Griffiths, T., and Jiwan, N., "Demanding accountability: Strengthening corporate accountability and supply chain due diligence to protect human rights and safeguard the environment," TuK Indonesia, June 2021, https://www.tuk.or.id/wp-content/uploads/210611_FPP_Demanding-Accountability_Bahasa-Indonesia-1_compressed.pdf

140 Jong, H.N., and Nugraha, I., "Palm oil executives arrested in bribery scandal in Indonesia," Mongabay, 30 October 2018, https://news.mongabay.com/2018/10/palm-oil-executives-arrested-in-bribery-scandal-in-indonesia/

141 "Agriculture, Forestry and Other Land Uses (AFOLU)," IPCC, 2022, https://www.ipcc.ch/report/ar6/wg3/downloads/report/IPCC_AR6_WGIII_Chapter07.pdf

142 "Agriculture, Forestry and Other Land Uses (AFOLU)," IPCC, 2022, https://www.ipcc.ch/report/ar6/wg3/downloads/report/IPCC_AR6_WGIII_Chapter07.pdf

143 "IPBES-IPCC Co-sponsored workshop: Biodiversity and climate change," IPBES and IPCC, 10 June 2021, https://ipbes.net/sites/default/files/2021-06/2021_IPCC-IPBES_scientific_outcome_20210612.pdf

144 "IUCN Policy Statement on Primary Forests Including Intact Forest Landscapes," IUCN, January 2020, https://www.iucn.org/sites/default/files/2022-05/iucn-policy-statement-for-primary-forests.pdf

145 Baillargeon, N., "Forest ecosystem integrity: A crucial framework for climate mitigation and primary forest protection," Woodwell Climate Research Center, 8 December 2022, https://www.woodwellclimate.org/forest-ecosystem-integrity/

146 Rogers, B. et al., "Using ecosystem integrity to maximize climate mitigation and minimize risk in international forest policy," Frontiers in Forests and Global Change, 25 October 2022, https://www.frontiersin.org/articles/10.3389/ffgc.2022.929281/full

147 Moomaw, W., "Intact Forests in the United States: Proforestation Mitigates Climate Change and Serves the Greatest Good," Frontiers in Forests and Global Change, 11 June 2019, https://www.frontiersin.org/articles/10.3389/ffgc.2019.00027/full

148 Moomaw, W., "Intact Forests in the United States: Proforestation Mitigates Climate Change and Serves the Greatest Good," Frontiers in Forests and Global Change, 11 June 2019, https://www.frontiersin.org/articles/10.3389/ffgc.2019.00027/full

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