Domini®

INTRODUCTORY REPORT 3

Introduction to Forest Value

2021

In this report, to explain Domini's focus on creating solutions for forests, we illustrate the value that society and the global economy receive from forest ecosystems, both at the local landscape level and on a planetary scale.

RELATIONSHIP TO FORESTS

Forests are as entwined with humanity as lianas, the woody vines that comprise a large volume of the vegetation in a tropical rainforest. Home to 300 million people, including 60 million Indigenous inhabitants[1,2], forests provide food and resources, as well as recreation, rest, and reflection, for millions more. Accounts of forests as places of both beauty and natural wealth stretch back to the Epic of Gilgamesh.

Forests are vital to the planet's habitability. Through cooling themselves by the absorption, filtration, and respiration of water, **forests stabilize local climates**. Tropical forests, the most biodiverse biome, provide habitat to between half and three quarters of species. By cycling nutrients, **forests enrich soil**, and protect it against flood. The largest forests impact global movement of moisture, heat, and carbon. **They are crucial to Earth's climate system**, sequestering huge amounts of carbon dioxide. This carbon-storage capacity is key to mitigating climate change.

DIRECT VALUE FROM FORESTS

From Brazil nuts to mahogany to oxygen, forests directly meet human personal, economic, and environmental needs. **Forests provide clean water, food, and medicine**. They keep the air around them cool and moist, maintain intact hillsides and soil, and prevent drought and flooding. **A healthy forest is a source of balance.**

The values forests provide to humans are known as ecosystem services. Ecosystem services fall into four categories:

Provisioning services, as in direct production of timber, fruit, and other products.

Cultural services such as ecotourism.

Regulating services that stabilize environmental conditions, such as air purification and maintenance of soil fertility.

Supporting services that underlie ecosystems, such as habitat and nutrient cycling.

See the table on page 2 for a list of these forest services.

The services provided by forest ecosystems are a subset of the global ecosystem services and are by one estimate to be worth US$125 trillion per year.[3] More than 1.6 billion people rely on forests for their livelihoods to some extent and 10 million are directly employed in forest management or conservation, according to the United Nations.[4,5]

FOREST SERVICES

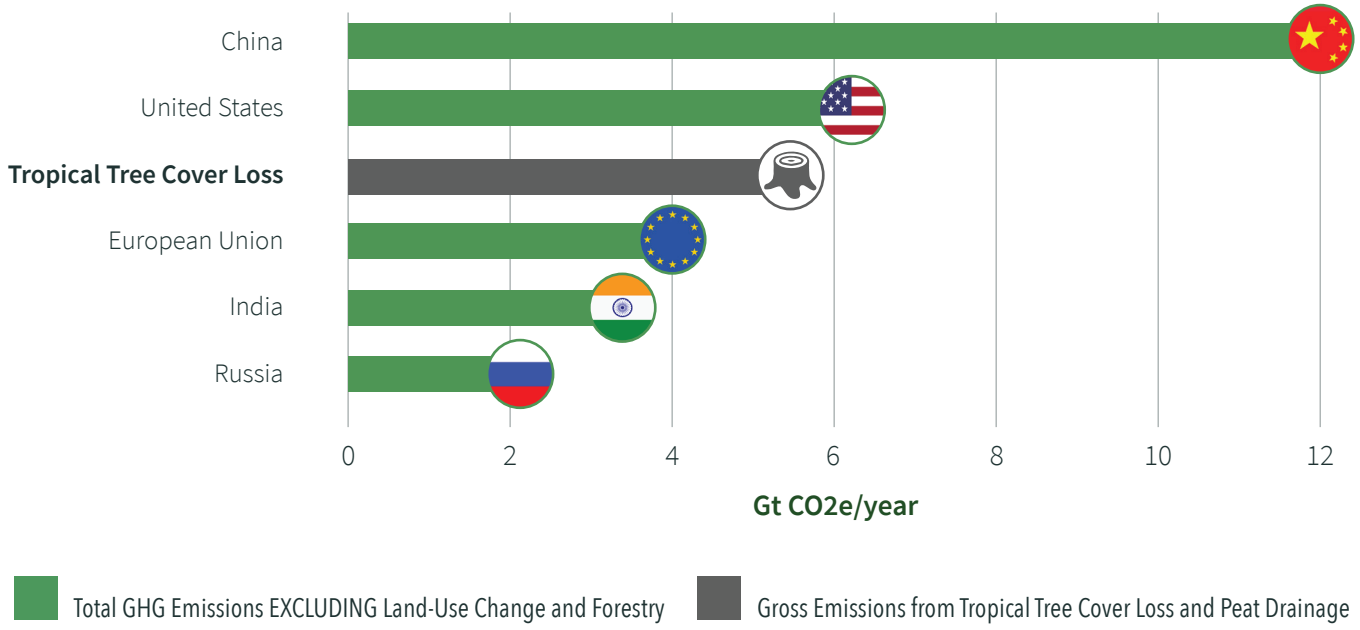
Forests are sources of immense value. Ecosystem services, listed here, are linked to numerous environmental, social, and economic areas, including sustainable agricultural systems, human health, and climate change, that affect value in many different industries. (*Adapted from Costanza et al. [2017]*).[6]

Ecosystem Service	Service Description	Example
Provisioning Forests are sources of many goods, including food, water, and wood.	Production of food by forests	Forests contribute about 2% of the global GDP through timber production and non-timber products, the latter which alone supports up to 80% of the population in many developing countries.[7]
	Fresh water from forests	
	Wood, fiber, and ornamental resources	
	Genetic resources	
Regulating Healthy forests stabilize the environmental quality around them in many ways, from moderating temperature and rainfall to protecting from disease and natural disasters like flooding and landslides.	Air quality regulation/prufication	Insects provide at least US$57 billion in services to the U.S. economy each year, mainly through pollination.[8]
	Climate regulation	
	Natural harzard/disaster and water regulation	
	Water purification and waste treatment	
	Erosion prevention	
	Soil formation and fertility	
	Pollination	
	Biological control of pests and disease	
Supporting Forest are responsible for some of the most basic processes that underlie other Earth systems, like ensuring nutrients are recycled and providing a home for most of the world's species.	Nutrient cycling	"*Without biodiversity, no ecosystems. No ecosystems, no biomes. No biomes, no living regulator of all the cycles of carbon, nitrogen, oxygen, carbon dioxide and water*"- Johan Rockström[9]
	Habitat, biodiversity	
Cultural Forests are a key part of humanity's cultural imagination and a space for rest and rejuvenation.	Recreation and eco-tourism	
	Cultural diversity, spiritual and religious values	

MACRO VALUE: FORESTS AND CLIMATE STABILITY

Forests sequester huge amounts of carbon dioxide, a greenhouse gas. The boreal forest is the most intact ecosystem on the planet and alone holds one-third of the world's terrestrial carbon.[10]

If Tropical Deforestation were a Country, it Would Rank Third in CO2e Emissions[12]



Source: Seymour & Busch, 2016 at p. 40

Forests' proven capacity for carbon capture could be a powerful solution to climate change, but currently an estimated 15% of all greenhouse gas emissions result from deforestation.[12] In the tropics, degradation (industrial and fuelwood logging and shifting cultivation) accounts for up to 40% of forest's total carbon emissions.[13] But a report by World Wide Fund (WWF [formerly World Wildlife Fund]), the International Union for Conservation of Nature (IUCN), and Climate Advisors found that, "if just twelve forest countries, including Brazil and Indonesia, meet their existing forest goals this should cut annual global climate emissions by 3.5 gigatonnes in 2020 – equivalent to the total annual emissions from India and Australia put together".[14] Forests have the potential to produce net negative emissions, while also providing developmental and environmental benefits, for example, silt-free water to power hydro-electric damn generation.

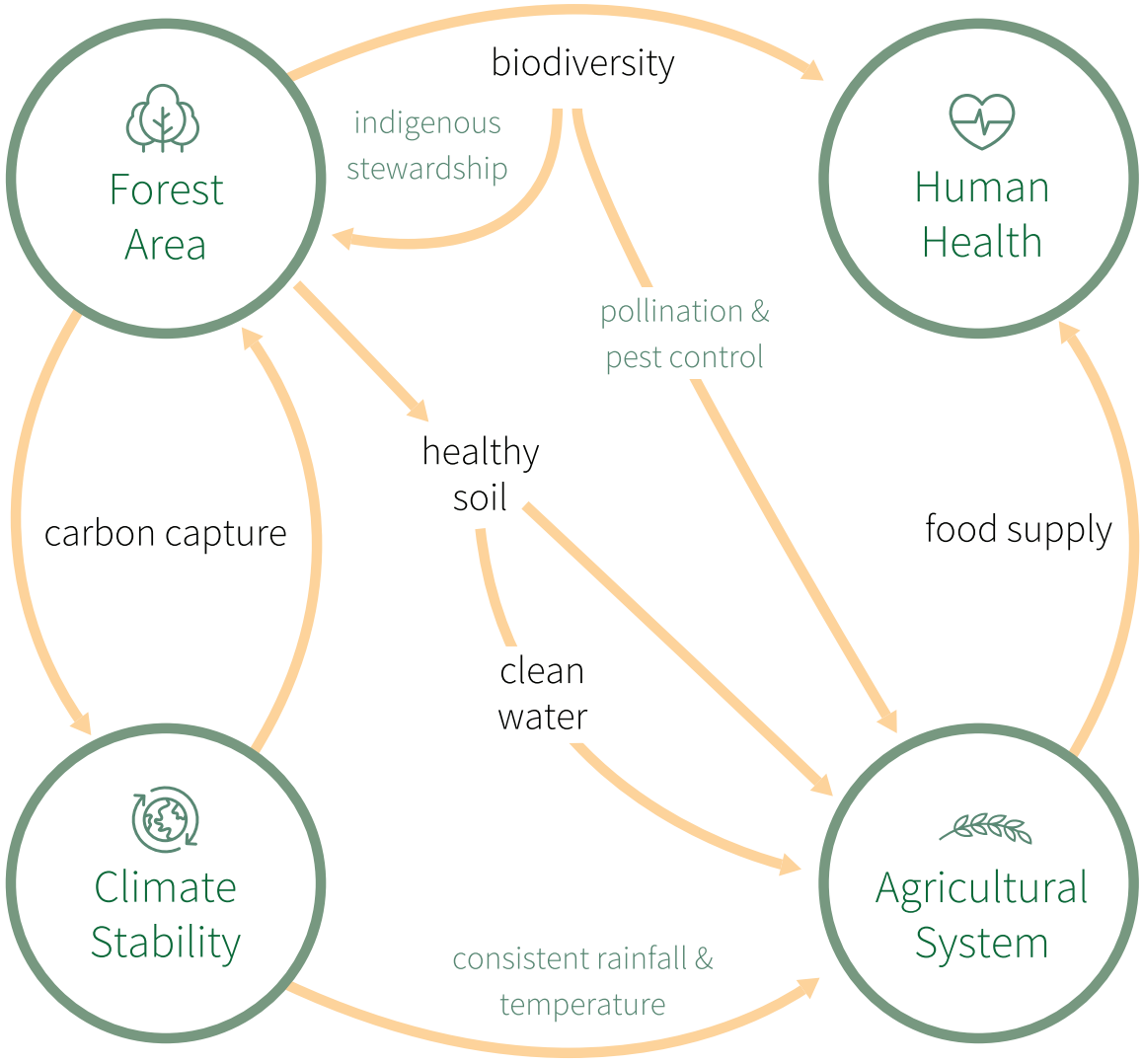
THREATS TO FORESTS' VALUE

FOREST AREA: According to WWF, every minute, an area of forest equivalent to 27 soccer fields is lost, with a total loss of 18.7 million acres annually.[1] The Amazon has lost at least 17% of its cover in the last half century through clearing, often for grazing land and vast soybean farms. In Indonesia, another biodiversity hotspot home to orangutans, rhinos, and tigers, key islands have lost 85% of their forest due to conversion to oil palm plantations. Indeed, most forest loss is driven by just four commodities: 1) palm oil for food, personal care products, and biofuel, 2) soy for animal feed and biofuels, 3) cattle, and 4) wood and pulp products.[15]

The concentration of species in forests means forest loss contributes to today's recent population sizes with vertebrate species overall declining 60% from 1970 through 2014.[16] Most affected by current extinctions are South and Central America, principally due to the region's vast forest loss. [17]

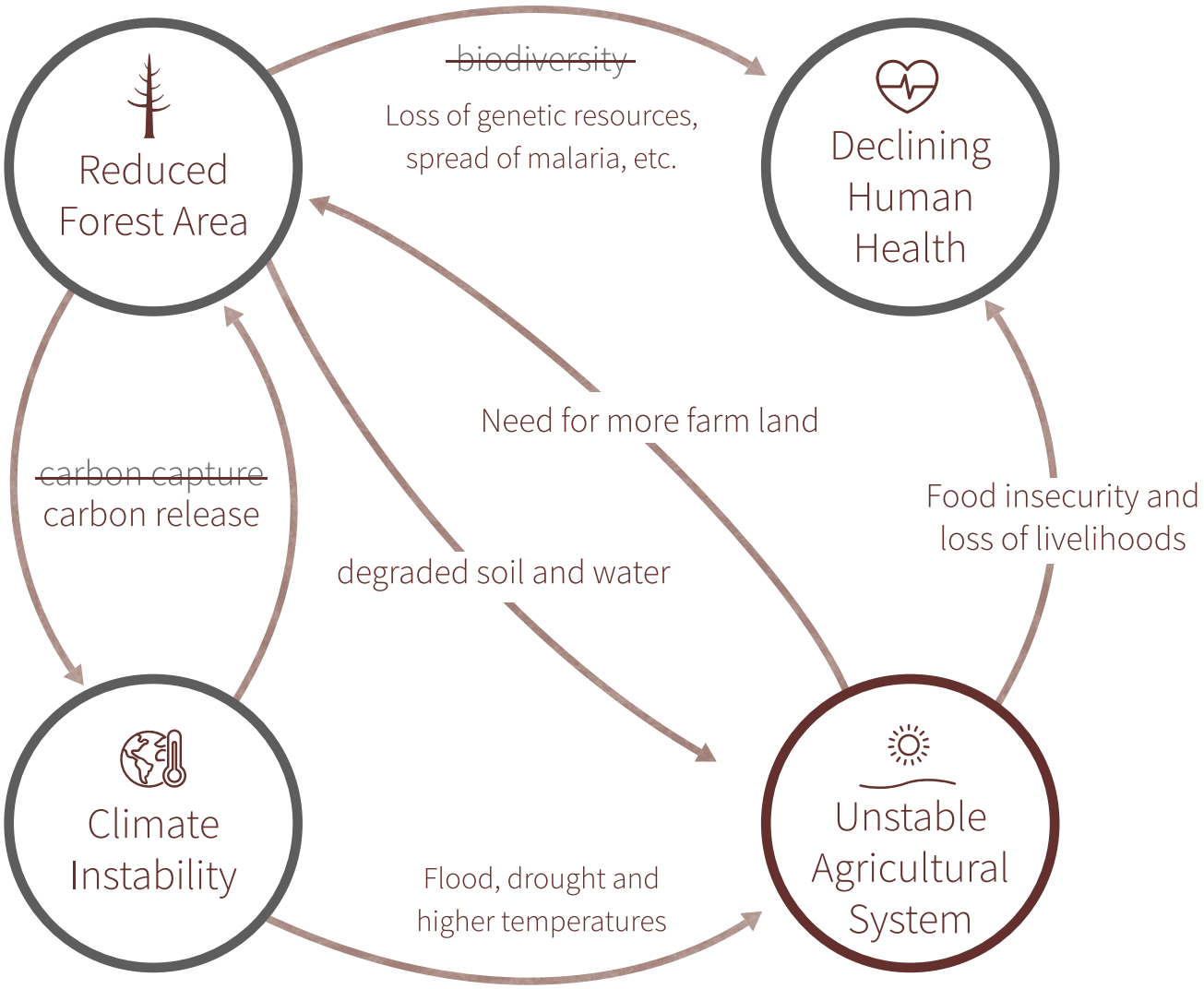
AGRICULTURE: Agricultural yields are highly dependent on the clean, sediment-free water and stable climate supported by forests. Forests also harbor vital pollinators. Wild insects pollinate more crops than honeybees.[18] In addition, insectivorous animals like bats and birds provide pest control, thereby improving harvests' quality and size.

Today, 75% of the world's food comes from just a dozen crops and five animal species, leaving supplies vulnerable to pests or disease that may sweep through large areas of monocultures.[19] With yields expected to fall due to climate change, and the world's growing global population faces a potential food crisis. Forest loss imperils the food supply by undermining soil health, rainfall, and natural disease protection.



Forest Value-Creating System
Stores of value and their interplay with forests in a series of self-regulating feedback loops: enhancing one node enhances the others, i.e., more stable climate leads to better and more predictable agricultural yields, reducing pressure on forest cover clearance. This leaves more forest to sequester CO2, improving climate stability.

HUMAN HEALTH: Fruits, roots, nuts, and other forest foods are key nutrient sources in many diets and may serve as food "safety nets" in times of scarcity, but forests' major contribution to human health is as a source of both traditional and modern pharmaceutical medicines. One-quarter of all pharmaceuticals and nearly fifty percent of cancer drugs are derived from genetic compounds found in forests.[20] Forests, by stabilizing soil and preventing erosion, also protect human settlements from destruction by landslides and floods. On the flip side, forest-clearing, especially via burning, causes deadly air pollution and is linked to higher incidences of malaria and other diseases.[21]



Forest Value-Destroying System

At present, we are trapped in a negative reinforcing dynamic. Unchecked deforestation is the third=largest source of carbon emissions after coal and oil contributing to climate instability and threatening to push the Earth into a "hothouse state," jeopardizing the global agricultural system. Loss of forests is driving species extinction, and undermining human and ecosystem health.

VALUE AT RISK

The looming threats of climate change and extinction crises, coupled with continued deforestation and inadequate forest-protection policies in enforcement in key nations including Brazil and Indonesia, are deepening concern about crossing a planetary boundary that could tip Earth's climate into a hothouse state.[22] This renewed urgency is spurring the need for proven mitigation solutions like forest preservation and reforestation. Humanity needs forests, because they underlie the ecosystems in which we live and upon which we depend for food, materials, and crucial services.

Endnotes
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