

Domini Forest Project

Forests Definitions and Goals

**2022 Update
September 2022**

For Institutional and Financial Professional Use Only

Introduction – Asking Questions and Seeking Answers

In 2018 Domini launched a “system-level” approach to investing centered on forests. We selected forests because they appeared to us to constitute 1) a relatively discreet and definable system and 2) although it was systematically important, investors were paying less attention to it than this global asset warranted with its critical relationship to climate change.

As our knowledge of forests and their investment-related systemic risks and opportunities evolved, we came to more fully appreciate the interrelations of different types of forests and other closely related “green lands” such as agricultural systems. In 2022, we decided to formally include a broader definition of forests and expanded the coverage of types of green lands included in our Forests Project.

We now distinguish six types of forest-related green lands that as investors we are concerned with:

- Intact Forests
- Planted Forests—Mixed Species
- Planted Forests—Monoculture Plantations
- Agricultural Lands
- Green Spaces—Primary
- Green Spaces—Secondary

As an investor managing for both the short and long term, we believe this interrelated network of green lands and spaces offers opportunities and presents risks that can and should supplement our investment decision making. Consequently, in September 2020, Domini Impact Investments joined the Finance for Biodiversity Pledge and, in November 2021, was among 30 institutional investors who signed the Financial Sector Letter on Eliminating Commodity Driven Deforestation.

As the Forest Project evolved, the profile of climate change, regenerative agriculture, biodiversity loss, and the rights of Indigenous peoples and related issues has continued to gain currency among investors.

Our initial efforts related to slowing global deforestation had focused on the need to preserve today’s intact forests. We were committed to encouraging “no further deforestation,” but we were less clear as to the definition of deforestation, the policies on reforestation, what portion of all green land should remain intact, how other green lands should be managed, and other matters. The commitment, work, and resulting evolution of our Forest Project led us to these questions and, in turn, their answers.

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We had initially postponed setting specific goals in response to these somewhat intimidating questions, seeking first to deepen our knowledge of forest-related matters. Starting in 2021, we felt that we were prepared to address these questions, derive appropriate definitions, and set goals. This document is the result of that effort.

The dates associated with the various goals in this document are our current estimates of when our efforts and external circumstances will permit their achievement. They are subject to change as we learn more, as the environmental and political climate changes, and as actions taken today succeed or fail in the short and long term.

Definitions – How We Define Forests

Green lands included in our Forests Project abound: from massive intact forests to pocket parks, from protected biodiversity “hotspots” to community gardens, from savannahs and grasslands to corporate headquarters’ landscapes. Drawing clear distinctions can be a challenge and existing definitions for these types of lands are many and varied. For our purposes as investors, we have settled on six broad-brush definitions that work well as we consider risks and opportunities in our daily practice. These six categories are:

- *Intact Forests*
- *Planted Forests—Mixed Species*
- *Planted Forests—Monoculture Plantations*
- *Agricultural Lands*
- *Green Spaces—Primary*
- *Green Spaces—Secondary*

This “spectrum of green” is broad with one shade merging into another. We recognize that other definitions differently delineated exist. These definitions, however, are the most helpful for us as investors at the current time.

In our goal setting, we refer to the role of Indigenous peoples. The definition of “indigenous” is subject to debate. For the purpose of our Forests approach, we align ourselves with that proposed included in *Conservation Refugees*: “[I]f they occupied the land where they reside, or in the case of pastoral nomadics if they grazed their livestock through a region, before the particular area in question was absorbed by the nation-state or states within which it now exists.”¹

Intact Forests

Generally speaking, we characterize “*intact forests*” as those large, contiguous primarily forested lands that are self-regenerating, undisturbed by commercial activities, and free of roads; they may be accessed by Indigenous peoples deriving traditional low-impact livelihoods from these lands. They may include waterways, open fields, and other untimbered land such as intact savannahs or peat lands. These lands may or may not be legally protected as conservation areas, have status as national or regional parks, be the recognized homes to Indigenous peoples, or be in federal, state, or private hands.

Domini’s definition is in line with that of the Food and Agriculture Organization of the United Nations, which defines “naturally regenerating primary forests as those consisting of “native tree species, where there are no clearly visible indications of human activities, and the ecological processes are not significantly disturbed.”²

Ideally, forests of this type would fit the rigorous definition developed by the Intact Forest Mapping Project which defines “Intact Forest Landscapes” (IFLs) as requiring unbroken, contiguous lands at least 500 square kilometers (approximately 190 square miles or 121,600 acres).³

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Planted Forests—Mixed Species

Generally speaking, we characterize “*mixed-species planted forests*” as lands primarily devoted to mixed-species management and sale of trees for lumber, building products, or the pulp and paper industry. We recognize that commercially managed forests may consist of a patchwork of mixed-species forests interspersed with monoculture tree plantings.

These lands are managed “sustainably,” meaning they incorporate practices that address, among other things: forest product diversity and sustainable levels of harvesting, protection of biodiversity, avoidance of environmental damage, fair labor practices, and positive relations with local communities and Indigenous peoples.⁴ In practice, the line between mixed-species, sustainable planted forests and plantation forests can be blurry.

We include forest restoration and “tree planting” projects in this category if they intentionally consist of mixed species. Whether their ultimate goal is to create forests as intact and long-term preservation sanctuaries or as commercial mixed-use or plantation-based enterprises, these projects involve substantial financial commitments. Moreover, they can encounter numerous sustainability challenges and their success is far from guaranteed.⁵

Ideally all mixed-species planted forests would be third-party certified to meet broadly agreed-upon, rigorous standards for sustainability. In practice, distinguishing consistently among various degrees of sustainability in forest management depends upon the adequacy of third-party standard-setting and certification processes and the transparency of forest landowners.

Planted Forests—Monoculture Plantations

Generally speaking, we characterize “*monoculture plantations*” as lands primarily devoted to the cultivation of a single-species of exotic or Indigenous tree, all of the same age, for use as timber, building products, pulp and paper, rubber, or similar non-food-related products. We do not include single-species plantations of food- and beverage-related trees (fruits, nuts, coffee, tea, etc.) in this definition, but rather include them in our category of Agricultural Lands.

Ideally, timber and lumber industries would transition from the classic plantation model of maximally efficient wood-product sources in order to address plantations’ limited ability to promote biodiversity, healthy soil, water conservation, and other nature-related services. Ultimately, the plantation concept would become more “mixed-use” and merge with such practices as “agroforestry” that rely less on monocultures, agrichemicals, and clear cutting.

Agricultural Lands

Generally speaking, we characterize as “*agricultural lands*” a wide variety of lands primarily used to produce foods. These can be tree and shrub plantations devoted to food (fruits and nuts) and beverage products (coffee, tea, wine); pasturing lands for livestock (cows, cattle, pigs, sheep); or crop lands for growing grains, legumes, vegetables and other crops.

Ideally, agricultural lands would be managed according to “regenerative” agricultural principles. As the term is currently used, “regenerative” agriculture has many different definitions relating both to processes and outcomes. Among the processes frequently included are integration of diverse trees, crops, or livestock, organic certification, use of crop covers, no-tilling of land, and reduced use of pesticides and fossil-fuel based fertilizers. Among desired

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outcomes are increased health and productivity of soil, greater biodiversity, enhanced water stewardship, improved nutritional value for foods, increased crop resilience, and improvements in the livelihoods and economic resilience in farming communities.⁶

We also include in this definition “agroforestry”—the hybrid practice which consists of the mixed-use combination of trees and food crops. Five types of agroforestry can be distinguished: alley cropping (crop alleys separated by tree rows); windbreaks, riparian forest buffers (trees along rivers and other waterways); multistory cropping (tree crops combined with understory crops); and silvopasture (livestock pastured among trees). These practices are also said to improve yields, enhance resilience, and sequester carbon, but do not necessarily make claims to “regenerative” practices.⁷

Green Spaces—Primary

Generally speaking, we characterize as “*primary green spaces*” a broad range of natural landscapes dominated by tree cover and not primarily used for commercial purposes. This large, catch-all category includes lands that fall between unmanaged intact forests and those that are purely commercially managed. They include everything from national parks used for a multiplicity of purposes to purely recreational urban parks, from large-scale conservation lands to specialized wildlife refuges, from unmanaged forested land in private hands to curated arboretums and botanical gardens open to the public.

Ideally, owners of primary green spaces would intentionally manage these lands so as to appropriately balance the amounts of cultivated natural capital with that of the natural capitals that these lands can ideally generate. The further toward the purely natural capital end of the spectrum, the more ideal. These lands by and large are intended for the public benefit and should be managed toward that end.

Green Spaces—Secondary

Generally speaking, we characterize as “*secondary green spaces*” land owned by for-profit entities that is part of their primary business model but is not a profit center—for example, rights of ways for railroads or utilities, lands maintain around cell phone towers, and lands associated with real estate development firms.

Ideally, entities with property that can be used for green spaces would intentionally manage some portion of these lands for the public’s benefit. Doing so increases the possibility that they will view these lands as “investable” opportunities with tangible or intangible returns rather than as a simple maintenance expense.

Background on Our Sustainability Goals for Forests

Domini has established sustainability goals for our six categories of forests, compatible with our funds' investment objectives of "providing shareholders with long-term total return" and identifying "investment opportunities . . . that create positive environmental and social outcomes for people and the planet while seeking competitive financial returns."⁸ Accordingly, we have set specific goals for our forest-related activities. Through these goals, we seek to influence practices of individual enterprises, entire industries, and societal norms that will generate positive environmental, social, and financial outcomes for the systems of which they are a part.

Due to the dynamic nature of the complex systems to which these various types of forests belong, we expect that the goals outlined here will evolve as the systems themselves do. Our goals, in effect, constitute ideal "scenarios" of how investors might act in relation to forest-related systems. These scenarios are not predictions but rather potential goals that help us maintain a flexible mindset in the face of unpredictable conditions.

Three Overall Sustainability Goals for Domini's Forests Project

Domini has three overarching goals for its Forests Project. While continuing to generate competitive long-term portfolio returns, Domini's sustainability goals for forest-related green lands are as follows:

- 1) To increase and preserve the capacity of these lands to sequester carbon and hence help mitigate the impacts of climate change.
- 2) To increase and preserve the capacity of these lands to support biodiversity of flora and fauna that increase investment opportunities through the enhancement of soil quality and their capacity for resilience in the face of systemic shocks.
- 3) To support and learn from Indigenous peoples' knowledge and practical application of low-impact ecosystems management.

Domini will pursue these three goals and measure progress toward their achievement through two lenses.

- *Portfolios.* At the portfolio level, we will monitor and work with firms among our holdings in relation to their abilities to support these goals.
- *Systems.* At the system level, we will work to support ways other than simple security selection to enhance the ability of each forest-related land to generate long-term investment opportunities.

We view these goals, which differ from one type of green land to another, as forming part of an interconnected web of land usage. Economists have historically viewed land as a substantial, or even primary, source of wealth. How it is treated and used is crucial to the long-term performance of the economy and hence our investments and is increasingly important to the long-term sustainability of our increasingly populous world.

Percentages of land currently devoted to each type of forest-related use

The relative amounts of total land devoted to each type of forest-related land is clearly an important sustainability and investment-related consideration. A world with no intact forests or primary green spaces would be a poor one from a sustainability point of view, suffering from an

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absence of biodiversity and carbon sequestration. Conversely, a world with nothing but intact forests and primary green spaces would be unsustainable from an investment perspective as it would be unable to support the current population.

A balance between the two goals of long-term investment opportunity and long-term ecosystem sustainability is necessary. Favoring one excessively constrains the other. An increase in agricultural lands means a decrease in intact forests or primary green spaces. But setting global goals for the allocations of various types of green lands is a task fraught with difficulties: definitions of forest types vary, measurements are imprecise, their relative values are contested, economic interests can be misaligned, and best practice for investors remains ill-defined. Nevertheless, a rough determination of the direction of change is possible: is intact forests being lost? Are the amounts of agricultural land managed with regenerative processes increasing? Is recognition of Indigenous peoples' rights to practice their traditional livelihoods becoming more widespread? Assessment of such indicators and their long-term implications for investors is therefore important.

Domini's use of the terms "natural capital" and "cultivated natural capital"

In setting goals in our role as an investor, we found it useful to distinguish between two types of natural capital that each type of forests creates. Following the lead of Herman Daly, we reserve the term "natural capital" for intact, self-regenerating forest lands and the term "cultivated natural capital" for those intensively managed forest and agricultural lands.⁹ Our definitions of these terms therefore are as follows.

- Natural Capital: the resource stocks and public goods that green lands offer for extraction and wealth creation without any "transformative" inputs or "cultivation" through human intervention.
 - Domini's definitions of natural capital in relation to forests includes carbon sequestration, biodiversity enhancement, climate amelioration, water purification, pasturing, recreation, spiritual refreshment, and the like.
- Cultivated Natural Capital: transformative extraction and cultivation that creates wealth from natural capital by and for humans.
 - Domini's definition of cultivated natural capital includes extraction of timber and other natural resources for commercial purposes, agricultural enterprise, and the like.

For each type of forest, we distinguish between its ability to provide natural capital and cultivated natural capital. This distinction is helpful because investors can use tools designed for portfolio construction and risk management to enhance cultivated capital, but for natural capital they need tools designed to assess influence at system levels. Overall, we seek a balance between the two capitals, as consistent with our stated financial investment goals. Being clear which of our policies and practices are intended to enhance cultivated natural capital with implications for our portfolios and which enhance natural capital with implications at systems levels helps us formulate our strategies, tactics, and allocation of resources, as well as maintain an appropriate balance between the two.

A note on climate change and its relevance to our forest-related approach. In addition to their crucial role in preventing biodiversity loss, forests have an important role to play in mitigating climate change through the sequestration of the carbon dioxide currently building up in the atmosphere. In addition, they play an important role in cooling local climates and recycling water. For these reasons, the Intergovernmental Panel on Climate Change has stressed

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their importance in any overarching climate-change mitigation strategy. It concluded, for example, that AFOLU [agriculture, forests, and other land use] mitigation options, when sustainably implemented, can deliver large-scale GHG emission reductions and enhanced removals, but cannot fully compensate for delayed action in other sectors.¹⁰ For example, old-growth forests are among the least expensive long-term methods of carbon sequestration in that no human intervention is necessary once their preservation has been ensured.

There are, however, substantial disadvantages in relying on forests to sequester carbon. Intact, diverse, old-growth forests sequester carbon in meaningful amounts. However, adding capacity to forests' ability to mitigate climate change through reforestation and afforestation means waiting decades. Second, in a vicious cycle, as climate change increases temperature and droughts, wildfires have become more common, releasing carbon in the form of carbon dioxide into the atmosphere while destroying one of the best means for sequestering it.

Two implications follow from these observations. First, a forest-related approach to mitigating climate change is likely to be only marginally impactful unless accompanied by strong additional steps to mitigate climate change. Second, investors will need to "invest in preservation" but this is a challenge: it requires more tools than simply security selection and portfolio risk management—tools designed to address climate change at a systemic level.

For each of the following types of forests, we provide background on each type in relation to: its ability to provide natural and human capital; our goals for that type of forest at a portfolio- and at a systems level; our assessment of investors' best practices to enhance the ability of this type of forest to serve as a source of natural and human capital; and an estimate for an optimal amount of the share of the of the total amount of green lands that should be devoted to that type of forest.

A note on Domini's view of investors' best practice. Best practices as called out here are those actions that Domini views as most likely to lead to the creation of a network of interrelated types of forests that seeks to generate positive outcomes for investors, the environment, and society. They enhance both natural capital and cultivated natural capital that each type of forest is best suited to enhance. In doing so, we seek to create a mosaic of forest-related investment practices that maximizes overall opportunities for investment in the broad contexts of environmental sustainability, biodiversity, and human dignity.

I. Intact Forests

Intact forests are those large, contiguous forested lands that are self-regenerating, undisturbed by commercial activities, and free of roads; they may be occupied by Indigenous people deriving traditional low-impact livelihoods from these lands. These intact forests are a substantial provider of natural capital in the form of ecosystem services including biodiversity, carbon sequestration, the purification, preservation, and recirculation of fresh water, and climate amelioration. They provide limited opportunities for investors in pursuit of cultivated natural capital at a portfolio level but offer substantial system-level advantages. No further loss of intact forests is an important Domini goal. Engagement with deforestation-risk companies is a primary tactic for attaining that goal, along with recognition of the traditional rights of Indigenous peoples to access these forests and exercise of their livelihoods in ways aligned with intact forests' preservation.

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Background on Intact Forests

Natural Capital. Intact forests are a substantial provider of natural capital in the form of biodiversity, carbon sequestration, fresh-water purification, preservation, and recirculation, and climate amelioration. Intact forests are one of the primary vehicles for the support of biodiversity on land. According to the UN Farm and Agriculture Organization, “Forests provide habitat for 80 percent of amphibian species, 75 percent of bird species and 68 percent of mammal species, and tropical forests contain about 60 percent of all vascular plant species.”¹¹ Research has shown that the greater the contiguous area of unmanaged forest lands the larger the number and volume of diverse species it can support.¹² In addition, intact forests are a major site for old growth trees. The larger and older individual trees, the greater the volume of carbon they can sequester annually.¹³ Large tropical forests such as the Amazon, “make their own rain”—in effect, retaining and recycling water within local systems, creating rivers of moisture in the sky that circulate water far and wide.¹⁴ These public goods have the broad benefit of possessing a global nature and an inexhaustibility of use.

With regard to climate-change mitigation, preservation of intact forests has long-term value in that simply by preserving them at relatively little out-of-pocket expense substantial carbon sequestration can be achieved. In addition, their carbon sequestration comes with multiple ancillary benefits (e.g. biodiversity) and does not entail the possibilities for unintended consequences currently involved in such untested initiatives as geoengineering of the atmosphere, technological carbon-capture and sequestration, and the bioengineering of the plant photosynthesis process.¹⁵

Cultivated Natural Capital. Preservation of intact forests presents relatively few opportunities to create cultivated natural capital. Their natural capital is most productive when these territories are simply left alone. Nevertheless, Indigenous peoples have a long history of living in harmony with intact forests including pasture lands in ways that sustain and steward their natural capital. Moreover, these lands support the cultures and livelihoods of Indigenous peoples who have traditional rights to live on these lands and whose customs have not impinged on these lands’ intrinsic worth. According to the World Bank, Indigenous peoples make up approximately six percent of the world’s population (476 million persons). They “own, occupy, or use a quarter of the world’s surface area” and “safeguard 80 percent of the world’s remaining biodiversity.”¹⁶

Opportunities for Investors. The preservation of intact forests’ natural capital is the primary opportunity for investor through engagement with companies involved in high-deforestation-risk agricultural products (timber, soy, beef, palm oil). Because Indigenous peoples have an historical record of stewardship of intact forests, investors can also support their traditional rights to have access to these lands and to free, prior, informed consent with respect to their use to generate cultivated natural capital by others.

Goals for Intact Forests

Overarching Goals for Intact Forests. Domini’s primary goal is no further development and deforestation of intact forest lands, including those formally designated as Intact Forest Landscapes and others closely approximating this definition. Specifically, we believe that a goal of no construction of roads in these landscapes is an effective step in this direction.¹⁷ As a general directional goal, the current trend toward decreases in these lands should be stopped and reversed. Implicit in this goal is a reallocation of agricultural lands, planted forests, or primary green spaces to intact forests.

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In addition, our goals include encouraging governments, corporations, and non-governmental organizations to recognize the rights of Indigenous peoples with respect to these lands, including free, prior, and informed consent, access to their traditional lands within these landscapes, and the freedom to practice their traditional low-impact cultural livelihoods. These groups have a historical record of stewardship of these lands as intact. According to a UN Farm and Agriculture Organization (FAO) study, Indigenous peoples

manage about 40 percent of all terrestrial protected areas and ecologically intact ecosystems worldwide. Deforestation rates tend to be lower on Indigenous People's lands than in surrounding forests, including in protected areas, due to (among other reasons) cultural factors, traditional knowledge, strong governance, forest incentive policies, PES support, the low profitability of agriculture, and limited accessibility. Studies also show that ensuring indigenous and tribal land rights could be highly cost-effective for halting deforestation and slowing climate change.¹⁸

Furthermore, our goals include encouraging governments, corporations, and non-governmental organizations to recognize basic, widely accepted labor standards such as those embodied in the United Nations Declaration of Human Rights and the United Nations Guiding Principles on Business and Human Rights with respect to labor on agricultural and other forest-related lands. Moreover, we count as serious violations any interference with or violence directed against those who defend the integrity of intact forests and promoting the rights of Indigenous peoples exercising their traditional rights to such lands.

Portfolio-level Goals. Domini's primary portfolio-level goal here is no deforestation activities in or around intact forest by companies held in our portfolios or in their supply chains.

Domini is a signatory of the *Financial Sector Commitment Letter on Eliminating Commodity-Driven Deforestation* of November 2021. Consistent with that pledge, by the end of 2022 we will have assessed exposure of companies in our equity and fixed-income portfolios to "deforestation-risk" agricultural activities (i.e. soy, palm oil, beef, and timber) through financing or investment. By the end of 2023, we will report on our mitigation efforts for that risk, including due diligence and engagement for high-risk firms. By year-end 2025, we will report on progress in eliminating deforestation-related activities from our portfolios, including financing.

Specifically, we look to those high-risk companies in our portfolios to have adopted business models consistent with no-deforestation related agricultural activities.

System-level Goals. Domini's primary system-level goals here are 1) an end to deforestation in intact forest lands, 2) an increase in the square miles categorized as Intact Forest Landscapes, and 3) a general principle establishing the rights of Indigenous peoples to serve as stewards of intact forests.

In addition, when appropriate opportunities arise at a system level and resources permit, we will support the efforts of governments, NGOs, and our peers in the investment community to strengthen policies and practices that protect intact forests and support Indigenous peoples' rights with regard to them.

Finally, our long-term goals are that by 2030 forests be substantially integrated into international efforts to set aside 30 percent or more of land for "nature" including provisions for the rights of Indigenous peoples.

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Investors' Best Practice for Intact Forests

Enhancement of Natural Capital. Investors' primary opportunities include:

- Engage with companies in food-related industries including the largest commodity trading firms to ensure that their supply chains have established and implemented rigorous no-deforestation policies and practices.
- Survey financial services firms—including insurance, commercial and retail banking, and asset managers and investment bankers—to identify best practice with regard to deforestation in their financial activities. Engage with these companies to advocate for adoption of deforestation policies and practices.
- Enter into partnerships with governmental and non-governmental organizations in initiatives to preserve intact forests through regulation, preferential purchasing or similar initiatives. Encourage adoption of “no-deforestation” preferential purchasing legislation by governments
- Advocate for timber and forest-product companies with which they have financial relations to set aside a portion of land they may own, where feasible and appropriate, for conservation, intact forests, or otherwise protected lands.
- Promote a policy of “no new roads in intact forest lands.”

Enhancement of Cultivated Natural Capital. Investors' primary opportunities include:

- Support the rights of Indigenous peoples to occupy and sustainably preserve intact forests.
- Through commercial venture partnerships with Indigenous peoples, investors can support joint ventures that allow these peoples to maintain their lifestyles, viable communities, and empowered cultures.

II. Planted Forests—Mixed Species

We include in our definition of “mixed-species planted forests” commercial, mixed-species forest land managed by large corporate entities or small landholders. These forest lands are substantial providers of cultivated natural capital in that they are dedicated to the production of timber, lumber, and pulp and paper products. Investors can participate directly and indirectly in ownership of these lands. Managed to the highest sustainability standards, forests of this class can also provide moderate amounts of natural capital, although less so than intact forests. Domini's portfolio- and system-level goal for these forests is that virtually all mixed-species, planted forests be managed at the highest sustainability levels. At a portfolio level the goal is specific to particular firms; at a system-level it is a broad regulatory and cultural goal. Collaboration with standard-setting initiatives is Domini's primary strategy for achieving these goals.

Background on Mixed-Species Planted Forests

Natural Capital. Sustainable, mixed-species forests can be a source for a moderate amount of natural capital through the provision of ecosystem services. Among these are: habitat protection; protection of threatened and endangered species; fishing protection; resistance to wildfires; harvesting of forest-related products such as mushrooms, berries, honey, or fur; and public education.

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If managed under the highest sustainability standards, these forests can sequester reasonable, although not exceptional, amounts of carbon. Because trees in these forests are typically harvested at between 25-50 years after planting, their ability to sequester carbon in substantial quantities is limited to the latter years of their lifetime. The seedlings that replace them will not be able to sequester substantial amounts of carbon for a decade or two. Similarly with respect to biodiversity, these forests are likely to be less diverse and cover smaller contiguous areas than intact forests and support moderate, but not exceptional, amounts of biodiversity.

Owners of mixed-species planted forests have an opportunity to maximize the ecosystem services of these lands. They can also place into protected and conservancy status areas of their lands that might be appropriate for such status or adopt policies prohibiting sale of their lands for real estate development purposes.

Cultivated Natural Capital. Sustainable, mixed-species, mixed-age forests can be a substantial source of cultivated natural capital through sale of trees for timber, lumber, and pulp and paper; they may also be licensed for other commercial purposes such as wind power. Investors can readily attain access to this source of cultivated natural capital through investments in such lands, either directly through stock in sustainably managed forest-products companies or indirectly through stocks companies that require such policies by their suppliers. In addition, investors occasionally invest in such lands directly themselves.

In practice, many different “sustainability” standards and certification schemes for forestry management currently exist. Among the earliest, most broadly recognized of these is that of the Forest Stewardship Council (FSC). In recent years, various environmental organizations have criticized FSC for lax standards, conflicts of interest, and failure to keep up with technologies for monitoring and enforcement.¹⁹ Domini consequently pays close attention to the rigorosity of the FSC’s policies and practices.

A further opportunity for investment is the pursuit of carbon offsets related to mixed-species planted forests as well as intact forests. The market for these offsets is currently being driven by companies’ and governments’ “net zero by 2050” pledges. These offsets are a convenient alternative to switching away from the use of fossil fuels. Carbon offsets face a host of challenges in implementation, including measurement of carbon reductions achieved; the additionality of the investments for which offsets are claimed; and the financial value of the offsets themselves.²⁰

Currently, Domini believes carbon offsets are of uncertain value as a means to channel funds to forest preservation and sustainability. One uncertainty arises due to threats to the ability of forested lands to sequester carbon for the century-long lives over which these offsets are often calculated. The increasing destruction of forests by wildfires accounts for this uncertainty.²¹

Reforestation on previously forested lands and afforestation (creating forests on previously unforested lands) are also viable investment opportunities. Both come with their own set of challenges as they contend with the rigors of sustainability in forest management as well as the environmental and societal contexts in which these activities take place. Simply “planting trees” without attention to local contexts jeopardizes their prospects of success.²²

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Opportunities for Investors. Investors' primary opportunities lie in ensuring that these lands are sustainably managed in ways that support both cultivated natural and natural capitals, taking care not to let the former undermine the latter.

Goals for Mixed-Species Planted Forests

Overarching Goals for Sustainable Planted Forests. Domini's primary goal is to create a culture in which the highest level of sustainability management standards is the norm for mixed-species planted forests. These standards and norms should be in line with the principles of regenerative agriculture and the transition to a circular economy.

Portfolio-level Goals. Domini's goal for the management of our portfolios is that virtually all companies with business models focused on the ownership of mixed-species forest lands, as well as companies that depend upon their supply chains for products from these forest lands, require a highest-quality policy of sustainable management by 2025 and be certified for implementation of these standards by independent third parties by 2027. Sustainability of this type includes cultivation of the potential for ecosystem services provided by these forests. Domini does not consider the production of wood chips and pellets as a primary source of fuel as aligned with those principles.

System-level Goals. Domini's primary system-level goals are that by 2035 virtually all management of mixed-species planted forest lands globally be conducted in accordance with sustainability practices of the highest levels. The implication of this goal is that these "best practice" standards will by then have become "standard operating procedure."

Investors' Best Practice for Mixed-Species Planted Forests

Enhancement of Natural Capital. Investors' primary opportunities include:

- Advocate for the monitoring and disclosure of ecosystems services' data by owners of sustainable forest lands.
- Support work of sustainability certification bodies such as Forest Stewardship Council as well as governments to establish, monitor and enforce highest-quality sustainable forestry standards and processes.
- Advocate for owners of mixed-species forests to convert a portion of their holdings to conservation lands or provide charitable contributions to organizations seeking to do the same.
- Engage in B2B purchasing policies encouraging highest-standard forest-management practices by suppliers of timber, lumber, and pulp and paper products.

Enhancement of Cultivated Natural Capital. Investors' primary opportunities include:

- Invest directly in forest land and manage it with highest levels of sustainability while maintaining reasonable levels of productivity.
- Engage with companies to adopt and comply with highest levels of sustainable forest management standards in their lands they may own and in those of firms in their supply chains including small landowners.

III. Planted Forests—Monoculture Plantations

We include in our definition of “planted forest plantations” commercial forest land planted with one or two species all of the same age, treated with pesticides and fertilizers, and otherwise grown and harvested as “agricultural” products. They may be owned by large corporate entities or small landholders. They are a substantial provider of cultivated natural capital in that they are a primary source of timber, lumber, and pulp and paper products. Through public and private ownership, investors can participate directly and indirectly in the cultivated natural value of these products. By contrast, these lands’ ability to support biodiversity and sequester carbon are far from guaranteed. According to one study, they vary substantially “depending upon the characteristics of both the plantations and of the previous land uses.”²³ Biodiversity is greater on plantations located on degraded lands rather than when they replaced intact or lightly managed forest-related ecosystems, and when they consist of indigenous rather than exotic species. Similarly, plantations’ ability to promote carbon sequestration and provide other ecosystem services depends on past land usage and the types of trees planted.

Domini’s portfolio- and system-level goal for plantations is that, along with competitive levels of efficiency, they be used and managed primarily in contexts that permit substantial biodiversity and carbon sequestration, use highest levels of sustainability practices, and explore means of conversion to mixed-species sustainably planted forests.

Background on Monoculture Plantations

Natural Capital. Unless appropriately tailored to the context of the lands on which they are planted and types of trees used, plantations may support substantially less biodiversity or other ecosystem services (e.g., protection of wildlife habitats or endangered species) than intact forests or sustainably managed mixed-species forests. In addition, they may also sequester less carbon due among other things to the practice of clear cutting after life cycles that can be as short as 20 years or less.

To increase the natural-capital profile of these lands, several forest-industry-related organizations have established sustainability principles for the management of tree plantations. For example, since 2007 World Business Council on Sustainable Development has spearheaded the New Generations Plantations initiative that promotes among other things a set of plantation principles including maintenance of ecosystem integrity, enhancement of high conservation values, and effective stakeholder involvement.²⁴ In addition, its Forests Solutions Groups has proposed a set of Key Performance Indicators for “working forests” with implications for natural capitals. These KPIs include percentage of owned-lands certified to sustainability standards, percentage of owned-lands restored or conserved, and total area of any other lands they may have restored or conserved.²⁵

Increases in biodiversity and carbon sequestration may also be achieved through such regenerative and agroforestry processes as “tree intercropping” as advocated by Project Drawdown. Intercropping consists of the intermingling of trees and crops, which can be grown in mixed strips or with crops as an understory amid tree stands.²⁶

Cultivated Natural Capital. Given their industrial farming practices, these single-species tree plantations are more productive per acre for growing and harvesting trees than intact and sustainably managed mixed-species forests. They are consequently often favored by large timber companies.

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One argument for the efficiency of tree plantations is that properly managed on already degraded lands they can alleviate deforestation pressure on intact forest lands or primary green spaces, assuming they do not simply increase demand for low-cost forest-related products.²⁷

Opportunities for Investors. Given their efficiency, tree plantations can offer substantial opportunities for investors on the cultivated natural capital side of the equation. Because tree plantations can also come with a cost to biodiversity, soil quality, and other natural capitals, investors have an opportunity to steer the operators of tree plantations toward more sustainable and regenerative practices that can enhance instead of undercutting these capitals.

Goals for Monoculture Plantations

Overarching Goals for Forests Plantations. Domini's overall goal is that highest-quality sustainability and biodiversity standards be set for forests as tree plantations by 2025. Those standards could be implemented by 2026, and a gradual reduction of the percentage of planted forests as plantations begin in 2028. These forests would thus transition to models approaching those of regenerative agriculture or mixed-species forests while still preserving a competitive degree of efficiency.

Portfolio-level Goals. Domini's goal for the management of our portfolios is that by 2025 companies using tree plantations adopt policies including highest sustainability and human rights standards and begin implementation by 2026. By 2027, a preponderance of plantations will be established in ways that increase the sequestration of carbon and support biodiversity. They may ultimately tend to look more like mixed-species planted forests.

In addition, over this same period, our goal is that companies in our portfolios that source wood and pulp and paper products from companies in their supply chains owning tree plantations will adopt preferential business-to-business purchasing policies favoring those forest product companies with the highest quality plantation sustainability standards.

System-level Goals. Domini's goal is that that by 2027 best practice in the transition of plantation forests to sustainable forest management becomes standard operating procedure throughout the timber industry and by companies sourcing from plantation-related companies within their supply chains.

Investors' Best Practice for Planted Forests as Monoculture Plantations

Enhancement of Natural Capital. Investors' primary opportunities include:

- Advocate for the development of higher standards by those establishing principles for plantation management.
- Support legislation for preferential purchasing by governments only from plantations with highest sustainability standards and advocate for similar voluntary business-to-business preferential purchasing programs by suppliers.
- Increase demand for highest-quality natural capital from planted forests as plantations, while still maintaining competitive levels of efficiency in their operations.

Enhancement of Cultivated Natural Capital. Investors' primary opportunities include:

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- Monitor controversial emerging issues in enhancement of the efficiency of plantation forests including genetic modification of existing species and introduction of foreign species to current habitats. Such practices have the potential to pose environmental challenges that counterbalance efficiency gains, concerns that may impact their investment decisionmaking and related activities.

IV. Agricultural Lands

We include in our definition of “agricultural lands” lands for growing crops as well as grasslands and rangelands for pasturing livestock. We also include tree and shrub farms for fruits, nuts, coffee, tea and the like. These lands may be owned by large corporate entities or small landholders.

Industrial farming practices combined with shifts in land use to pasturing livestock and growing crops to feed them are major contributors to biodiversity loss and exacerbate climate change. Managed according to regenerative agriculture processes and outcomes, crop lands can be a substantial source of biodiversity and can store moderate quantities of carbon under the right conditions. The expansion of industrial agricultural lands at the expense of intact forests and primary green spaces is a major contributor to biodiversity loss and climate change.

Domini’s primary goals are greater use of agricultural practices that allow for the enhancement of biodiversity and carbon sequestration while still serving the world’s demands for adequate, affordable, healthy food. Engagement with companies and standard setting organizations to promote the adoption of regenerative agriculture processes and outcomes is among Domini’s primary strategies for achieving these goals.

Background on Agricultural Lands

Natural Capital. Agricultural lands share with mixed-species and plantation forests a range of environmental and biodiversity challenges. For example, conversion of intact forests in regions such as the Brazilian rain forests and “cerrado” shrub lands to industrial agricultural production, including the growing of crops such as soy and the pasturing of cattle, is a substantial contributor to climate change.

If appropriately managed through regenerative practices, agricultural lands can provide opportunities for the promotion of biodiversity, sequestration of carbon, and recreational and touristic activities. Currently, regenerative agriculture has many definitions that focus on a combination of processes and outcomes. According to one academic survey, among the processes most commonly associated with regenerative agriculture are the increased use of cover crops, crop rotations, integration of perennials and trees, integration of livestock, and composting and other “on-farm” inputs, along with reduced use of tilling of soil and “external” inputs such as non-natural pesticides and fertilizers. Among the outputs most desired from implementation of these process changes are increased biodiversity, water health, soil health, carbon sequestration, and the strength of local economies.²⁸ Regenerative agriculture may also include planting a diversity of crops in a single plot to raise aggregate yields.

For example, a large portion of the diets of the world’s population depends upon three cereal: wheat, rice, and corn. How lands for these crops are managed is consequently of substantial importance. To promote no-tilling in the growing of these crops, the Kansas-based

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Land Institute has developed perennial breeds of wheat and rice that do not require the annual replanting of seeds.²⁹

According to Our World Data, 77 percent of all agricultural lands are devoted to pasturing livestock and the raising of crops to feed them, with 23 percent of farmland devoted to crops other than for animal feed.³⁰ Land use issues and their relation to regenerative agriculture are consequently a substantial challenge when it comes to serving the need of the world's current population for diets adequate in affordable protein. Moderate consumption of meat can be part of the solution, as can advanced plant-based meat alternatives and manufactured bacterial proteins.

Cultivated Natural Capital. Agricultural lands, along with forest plantations, provide numerous opportunities for investments in cultivated natural capitals. Owners of agricultural land as well as commodity traders and the processors and retailers of agricultural products are among those offering such opportunities. The efficient production of crops on agricultural lands has grown remarkably since 1900.³¹ It has come, however, at a cost to soil health, biodiversity and carbon sequestration. A major challenge is how to achieve a balance between natural and cultivated natural capitals in the production of affordable, high quality, environmentally sustainable food for a world population rapidly approaching eight billion.

Opportunities for Investors. Given the importance of soil health to the long-term prospects for agriculture and consequently to the wide range of food-related investment opportunities, investors' primary opportunity is to ensure the long-term health of this foundational asset along with other aspects of regenerative agriculture.

Goals for Agricultural Lands.

Overarching Goals for Agricultural Lands. Domini's overarching goal is to promote the development and implementation of regenerative agriculture processes and outcomes. As part of that goal, it seeks to end land conversion from intact forests and primary green spaces to agricultural land. At the same time, adequate supplies of affordable food need to be maintained. Therefore agricultural land use needs to be better tailored to the need to producing adequate food for human consumption without the need for additional conversion of forest lands to agriculture. One possible way forward lies in the reduction of the percentage of land currently used to support livestock.

Portfolio-level Goals. Our goal for the management of our portfolios is that by 2026, a preponderance of companies in our portfolios with business models based on the ownership and management of agricultural lands or sourcing of products from these lands will have adopted policies favoring regenerative agriculture and implemented time-bound transition to this practice for the lands they own or in their supply chains. As part of this transition, companies will incorporate commitments to assess their impacts and manage them as part of their long-term climate objectives and align their capital allocation and business decisions with this transition planning.

System-level Goals. Domini's primary system-level goal is that by 2030 a preponderance of companies in our investment universe will have adopted policies and practices based on principles of regenerative agriculture.³² Ultimately the goal is to hold the area of the Earth's land currently used for agriculture at current levels, reducing moderately the portion of that land used for livestock pasturing and food-crops for livestock, with freed-up lands transitioning to intact forests or primary green spaces and to crops for human consumption. Of land devoted to

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human consumption, Domini currently believes half could transition to regenerative agriculture, with the rest remaining intensively farmed until such time that regenerative lands can be managed without reducing crop yields.

Investors' Best Practice for Agricultural Lands

Enhancement of Natural Capital. Investors' primary opportunities include:

- Set and implement goals and standards for lands dedicated to regenerative agriculture.
- Advocate for adoption of high-quality regenerative agriculture policies and practices with specific food-related companies.
- Monitor implementation of commitments to implement these regenerative agriculture principles and policies.
- Advocate for research and development on the advancement of perennial grains and legume breeds.
- Promote public policies, including tax subsidies, which support the transition of industrial agricultural lands to regenerative policies and practices.
- Encourage moderate consumption of meat in order to reallocate some portion of grazing and pasture lands to intact forests, primary green spaces, or crops for human consumption.

Enhancement of Cultivated Natural Capital. Investors' primary opportunities include:

- Advocate for multi-use cropping: mixing crops on same land to increase yields.
- Invest in protein alternatives to meat that are plant based and the fermentation of protein-rich bacteria.
- Invest in high technology companies that facilitate environmentally friendly land management.
- Invest in greenhouses, hydroponics, and vertical farms that will reduce the areas of land set aside for crops.

V. Primary Green Spaces

We include in our definition of “primary green spaces” a broad range of green lands that are primarily not commercially managed but at the same time not treated as intact. They encompass lands in public hands such as municipal, regional, and national parks; conservation or otherwise protected natural lands; forest land held in private hands and not managed primarily for commercial purposes; a diverse array of arboretums, botanical gardens, private gardens, and even incidental landscaping and lawns.

Enhancing natural capital is their typical benefit but their focus can also be cultivated natural capital. Many primary green spaces entail a mixture of both natural and cultivated natural capitals (e.g. national forest and park land that can be leased for timber harvesting, livestock grazing, petroleum or mineral extraction or other commercial purposes). They may also be the traditional lands of Indigenous peoples.

Depending on circumstances, they can serve as moderate sources of biodiversity preservation and carbon sequestration. Investors have only ancillary opportunities to interface with these lands but can support their natural-capital benefits through philanthropic activities or participation in partnerships with governmental or environmental organizations. Domini's

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primary goal is to encourage the enhancement of primary green spaces' abilities to generate natural capital.

Background on Primary Green Spaces

Natural Capital. Properly managed and maintained, large parks, conservation land, and even private landscapes can generate moderate to substantial amounts of natural capital in the forms of biodiversity, wildlife protection, carbon sequestration, and recreation and tourism. In practice, large national parks often are wholly or partially designated conservation or protected areas. Many even contain regions meeting the definition of Intact Forest Landscapes. In practice, some with conservation status may be poorly protected by the governments or other organizations charged with maintaining their well-being and are opened to commercial exploitation.³³ They may also be the traditional territories of Indigenous peoples with a historical claim to their usage and proven records of stewardship including subsistence living that remains in harmony with the biodiversity of these territories.

These primary green spaces can also provide the public benefits of rest, relaxation and spiritual sustenance that access to forests, parks and other green spaces entails. Equitable access to and enjoyment of these spaces is an important goal for green spaces of these kinds.

Cultivated Natural Capital. Because these primary green spaces are generally in public hands or privately owned and not exploited for commercial purposes, their primary purpose is not the creation of cultivated natural capital. Nevertheless, they often support commercial activities of various sorts such as leasing of lands for lumbering, permitting of pasturing, commercial operations associated with tourism, and the like. In addition, these lands may support the livelihoods as well as the cultures of Indigenous peoples.

Opportunities for Investors. Investors may invest in so-called “green” bonds issued in the corporate, sovereign, or municipal fixed-income markets that allocate funds to the creation or upkeep of green spaces, including national and local parks and “urban forests.”

In addition, they may undertake philanthropic activities or engage in partnerships with governmental or environmental organizations that preserve, create, or enhance these spaces' natural capital. Support for reforestation and restoration of green spaces for investment credits or carbon offsets is another opportunity, although with challenges of its own.

Goals for Primary Green Spaces

Overarching Goals for Green Spaces. Domini's overarching goal for primary green spaces is to enhance the ability of corporations—in particular, in partnership with governmental and non-profit organizations—to protect and nurture the creation of natural capital within these spaces.

Portfolio-level Goals. By 2027, Domini will seek to allocate up to five percent of its fixed income portfolios' holding to “green bonds” and similar instruments that support forest-positive initiatives. These bonds may be issued by governmental agencies, quasi-governmental financial institutions, or for-profit and non-profit corporations.

For companies in its equity portfolios, in 2025 Domini will begin to raise awareness about opportunities for corporate partnerships and philanthropic activities to support the ability of primary green spaces to create, preserve, and enhance natural capital.

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System-level Goals. Domini’s system-level goals are 1) by 2030, fixed-income portfolios in the investment community will typically include an allocation to green bonds or similar securities with a forest-positive focus, and 2) the focus of corporate philanthropy will eventually come to include forest-positive initiatives if appropriate given the mission of the corporation, and 3) an awareness will permeate the world of private land owners from those with large tracts of green lands to individual home owners with lawns and landscaping as to the potential for those green spaces to promote biodiversity even if only to a limited extent.

Investors’ Best Practice for Primary Green Spaces

Enhancement of Natural Capital. Investors’ primary opportunities include:

- Invest in green bonds issued by NGOs (e.g. for creation of conservation lands); by state and local authorities (e.g. for use in climate change mitigation projects or for parks, landscapes, and urban forests); or by nations and development financial institutions (e.g. for maintenance of national parks and environmental protected areas, or for green spaces used as in climate-change mitigation projects).
- Advocate company commitments to partnerships and philanthropic activities (cash, lands, pro bono staff time, or other resources) that support the creation or enhancement of primary green spaces.
- Invest in credible carbon-offset projects involving primary green spaces.

Enhancement of Cultivated Natural Capital. Investors’ primary opportunities include:

- Invest in bonds of nations, quasi-governmental bodies, and development financial institutions that promote economic development through forest-positive initiatives (e.g. ecotourism, regenerative agriculture).

Secondary Green Spaces

We include in our definition of “secondary green spaces” lands that are owned and maintained by for-profit corporations as part of their primary business model but are not profit centers. These secondary green spaces typically provide only limited abilities to promote biodiversity or carbon sequestration. Domini does not systematically engage companies on their management of secondary green spaces but notes positively those landowners who successfully realize the potential for their creation of natural capital.

For certain industries such as utilities, cell phone tower companies, and real estate development firms, land management is an ancillary necessity in their basic business models but is not a primary focus or a profit center. In addition, other small parcels of land can be managed with an eye to biodiversity but without benefit from a strictly business viewpoint. For example, farmers have land that borders on productive fields that can be set aside for wildlife and encourage biodiversity; large corporations often have campuses that can be landscaped with biodiversity or other natural capital benefits in mind. In the aggregate, these lands can play a substantial role in promoting biodiversity or at least preventing its loss.

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Currently, Domini does not typically engage companies on their management of secondary green spaces but notes positively those landowners that successfully realize the potential for their creation of natural capital.

Background on Secondary Green Spaces

Natural Capital. Opportunities for the creation of natural capital are relatively limited but include enhancement of biodiversity and general appreciation and awareness-raising about the positive attributes of nature.

Cultivated Natural Capital. Companies can cultivate green spaces near their facilities as a benefit that can modestly enhance the mental and physical health of employees or that will enhance the firm's reputation with the general public.

Opportunities for Investors. Investors can encourage companies to pursue the benefits of secondary green spaces for the environment, their employees, and the general public.

Goals for Secondary Green Spaces

Overarching Goals. Domini has not currently set specific goals for secondary green spaces but encourages their development.

Portfolio-level and System-level Goals. Domini informally monitors positives or negatives that arise for companies in the utility, cell tower, real estate development, and other industries where land ownership is built into their business model. We have not currently set portfolio- or system level goals for secondary green spaces.

Investors' Best Practice for Secondary Green Spaces

Enhancement of Natural Capital. Investors' primary opportunities include:

- Advocate the intentional management or creation of secondary green spaces by companies that they invest in to enhance biodiversity and the appreciation of nature among their employees, peers, and the general public.
- Encourage homeowners with lawns to enhance their biodiversity potential and encourage the companies that serve these homeowners to develop products that will allow homeowners to do so.

Enhancement of Cultivated Natural Capital. Investors' primary opportunities include:

- Engagement of companies with their secondary green spaces as part of their business models but not profit centers (e.g. maintenance of railroad, utility, and cell tower rights-of-way) to manage these spaces to enhance biodiversity.

Land Use

According to Our World in Data, 71 percent of the globe's surface is covered by oceans, leaving 29% for land. Of that land, 29 percent is uninhabitable (10 percent glaciers and 19 percent barren land); 26 percent is forest land; 8 percent shrub land; 34 percent agricultural

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lands (27 percent devoted to livestock, dairy and crops for that livestock; and 7 percent to crops for human consumption); 1 percent fresh water, and 1 percent the built environment.

In effect, of the 71 percent of the Earth's habitable land 50 percent is devoted to agriculture, 37 percent covered with forests of various types, 11 percent by shrub, and built environments and freshwater the rest. Of the agricultural land, 77 percent is devoted to livestock and crops for their feeding and 23 percent to other crops.³⁴

Figures cited by the UN Farm and Agriculture Organization using different categorizations of land show that of all forested land, 34 percent is covered by forests considered "primary" and corresponding approximately to the definition of "intact" forests used by Domini. An additional 59 percent is covered by "other naturally regenerating" forests, which fall generally into the category Domini calls "primary green spaces." Of the remaining seven percent of forest lands, three percent is devoted to "plantation" forests, which we call "planted forests—monoculture plantations" and four percent as "planted" forests, which we term "planted forests—multi species."³⁵ FAO's data show agricultural lands occupying approximately 38 percent of land, with one-third of that being devoted to crops and the remaining two-thirds to pasture and grazing lands for livestock.³⁶

Given the current need to feed close to eight billion people, it is not surprising that as the population grows, an increasing portion of the Earth's habitable land has been devoted to agriculture with livestock for meat and dairy taking up approximately twice the acreage as other food crops.

The *2030 Nature Compact* adopted by the G7 in 2021 set a goal of 30 percent of land set aside for "nature." The G7 Compact states that "Nature, and the biodiversity that underpins it, ultimately sustains our economies, livelihoods and well-being . . ." and that "Tackling deforestation, including by supporting sustainable supply chains and demonstrating clear domestic actions" involves support for "sustainable supply chains that decouple agricultural production from deforestation and forest degradation, including from illegal land conversion."³⁷

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