Domini

Domini Forest Project

Value Creators: Business Model Change and 21st Century Systemic Risks

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Executive Summary

To contend with 21st century systemic social and environmental challenges, corporations and investors will need to modify current business models to incorporate what we call "value creation." This paper provides background on how we at Domini view value creation in the context of our Forest Project, with its implications for our investment policies and practices, financial materiality, and hybrid business models that merge the financial, social, and environmental in ways that can help manage short- and long-term risks for our portfolios. Project is integrated in.

Our understanding of the need for a combination of financial, social, and environmental value creation in the business models of companies faced with 21st century systemic challenges emerged as we developed our Forest Project. We contacted 68 companies among our holdings that we identified as likely to depend on forests and agricultural lands while simultaneously impacting them. We found that numerous companies we contacted recognized the importance of the challenge they faced, but few were taking concrete steps to actively support the creation of long-term value for their forest-related lands.

The following were among the motivating factors for those who we would come to call "value creators." They:

- Recognize that their impacts, along with those of others, contribute to systemic risks.
- Seek solutions proactively.
- Cooperate with nature.
- Collaborate vertically, horizontally, and across sectors to scale up.
- Center on the interests of impacted communities.

As part of the Forest Project, we came to believe that a value creation approach with its emphasis on the long term could help moderate the purely financially efficient model with its emphasis on the short term. In addition, we understood how value creation in the form of systemic resilience could serve not as a replacement for financial efficiency, but rather as a moderating influence in a hybrid model. Neither one nor the other should dominate entirely.

As we delved into the practices of specific forest-product companies, we as investors saw four areas where current business models could usefully incorporate a value-creation approach. In each of the areas, the consideration of long-term social and environmental value creation can complement short-term profit-oriented tactics to help manage systemic risks related to climate change, biodiversity loss, and degradation of arable soil. A hybrid business model that incorporates and balances both value creation and extraction can help ensure the resilience and stability of forests and agricultural lands in ways that preserve current and future investment opportunities. The four areas of consideration are:

- Preservation of resilient lands
- Supply chains as stakeholders
- Indigenous Peoples as key partners
- Alternatives to biomass as a source of energy

To stimulate change and shift business models, investors can take several short- and long-term initiatives. Among them are the following.

Preservation of Resilient Lands.

Initial steps:

- Adopt and implement "no-deforestation" policies.
- Support public policy initiatives with a no-deforestation focus.
- Advocate the adoption of "high conservation value" principles and practices for land-owning companies.
- Respect and comply with governmental designations of forest lands for preservation and conservation.

Long-term transitional initiatives:

- Consider preservation as a profit-and-loss undertaking.
- Formalize recognition of the intangible value of preserved natural land.

Supply Chains as Stakeholders

Initial steps:

- Maintain credible disclosure policies and credible certifications for supply chains.
- Ensure effectiveness of implementation of supply chain standards and certifications.
- Advocate the transitions to more resilient practices.

Long-term transitional initiatives:

- Advocate funding small landholders' and family farmers' transition to sustainable practices.
- Work toward alignment of interests.

Indigenous Peoples as Key Partners.

Initial steps:

- Support Free Prior and Informed Consent.
- Enter into ongoing dialogues.
- Encourage resolution of land ownership and usage disputes.
- Support public policies that create stewardship partnerships.

Long-term transitional initiatives:

- Endorse the principle of preservation of the value of lands for future generations.
- Communicate with Indigenous Peoples in advocacy for the protection of their rights of usage for traditional lands.

Alternatives to Biomass as a Source of Energy.

Initial steps

- Advocate the use non-carbon-based fuels.
- Support firms that don't incinerate carbon-based waste.

Long-term transitional initiatives:

- Minimize subsidies for agricultural products converted to energy production.

Introduction

To contend with 21st century global systemic social and environmental challenges, corporations and investors will need to modify current business models to incorporate what we call "value creation." This paper provides background on how we at Domini view value creation and our efforts to integrate it into our Forest Project.

Simply put, current corporate and investment business models are based on what might be viewed as "value extraction." Businesses and investors see their primary strategy as extracting financial value from current opportunities as efficiently as possible. Until recently, the default approach was to view nature as an essentially limitless resource from which value can be extracted in ever increasing amounts through technological innovation and substitution of inputs. Labor and capital, by contrast, were seen as in short supply. In an efficiently run economy, the goal was to extract as much value from nature, labor, and capital as possible in as short a time as possible. Labor and capital were the primary focus because of their scarcity; natural resources were there for the taking. Pursuing the economically efficient extraction of value from these three resources has succeeded in creating great wealth for a global society. Among other things, it has helped lift literally billions out of extreme poverty over the past several decades, although income inequality persists and has even been increasing at national levels.

As the 21st century has evolved, however, nature appears no longer so abundant or resilient and its biodiversity is under siege, while at the same time labor and capital are plentiful and more powerful than ever. This fundamental shift lies at the heart of the 21st century systemic and global economic challenges. To begin with, it now appears that the unrestrained extraction of value from nature can create existential risks for business and investors alike. The risk is not so much the exhaustion of these resources, although that is certainly a concern.

The problem is that extracting value from them with maximum efficiency results in the externalization of costs at global, systemic levels. If left unaddressed, building in economic models that systematically externalize costs into society come with an astoundingly high price. An economy built on the burning of fossil fuels, for example, has resulted in global warning and climate disruptions which, if they are to be addressed, place huge burdens on business, governments, and consumers alike. Changing this global economic model rapidly enough to avert dire scenarios is a monumentally difficult and costly task impacting most every industry and all investors.

In addition, labor and capital are more plentiful than a century ago. Their financially efficient use is far more impactful at a global scale. What type of energy businesses and investors rely on for the efficient generation of their profits and returns now determines the stability of our global weather system. The efficient use of financial investments globally now helps determine prospects for poverty alleviation and wealth equality, with their implications for preservation of national political stability and democratic institutions around the world. Just transitions for labor when addressing systemic crises of these sorts can play a crucial role in the orderly implementing of necessary but difficult change.

Throughout the 19th and 20th centuries, economic efficiency has brought wealth to global societies while still allowing nature to thrive, or at least appear to do so. This is no longer the case. The power of untamed financial efficiency is now so great that its inevitable, foreseeable, but unpredictable consequences have begun to undermine the wealth it has created and destabilize the social structures it has enabled.[1]

The way forward requires a hybrid business model: one that reins in financial efficiency in the short term as it works toward building long-term systemic resilience. Value creation strives toward long-term resilience while still allowing financial efficiency to extract value within certain limits imposed by that long-term perspective. This background paper explores how we define value creators, how they can contribute to a hybrid business model of simultaneous value creation and extraction, and what the implications are for investors—all in the context of Domini's Forest Project.

Value Creators in Practice

Our understanding of the need for "value creation" in businesses faced with 21st century systemic challenges emerged as we developed our Forest Project. As we use the term "value creation" it is closely related to the concept of systemic resilience in the face of external shocks. Value creators look to ensure the long-term stability of the foundational systems that underpin the long-term creation of investment opportunities and hence the stability and reliance of these systems.

We initiated the Project in 2017 to test the viability of this "system-level" approach to investment. After an initial false start in the first year when we attempted to tackle eight systemic risks simultaneously, we decided to focus on a single issue—forests—to which we eventually added the related challenges of agricultural lands.

As we progressed, it became clear to us that the financially efficient management of these lands was contributing to social and environmental systemic risks in a cycle that threatened to spiral downward. We also came to believe that more ecosystem and societally beneficial practices that might appear "uneconomical" could increase the viability of these lands and social cohesion in the long run. This led to our distinction between value creation and value extraction and our belief in the usefulness of business models that balance the two.

The next step was to ask what value creation looks like in the context of forests and related lands and what in practice should be the relationship between value creation and extraction?

Before the start of the project, Domini had engaged companies, NGOs, independent experts, and our peers to better understand how to discourage deforestation and encourage effective stewardship. Although we had made progress working with individual companies to encourage more sustainable

practices, we were also aware that forest loss persisted. We noted, for example, that despite the fact that in 2014, 53 companies had signed a pledge to eliminate deforestation and initiate reforestation in their operations and supply chains by 2020 as part of the New York Declaration on Forests, as of 2019, little progress had been made and hope of reaching their goals had been abandoned.[2]

It appeared that a business model that prioritized the short-term maximization of returns—with Wall Street's constant calls for quarterly earnings and other demonstrations of value extracted for its benefit—was so powerful that effectively only incremental change at individual firms was occurring. What was needed, we came to realize, was a countervailing model of value creation compelling enough to lead to such changes within firms and across the industry. We wondered if the wave of voluntary no-deforestation pledges and emergence of commitments to regenerative agriculture were signs of anything more than "greenwashing"—fads that would pass without credible implementation without more vigorous steps by investors and governmental oversight and regulation.

To see whether a shift in emphasis to something like value creation had begun, we contacted 68 companies among our holdings that we identified as likely to depend on forests and agricultural lands while simultaneously impacting them. Our theory was that these firms might understand that adversely impacting resources upon which they depended could threaten their long-term sustainability, resilience, and thus their profits.

We found that numerous companies we contacted recognized the importance of the challenge they faced, but few were taking concrete steps to actively support the creation of long-term value for their forest-related lands. In those conversations, a number of characteristics of what that change in practice might look like emerged. The following were among the motivating factors for those who we would come to call "value creators."

To integrate a value-creation model, companies would need to:

1. **Recognize that their impacts, along with those of others, contribute to systemic risks.** The risks created by widespread forest loss (e.g., climate instability, biodiversity loss) are not created by a particular company or supply chain. Value creators recognize the need for a system-level approach that can address root cause, not just symptoms, and benefit all.

2. **Seek solutions proactively.** Value creators see that they should not wait for government intervention, consensus among their peers, or outside pressure to protect the systemwide value that forests and related lands provide. They recognize the need to lead.

3. **Cooperate with nature.** Value creators understand that the value of enlisting nature's aid and leveraging "nature-based solutions" such as regeneration in forestry and agriculture, conservation of lands of high biodiversity value, the efficacy of circular economies, and lessons learned from Indigenous Peoples can provide a useful complement to short-term efficiencies.

4. **Collaborate vertically, horizontally, and across sectors to scale up.** Value creators enter into partnerships to deliver systemic solutions at scale. Alliances with government, NGOs, and Indigenous Peoples, for example, hold the promise of effective change at these system levels.

5. **Center on the interests of impacted communities.** Value creators acknowledge that misalignment of interests among key stakeholders can obstruct systemic change in how forests and related lands are managed. Addressing head-on the needs of impacted communities facilitates the road to positive systemic change.

Value Creation and the Hybrid Business Model

As the usefulness of an explicit value creation approach became clearer, we came to understand how it could help moderate the externalization of costs that can come with a financially efficient approach and ultimately financially benefit companies, investors, and other stakeholders. Value creation did not replace financial efficiency, but could work in tandem with it in the short and long term in a hybrid model. Both are necessary in a world of systemic challenges. Effective value creation without the discipline of efficiency cannot address the economic demands of a complex world of eight billion people. On the other hand, unrestrained financial efficiency can lead to an unintentional degradation and destruction of the very systems upon which investors depend in the long term.

The more rigorous transition for forest and agricultural lands as currently managed from one of value extraction to a hybrid model incorporating value creation may be difficult. But it has the virtue of building the on current understanding that it is necessary to minimize current detrimental impacts on climate, biodiversity, and soil degradation, while preserving what is effective in current practice.

One substantial obstacle standing in the way of such a shift is that of cost. Currently, an estimated 608 million family farms produce approximately 80 percent of the world's food, operating on somewhere between 70 and 80 percent of global farmlands. Many of these family farms are large industrial operations. Small landholders, however, still "account for 84% of all farms worldwide, as per the available census information, but operate only around 12% of all agricultural land, and produce roughly 35% of the world's food."[3] The cost of a transition for these hundreds of millions of family farmers around the world must be borne by someone, with small landholders being particularly vulnerable. Altering the current practices of these large and small family farms by fiat alone won't be easy. We can see already the resistance from individual dairy farmers to the European Union's attempts to encourage a modest environmentally beneficial change in their current operations.[4] Large publicly traded corporations may turn out to be the most financially capable of withstanding transition costs.

The value creation models appear to be expensive and "inefficient" from a business perspective. To overcome that hurdle, a recognition of value creation's fundamental benefits and how they can be melded with current business models is necessary. Such a step is not inconceivable particularly when it comes to the largest corporations most likely to be able to bear the cost of such a transition. After all, we have made the transition to business models where the costs of such mandated practices as consumer product safety, employee safety and well-being, minimum wage requirements, safe disposal of toxic wastes, and the like are necessarily part of a responsibly run company.

Four industry-specific areas where we see that a hybrid business model for forest product companies can usefully incorporate a value-creation approach are:

- Preservation of resilient lands

- Supply chains as stakeholders
- Indigenous Peoples as key partners
- Alternatives to biomass as a source of energy

Business model change within each of these four areas will not be easy. But underlying all four is the need for a shift in point of view—a paradigm change—that allows for the concept that what may appear "inefficient" today may prove essential tomorrow.

Preservation of Resilient Lands.

Preservation of natural forests and healthy, resilient agricultural lands is of vital importance when confronting the challenges of biodiversity loss, climate mitigation, soil loss and degradation, and carbon sequestration. Nevertheless, how preservation can work in concert with the current value-extraction business model in a practical hybrid framework is not currently clear.

The efficiencies of the current models have produced vast amounts of food and wood products at generally affordable prices in a world of eight billion people. But in achieving this miracle, it has also allocated the majority of the Earth's habitable land for growing crops and raising livestock (46 percent) and commercial forestry (seven percent). The rest of that land remains primarily in forest and scrub lands, although in ever diminishing quantities.

Moreover, commercial enterprises encroach on many forested and lands otherwise set aside for public use through commercial concessions of various sorts. Increasingly, for example, mining concessions are sought for copper, lithium, nickel, iron ore, bauxite, and other metals crucial for the transition to a low-carbon energy future but located on remote, pristine lands that are the traditional territories of Indigenous Peoples around the world from Alaska and Northern Canada to Indonesia and Africa.

Pledges such as that of the G7 in 2021 to set aside 30 percent of global land for nature are driven by the knowledge that such lands are essential for the preservation of biodiversity, their ability to store carbon, and to moderate climate extremes.[5] Yet, in 2022, 4.1 million hectares of tropical forest were lost, the vast majority of that to non-fire-related causes, a ten percent increase over 2021.[6] How much of the Earth's remaining lands will in days to come be appropriated for maximizing financial returns without concern for preservation and conservation remains an open question, one difficult to resolve.

Nevertheless, mandating a balancing of preservation and extraction has numerous precedents, even when lands are in private hands. For example, since 1965, Brazil has had legislation requiring private landowners in the Amazon Forest regions to set aside 20% to 80% of their land and manage it for conservation, although that requirement has come under attack in subsequent years.[7] These days, wetlands when on private property in the United States and elsewhere are typically protected from development.

Closely tied to the preservation question is that of ensuring the health of arable soil around the world, a potentially existential challenge. An efficient value-extraction agricultural model has driven remarkable improvement in the productivity of agricultural lands over the last century. The productivity of agricultural lands in the United States grew 2.7 times from 1948 to 2019,[8] comfortably exceeding the

country's population growth from 146 million to 328 million. Moreover, it did so largely without increasing cropland under cultivation.[9] Increases in global productivity in the 1960s and 1970s at the height of the so-called "green revolution" came primarily from increased inputs such as new pesticides and fertilizers as well as breeds of high-yield crops.[10]

These successes kept pace with the rapidly growing populations of the 20th century, but its value extraction model has caused deteriorating soil quality. According to the Food and Agriculture Organization of the United Nations, the world is on track to see 90 percent of its agricultural lands degraded by 2050. As of 2015, it found that one-third of arable land in the world was already degraded.[11] Combined with the 12 million hectares of land being lost globally to desertification each year, this is a potentially existential problem for humankind.[12] This trend is already worrisome for China which, with less than 10 percent of world's arable land, must feed 25 percent of the global population.[13]

Soil health is one of the principal concerns of regenerative agriculture, which is particularly apt in increasing the biodiversity of the land. Although theoretically shifting substantial portions of agricultural lands to a wealth-creating regenerative approach would have multiple benefits, it would currently be a practical challenge. Among other things, such a transition takes time, is costly, and requires substantial investments of capital. The short-term hit to farmers' profits are a major obstacle and result in a misalignment of interests that is hard to overcome with subsidies that can create a "just transition." In part this misalignment arises from the fact that when regenerative agriculture is rigorously practiced lands are set aside to lie fallow to renew their fertility one out of every two or three years. Requiring such a reduction in land in productive agricultural use could not only hurt farmers' income but threaten food supplies.

Redressing the balance between lands managed according to regenerative principles and industrial agriculture with its risks of land degradation could be helpful, as could increasing the closely related practices of agroforestry (the combining of crops and trees in land management). The regenerative approach can not only help reduce harmful carbon dioxide emissions but also increase the resilience of agricultural lands to the external shocks of climate change: increased heat, drought, and flooding.

Many of the largest food producers these days have begun to make commitments to regenerative agriculture and assess its outcomes on soil health, carbon sequestration, biodiversity, water quality, and economic livelihoods.
Where the restoration of abandoned and degraded agricultural lands that are currently unproductive is the goal, emphasizing regenerative models would help soil health while adding to global food production.

A generally accepted business model that balances the need to provide the world's growing population with food and forest products with the need to preserve the intangible values of forested landscapes and the health of arable soils is an essential task if we are to face up to the challenges of global warming, extreme weather, and biodiversity loss.

Supply Chains as Stakeholders.

In many industries large companies outsource key services and products to extensive, complex supply chains of smaller entrepreneurs. This is true of forest- and agricultural-product industries where corporations often depend on networks of small and family landholders for their raw materials. To the

extent that these large companies are not the direct owners of these productive lands, they have in effect offloaded the responsibility for how these lands are managed. Financial efficiency drives this practice, in part because it allows for a diversified supply base of committed, locally knowledgeable landowners. In doing so, it places the burdens of the cost and management of environmental challenges on them as well.

The need for preservation of arable soil has long been a concern and is increasingly so as the 21st century progresses. For large corporations that have supply chains in the thousands, sometimes the tens of thousands, addressing this issue can be a complex challenge involving what is in effect a new business model on these suppliers.

Initial steps in this direction, for example, involve their current contracts with suppliers that often set standards for quality, quantity, and price. Firms have begun to amend these to include expectations for sustainability, labor practices, human rights, and ethical behavior, among other things. But for companies to measure, monitor, and enforce these new requirements requires substantial costs—costs that must be shouldered either by themselves or by their suppliers. Ongoing third-party certification of suppliers in their networks is an option, but it is costly—too costly for many small landholders to absorb.

From the contractors' perspective, these supplier-related costs are in effect uncompensated. The whole point of outsourcing to small landowners is to cut costs. If building sustainability considerations into their supplier contracts entails uncompensated costs of training or subsidizing their suppliers, they must either squeeze their suppliers' margins, raise their customers' prices, or accept lower returns.

In short, forest- and agricultural-product companies are confronted with the limitations of a solely financial efficiency business model for their supply chains. Acknowledging the need to address this challenge is the first step that contractors can take on the way to a hybrid model that builds in a balancing component of value creation.

Indigenous Peoples as Key Partners

Currently, forest and agricultural products companies have little in the way of proven business models for incorporation of Indigenous Peoples and their approaches to stewardship of land. Without a hybrid stewardship model that includes Indigenous Peoples, the incentives for value extraction will continue to lead to the degradation and exploitation of public and private lands.

Historically, most of the dominant governments and large corporations of today have systematically dismissed the practices and philosophies of Indigenous Peoples as irrelevant to the modern world, if they considered them at all. In the 20th century, government models for national parks around the world, for example, have forced Indigenous Peoples to give up traditional land-use rights and leave these protected areas.[14] Similarly, in recent centuries, business interests have acquired legal rights for land that Indigenous Peoples had historically established through rights of usage. Once established, these legal rights allow free rein to extract value as efficiently as possible without the integration of stewardship and value creation principles of the Indigenous Peoples who had previously occupied them.

The 21st century system-level challenges of biodiversity loss and climate change, however, are forcing reconsideration of this model. The need to protect forests in particular and nature in general is increasingly recognized by governments and businesses alike. In 2022, 140 countries pledged to halt all

deforestation by 2030. According to one study, just over 16% of lands around the world had been formally "protected" by governments as of 2021.[15] But the no-deforestation efforts are off to a slow start.[16] As it turns out, setting aside lands as protected and actually protecting them are two different things, with one-third of protected lands found to be degraded by human activity as of 2018.[17] Nevertheless the principle of mandated rights for Indigenous Peoples is not unheard of. For example, the Brazilian national constitution memorializes the rights of Indigenous Peoples in the Amazon to their traditional lands, although those rights are frequently ignored in practice.[18]

Indigenous Peoples are well positioned to play a key role in the stewardship of protected lands and biodiversity hotspots if they are provided opportunities to do so without threats or risks to their lives or safety.[19] They make up approximately six percent of the world's population but, according to the Food and Agriculture Organization, they manage "about 40 percent of all terrestrially protected areas and ecologically intact systems worldwide." The FAO cites academic studies showing that "[d]eforestation rates tend to be lower on Indigenous Peoples' lands than in surrounding forests, including in protected areas,"[20] although examples of controversies over their management of such lands also exist. Respecting their desire to participate in, and proven record of sustainable management of, their traditional forest lands, governments around the world have begun to partner with Indigenous Peoples as they seek to reach goals for protection of ecologically valuable lands. Canada and Australia are among these.[21]

Implicit in these developments is the increasing recognition of the importance of Indigenous Peoples' practices in preserving the long-term intangible value of forests and related lands at relatively low costs and in ways that add value through their contribution to the long-term resilience and ecological sustainability of large tracts of undisturbed lands.

Alternatives to Biomass as a Source of Energy

Among major industries, forest- and agricultural-product companies have an unusual relationship to energy sourcing on-site energy. They can burnt their own production wastes. In addition, if they choose, they can also market their primary products for a secondary use: as fuel.

The current value extraction business model leads corporations to the environmentally questionable practice of burning forest and agricultural production wastes and even their own products for energy. Other uses of these wastes and the lands on which these products are grown can have more beneficial environmental use or, in the case of agricultural products, do more to feed a hungry world. Were these industries to use a hybrid model of value creation balancing value extraction, they could avoid the dilemmas posed by these questionable practices.

For forest product companies, bark, woodchips, sawdust, branches, and spent bleaching chemicals can fuel their on-site mills and other operations. These production wastes can provide as much as 70% of a mill's energy needs.[22] Some firms describe these fuels as "carbon neutral" because they substitute for fossil fuels. They are, nevertheless, more carbon intensive than alternatives such as wind and solar power. Efficiency, however, drives companies to burn these wastes on-site to save the cost of their disposal and of acquiring other fuel. The environmentally preferable alternative is to find another use for these wastes—a profitable one if possible—that did not release their stored carbon so quickly into the atmosphere while shifting their fuel to low-carbon sources such as wind, solar, or the like.

In addition, some forest product companies are in the "wood pellet" business. Wood pellets are simply trees processed so that they can be burned as fuel rather than for construction, furniture, or paper products. Doing so violates a basic principle of circular economy: keep a product in its original form as long as possible, with incineration being the last and least desirable option.[23]

Similarly for agricultural companies, certain of their wastes can be burned for fuels: rice husks, for example. More controversial is the converting of corn to ethanol to be used as an additive to gasoline. Even if the energy needed to produce a gallon of ethanol were less than the energy it generates when burned, the amount of fertile land used grow corn that could otherwise help feed the world is staggering. About 90 million acres of land in the U.S. is now planted in corn and approximately 45 percent of corn production ends up being converted to ethanol.[24]

Financial incentives and questionable subsidies drive these practices in the forest and agriculture industries. Finding business models that can produce more desirable results is not an easy task. But for value creation to counter the undesirable outcomes of the present models, this challenge must also be addressed.

Investors' Role as Value Creators

If left unchecked in the forest-related industries, a financial-efficiency-only model runs the danger of exacerbating the 21st century systemic risks of biodiversity loss and climate change, with their global reach and undiversifiable attributes. . If the maximization of financial efficiency is allowed to undermine the fundamental social and environmental systems, including forest and agricultural lands, upon which the economy depends, all investors will suffer. The task of alleviating poverty and providing an acceptable standard of living for the eight billion plus people in this world cannot succeed if the value of these lands as viable social and environmental systems is disrupted, undermined, and destroyed.

A hybrid business model that manages lands for long-term resilience can temper financial efficiency's drawbacks and complement its virtues. If the maximization of financial efficiency is allowed to undermine the fundamental social and environmental systems, including forest and agricultural lands upon which the economy depends, all investors will suffer. The task of feeding and providing an acceptable standard of living for the eight billion plus people in this world cannot succeed if the value of these lands as viable social and environmental systems is disrupted, undermined, and destroyed.

Implementing a hybrid model may be difficult but it is, we believe, a viable way forward in the complex, interrelated, technologically and financially powerful society of today. Because the greatest 21st century challenges are systemic, they will impact all industries; because these industries' business operations differ from one and another, these hybrid models will differ from industry to industry.

For the forest-product companies and related agricultural industries, the four operational challenges identified here are, in our view, where fundamental change can have the greatest positive impact at a system level. When taken together, they embody a cohesive shift in the fundamental model, or paradigm, driving their business itself. The hope is that the transition to a hybrid model that strikes a balance between resilience and efficiency will engender environmental and social systems that produce those outcomes needed to contend with these 21st century challenges.

Steps that investors can take to encourage these industries to make this transition are described below. They entail use of tools designed to bring about change at a system level such as engagement with industry standard setters, public policy advocacy, collaboration with their peers, and the like. In pursuing these opportunities, investors can play a constructive role in ensuring the viability of the fundamental social and environmental systems relating to forests and agricultural lands on which they ultimately depend.

All four pose difficulties in implementation: they require modifying proven efficient value-extracting models for a hybrid model. For each, we highlight specific initial steps that investors and those firms in which they invest can take with relative ease. Some investors and firms have begun to recognize and explore these incremental advances. In addition, we highlight the more difficult business-model transitions that must also occur.

Investors and Preservation of Resilient Lands

As investors, we rely on the resilience of the complex natural systems with which nature has endowed us. If left unchecked, current models that focus solely on maximization of value extraction from these resources can disrupt, consume, and destroy their resilience and consequently undermine a firm foundation on which we depend. Once past its tipping point, resilience of this sort cannot easily be restored. At best, restoration is more costly than preservation and in some cases may simply be impossible.

As the Earth's population has skyrocketed from approximately one billion in 1800 to more than eight billion a mere 250 years later, the amount of land allocated for commercial forestry and agricultural purposes has followed suit. Of the 71 percent of the world's habitable land, approximately 46 percent has been appropriated for agriculture, leaving 38 percent in forested areas and an additional 14 percent in scrub lands.[25] Among forested lands, planted forests and plantations account for seven percent and an additional 23 percent are natural forests, some of which are used to a greater or lesser extent for commercial purposes.[26]

As the world's population continues on this trajectory to ten billion by the end of this century, pressure to convert additional natural forests to commercial agricultural use will increase. Unless value creation models are incorporated to slow or reverse this conversion, more forest and scrub lands will be lost along with their intangible value.

Specific Initial Steps

Among the initial steps that investors can take on the road to the incorporation of value creation into the current business model with regard to preservation of resilient lands are the following:

- *Adopt and implement "no-deforestation" policies.* Many investors and companies already have adopted such policies formally or informally for themselves and require them of their supply chains. The challenge now for investors is to ensure the rigorous implementation of these policies.

- *Support public policy initiatives* with a no-deforestation focus. Regulations at local and national levels that would favor or require "deforestation-free" guarantees for products sold are currently under consideration in the United States and Europe. Investors can support their adoption.
- *Advocate the adoption of "high conservation value" (HCV) principles and practices* for land-owning companies. Support the *creation and preservation of "intact forest landscapes."* Both concepts are currently well defined. Investors can encourage forest and agricultural product companies to integrate them into their business practices. Some forest-product companies already use HCV principles in their management of environmentally sensitive lands.
- *Support and respect government designation of forest lands for preservation and conservation*. Investors can encourage companies to pursue philanthropic initiatives that set aside lands for conservation and preservation. A number of firms already donate land to conservation causes.

Similarly, investors can encourage firms to carefully limit their pursuit of commercial concessions on public lands. Recently, companies have had to consider whether to bid on oil concessions in the Democratic Republic of the Congo and mining in protected forests in Alaska, Northern Canada, Indonesia, and other countries. Frequently at issue in these situations are tensions between the economic development and the preservation of environmentally or culturally sensitive lands. An appropriate balancing of these competing interests will require consideration of local as well as broader contexts.

Long-Term Transitional Initiatives to a Hybrid Model

Incorporation of preservation as a value-creation tactic requires a fundamental change in the assumptions underlying current value-extraction models. Two elements of such a shift in paradigm are as follows. Neither is common practice or typically seriously considered, but both are necessary if fundamental change is to take place.

- First, c*onsider preservation as a profit-and-loss undertaking.* Investors can encourage companies to treat what they now consider as a philanthropic activity regarding preservation of forests and related lands as instead a business-line item. In the same way that Research & Development is a business asset-allocation decision, so can firms consider preservation of forest and agricultural lands as an investment—specifically an investment in underlying systems upon which they depend and a hedge against an uncertain future.
- Second, f*ormalize recognition of the intangible value of preserved natural land.* Investors and corporations can incorporate considerations of the intangible value of preserved natural lands as a substantive asset in their investment and asset-allocation decision-making. These intangibles are similar to those of reputation, patents, trademarks, and lists of customers, which are already incorporated into decision-making by investors and corporations.

For investors and companies, the challenge no longer is establishing the importance of preservation in the management of forests and related lands. It is that of integrating that principle into their core business model in a hybrid approach that incorporates its potential for preservation of that long-term intrinsic value of forests and related lands that is essential for their long-term investment opportunities. This is a substantial departure from their treating conservation as essentially a philanthropic activity that is not core to their business operations.

Investors and Supply Chains as Stakeholders

By relying on extensive supply chains of small landholders and family enterprises, large forest- and agricultural-products companies have established low-cost, decentralized, and diversified sources of raw materials for their operations. Small landholders in these networks can number in the thousands, even tens of thousands. Currently, companies manage these networks through contracts with individual landholders that set requirements for the quantity and quality of their deliverables. This model has proven to be cost effective and efficient, enabling the transfer of risk to suppliers, and sparing the large firms from the direct responsibilities of ownership.

As complex 21st century challenges such as climate change and biodiversity loss have emerged, however, these firms face a dilemma: if they acknowledge the importance of these challenges and their responsibility to contend with them, they should in theory ensure that their supply chain addresses them as well. But how can they do so without undercutting their own profitability?

Not surprisingly, cost is the chief obstacle to implementation of a hybrid business model here. For small landholders, the requirements of environmental certification programs, for example, can be prohibitively high, while their contractors would not be financially compensated for training and monitoring them. Neither party wants to absorb this cost of doing business.

Historically, government has stepped in to require that businesses absorb costs for such things such as pollution control, waste disposal, workplace safety, workers compensation insurance, minimum wage guarantees, and the like. But the emergence of complex supply chains for efficiency reasons has complicated the picture. The large firms have simply outsourced the responsibility for the management of lands they would otherwise have to own.

In addition, the recently implemented UN Guiding Principles on Business and Human Rights has stressed the responsibilities for firms and their suppliers to understand and act upon their impacts with regards to human rights. This has in turn led to increased due diligence expectations and regulations.

For investors, encouraging companies to adopt a hybrid model that invests in the value creation aspects of their supply chain can help address challenges that a value-extraction model poses by ensuring the long-term environmental and financial sustainability of these supply chains on which they are dependent. The apparel and footwear industries have long had to deal with the challenge of fragmented, convoluted supply chains. Lessons learned from contending with their challenges may prove useful for forest- and agricultural-product firms and their investors as well.

Specific initial steps

Among the initial steps that investors can take on the road to having forest- and food-product companies incorporate a value creation model with regard to supply chains are the following.

- *Maintain credible certifications for supply chains*. Investors can work to ensure the credibility of third-party certification programs such as that of the Forest Stewardship Council and corresponding agricultural certification schemes. They can communicate to certification bodies the need for rigor in these standard setting processes, as they have occasionally done in the

past. They can also encourage large firms to help make certification affordable for small landholders. Some, for example, are experimenting with group certifications to reduce costs.

- *Ensure effectiveness of implementation.* Investors can encourage large firms to shoulder the costs of monitoring the effectiveness of their supply chains' implementation of commitments to address systemic risks. Some firms have begun to experiment with geographic information system (GIS) monitoring; others have established in-house certification subsidiaries; yet others offer specialized training services.
- *Advocate a transition to more resilient practices.* Investors can encourage the large contractors to drive home the need for resilience in their supply chain's forestry and agricultural practices. Biodiversity is key to ensuring resilience: by definition, mixed-species plantings are more diverse than monocultures. Agroforestry—the combining of trees with crops—offers advantages for biodiversity and carbon sequestration. Some pilot programs are currently underway with agroforestry in coffee, cocoa, and rubber tree plantations. More challenging is the incorporation of agroforestry into tree plantations that require felling of the trees.

Long-Term Transitional Initiatives to Hybrid Value-Creation Models

Driving the value-creation principles into supply chains with regard to systemic resilience through biodiversity, carbon sequestration, and mitigation of climate extremes requires a fundamental change in the assumptions underlying current value-extraction approaches. Without financial incentives to make this transition, small landholders are unlikely to take on the burden of what is being asked. Identifying funding to make this transition is essential if a hybrid value creation/extraction model for supply chains is to be realized.

Transitions away from purely efficient monoculture models can be time-consuming and expensive. Investors can advocate for funding to facilitate these transitions among landholders in forestry and agricultural supply chains. Several sources for funding are possible.

A handful of large agricultural products companies have started to help fund such transition by suppliers. Occasionally they draw on their charitable contributions budget to do so, but unless such expenditures are viewed as a business expense, akin to research and development, they are unlikely to be made at a scale and over the extended timeframe necessary for substantial impact.

Governments around the world are capable of subsidizing this transition in large part, should they choose to do so. According to the International Monetary Fund, they provided $1.3 trillion in direct subsidies to the fossil fuel industry in 2022. Including indirect subsidies this figure totaled approximately $7 trillion.[27] In the United States, the government directly subsidizes farmers to the tune of $28.5 billion in 2021.[28]

By shifting current fossil fuel subsidy supports from fossil fuels and directing more to agricultural subsidies for climate friendly programs, governments can hasten the necessary transition. Some have already started down this road. The European Union, for example, has earmarked approximately $26 billion dollars to aid in farmers' transitions or to pay them to sellout.[29] The Biden Administration has initiated a $3.1 billion "climate smart" program for farmers. Included in it are funds for transitioning to such regenerative agriculture practices as no-tilling and planting cover crops.[30]

In addition, an opportunity exists for governments to issues "green" or "sustainability" bonds to help fund these transitions, with "debt-for-nature" swaps being a different funding option.

Funding will help in this transition, but alone it is not sufficient if those in the supply chain do not see the long-term, system-level benefits of pursuing this path. Investors can continue to promote the intangible benefits that ensuring resilience at a system level brings.

Resolving both the funding and alignment-of-interests dilemmas depends on clarifying the virtues of a hybrid value creation/value extraction business model. Investors can play a key role in this process through engagement with companies, governments, and civil society organizations, as well as communications with peers and the general public.

Investors and Indigenous Peoples as Key Partners

In many cases, forest and agricultural product companies have difficulty incorporating the concern of Indigenous Peoples into their business models. The former's unrelenting emphasis on financial efficiency can run headlong into the latter's sense of obligation to steward natural resources for future generations. Moreover, corporations have relied on the rule of law and individual property rights to take from Indigenous Peoples lands that their traditional rights of usage have long established. One of the ironies of the 21st century challenges of climate change and biodiversity loss is that their existential threats to our current ways of life suggest that responsibility to future generations cannot be so easily ignored.

How to integrate these often-conflicting models for land management is a substantial challenge. One emerging approach is partnerships in the stewardship of such lands. Models where Indigenous Peoples are integrated as key partners are now emerging as a potentially viable way forward. Canada and Australia have recently explored such partnership approaches. Since governments around the world have claimed legal rights to the vast majority of natural forests and scrub lands, they must also play a leading role in this partnership approach. At the same time, Indigenous Peoples with long histories of sustainable living practices and stewardship on many of these lands, are well positioned to also play a key role as well. The role of for-profit corporations in these partnerships is less clear.

Nevertheless, forest- and agricultural -product companies can support the emergence of productive partnerships that allow value creation through environmental and community benefits to become part of the discipline of the management discipline for substantial parts of Earth's land, while value extraction is held within appropriate bounds.

Specific Initial Steps

Among the initial steps that investors can take on the road to having companies incorporate a value creation model with regard to Indigenous Peoples are the following.

- *Support Free Prior and Informed Consent.* Human rights advocates have long emphasized the importance of obtaining Free Prior and Informed Consent (FPIC) from Indigenous Peoples before corporations' access to traditional lands are granted. Investors can pressure companies to adopt

and implement formal FPIC policies. Credible "best practice" guidelines for conducting these consultations have been developed by organizations such as the Accountability Framework Initiative, Cultural Survival, the Food and Agricultural Organization of the United Nations, and others.

- *Enter into ongoing dialogues.* When engaging with companies in their portfolios that have controversies regarding Indigenous Peoples, investors can ensure that they include input from these groups as well as corporations in their evaluation of what often are complex situations.
- *Encourage resolution of land ownership and usage disputes.* Many conflicts between Indigenous Peoples and corporations revolve around their rights to use and control the use of lands in systems of common usage independent from the formalities of legal ownership. Investors can encourage the resolution of such disputes.
- *Support public policies creating partnerships with government.* Investors can generally advocate partnership approaches with key roles for Indigenous Peoples and the financial support from government often needed to carry them out.

Long-Term Transitional Initiatives to Hybrid Value-Creation Models

- *Advocate the principle of preservation of the value of lands for future generations.* Investors can explicitly recognize the legitimacy of approaches that steward lands for use by future generations. This concept is built into the definition of sustainable development and the Sustainable Development Goals. It should not be a stretch for investors to embrace similar Indigenous Peoples' approaches.
- *Communicate with Indigenous Peoples in advocacy for the protection of their rights of usage for traditional lands.* Endorsement of the concept of value-creation for future generations implies that investors incorporate it as a core part of their value-creation business model. Increased communications with Indigenous Peoples may help in deepening their understanding of this long-term approach. Communications, however, will need to overcome a long history of broken promises.

Investors and Alternatives to Biomass as an Energy Source

The forest-product industry is unusual in that the by-products of its manufacturing processes (branches, bark, woodchips, sawdust, and spent bleaching chemicals) are well-suited as an energy source for the boilers at its own plants. Financial efficiency and value extraction naturally dictate that they be put to that cost-effective use.

To a certain extent this reuse of its production wastes a part of a circular economy: waste outputs from one process become inputs for another. One of the foundational circular economy principles, however, is that material be kept in its original form as long as possible: its incineration is the last and least desirable reuse option. In the case of forest-product wastes, this is because burning them releases carbon immediately into the atmosphere. From an environmental perspective, finding other uses for these wastes is preferable. Black liquor, left over from bleaching the lignin out of pulp, for example, can become an input in the making of cement.[31] Wood chips can be applied to soil as part of regenerative agriculture practices.[32]

Equally problematic is the direct transformation of trees into wood "pellets" for burning as an alternative to fossil fuels, short-circuiting other uses for those trees that could extend their usefulness in carbon sequestration or biodiversity preservation. Wood pellets for energy are frequently referred to as "carbon neutral," on the grounds that the carbon stored in this wood would eventually be released into the atmosphere anyway. But those trees, if left standing, would continue to store carbon and preserve biodiversity; in addition, they could later be used for lumber, paper or other products, thereby delaying the release of that stored carbon. In addition, the burning of wood for fuel contributes to air pollution in the form of particulates with their harmful health implications for workers and communities.

A similar case can be made that the burning of food products for energy is not only environmentally, but also societally, questionable. As noted above, in recent years corn has become an important feedstock for the production of ethanol. Among its many uses, ethanol is now a common non-fossil-fuel additive to gasoline. Even if the energy needed to produce a gallon of ethanol (i.e. growing and processing it) were less than the energy it generates when burned, the amount of fertile land used to grow it that could otherwise help feed the world is staggering. About 90 million acres of land in the U.S. are now planted in corn and approximately 45 percent of that corn production ends up being converted to ethanol.[33] Government subsidies play a role in ensuring that this process remains profitable.

In short, burning trees and their production wastes or converting food to fuel may make sense as a financial model, but other uses are preferable from an environmental and societal perspective. Transitioning from this value-extraction model embedded in the current system to an alternative model that gives full weight to their value creation potential will not be easy.

Specific Initial Steps

Among the initial steps that investors can take on the road to having companies incorporate a value creation model with regard to maximizing the value-creation of biomass are the following.

- *Advocate the use non-carbon-based fuels.* Advocate the use of non-carbon-based fuels such as wind and solar power as primary energy sources throughout the forest products industry.
- *Support firms that don't incinerate carbon-based waste.* Support companies that devote research and development to alternative uses of wood-waste biomass now burned for energy, in keeping with the Paris Agreement on climate change and its pledge to keep climate change in check.

Long-Term Transitional Initiatives to Hybrid Value-Creation Models

- *Support public policies* that minimize subsidies for agricultural products converted to energy production.

Conclusion

Investors and corporations can benefit from the creation of hybrid value creation/extraction business models at these four leverage points within the forest- and agricultural-products industries. These models can help preserve the fundamental asset of healthy and resilient soil and environmental

systems so crucial to investors' long-term opportunities. In doing so, they can help mitigate climate change and loss of natural assets with intangible values, losses that pose challenges to our economy and hence to investment opportunities. Collectively, these hybrid models represent a paradigm shift, a transition to an altered approach that can minimize the undesirable outcomes of a financial efficiency-only model and generate more desirable outcomes from the outset.

This approach can be embedded in corporate practice and the financial system to help ensure that future policies and products will no longer exacerbate 21st century challenges so potentially disruptive to our economy. One initial step down that road is the recognition that a hybrid approach allows both resiliency and efficiency to exercise their influence and creates a flexible balance between the two that can adjust to the ever-changing contexts of the future.

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