

EXECUTIVE SUMMARY

THE BUSINESS OF PLANTING TREES

A Growing Investment Opportunity



WORLD
RESOURCES
INSTITUTE

The Nature
Conservancy 

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HIGHLIGHTS

- In recent years, hundreds of companies have entered the landscape restoration industry, forming an emerging “restoration economy.” They represent a wide range of business models that deliver financial returns for investors while restoring forests and agricultural lands.
- This report highlights four promising investment themes in land restoration: technology, consumer products, project management, and commercial forestry.
- We provide snapshots of 14 companies that restore land; the profiles are based on extensive research, field visits, and interviews with their senior management.
- Entrepreneurs continue to develop new opportunities that create value for investors as well as local communities and the planet.

Context

Population growth and expanding consumer demand are placing immense pressure on the earth’s natural resources. The human population has more than doubled over the past 50 years and is projected to rise further, from 7.3 billion in 2015 to 9.8 billion by 2050 (UN 2017). Demand for food is likely to increase by 46 percent between 2017 and 2050 (Ranganathan et al. 2016), while global demand for industrial roundwood will rise by 49 percent from 2013 to 2020 (FIM 2015).

Signs of degradation can be found in almost every ecosystem in the world. One-third of agricultural landscapes were degraded in 2010, temporarily or permanently lowering the productive capacity of land (FAO 2011). Also, the world loses 7.6 million hectares (ha) (18.8 million acres) of forest every year—an area about the size of Panama. It also gains 4.3 million ha (10.6 million acres) of forest annually, as a result of planted or naturally regenerated forests, but there is a net loss of 3.3 million ha (8.1 million acres), or an area the

size of Taiwan (FAO 2015). This loss has a direct impact on local communities that depend on the land, and it also exacerbates other environmental issues. For example, deforestation accelerates climate change as the carbon stored in soil and trees is released into the atmosphere. The dual issues of resource demand and environmental degradation—coupled with land’s inherently limited availability—make clear that the way we currently use land is unsustainable.

This challenge offers an opportunity for businesses and entrepreneurs. As we encounter constraints in the planet’s resources, pressure is growing to find new ways to enhance productivity and recover lost natural assets. Land restoration offers a path forward. Companies that develop profitable and scalable business models for restoration have the potential to grow substantially.

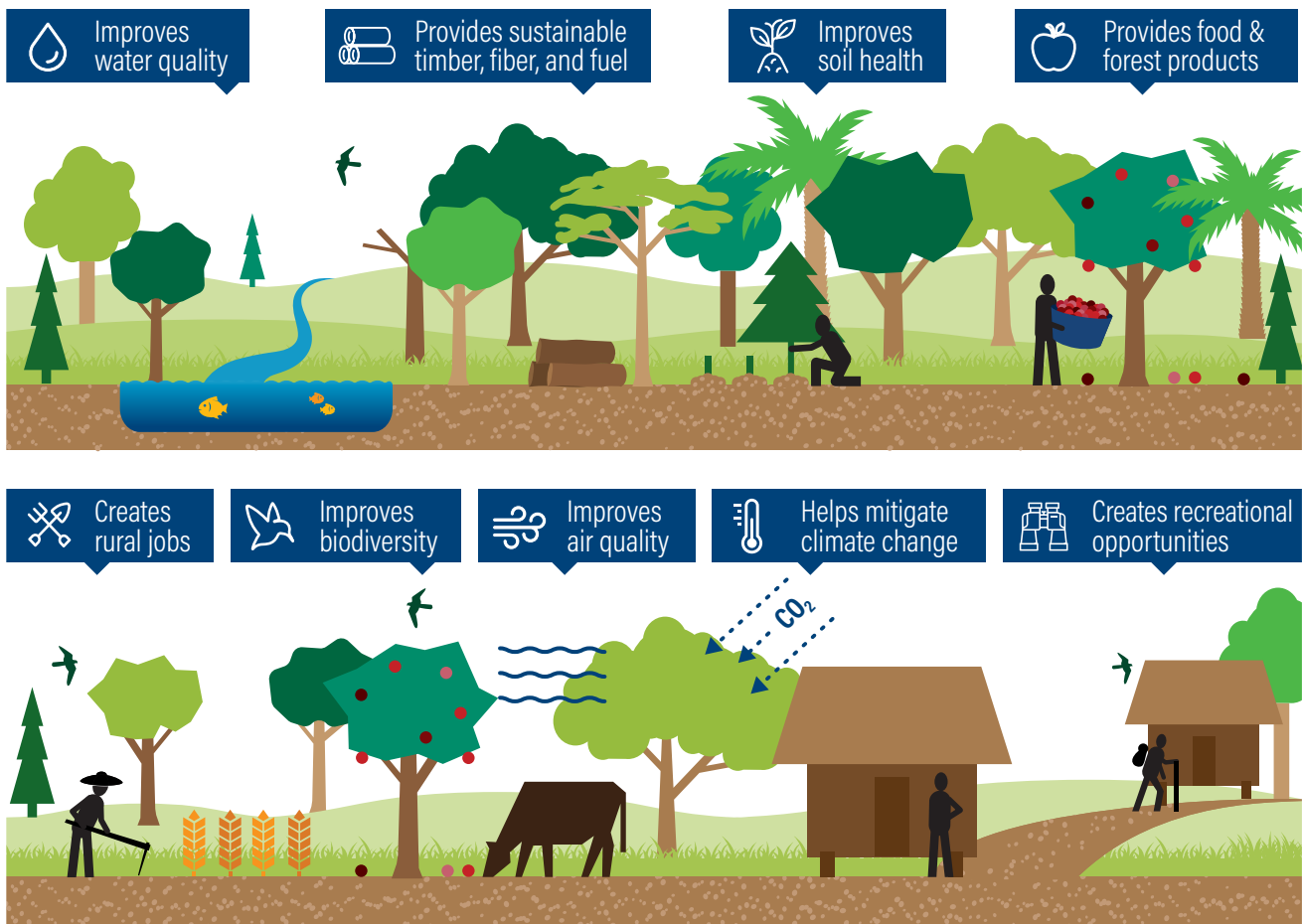
What Is Restoration?

In this report, we define *restoration* as an activity that improves the ecological function of a degraded landscape. We focus primarily on tree-based restoration, which can range from reforestation—completely replanting a deforested area with trees—to agroforestry—establishing agricultural systems that incorporate trees. Figure ES-1 shows the benefits of planting trees.

***Restoration economy* refers to the network of businesses, investors, and consumers that engage in economic activity related to restoring land.** Given the wide array of benefits restoration can provide, end markets for restored forests and landscapes range from sustainable timber to consumer products to livestock feed.

There are no official measures of the size of the global restoration economy. This is not surprising because restoration spans a broad range of industries, ecosystems, and regions. At the national level, data are similarly scarce in most countries. In the United States, a 2015 study estimated that the American restoration economy generated US\$9.5 billion in annual economic output and created an additional \$15 billion in indirect and induced output (BenDor et al. 2015). The study found that the ecological restoration industry employed 126,000 Americans in 2014, exceeding jobs in coal mining by 59 percent.

Figure ES-1 | Benefits of Tree-Based Restoration



Source: WRI.

About This Report

Since early 2016, the World Resources Institute (WRI) and The Nature Conservancy (TNC) have been researching businesses that restore land (Box ES-1). This undertaking was motivated by the fact that some investors would like to invest in land restoration but are not sure how they will earn a financial return. Through Initiative 20x20 and the African Forest Landscape Restoration Initiative (AFR100), we have helped mobilize more than \$2 billion in commitments from investors in Latin America and Africa to allocate a part of their portfolios to restoration investments. This capital is ready to be deployed, but it requires investable deals.

This report is primarily targeted toward long-term investors who make direct investments of, on average, between \$500,000 and \$10 million in private companies. This category includes venture capital, private equity, and impact investors; national and multilateral development banks; and grant-making organizations. All these categories of investors are represented among those who have financed the businesses discussed in this report.

This publication will also interest potential entrepreneurs who would like to reverse the cycle of land degradation. By presenting real-world examples of companies that generate revenues from restoration, entrepreneurs will gain

insights into what business models exist. They can contact some of the highlighted enterprises to learn about their business model and operational setup. This may enable them to avoid early pitfalls and have a higher chance of success.

Commercial investment in restoration has been limited to date. There are several reasons for this. The proof of concept is often lacking because many of the business models are new. The

BOX ES-1 | THE WORLD RESOURCES INSTITUTE AND THE NATURE CONSERVANCY'S APPROACH

The New Restoration Economy at WRI

Launched in early 2016, the New Restoration Economy (NRE) is part of the Global Restoration Initiative at WRI. NRE's mission is to foster enabling conditions for the growth of the restoration industry. We believe that businesses and markets have the potential to scale up restoration rapidly and deliver financial, environmental, and social benefits. We have engaged with numerous restoration businesses around the world, researching barriers to scale and identifying solutions. NRE has taken a similar approach with financiers, reaching out to a range of investors to understand their perspective on restoration.

Natural Climate Solutions at TNC

The Natural Climate Solutions initiative at TNC has demonstrated that natural climate solutions—ways of storing and reducing carbon emissions through better management of the world's forests, grasslands, and wetlands—can deliver at least one-third of the emission reductions needed by 2030 (Griscom et al. 2017). In addition, investing in nature brings numerous cobenefits such as clean water and air, sustainable food production, and wildlife habitat. TNC is working to deploy natural climate solutions at scale to promote sustainable development, economic growth, and a low-carbon future.

small deal sizes involved have not been relevant to most institutional investors, and the long time horizon required—of five or more years—has further limited capital inflows. Nonetheless, our research indicates that business model development has advanced substantially, and rapid growth means investment sums are also rising.

Our Approach

We conducted a broad search for companies whose core value proposition is linked to restoring degraded land. We summarize the process briefly here and explain the methodology in more detail in the next section of the report. Based on a detailed analysis, we decided to focus on three countries: Brazil, Kenya, and the United States. The search gradually expanded as we discovered innovative enterprises in other nations. Eight countries are represented in this report.

In total, we analyzed around 140 businesses. The list is by no means comprehensive, and we assume it represents a small fraction of the corporate universe. Through online research, interviews with management, and field visits, we narrowed the list to 14 companies on the basis of the following five criteria that encompass the extent to which a company is:

- **Profitable:** Does the enterprise make money today (or will do so in the future)?
- **Scalable:** Does the company have the potential to become much bigger than it is today?
- **Replicable:** Can this concept be replicated in other regions by other businesses?
- **Environmentally beneficial:** Does the enterprise result in degraded lands being restored?
- **Socially beneficial:** Does the company have a positive impact on people?

Each company's core value proposition to customers centers on land restoration.

The businesses recognize that the status quo of continued environmental degradation is incompatible with growing demand for natural resources and that sustainable land management presents a significant commercial opportunity.

This is the only assessment to date that focuses exclusively on commercial businesses that restore land. Although there has been interest from governments and nonprofits in examining restoration projects broadly, we noticed an information gap in profit-oriented models suitable for private investment, which prompted our focus in this area.

Findings

Our research indicates that four themes are prominent in the emerging restoration economy. Companies are adopting a wide range of approaches to restore land, and these four themes appear to offer promising growth trajectories. Table ES-1 summarizes these themes and lists the businesses profiled in this report, while Figure ES-2 shows the companies on a map.

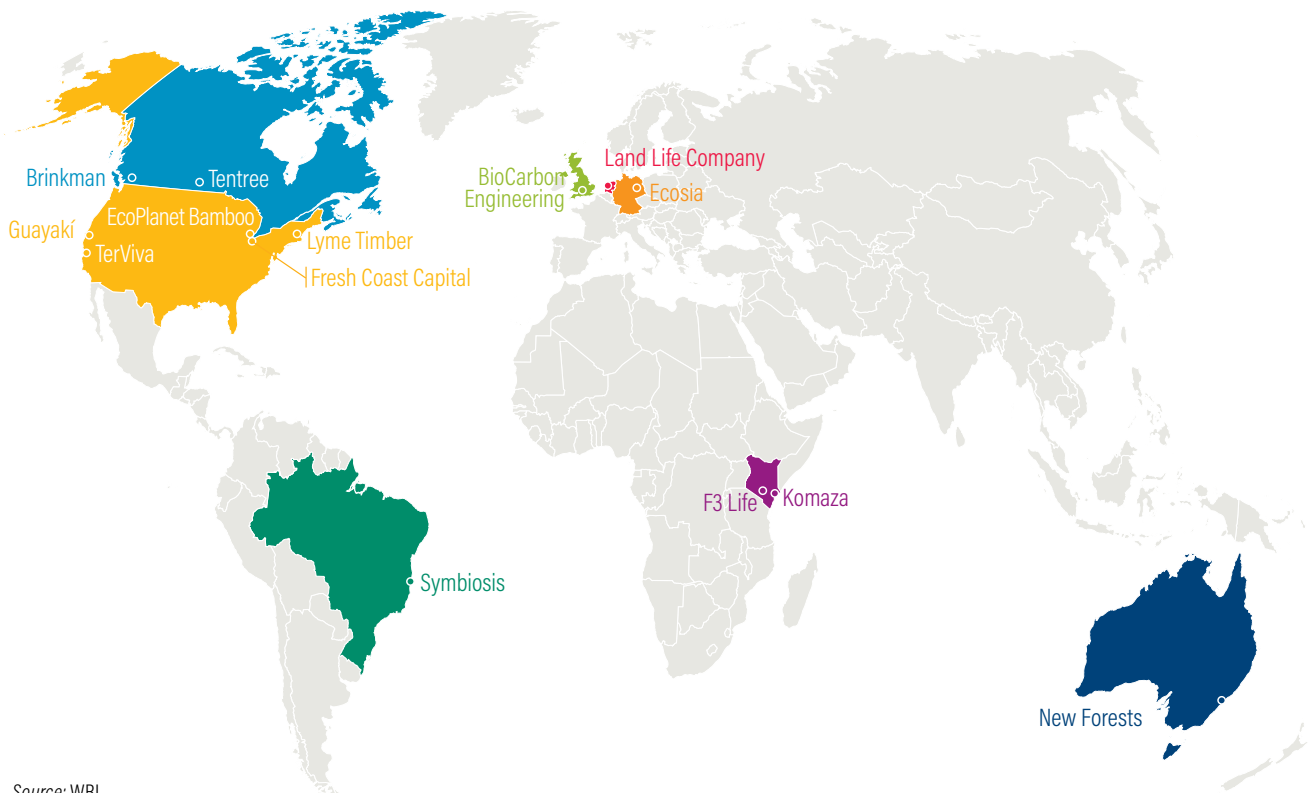
The variety of the business profiles demonstrates the breadth and depth of the restoration economy.

- They range from pre-revenue enterprises to businesses with more than \$50 million in sales.
- Some have been around since the 1970s; many started in the last few years.
- Company size ranges from fewer than 10 employees to more than 450 employees.
- Target markets range from middle-class consumers to large financial institutions.

Conclusion

We hope the information presented in this report serves as a starting point for investors to understand the growth opportunity in the restoration economy. They may be interested in exploring certain categories further—for example, the intersection between technology and restoration—or they may want to learn more about specific companies. For those who want to join the wave of entrepreneurship, this report highlights bright spots of innovation.

Figure ES-2 | Location of Headquarters of Companies Profiled in This Report



Source: WRI.

Table ES-1 | Investment Themes and Businesses Profiled in This Report

THEME	DESCRIPTION	COMPANY	BUSINESS ACTIVITY
Technology	Companies that develop and deploy technology to facilitate restoration, often by improving efficiency and lowering costs.	BioCarbon Engineering	Uses specialized drone technology to reforest remote landscapes.
		Land Life Company	Patented a product that enables trees to grow in dry and degraded land.
		TerViva	Plants pongamia (<i>Millettia pinnata</i>) on distressed agricultural land.
		F3 Life	Enables access to credit for smallholder farmers in Kenya.
Consumer products	Companies that sell products to the end consumer, often using materials from their restoration activities or sponsoring restoration projects.	Guayakí	Sells beverages made from yerba mate grown in restored Atlantic rainforest.
		Tentree	Apparel company; plants 10 trees for every product sold.
		Ecosia	Online search engine; uses its profits to plant trees.
Project management	Companies that develop, implement, and manage restoration projects from start to finish on behalf of their clients. Often driven by government pledges or policies.	Brinkman and Associates	Manages large government projects in Canada and tropical plantations in Latin America.
		Fresh Coast Capital	Does large-scale urban revitalization in U.S. cities.
Commercial forestry	The management and harvesting of trees for timber and wood fibers. Only those plantations that plant trees on degraded land are considered restorative.	New Forests	Manages sustainable timber plantations and conservation investments.
		The Lyme Timber Company	Acquires and manages working lands under working forest easements.
Distributed plantations	Companies that aggregate supply through trees grown by smallholder farmers on the farmers' land.	Komaza	Works with smallholder farmers to plant and process trees for timber.
Bamboo plantations	Plantations that grow bamboo, a non-timber forest product comparable to trees in its potential uses that can be highly productive.	EcoPlanet Bamboo	Establishes bamboo plantations as alternative timber and fiber sources.
Mixed-species plantations	Plantations consisting of more than one species planted in the same area, improving biodiversity.	Symbiosis Investimentos	Manages and restores Atlantic rainforest with native species.

Source: WRI.

This report is not an endorsement of any business. WRI and TNC’s focus has been on the restoration space overall, rather than on any one company within the industry. We did field visits with many of the enterprises, but we were unable to visit all of them. Most of the quantitative and financial information presented is self-disclosed by the companies. We strongly recommend that investors perform their own due diligence.

New business models continue to emerge. We expect the business landscape to look very different in the next few years. The companies presented in this report are a small sample of the broader industry. Entrepreneurs are vital to advance business model development and develop innovative market solutions, while investors can benefit from the growth trajectory by incorporating restoration in their portfolios. We are optimistic that the restoration economy will continue to expand, simultaneously creating financial, social, and environmental value.

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ABOUT WRI

World Resources Institute is a global research organization that turns big ideas into action at the nexus of environment, economic opportunity and human well-being.

Our Challenge

Natural resources are at the foundation of economic opportunity and human well-being. But today, we are depleting Earth's resources at rates that are not sustainable, endangering economies and people's lives. People depend on clean water, fertile land, healthy forests, and a stable climate. Livable cities and clean energy are essential for a sustainable planet. We must address these urgent, global challenges this decade.

Our Vision

We envision an equitable and prosperous planet driven by the wise management of natural resources. We aspire to create a world where the actions of government, business, and communities combine to eliminate poverty and sustain the natural environment for all people.

Our Approach

COUNT IT

We start with data. We conduct independent research and draw on the latest technology to develop new insights and recommendations. Our rigorous analysis identifies risks, unveils opportunities, and informs smart strategies. We focus our efforts on influential and emerging economies where the future of sustainability will be determined.

CHANGE IT

We use our research to influence government policies, business strategies, and civil society action. We test projects with communities, companies, and government agencies to build a strong evidence base. Then, we work with partners to deliver change on the ground that alleviates poverty and strengthens society. We hold ourselves accountable to ensure our outcomes will be bold and enduring.

SCALE IT

We don't think small. Once tested, we work with partners to adopt and expand our efforts regionally and globally. We engage with decision-makers to carry out our ideas and elevate our impact. We measure success through government and business actions that improve people's lives and sustain a healthy environment.



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