



The Nature  
Conservancy 

# Lands can do more

---

An integrated approach to conservation and development

[nature.org/global](https://www.nature.org/global)



Discussing prescribed burns to restore natural grasslands, Cuatro Ciénegas valley, Mexico © Mark Godfrey

*How lands can do more*

## Chapter structure

### THE WHY

#### 1. THE CHALLENGE

Understanding development risk and planetary boundaries.

#### 2. MEETING THOSE PRESSURES

Doing more to unlock land conservation and green growth on a global scale.

### THE HOW

#### 3. OUR PERSPECTIVE

Making conservation a central part of smart development strategies.

#### 4. AN EVIDENCE-BASED APPROACH

Applying science to conservation and development activities.

### THE WHAT

#### 5. MULTIPLE STRATEGIES DEPLOYED IN UNISON

Tackling ecological, economic and social challenges in an integrated way:

- Infrastructure: driving better development decisions
- Indigenous peoples and communities: advancing community-led conservation and development
- Working lands: promoting sustainable practices in agriculture and forestry
- Natural climate solutions: protecting, improving and restoring landscapes

#### 6. STRATEGIES IN ACTION

Enhancing a variety of ecosystems around the world where strategies come together:

- Pará State, Brazil
- Emerald Edge, North America
- Mongolia
- East Kalimantan, Indonesia
- Northern Rangelands, Kenya

## FOREWORD

---



Our lands have sustained us over millennia. We live on the land; we get most of our food from the land; we take energy from the land; it's where we build our cities, our culture, and our way of life. All of which, ultimately, depend on nature.

Nature's role is often overlooked. We take for granted the healthy soils needed to grow food, the forests that clean our air and regulate the climate, and the supplies of water that sustain all life. Biodiversity is not just a pretty picture: it is critical for all our food chains, crop survival—and is even the basis of many drugs that help us stay healthy.

However, development pressures are intense: to provide the food, fiber and fuel for a growing and increasingly affluent population. The pace and scale of development is so great that conservation projects alone cannot provide the answer to how we preserve and protect our essential resources. Nature must be an integral part of the development discussion.

All of these pressures are created by our species. We are not the only inhabitants on this planet, but it is indisputable that we are having the most impact. This means that we face choices—every day, every year, and every decade—about how to survive, how to live well, and how to sustain life for the longer term.

While our lands already do a lot for us, they can do more. This report looks at how society can make different choices about we how use our lands. We can simply continue to expand the amount of land we convert and use—whether forests, grasslands or wetlands. This is the business-as-usual paradigm. Or we can look at the trade-offs between environment and development in a different way, using science to inform where conservation and development can work in harmony and help us to make better decisions—to help our lands do more. We have enough land for all our production needs and to conserve nature to enable it to do its part.

The choices we make in the next generation or two will determine whether our lands will continue to sustain us over millennia to come. The consequences of the decisions and choices we make could not be more important. We can create a new paradigm.

Justin Adams,

*Global Managing Director, Lands  
The Nature Conservancy*

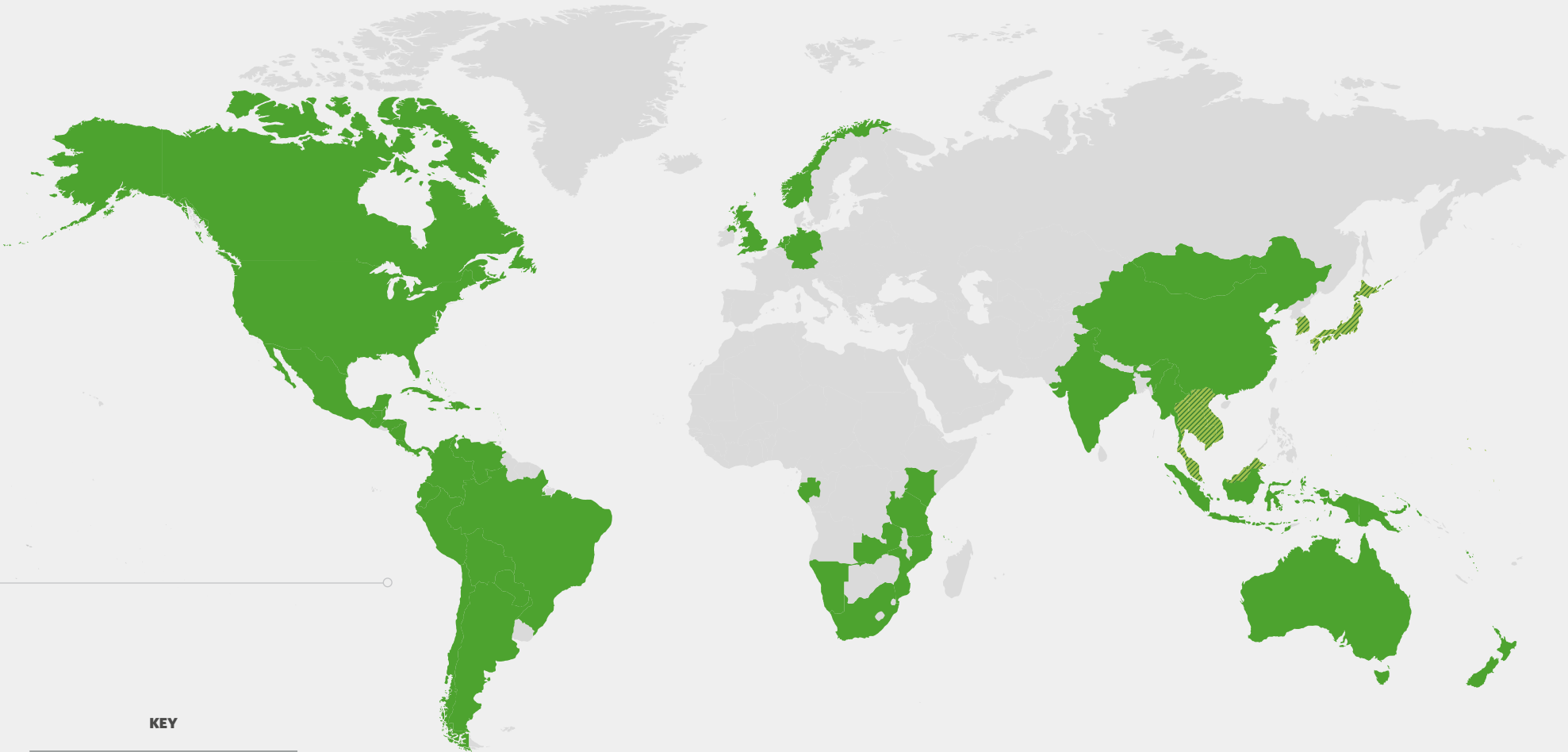
Working in **50** state chapters in the  
US and **35** countries around the world

Conservation of more than  
**50 million** hectares over **60 years**



More than **3,500** employees, **600** scientists  
and **1 million** members

---

**COUNTRIES WHERE THE NATURE CONSERVANCY IS WORKING, DIRECTLY OR WITH PARTNERS**



**KEY**

-  Countries where The Nature Conservancy is working
-  Other countries where The Nature Conservancy is working through RAFT (Responsible Asia Forestry and Trade)

The Why

# The challenge

## LAND CONSERVATION AT AN UNPRECEDENTED SCALE

Transforming how land is developed, used and conserved has never been more urgent. The impacts of a changing climate coupled with the need to double production of food, fiber and fuel by mid-century will place unprecedented pressure on our forests, our grasslands, our wetlands—on all our natural resources.

We are seeing more headlines than ever about the nexus of food, water and energy, and about poverty, climate change and risk. It has become a familiar story and the projections are well-documented.

## CHALLENGES

### PEOPLE

9 billion by 2050

Population growth—there will be more than **nine billion** people on Earth by **2050**<sup>1</sup>

### FOOD/FIBER/FUEL

70% increase in agricultural production

Growing demand for food, fiber and fuel—**70% increase in agricultural production** required to feed population in 2050<sup>2</sup>

### INFRASTRUCTURE

\$70 trillion gap by 2030

The OECD estimates a global infrastructure gap of **\$70 trillion** by 2030<sup>3</sup>

## PLANETARY BOUNDARIES

### BIODIVERSITY

100 to 1000 times higher extinction rates

Terrestrial biodiversity is projected to decrease further by 2050. Scientists point to a 'mass extinction' underway due to human activity, with species extinction rates **100 to 1,000 times** higher than the natural rate<sup>4</sup>

### CLIMATE

2 degrees

Continued global warming—with the need to limit temperature rise to **2 degrees** Celsius to avoid or mitigate the most damaging impacts of climate change<sup>5</sup>

### LAND

20% of world's land at risk by 2050

Looming threats to natural lands from agriculture, mining and infrastructure—with approximately **one-fifth of the world's land at risk of future development**<sup>6</sup>

### WATER

4 billion people water stressed

Unprecedented pressure on natural resources—for example, **water scarcity is increasing**, with nearly 4 billion people projected to be living in areas affected by severe water stress by 2030<sup>7</sup>

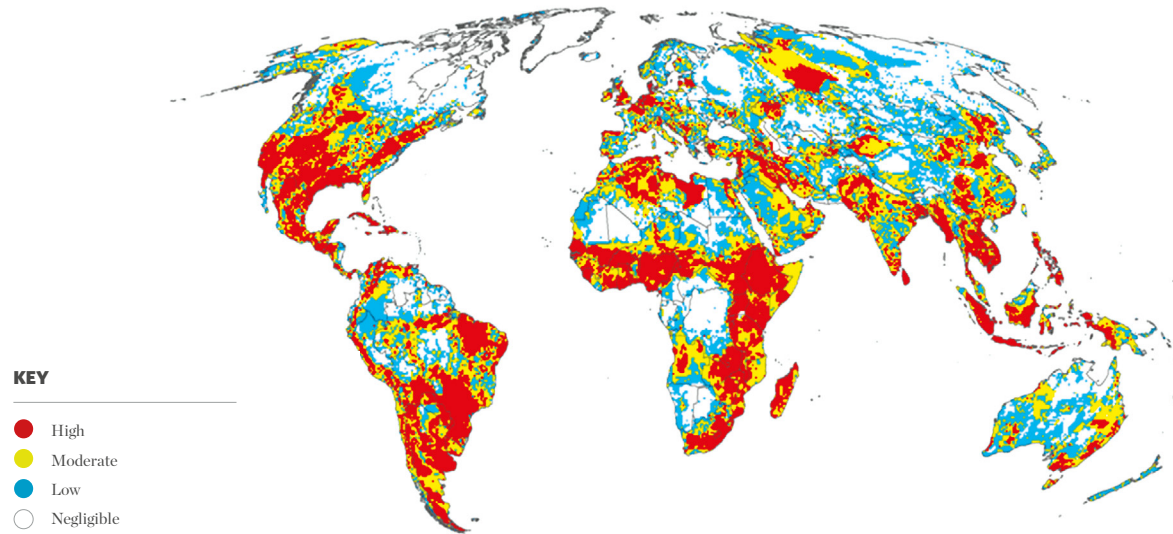
These pressures are creating physical challenges that endanger the rich biodiversity of our planet. They also threaten our values and pose risks to people, particularly many communities that depend on land for their livelihoods.

Sustainable development requires smarter integrated approaches than we have used till now, applied at a much greater scale. This can be done today like no time in the past. Science is enabling us to better understand landscape values and to model threats and potential solutions. In turn, public policy in many parts of the world and resource-intensive sectors are increasingly taking account of the value of nature and the services it provides to us.

The Nature Conservancy has its roots in land conservation. To meet the challenges we face today, our efforts on the ground have evolved to be larger in scale, system-wide and comprise multiple strategies, best deployed in unison. We are striving to fully evaluate the risks and challenges, and to develop appropriate solutions that promote inclusive green growth, ensure a continued flow of ecosystem services, help to stabilize our climate and meet food security needs. Our strategies summarized here are in action now around the world—and are described in more detail in the case studies within this document.



## GLOBAL DEVELOPMENT RISK ASSESSMENT



### UNDERSTANDING THE RISKS

In 2015, The Nature Conservancy, in partnership with the University of Minnesota Institute on the Environment and the Department of Geography at McGill University, published a new analysis of development risks—a complete global look at the impact that growth will have on the land we depend on.

This global development risk assessment maps and estimates potential combined threats to natural land and identifies the most at-risk regions worldwide for habitat conversion. The bottom line is that 20% of the world's natural lands could be developed by just the middle of this century. To put this in perspective, this could potentially affect an area of some 19.68 million km<sup>2</sup>—larger than the size of Russia. Furthermore, only 5% of the natural lands assessed as being at high risk of development around the world are under strict legal protection.

With the projected population rises—and associated increases in prosperity and demand—development will occur, including agricultural production, fossil fuel exploitation, mining, the development of renewable energy, other infrastructure development, and urbanization. These activities will fuel economic growth and deliver better living conditions for many, but the impacts on communities and the environment could be significant. While it is important to protect some irreplaceable or high-value ecosystems from any development, the aim is to ensure the long-term health of landscape through various measures and actions that protect available land.

*The study projects and aggregates global spatial patterns of expected urban and agricultural expansion, conventional and unconventional oil and gas, coal, solar, wind, biofuels and mining development.*

### Our planet is the one and only home we have. To meet both development and conservation goals, we must find a balanced approach

- The amount of natural land converted to working land in South America is expected to **double**. In Africa, it's set to triple.<sup>8</sup>
- **Only 5%** of natural lands considered to be at the highest risk for development are under strict legal protection today.<sup>9</sup>
- **38%** of the world's terrestrial area is farmland, including crops and pasture. Forest designated for production is another 9%.<sup>10</sup>
- **85%** of our increase in energy demand over the next 25 years will happen in developing countries on lands with high conservation value.<sup>11</sup>





Marsh grasslands and mangrove forest, Mississippi River delta and river channel below New Orleans, Louisiana, US ©Bridget Besaw

Solutions need to be developed for landscapes identified as being at risk before conflicts between proposed development and natural resources occur, or to reduce or avoid conflict altogether. By actively identifying potential conflicts, we can help guide siting and advance policies and practices that lower the risks and costs – and result in more sustainable development.

The risk of land conversion follows existing patterns of development with the three most converted regions already—Central America, Europe and South Asia—remaining the most converted after accounting for future development risk. In contrast, Africa and South America, which are currently among the least converted regions, have the highest amount of potential development risk. When development risk is accounted for, the amount of converted lands could approximately double for South America and triple for Africa.

A view from a mountain top above the camp where Chinggis Khan was proclaimed the Khan, in Khan Khentii Protected Area, Mongolia © Nick Hall

# 20%

of the world's natural lands are at risk of development by 2050



In many locations, the effects of development are considered only on a project-by-project basis and therefore fail to account for cumulative environmental and social impacts. However, there is an opportunity to create a new global model for development—one that combines social, economic and environmental goals. Strategic land use that anticipates conflicts and impacts will allow the world to benefit from growth while maintaining healthy natural systems and thriving communities. Landscape-level mitigation planning is needed to help optimize development objectives and conservation goals, using science-based scenario modeling and community engagement to deliver the landscapes we want and need.

The contrast between overgrazed and sustainable grazing within the Ol Pejeta Wildlife Conservancy in northern Kenya © Suzi Eszterhas

# 5%

only 5% of natural lands at the highest risk of development are under protection today





*The Why*

## Conservation agenda

---

### **GOING BEYOND PROTECTION**

Protecting land is where The Nature Conservancy story began. It is our legacy and our future. Our mission guides us to conserve the lands and waters on which all life depends.

Since our foundation, we have gained on-the-ground expertise from our 50 state chapters in the US and field presence in more than 35 countries around the world. We work with partners ranging from private landowners to multinational corporations to indigenous tribes, and to date, we have helped to protect 50 million hectares across the globe and countless species of wildlife. Place-based conservation is our heritage and continues as a cornerstone of our work.

However, protection alone is insufficient. The decades ahead will see hard-earned conservation gains erode unless we stabilize the climate and find better ways of meeting increasing demands for energy, food and other resources. To be successful, we must amplify our protection, restoration and management efforts.

One strategy that has been successful for The Nature Conservancy is land acquisition. In the US, the Conservancy has helped protect around 8 million hectares; within that number, we currently own nearly 1 million hectares and hold almost 1.5 million hectares in conservation easements. Outside the US, the Conservancy does not generally acquire land for its own protection but instead works with local communities and national governments to encourage the protection of ecologically sensitive land.

These strategies are a continuing focus for the Conservancy. In 2015, we completed the Western Checkerboard Deal in the US—under which 665 square kilometres of forests, rivers and wildlife habitat in Washington and Montana will be conserved. Through our impact investing arm, NatureVest, the Conservancy used interim financing to acquire the lands, stitching together these important migratory corridors that link up through Canada.



# DO MORE

Transforming how land is developed, used and conserved  
has never been more urgent

In Kenya, The Nature Conservancy donors provided \$9 million to transfer a 23,000-hectare private property in northern Kenya into the holding of a newly formed conservation trust.

This transaction maintains an important wildlife corridor for elephants, protects habitat for 260 bird and 57 mammal species, and secures some 200 jobs and supports schools, health clinics and sustainable grazing options.

## WE MUST DO MORE...

**More to protect** critically important habitats and to address the needs of those who depend on them

**More to transform** how we use working lands such as farms, ranches and forests

**More to inspire** sustainable land-use practices in places that face the greatest development pressures

Our scientists and conservation experts work at the intersection of development and environmental challenges, forging solutions in partnership with governments, the private sector, civil society and local communities. To achieve a future where people and nature flourish together requires that we augment our land protection efforts to find innovative approaches to protection and production.

This agenda is served by several inter-dependent strategies, which when deployed in unison can form the heart of a new agenda for green growth.

Pablo Borelli, grasslands scientist explains grassland ecology and grazing issues in Argentina © Nick Hall



### DRIVING BETTER DEVELOPMENT DECISIONS

Global economic output is expected to double in the next two decades and trillions of development dollars will be invested in new projects around the world. Much of this will be spent on energy, mining and infrastructure development: for these investments to deliver net gains for nature and people, development needs to be prudently planned and delivered. Our science-based mitigation planning process, Development by Design, optimizes the needs of development with those of conservation.

### INDIGENOUS AND COMMUNITY-LED CONSERVATION

Local communities and indigenous peoples have formally recognized rights over merely 18% of the world's land<sup>12</sup>—a fraction of the vast amount of land they manage under customary practices. Research demonstrates that strong communities and healthy ecosystems are mutually reinforcing.

While indigenous peoples and local communities are some of our most important allies and successful land stewards, their territory is often under threat. We are, therefore, committed to supporting those communities in their conservation goals, developing plans that support community leadership, self-determination and decision-making on the restoration, conservation and sustainable use of their lands and territories.

### TRANSFORMING WORKING LANDS

Humans have already cleared or converted 39% of the earth's ice-free surface for agriculture, whether for croplands, pastures or rangelands, and a further 9% is designated as 'production' forests. This means the total area of the world's 'working lands' is 48%<sup>13</sup>. Encouraging more productive activities on these lands is the only way we can meet growing demand for food, fiber and fuel while also taking pressure off habitat conversion.

To promote sustainable practices, we support the diffusion of good land management practices that deliver healthier soils, resource efficiency, habitat integration and more resilient agricultural systems. Supporting behavioral change and using technologies will make these practices and strategies the norm at farm and landscape levels—improving yields and reducing environmental impacts.

### MAXIMIZING NATURAL CLIMATE SOLUTIONS

The synergies between protecting our landscapes and reducing climate change are remarkable, and we are working to transform how working forests, grasslands and croplands are conserved and managed. Our focus is on advancing natural climate solutions, that can unlock the immense carbon storage and climate resilience potential of nature while improving economic returns and meeting development demands.

Building on decades of existing forest and land-use expertise around the world, we believe that nature-based solutions can play a much bigger role in helping to curb climate change.

Decisions that we make today, that we make this year, and over the coming decades will shape how our planet copes with its growing population. Over centuries, the world has devised many complex mechanisms for making decisions—and, more importantly given the scale of the challenges we face, for making those decisions have an impact at a global scale. These include public policy, finance and markets, corporate practices, and the application of science and technology. For example, new science enables us to better understand the full value of healthy landscapes and to model the threats and potential for solutions. In turn, public policy measures in many parts of the world and resource-intensive sectors are increasingly accounting for the value of nature and the services that nature provides to us.

We need to unlock new pathways for development—and so create resilient whole landscape—on a national and global scale. By agreeing compacts with governments, companies, communities and other stakeholders that unlock green growth, we can develop existing land-use planning processes and tools to move from project-by-project decision-making to more fully informed planning across entire systems.

At The Nature Conservancy, we believe we can do more to work in all these areas at a large scale. As a science-based, inclusive organization, we strive to bring people together to find common ground—so that we can protect vital habitats, transform the way society values and invests in nature, and broaden the constituency for conservation.



Buoyant Togiokhbaatar, one of Oyu Tolgoi Mine's environmental compliance officers, in the Gobi Desert Region of South Central Mongolia © Nick Hall

*The How*

## Our perspective on nature's role

---

Much of the world's 'green growth' story to date has focused on new energy technology, and the renewables sector in particular has made great strides.

But for many emerging economies, agriculture, forestry and extractive industries remain the major drivers of economic growth, environmental degradation and carbon emissions.

Recent years have seen an expansion of commitments by forest country governments, corporations, donors, investors and others to reduce deforestation and land-use emissions. However, these commitments have proven difficult to implement in practice, due to the complex challenges of shifting from business-as-usual to a model for delivering rural economic growth without further habitat conversion. It is vital that countries can see a compelling value proposition to embrace a forest-friendly development model compared to business-as-usual development pathways.

At The Nature Conservancy, we have been working in countries such as Mexico, Brazil and Indonesia on Reducing Emissions from Deforestation and Forest Degradation (REDD+) projects at sub-national levels for almost ten years. These programs are critical building blocks for success at the national level, and today we are working on 'Green Growth compacts' to unlock new pathways for development on a national and global scale.

Areas like these are at the forefront of confronting today's development challenges. We need to understand how some nations can incorporate 'green' considerations into their industrial development strategies, and create those conditions elsewhere. And we need to understand the opportunities and challenges countries face in engaging with smallholders, larger landowners, indigenous communities, and the corporate sector if we are to enable green growth to occur in an inclusive manner in larger areas.



Karen Mogensen F Reserve in north eastern Costa Rica was established to protect the watershed, as well as flora and fauna © Sergio Pucci

### **EVERYONE'S PROSPERITY RELIES ON NATURE**

Incredibly, over many centuries, humanity has a tendency to overlook the most basic fact of all: that it is the natural world that underpins our economic growth and prosperity. Our ability to increase economic growth and prosperity—as well as fight battles against poverty, disease, hunger, and now climate change – ultimately depends on what we do with our natural world.

In many locations around the world, people have lived on the land and stewarded it successfully. But if we fail to manage our natural resources prudently, we will drastically change the lives of human communities that have lived in harmony with these places for centuries. We will lose clean water and critical natural climate regulation. We will lose iconic plants, animals, savannahs and forests, all of which are priceless ingredients of a sustainable future, and nearly all irrecoverable once they are gone.

Despite the ominous facts and figures about future pressures and risk, this is a story about opportunity.

We need to get ahead of our growth curve, to bring world-class science to the development decision-making fore, and to make conservation a central part of smart development strategies. We can support local communities and indigenous peoples working with those communities to develop strategies that reinforce community leadership, self-determination and decision-making on the restoration, conservation and sustainable use of landscapes.

To understand the opportunity, we also need to understand the risks. These critical locations are vulnerable, and we have to think beyond traditional land protection strategies to find solutions that work with development, rather than against it.



This effort starts by simply taking a bigger picture approach to development choices. Governments, companies, communities and other stakeholders must trade the narrow project-by-project decision-making of the past for more fully informed planning across entire landscapes. This landscape-scale approach has applications for climate change mitigation as well, in preserving crucial natural carbon stores. We have the science and support tools to support these efforts, and we are already seeing progress in places like Mexico, Brazil and Indonesia.

Fundamentally, ensuring sustainable development and reversing climate change requires us to transform our relationship with nature—how we think about it, value it and use it. This is not a new concept. The natural capital movement goes back fifty years, but there are many indications today that we are on the brink of taking these ideas mainstream. Thousands of coalitions—including businesses, non-governmental organizations and governments—are mobilizing to change the way our economic systems work.

**We need to transform our relationship with nature—how we think about it, value it and use it.**

---



Nelida Barajas, TNC freshwater specialist at the El Uno Ecological Reserve near Janos, Chihuahua, in northern Mexico © Dave Lauridsen

*The How*

## The scientific and economic case for better land use

---

Conservation science underpins all our efforts. We apply science to every area of our work—whether land acquisition or management of a marine protected area, conservation finance or government affairs—and at all scales, from local to global.

Knowledge of what makes for successful conservation is continually evolving. At root, it is underpinned by fundamental understanding of core ecological and socio-economic processes, as well as of how those processes respond to changing climates and management. The use of tried-and-tested analytical methods, such as landscape-level planning, environmental impact assessment and many others, provides a well-established toolkit for intervention that is scientifically robust.

More recently, major advances in remote sensing, conservation planning, and computer modeling are providing new tools to assess cumulative social and environmental impacts from a range of infrastructure developments. Based on hard evidence, we can make robust assessments across eco-regions to determine how cumulative impacts will affect plant and animal diversity and other variables long before any individual projects begin.





Eloise Kandy, a TNC hydrologist looks at the Pulse Flow ecological restoration, Laguna Grande, Mexico © Nick Hall

---

## CONSERVATION BY DESIGN

From the mid-1990s, the Conservancy's work has been guided by a framework called 'Conservation by Design', a systematic approach that determines where we work, what to conserve, and what strategies we should use. Conservation by Design builds on the Conservancy's collaborative, science-based approach to ensure we work in the most effective ways possible.

Conservation by Design involves identifying conservation challenges and goals, mapping strategies and places, defining measurable outcomes, taking action in conservation projects, measuring progress and adapting where necessary. It represents, therefore, an adaptive management cycle in which opportunities for learning and adaptation are based on a solid core of evidence. The approach reflects the interdependence of social and natural systems and supports our vision of creating virtuous cycles between people and nature within those integrated systems.

Conservation by Design is a call to action. A call to use science, collaboration, and the experience and action of the broad conservation community to help transform the relationship between people and nature so that each reinforces and sustains the other.

---

## EVIDENCE-BASED APPROACH

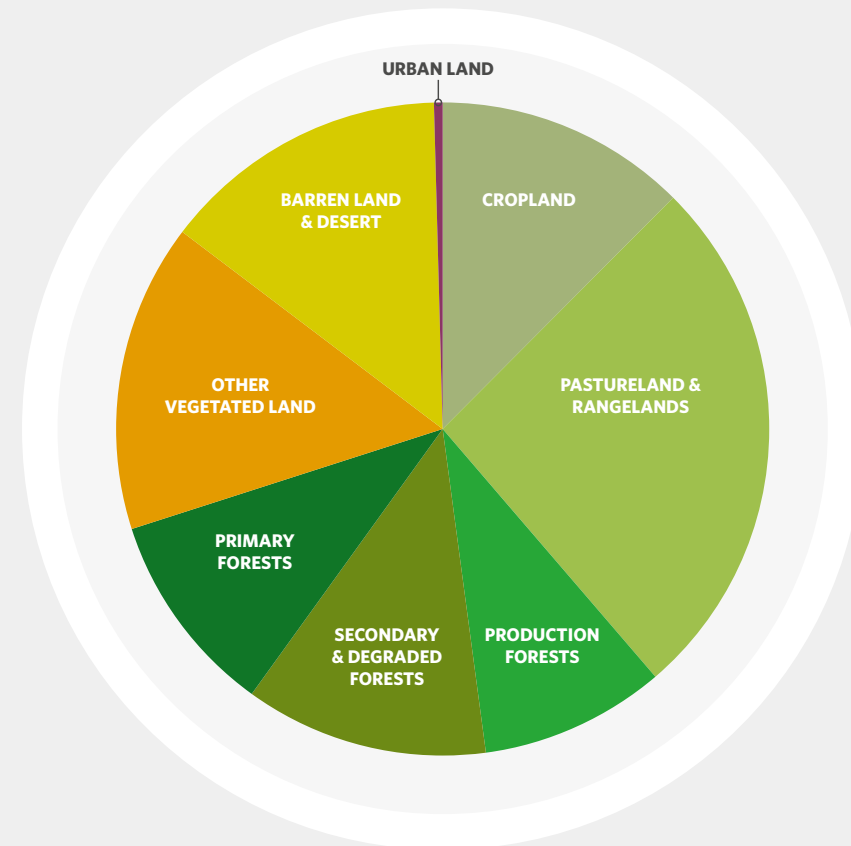
As a science-based organization, we place a premium on evidence. The business of conservation spans complex strategies and interventions—from buying land to creating tax incentives or designing corporate engagements or youth programs. Knowledge of what works in these strategies and what does not is created by our work on the ground and by the explorations and actions of other relevant actors around the globe. This knowledge allows us to take successful conservation actions to scale and to understand the risks when testing innovative approaches.

To hasten systemic change, we seek to foster, use and exchange the evidence base that underpins the conservation strategies being deployed around the world—the intellectual capital of the conservation movement. Our aim is to cultivate a global knowledge network that synthesizes what is learned from experimentation and innovation on the ground, and from the broader conservation community, indigenous groups, corporations, universities, governments and other knowledge holders.

Nowhere is the evidence base more important than in the area of land and land use, which has often been overlooked in developing solutions to climate change. Land conservation—and restoration—will be at the center of many of the challenges facing humanity in the next decades, including meeting an expected 70% increase in food demand due to population growth and dietary change, rural development, watershed and biodiversity protection and mitigation of and adaptation to climate change.

Humans now actively manage the majority of land on Earth, and our footprint is found in nearly all remaining natural landscapes. Many critical land-use decisions all over the world are being made without understanding the full implications of those decisions, not just for their effects on biodiversity, but also on the economic returns and benefits from nature that alternative uses of these lands might provide.

## GLOBAL LAND COVER AND LAND USE



*The Earth's ice free land area covers a total of 12.75 billion hectares. Other vegetated land includes unforested wetlands, scrubland, tundra and grassland not used for grazing. Production forests include both plantations and natural forests designated for production. Secondary forests include all other forests showing significant signs of human disturbance, including those recovering from past clearance.*

## LAND USE IN THE NEW CLIMATE ECONOMY

Rising demands on land coincide with continuing degradation of both native ecosystems and productive agricultural lands. The World Resources Institute estimates that 47% of original forest lands have been deforested or degraded, and one-third of lands globally are considered moderately or highly degraded by the UN's Food and Agriculture Organization. Such degradation releases billions of tonnes of CO<sub>2</sub> to the atmosphere annually, and reduces the ability of those lands to provide ecological and/or productive services. Restoring these lands is possible with techniques available today, and in many cases can reverse the damage done by land degradation.

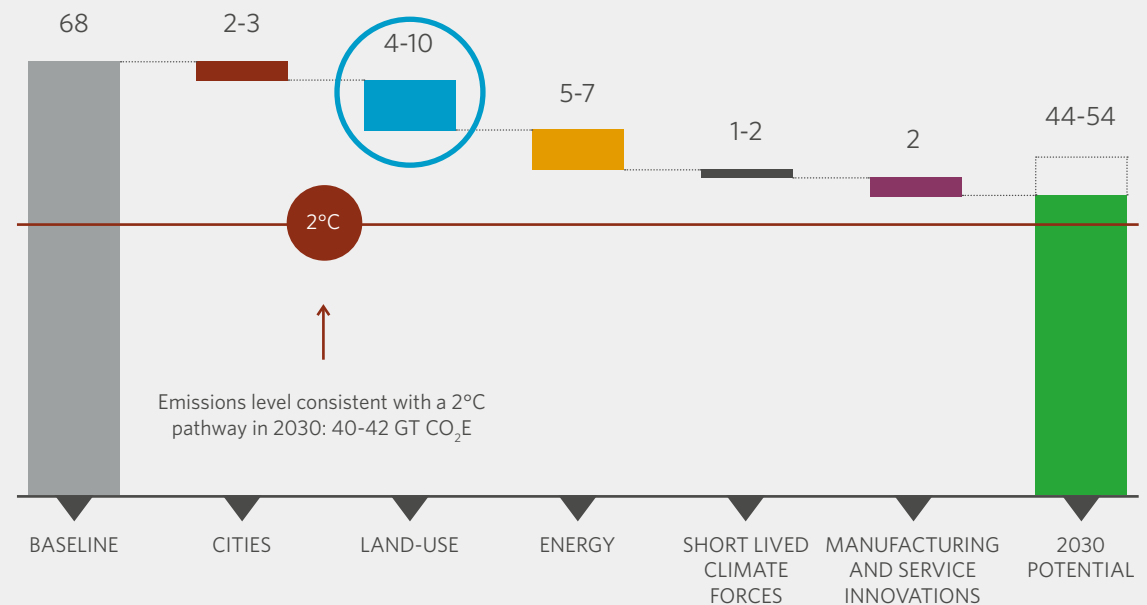
Restoring lost or degraded forests and degraded agricultural lands is one of the ten recommendations made by the Global Commission on the Economy and Climate for reducing greenhouse gas emissions to limit climate change to 2 degrees Celsius. According to their report, 'Better Growth, Better Climate', land restoration is potentially capable of supplying about 15% of the needed GHG emissions reductions. The Commission found that restoration could enable economic growth and improve human well-being while mitigating climate change.

## LAND USE IN NUMBERS

- In 2010, land use and land-use change accounted for 11% of global emissions and agriculture directly accounted for another 13% (24% in total). One-quarter of agricultural lands are currently degraded and less productive than they could be.
- Restoring just 12% of these (150 million hectares) into productivity could feed 200 million people by 2030, raise \$36 million annually in farm incomes, strengthen climate resilience, and reduce emissions.

## LAND USE INTERVENTIONS COMPRISE 15-35% OF MITIGATION TO REACH A 2°C PATHWAY BY 2030

Gigatonnes of CO<sub>2</sub> equivalent



Source: Emissions estimates: IPCC AR5; New Climate Economy analysis based on expert input and multiple data sources

## FOREST LANDSCAPE RESTORATION

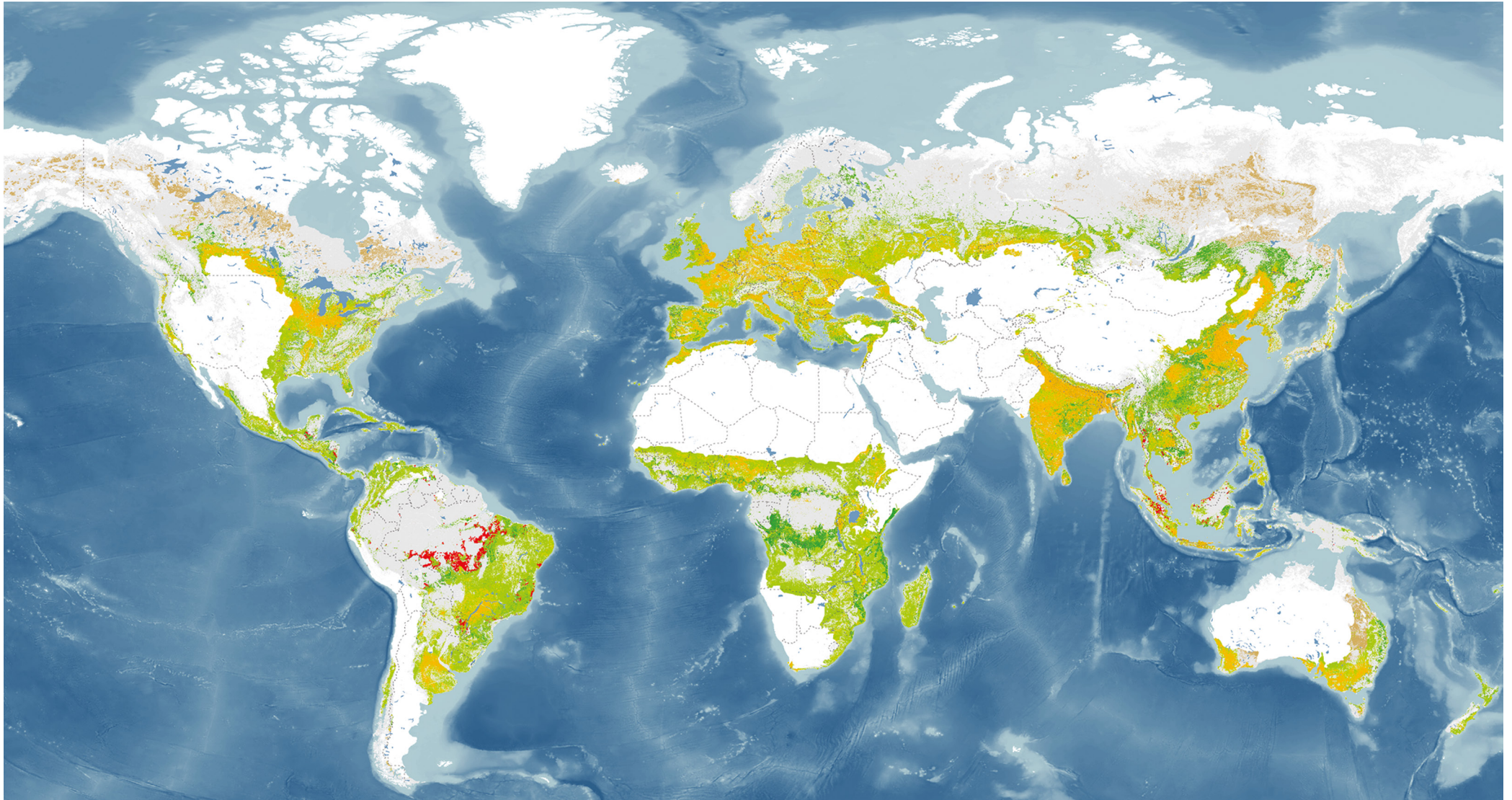
Besides sequestering carbon and providing wildlife habitat, restoration can boost the production of marketable forest products, reduce economic damage from natural disasters, increase crop yields, ensure clean drinking water, moderate water flows, create recreational opportunities, and generate other benefits. These benefits in turn create jobs and improve local livelihoods—factors that typically hold more sway in the minds of public and private sector decision makers than climate change or biodiversity considerations.

One of the prime forms of restoration is forest landscape restoration—a process to regain ecological functionality in deforested or degraded forest landscapes and to enhance human well-being. It involves increasing the quantity and health of trees and focuses on the watershed or larger spatial level. It may include other land uses besides forests. It involves rehabilitating the biological productivity of an area in order to achieve any number of benefits for people, wildlife and the planet.

In 2011, WRI and the International Union for Conservation of Nature (IUCN) estimated that the world has approximately 2 billion hectares of lost or degraded forest lands that may provide opportunities for restoration. The biophysical opportunity for forest landscape restoration is, therefore, immense. However, it is often perceived as too expensive with insufficient benefits, and restoration opportunities are seen as being too widely distributed across remote geographic areas to be realizable.

Despite these perceptions, evidence from a diverse range of developed and developing countries around the world indicates that large-scale forest landscape restoration is not only possible but also can go hand-in-hand with economic development. For instance, between 1953 and 2007, South Korea's forest cover expanded from 35 % to 64 % of the country's total area, even while its population doubled and its economy grew 25-fold in real terms.<sup>14</sup>





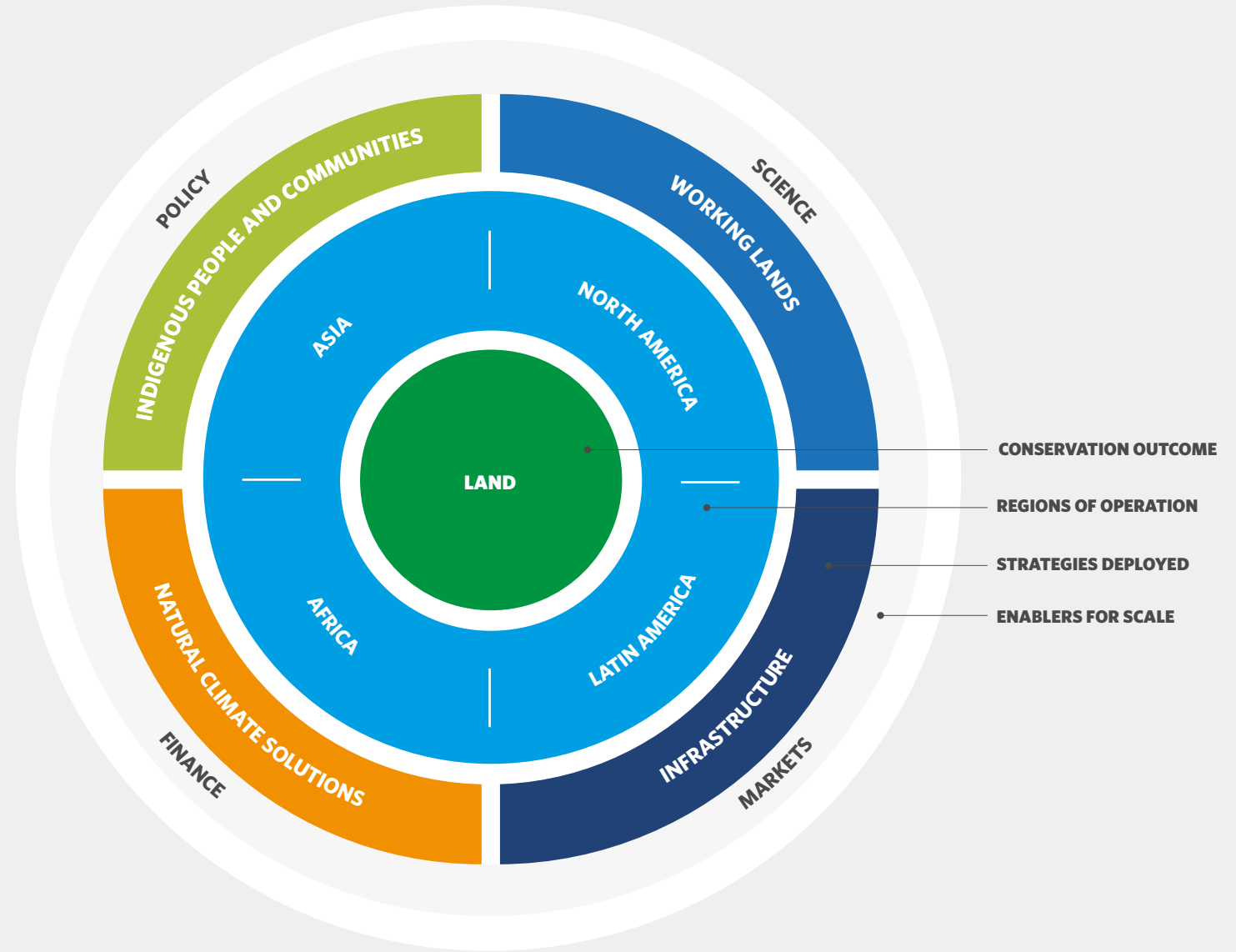
## Estimates of 2 billion hectares for landscape restoration to kickstart a ‘restoration economy’

Forest restoration in the US and Sweden has generated jobs and supported livelihoods. Restoration of native trees amidst 5 million hectares of farmland in southern Niger has boosted crop yields, increased farmer income, and rejuvenated biodiversity. Examples from Costa Rica, Tanzania and China provide further evidence.

Besides restoration, The Nature Conservancy believes that we need to harness tools that maintain and protect existing forest cover, such as REDD+ and forest certification, tools that can bring to scale our work to protect and improve the management of forests.

The What

# Integrated approach to optimizing conservation and development goals





## **MULTIPLE STRATEGIES, DEPLOYED IN UNISON**

Around the world, The Nature Conservancy is working on projects in sensitive landscapes, protecting and enhancing precious ecosystems where the extraordinary benefits that nature provides are under threat.

These geographies—whether in the tropical rainforests of the Amazon and Indonesia, the rangelands of Kenya and Mongolia, the forests of the Pacific Northwest, or the watershed of the Mississippi basin—all bring together diverse and complex challenges.

These locations—and many others around the world where the Conservancy works—present wide-ranging ecological, political and social challenges which can best be tackled in a coordinated, integrative and collaborative way. These local geographies do not have clearly delineated boundaries. Instead, they represent complex systems with regional dimensions. They are often of global importance in terms of their environmental impact and visibility.

Working effectively in this sort of environment requires integrated strategies which address the range of threats—to landscapes, waterways, flora and fauna, and communities—and corresponding opportunities. Strategies need to be complementary and mutually reinforcing and capable of delivery across physical and institutional

boundaries. This requires clear identification of the problems and articulation of the optimum solutions—whether policy related, economic, physical, scientific, social or more typically a combination of these. Typically, engagement and collaboration with other bodies, including local and national government, communities or industry with interests in economic development, are needed to support and implement solutions. Stable and long-term funding is also a prerequisite for success, and an operational and management model capable of supporting the complexity and scale of the work is required.

Each of the case study examples shows how we have implemented inter-dependent strategies to address complex challenges in protecting and enhancing the land—and the subsequent benefits these actions bring to other natural resources and to communities.

Our goal, wherever we work, is to create healthy and resilient landscapes—on an unprecedented scale. We do so by deploying multiple strategies in unison.

*The What*

## Integrating conservation and development

### **DRIVING BETTER DEVELOPMENT DECISIONS: MINING, ENERGY AND INFRASTRUCTURE**

Global economic output is expected to double in the next two decades<sup>15</sup>, and trillions of development dollars will be invested in new energy, mining, and infrastructure projects around the world, many of them in relatively pristine natural areas. These investments can help fuel economic growth, improve quality of life, and lift people out of poverty, but they also can bring large environmental and social impacts. As each project is developed, the direct, indirect, and cumulative impacts contribute to a footprint that reduces the capacity of landscapes and watersheds to support people and nature.

For development to deliver net gains for nature and people, governments, companies, and communities need to be much smarter about how they mitigate—the process of avoiding, minimizing, and compensating for—development impacts. Too often these footprints are viewed as simply an ‘environmental impact’ only relevant to natural resource and conservation decisions. But environmental impacts can reverberate across many sectors central to human well-being, including health, food and water security, and national security. Understanding interconnected values and alternative development scenarios can help head off conflicts before they occur and support more sustainable outcomes.

The Conservancy’s ‘Development by Design’ (DbD) approach, which builds from the concept of Conservation by Design, is transforming traditional mitigation by using a whole system, science-based approach that addresses the effects of development at landscape, watershed, and seascape levels. Seeing this big picture makes clear the risks, trade-offs, costs and benefits of development decisions, beyond what can be achieved by site-level planning for individual projects.

DbD involves setting goals for landscape health, projecting potential cumulative impacts of development, and identifying the best options for sustainable development. This benefits governments, businesses, and communities in several ways. It informs strategies to avoid impacts to priority areas, incentivizes development in lower-conflict areas (such as degraded lands), and promotes mitigation actions that best support long-term landscape resilience, such as ensuring functional watersheds for clean drinking water, connected habitat for species, and buffers against climate effects. For project investments, landscape-scale planning promotes comprehensive risk assessment and management, reduces conflicts and delays, and supports greater predictability and transparency with potential time- and cost-savings.

The Conservancy is working with governments, communities, and companies to transform mitigation policy and practice. We are supporting landscape-scale planning before major project investments are made, to promote sustainable solutions for development and healthy landscapes. Our work in the US, Colombia, and Mongolia has supported new policies for landscape-scale planning and compensatory mitigation that advances development and conservation goals. In Mongolia for example, a country of vast mineral resources where traditional nomadic culture remains a way of life for one-third of the population, The Nature Conservancy has worked with government to develop landscape-scale plans for the country that take into account biological resources, ecosystem services, climate change considerations, and projected development. These plans are guiding the establishment of new national protected areas and also millions of hectares of local protected areas – places that will be maintained for nomadic herding and wildlife. The plans will also help guide offset investments from mining and infrastructure projects so the offsets provide the highest benefits for landscape health and communities.





Dean Mununggulmur Yibarbuk, aboriginal elder and guide on Arnhem Lands in Australia's Northern Territory © Ted Wood

## **INDIGENOUS PEOPLES AND COMMUNITIES: COMMUNITY-LED CONSERVATION AND DEVELOPMENT**

Lasting sustainable land stewardship is always rooted in the people who know and care deeply for a place. Local communities and indigenous peoples have formally recognized rights over a mere 18% of the world's lands—a fraction of land managed by these communities under customary practice. Research also tells us that these communities can be conservation's greatest ally—to help develop the most sustainable solutions for the landscape.

At The Nature Conservancy, our work with indigenous peoples and rural communities has demonstrated that healthy ecosystems and strong communities are mutually reinforcing. With their strong historical and cultural connections to the land and their deep knowledge of the natural world and its sustainable management, indigenous peoples are among the most important partners for conservation. Recent research has shown that when indigenous peoples and local communities have rights over forests, deforestation rates are low. In fact, these communities were more successful at stopping illegal forest loss than governments were in protected areas.

The Nature Conservancy is committed to supporting indigenous peoples in their conservation goals. Around the world, we partner with indigenous and local communities across more than 290 million hectares of land, benefiting hundreds and thousands of people. In Brazil, for example, a key part of this work centers on developing effective planning tools and an enabling policy environment. This makes it possible for indigenous peoples to manage their lands according to their priorities, and respond to stakeholders' requests for engagement with an integrated plan of action.

In eight indigenous lands in Brazil, the Conservancy has partnered with communities to develop Indigenous Environmental and Territorial Management Plans. These plans support indigenous leadership, self-determination and decision-making on the restoration, conservation and sustainable use of their territories. Through the process, the community agrees on its shared values and priorities, develops mapping and monitoring capabilities within its own community, and builds an understanding of the relevant government programs available to them. The process also strengthens internal organizations for dealing with outside interests, and helps to form binding internal agreements about how to develop (and conserve) their territory to create the future they want for themselves and the generations to come.

This work happens in parallel with efforts focusing on government policy, large ranchers and smallholders so that the region can move collectively onto a more sustainable trajectory. Working with smallholders can help them to develop profitable and sustainable livelihoods such as cacao production, which can be cultivated on a small amount of land, rather than cutting forest in indigenous territories to establish ranches. When effective cultivation like this is carried out on abandoned pasture, there is the additional benefit of carbon being sequestered back into the landscape.

When environmental and territorial plans are being developed in this broader context, it facilitates the inclusion of indigenous priorities and interests. The Conservancy is working with indigenous, community, government, corporate and NGO partners around the world to advance indigenous and community-led conservation at an unprecedented scale and to strengthen the role of indigenous and local communities in landscape management decisions.

## **WORKING LANDS: PROMOTING SUSTAINABLE PRACTICES IN AGRICULTURE AND FORESTRY**

Agriculture, including livestock, already covers 39% of the land on Earth, and a further 9% is designated as production forests. We are currently losing more than 8 million hectares of tropical forest each year to ranching and farming, but there is also consensus that world food supplies need to increase to feed growing populations and to support the lifestyles of growing middle classes in countries like China, India and Brazil.

These trends pose major challenges for conservation. The total area of cropland in the world is about twice the size of Australia, and the total area of land being grazed is approximately equal to Africa. Large areas of the world are unsuitable for agriculture and will remain so. Doubling food production by doubling the area devoted to cropland and pasture would be difficult. Water presents a similar picture: with 70% of water consumption coming from agriculture, water scarcity and water quality are significant challenges now and in the future.

Agriculture is also a key driver of climate change. Nearly one quarter of global GHG emissions are directly or indirectly related to agriculture. It drives more than 85% of habitat conversion, especially deforestation, which drives around 11% of global GHG emissions, and a further 13% comes from other direct sources such as fertilizers and methane emissions from livestock.

An important part of the global response to climate change must be agricultural systems that are resilient to climate change: more tolerant of drought, flooding and higher salinity, more resistant to pests and more capable of maintaining and improving organic content in soils. Habitat conversion for agriculture should be minimized everywhere and eliminated altogether where possible.

At The Nature Conservancy, we believe that production systems must intensify. Intensification must be at the center of conservation thinking about agriculture. We also believe that intensification has to be sustainable. This is hard. An increase in return per unit area means market mechanisms can stimulate agricultural expansion. Increasing inputs can have environmental costs.

Some expansion of agricultural area may be necessary, but there is also more that can be done to make better use of existing agricultural land and restore the productivity of degraded agricultural land. The debate about sustainable intensification is intense and polarized, and agriculture is so variable from place to place that there is no single statement of what sustainability in agriculture looks like. What we can do, however, is articulate essential principles relevant for all scales of agriculture.



**FIRST IS SOIL HEALTH:** A healthy soil has a balanced biological community, with high organic matter and the capacity to retain and cycle nutrients and water through a living and functioning soil ecosystem.

**SECOND IS RESOURCE EFFICIENCY:** All agriculture requires inputs, but sustainable intensification implies precision in how inputs, especially water and fertilizers, are applied. Yields are maximized and environmental impacts minimized when inputs are applied as sparingly and efficiently as possible.

**THIRD IS INTEGRATION OF NATURAL HABITAT:** This integration operates at farm and landscape level. At individual farms, integrating areas of natural habitat into farm management helps maintain a range of environmental services important to farmers, but which have broader benefits for biodiversity, water quality and climate resilience.

**FOURTH IS RESILIENCE:** Agricultural systems need to be resilient to climate change. Resilience in the context of agriculture means hedging of bets, which requires a larger portfolio of crops, at both farm and landscape levels.

We believe there is solid evidence that a range of best management practices and other farm and landscape level strategies can deliver healthy soils, resource efficiency, habitat integration and resilient agricultural systems. Were these practices and strategies typical of agriculture at both farm and landscape level, all agricultural systems would be increasing yields and the environmental impacts of agriculture would be well below their current levels.

Change must happen in the public and private sectors. Public extension services can be complemented by using private sector

retail and sales networks to do field research and deliver sound advice to the majority of farmers who rarely interact with public extension systems. While the private sector is excellent at certain kinds of technical innovation, the need to recover costs means there will always be a role for public funding of certain kinds of technical innovation more relevant to poorer farmers. Some farmers can and will invest in change; others will lack resources and will require other incentives from the public and voluntary sectors. Some changes can be left to market forces; others will not happen without public subsidy or policy support.

Intensification is in itself a powerful incentive for adoption, since it will increase yields, improve productivity, maximize input efficiency and improve income. To achieve our objectives, tens of millions of farmers across the world need to change practices. Problems with governance, regulatory frameworks, perverse incentives, insufficient investment, population pressure, inertia, tradition, and risk aversion all combine to make change difficult. Targeting effort in the right places, and influencing the right set of public and private institutions, will help us move from theory to the practice of change.

On the other side of the equation, we need to support mechanisms that avoid conversion of natural forests, incentivize improved forest management (IFM), and restore forests at an unprecedented scale.

Worldwide, approximately 30% of forests are designated for logging<sup>16</sup>. This makes logging one of the dominant land uses, surpassing agriculture in some areas. Logging therefore plays an important role in the economic development strategies of many forested countries. Demand for wood products is expected to double or even triple, in some scenarios, from 2010-2050. With timber plantations occupying only 7% of forested lands, meeting demand

for wood in the short-term will increase pressure to open up natural forests and/or intensify harvest in already logged forests. The likely expansion of industrial logging in the tropics presents a significant challenge to efforts in mitigating climate change by curbing deforestation and forest degradation.

We must do all we can to protect our remaining natural forests and shift production to managed plantations as well as using secondary or degraded forest land. Making better use of our forests through techniques like IFM can become part of an overall conservation strategy. IFM can help meet the growing demand while providing significant and measurable emissions reductions; however, incentives are needed to make that happen, and innovation is needed for more affordable and scalable carbon measurement. While IFM can generate cost savings over the long-term, there has been limited adoption to date of IFM practices, largely due to significant up-front costs and a low value placed on the social and environmental benefits that it provides.

Logging is inevitable, IFM is not. Incentives are needed to shift the industry standard toward more sustainable practices and advance scientific measurement of carbon benefits. While IFM can generate cost savings over the long-term, there has been limited adoption to date of these practices—less than 5% of tropical forest area designated for logging is under certified forest management.

The Nature Conservancy is actively working to strengthen and expand forest certification systems, specifically Forest Stewardship Council (FSC) certification, around the globe. This means working on the standards behind FSC certification, engaging in governance at various levels, and applying these standards on our own lands as demonstration sites.

NATURAL CLIMATE SOLUTIONS

# PROTECT, IMPROVE AND RESTORE OUR LANDSCAPES



**NATURE CAN  
MITIGATE AT  
LEAST 20%  
OF HUMAN  
GREENHOUSE  
GAS EMISSIONS**

# Climate change is one of the most crucial challenges facing human and planetary well-being, but one of the key solutions—nature’s ability to absorb and store carbon—is often overlooked.

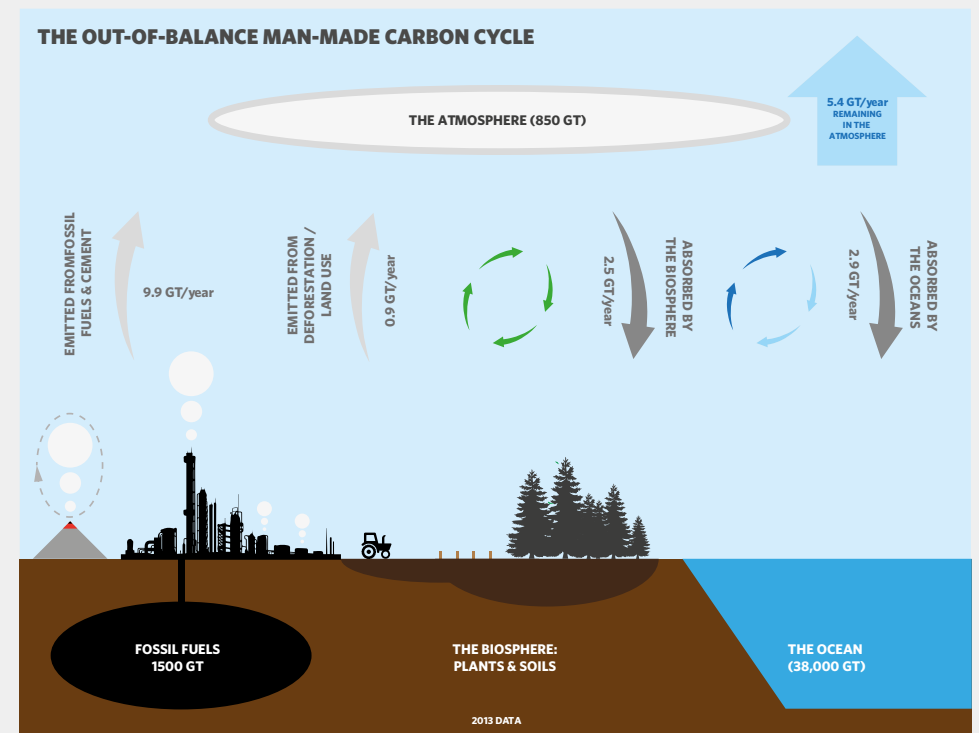
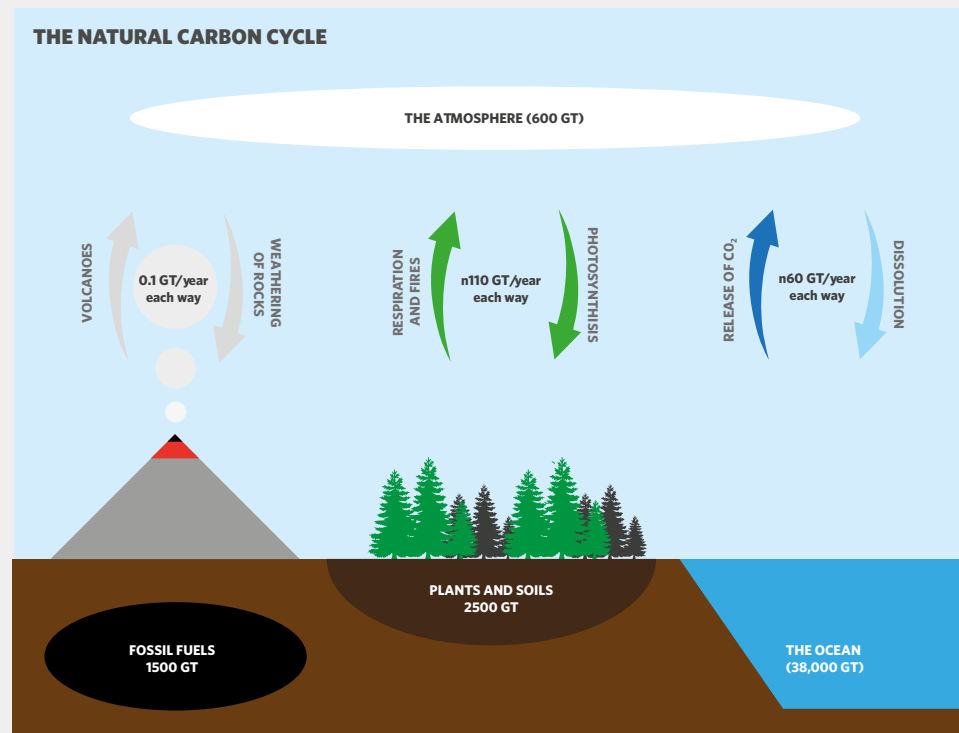
Natural systems, such as forests, grasslands and wetlands, have been stabilizing the climate for hundreds of millions of years. Over and above the current levels of natural mitigation, research indicates that we can mitigate at least 20% of total anthropogenic greenhouse gas emissions—some 10 Gt of CO<sub>2</sub> per year—by protecting, restoring

and improving how we manage those systems. While natural sinks already sequester billions of tons of carbon each year, the land sector is also a source of emissions. Existing farming and ranching practices, deforestation and forest fires are responsible for about one-quarter of global greenhouse gas emissions. There is opportunity therefore both to restore the ability of our ecosystems to absorb and store carbon and simultaneously to reduce and avoid emissions arising from poor land use. Moreover, as the Intergovernmental Panel on Climate Change (IPCC) reports, it will not be feasible to limit global warming to 2°C without changing how we conserve and use land.

As material and immediate opportunities, natural climate solutions represent the crucial biological bridge to a more sustainable future while we continue with critical efforts to de-carbonize the global

economy. While governments and industry around the world invest billions to develop and implement lower-carbon technologies and to determine routes to industrial-scale carbon capture and sequestration (CCS), nature is, in short, the ultimate carbon sequestration machine.

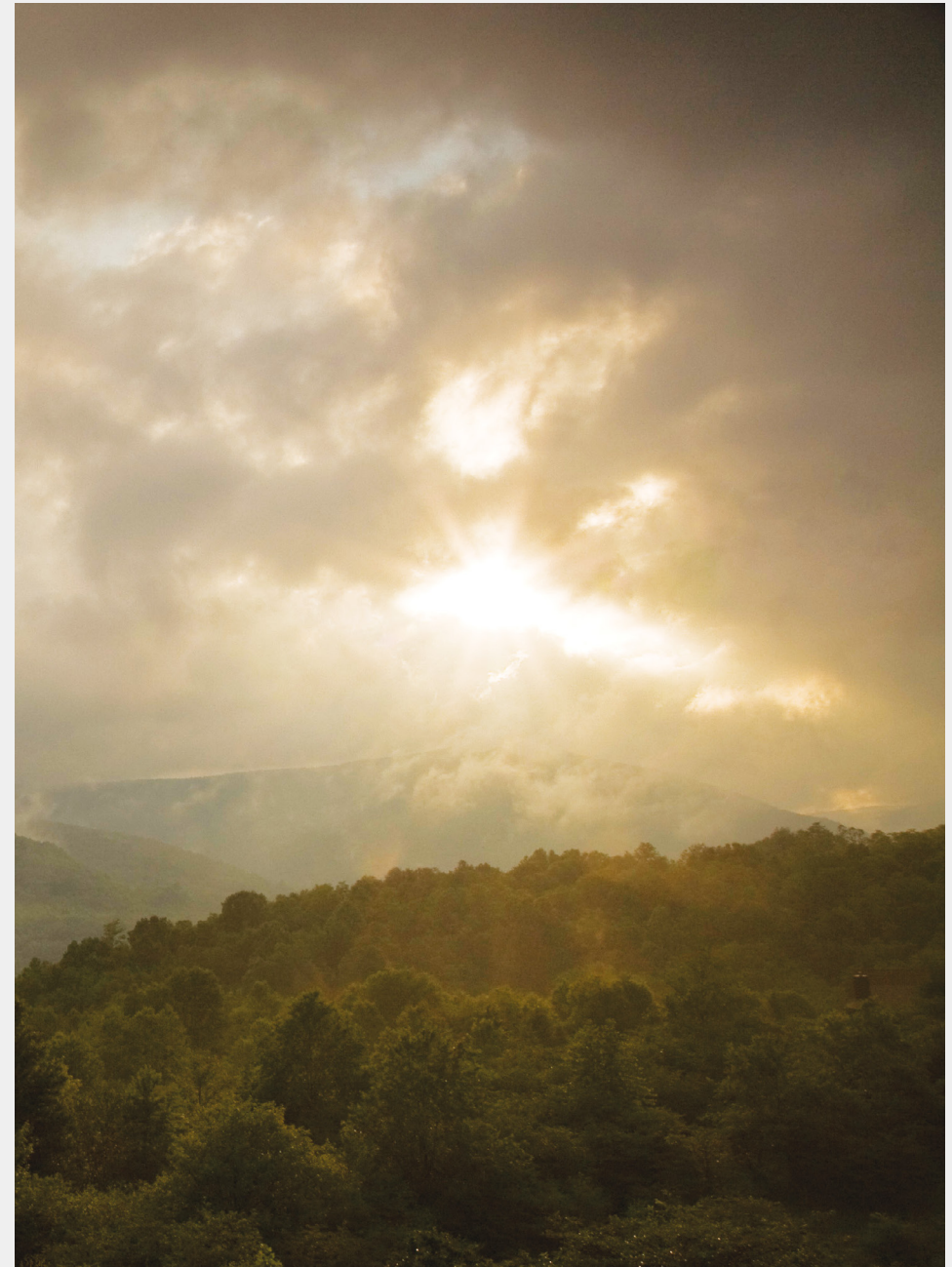
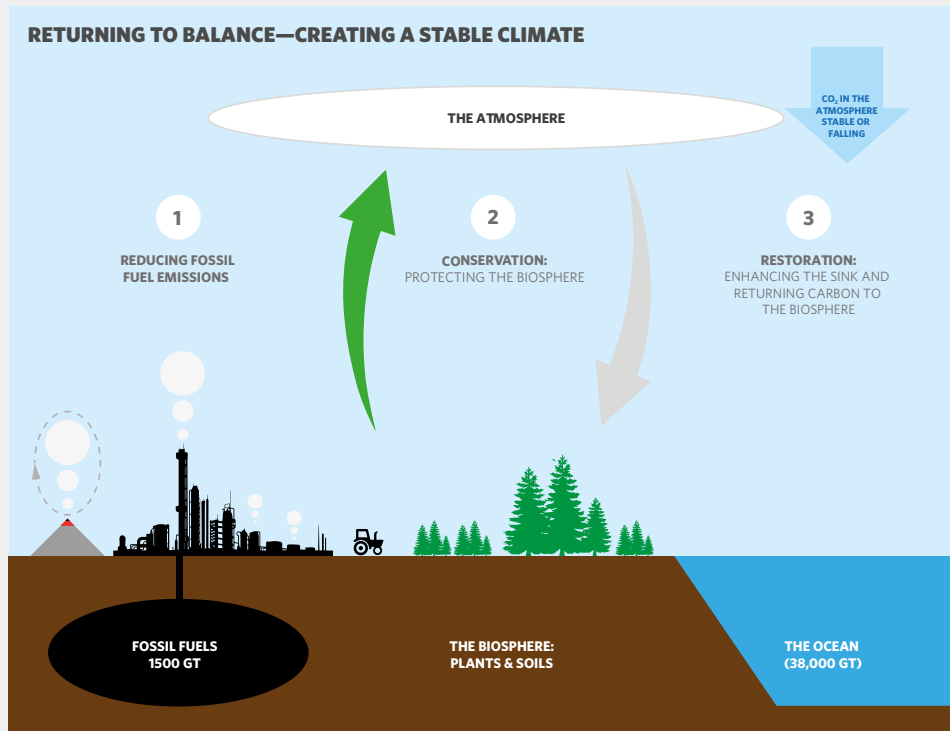
To tap this potential, we need to transform how working forests, grasslands and croplands are managed. There is research under way to better understand the science of carbon sequestration across the full range of ecosystems, and to identify the key commercially scalable pathways that are available to us. We need a clear roadmap that shows how we can reduce greenhouse gas emissions while improving economic returns, and can restore forests’, croplands’, and wetlands’ ability to store carbon while enhancing their resilience.





These solutions are not only available to us today, they are also cost-effective, flexible and provide many other benefits to the world—to our economies, societies and the environment. By focusing on natural climate solutions, we not only reduce carbon pollution and increase climate resilience for communities, but we also ensure more vibrant and diverse forests, grasslands, wetlands, reefs and mangroves; more food and water security for communities; and more habitat for animals and plants.

The benefits are clear, multi-faceted and dramatic. Nature is already good at its job, but—unrestrained—it can be great. This is the opportunity in front of us today, to maximize nature's role in solving climate change.



Storm clouds over Weiss Knob, Monongahela National Forest in West Virginia, US © Kent Mason

## The Conservancy is pursuing opportunities to enhance landscapes' carbon mitigation potential by pursuing three interrelated categories of opportunities. These are:

### **PROTECTING ECOSYSTEMS**

Including forests, grasslands and wetlands

### **IMPROVING LAND MANAGEMENT**

Including farms, rangelands and timber forests

### **RESTORING KEY ECOSYSTEMS AT SCALE**

Such as by planting trees, restoring salt marshes and re-wetting peatlands

Unlocking these opportunities requires a deep understanding of the science and economic potential, reinforced by real-world field projects, to identify which pathways truly have the opportunity to achieve sufficient scale. To affect this level of change, we must build a broad movement—including scientists, economists, corporate leaders, ranching and agriculture associations, forestry companies, policymakers, investors and funders.

The first opportunity—protecting ecosystems—is about avoiding further land conversion. This relates in particular to tropical forests but is also relevant to grasslands. To avoid the loss of these vital resources, we need a development paradigm that illustrates the value of standing forest.

In this new model, nature and development go hand in hand, as complementary forces rather than by trading one off against the other. Integrated land management and planning at the level of individual landscapes need to be promoted at a much wider scale—building on the excellent examples which we have supported in locations all over the world.

Avoiding land conversion also needs positive action in corporate supply chains. The commitment of consumer goods companies to eliminate deforestation from supply chains can make a major contribution. There are already grounds for optimism: public

and private sector organizations are increasingly aligning on common goals, such as those within the Tropical Forest Alliance 2020, in which partners take voluntary action, individually and in combination, to reduce the tropical deforestation associated with the sourcing of commodities such as palm oil, soy, beef, paper and pulp. In the longer term, payment for ecosystem services including carbon sequestration, but also potentially for the natural services provided by resources of water and biodiversity, provides a route to greater understanding of the value of nature and greater awareness of the need to protect it.

The second dimension of climate solutions involves improving land management. We currently use approximately 6 billion hectares of land worldwide for the production of food, fiber and fuel—48% of the world's ice-free land area<sup>17</sup>. Encouraging more productive activities on these lands is the only way we will be able to meet a doubling of demand while taking pressure off habitat conversion.

How we use our productive lands also has huge implications for climate and inter-related benefits on other natural resources such as water. There are business models and land management strategies that have multiple benefits and are already in use, such as extended rotation logging in the US and Indonesia, or reduced fertilizer usage for cropland in the US Midwest.

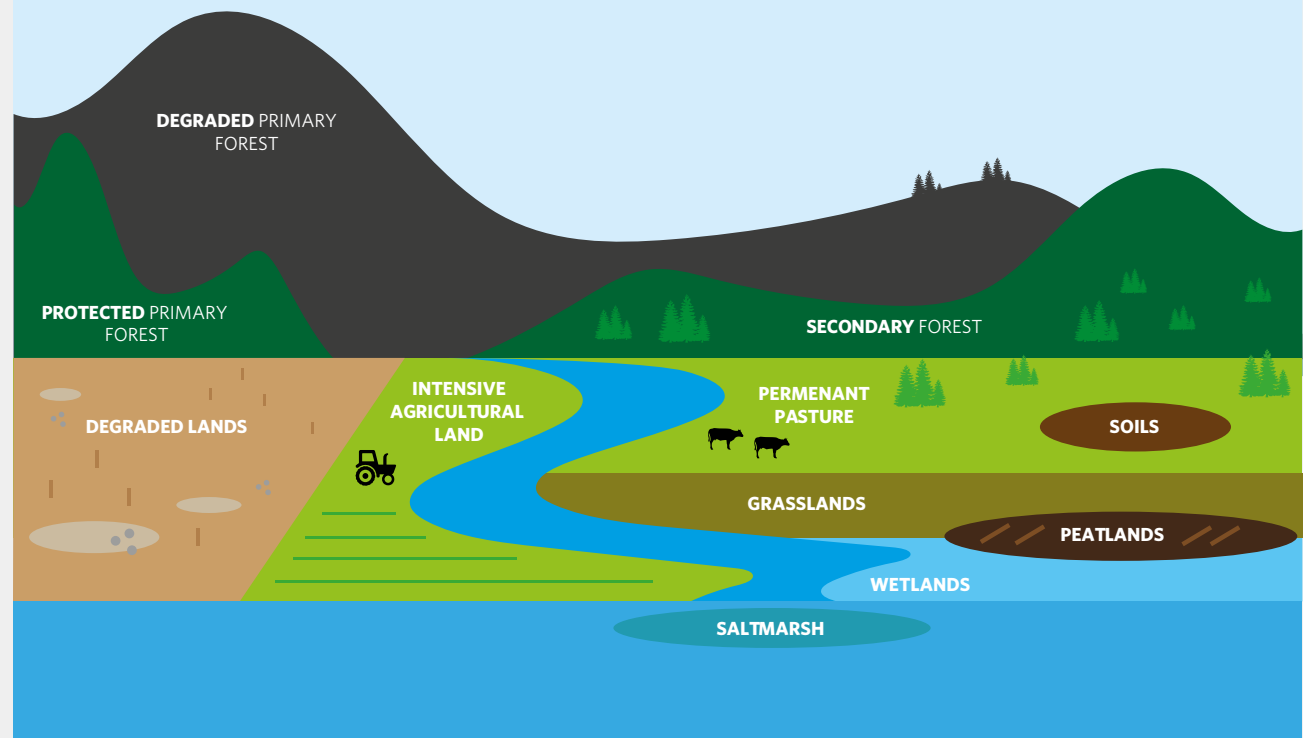
The third aspect of natural climate solutions is to restore degraded land on a global scale, learning from the many examples of projects supported by The Nature Conservancy and others. Approximately 2 billion hectares of degraded land<sup>18</sup>—an area larger than South America—could be restored into productivity for food and/or forest. There is already a robust economic case for restoration and reforestation, with or without a price on carbon.

The restoration and planting of indigenous tree species provide more resilience. In the US, for example, the purchase of marginal production farmlands on the Mississippi floodplain has enabled native commercial hardwoods to be planted which both restore the critical floodplain landscapes and store carbon.

The long-term sustainability of large-scale conservation efforts depends upon achieving not just carbon outcomes, but also on promoting human well-being and ecosystem service benefits for local communities.

### ENHANCING THE CARBON MITIGATION POTENTIAL OF THE ENTIRE LANDSCAPE

There are many opportunities for reducing emissions, protecting key habitats, while increasing or maintaining production in the agriculture and forestry sectors.



*The What*

## Multiple benefits in many landscapes

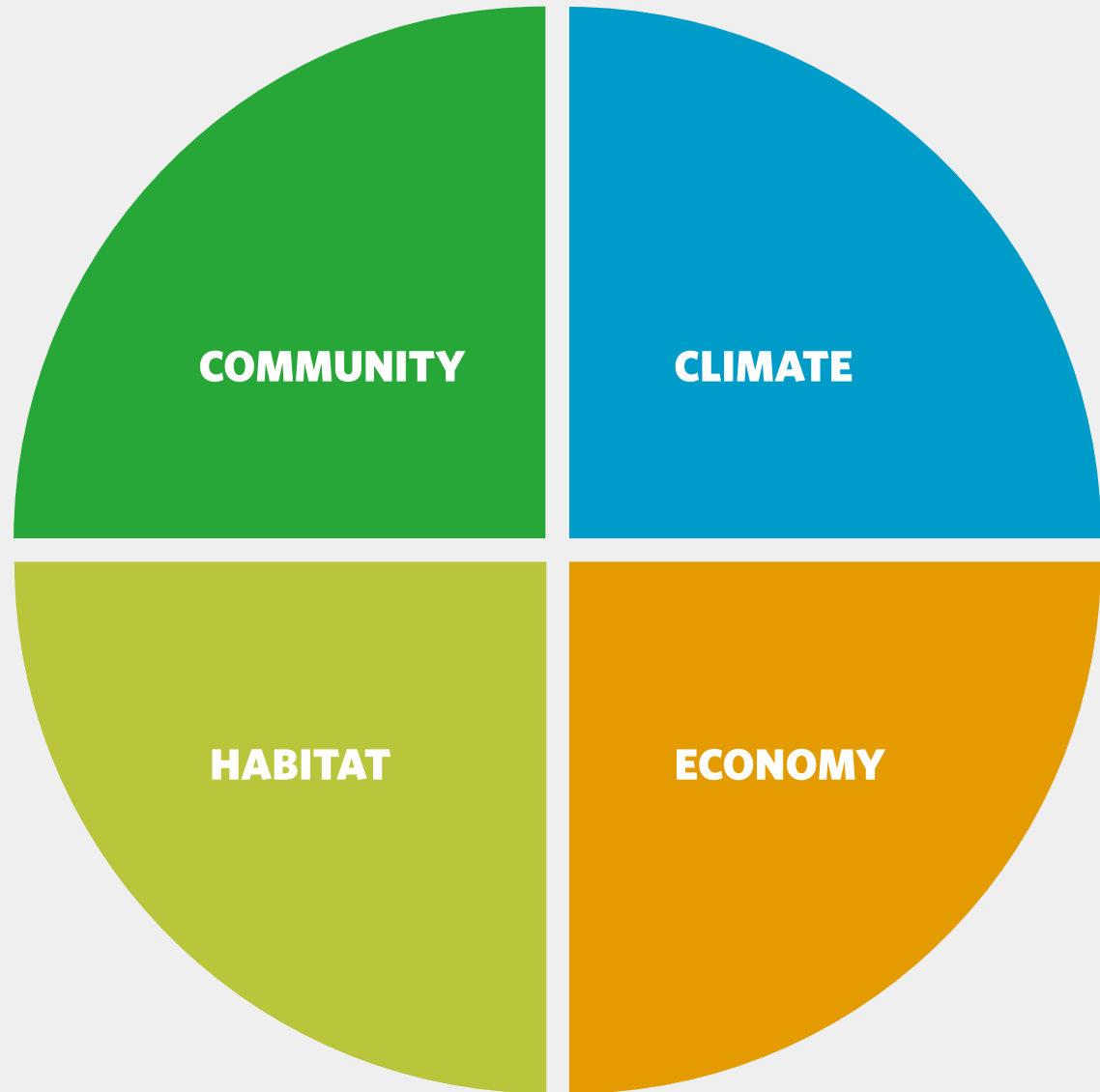
---

### SCALING UP OUR EFFORTS

While traditional development models have succeeded in lifting countless individuals out of poverty in the developing world, public policies and incentives that spurred growth in forest countries often hastened deforestation and broader environmental degradation. The Nature Conservancy has for decades worked with diverse parts of society to promote conservation, and has seen time and again how decision-makers have grappled with what seem like trade-offs between environmental and economic goals.

Recent years have seen more commitments to reduce deforestation and land-use emissions, but obstacles such as lack of political will, poor governance structures and trade-offs between shorter- and long-term costs and benefits, complicate implementation. Governments, companies and landowners must trade single-outcome decision-making for more fully-informed planning across entire landscapes and longer-term horizons. In this way, we can move beyond the polarizing 'development versus environment' debate. New business models, like restoring degraded land to production or reduced-impact logging can contribute to economic, social and environmental goals.

The strategies previously outlined—and the case studies ahead—are examples of how we are working to tackle development and conservation challenges in an integrated way. It is not a zero-sum game. There is a development path that is compatible with healthy landscapes and flourishing communities—and where the power of nature can be fully harnessed for tackling climate change.





Elna Mathurin shows off her Black Mangrove seedlings, soon to be transplanted to the nursery area © Tim Calver



*Case Study*

## The Amazon Frontier— Pará State, *Brazil*

---

The Brazilian Amazon epitomizes the challenge and the potential for creating resilient landscapes. Here, the competing pressures of economic, social, technological and environmental development are evident on a massive geographical scale. While the scale of land degradation, driven by unsustainable cattle ranging practices, has been vast over several decades, it remains a region where there are countless possibilities for generating sustainable economic and environmental return.

Programs in the municipality of São Félix do Xingu, within the state of Pará, show how communities can employ more sustainable land use and agricultural practices to keep forests intact while increasing yields and incomes. Avoiding deforestation, which in this area is mainly driven by cattle ranching, remains one of the best strategies for mitigating climate change. Coupled with complementary strategies, such as restoring degraded habitats and improving land practices, we have also shown the capacity to absorb carbon while benefiting local communities.





## TACKLING DEFORESTATION

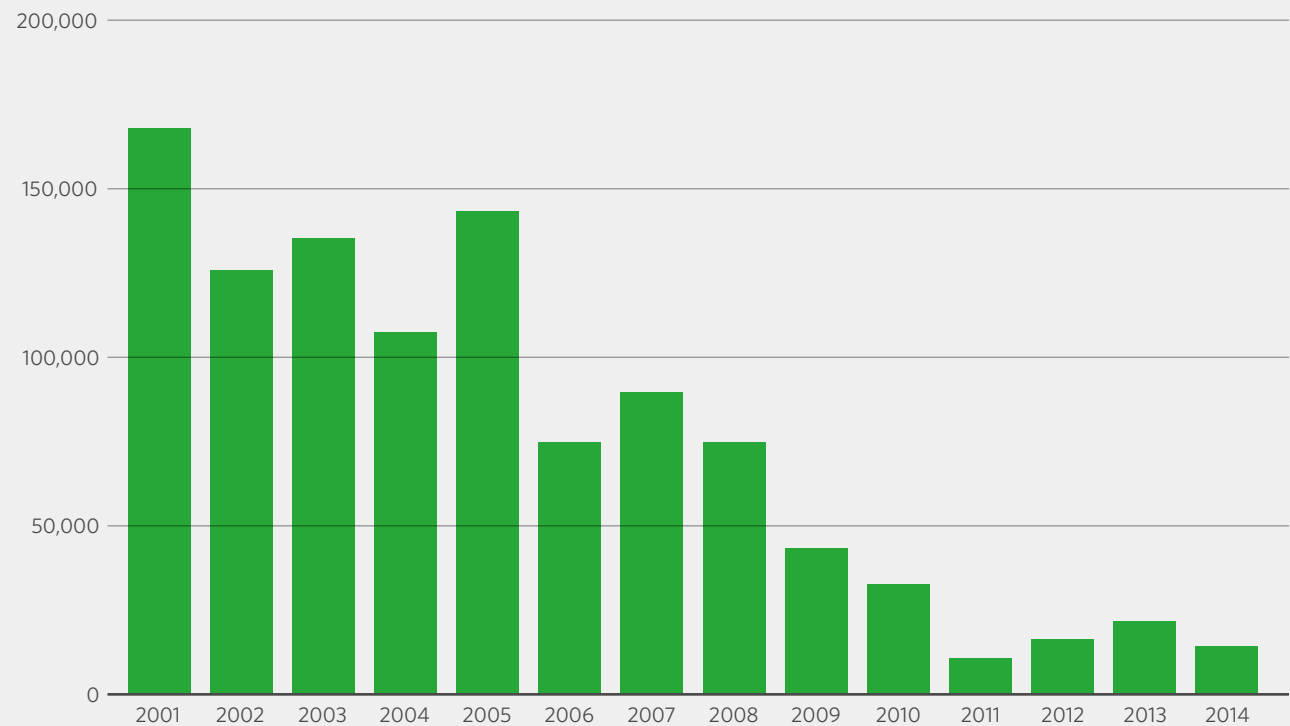
As a frontier region on the front line of uncontrolled beef expansion in the Amazon, São Félix has had some of the worst deforestation rates in the Amazon. Traditional methods of cattle ranching—following a vicious circle of timber removal, soil exhaustion, land degradation, abandonment, followed by deforestation of new areas—had led to severe land degradation and the loss of an average of 85,000 hectares of forested land per year from 2000-2012.

As a result, the municipality was one of the first entries on Brazil's national deforestation 'black list', in 2008. The black list, which targeted municipalities with high deforestation rates, included an embargo on the sale of goods produced in illegally forested areas, and severely affected ranchers' ability to sell their livestock and get access to credit.

### SÃO FÉLIX DO XINGU, BRAZIL: BASIC FACTS

- **Size:** 8.4 million hectares
- **Forest cover:** 6.1 million hectares
- **Population:** 106,940 people
- **Economy:** Primarily beef production, and mining

São Félix do Xingu  
Forest Loss (hectares)







Forest carbon scoping in São Félix do Xingu, in the Brazilian Amazon © Rane Cortez/TNC

Since 2005, however, rates of deforestation have slowed. A mix of national and state policies and enforcement measures, coupled with an innovative program to promote forest-friendly development, have brought rewards. Throughout this time, The Nature Conservancy has been working with national and local authorities on forest code improvements and enforcement. This has included the agreement of a pact to end illegal deforestation, signed in 2011 by more than 40 local institutions, overseen by a commission. The registration of private lands through Brazil's rural environmental registry (CAR), has helped to reduce deforestation by linking deforestation with registered property owners, creating a regime of accountability. Financial incentives have been successfully introduced by linking municipal tax revenues to trends in deforestation and land registration.

---

Since 2005, rates of deforestation in Brazil have decreased dramatically—by 70% below historical rates—because of improvements to national forest law and actions like those taken in Sao Felix and the Pará state. There is much more to be done, but the trend has shown that these solutions can work.

---



## BETTER LAND MANAGEMENT

We have worked with ranchers, farmers, companies and other local landowners to register their lands and implement more sustainable agricultural practices. Through a programme to intensify cattle production, cattle producers have received support for more efficient practices that avoid soil degradation and allow more cattle to be raised on the same amount of land, reducing the need to clear additional forest.

Since 2004, Cargill and The Nature Conservancy have been pioneering a pragmatic, market-based approach to reducing Amazonian deforestation even as soy production in Brazil increases

to meet growing global demand. The goal has been to influence more responsible production of soy by purchasing only from producers who are in compliance with Brazil's Forest Code. Today, 100% of the soy Cargill buys in the Santarem region is from farms enrolled on the rural environmental registry, with deforestation monitored by satellite.

Commitments from corporations have been made to eliminate deforestation from beef supply chains, helping to promote more sustainable farming practices. It is an example of collaboration that shows the power of the private sector to help make change happen at scale. Efforts have also been made to restore deforested land by producing cacao—a high-value, shade grown crop that can

be grown on reforested land, often by smallholders and with the support of local cooperatives. It has provided a better alternative to unsustainable cattle production and has delivered local economic benefits through the development of partnerships with larger corporations.

---

**“We can be a model, not just for Brazil, but for the world.”**

Wilton Batista, Rancher's Union representative, São Félix do Xingu



Seedlings at Fazenda Santo Antônio restoration property, Brazil © Devan King

## **WORKING WITH INDIGENOUS COMMUNITIES**

We have developed relationships with indigenous leaders to help secure land tenure and protections. Local people have made progress in developing territorial and environmental management plans for their traditional lands and have reduced the encroachment by outsiders that previously resulted in deforestation.

To reduce deforestation and shift to a new development trajectory, good practices for ranching and crop production need to happen and indigenous people need to be supported in their continued stewardship of the forest—especially when most of the remaining carbon-rich forest is found in indigenous reserves.

Indigenous people need help in removing illegal settlers from their land and those settlers need to be able to find alternative solutions which generate sustainable livelihoods. Progress towards these goals can be made by incorporating indigenous interests into overall development planning.

## **GREEN GROWTH FOR PARÁ**

Building on the years of work in São Félix do Xingu, The Nature Conservancy is now supporting the State of Pará to advance a bold agenda to expand investment and production in the state, while eliminating deforestation.

The state's economic development plan, Pará 2030, will draw on all of the Conservancy's strategies for green growth—better development planning, support for indigenous communities, transforming working lands to a more sustainable model, and natural climate solutions including reduced deforestation and restoration.



*Case Study*

## Integrated conservation: Emerald Edge, *North America*

---

The Emerald Edge is the largest and last intact coastal rainforest on earth, spanning 40 million hectares from Washington's Olympic Peninsula, through coastal Canada to Alaska's southern panhandle.

It is a global treasure of biodiversity: its lush coastal landscape is a leading source of healthy wild salmon; it is a stomping ground for grizzly bears and wolves, as well as elk and eagles, and is home to indigenous groups whose clan roots stretch back for millennia. The rainforest is also an important timber resource, a source of jobs in rural communities, and a standing buffer against climate change. The region is home to more than 35 First Nations and tribes who depend on the Emerald Edge for their livelihoods.





Aerial view of Clayoquot Sound, Emerald Edge © Bryan Evans

Despite the biological richness of the region, the people here suffer poor economic conditions. Boom-and-bust resource economies have chipped away at the landscape. In the last century, unsustainable logging, fishing and other extractive industries have eroded old-growth forests, diminished wild salmon runs, and frayed ecosystems. Unresolved issues linked to resource decision-making authority have created uncertainty about the way forward.

Population growth and the escalating demand for resources are placing increasing strain on the region, which is under pressure from the development of pipelines, ports, mines and other infrastructure. Plans previously considered by the Canadian government include the investment of hundreds of billions of dollars in mining, forestry, and gas and oil projects. In 2013, 94 of the 105 projects under review were “located on reserve, within an historic treaty area, or in a settled or unsettled claims area”. This indicates the scale of the challenge.

A clear path to making development decisions that benefit the people, nature and economy of this area is needed, or we risk losing one of the world’s last great wild places.

The Nature Conservancy has been working in this region for more than 50 years. In 2004, we played a key role in brokering a historic land use agreement in the Great Bear Rainforest that protected two million hectares of the Emerald Edge forest from logging and put more than 8 million hectares under strict resource-use guidelines that balance the needs of people and nature.

Today, we are scaling up our partnerships with the local communities in Emerald Edge. We are working to change the conservation paradigm so that the region’s communities are operating and benefiting from sustainable local economies that are also producing conservation outcomes. By providing additional land use planning tools and information, communities can make their own informed decisions about their lands and futures.

In the Emerald Edge, we are working in partnership with indigenous communities to bring the benefits of our track record in large-scale conservation, science, planning and sustainable economic development. The approach seeks to ensure the creation of local benefits from land use and land protection. This will help realize the local communities' visions for these lands by changing provincial land tenure to create community-managed forests and protected areas that honor traditional use and the need for sustainable local businesses such as eco-tourism.

### **BALANCING CREATION AND CONSUMPTION**

The Tla-o-qui-aht First Nation people, who live on Vancouver Island, like many indigenous communities around the world, have a deep connection to nature and rely on it for their economic, spiritual, cultural and physical well-being.

“We used so much cedar that we were called the cedar-salmon people,” said Saya Masso, Councilor and Resource Manager, “but you couldn't tell that we were using the forest.”

Because these communities have never signed treaties with the Canadian government, their legal land status remains ambiguous. Despite this, the Tla-o-qui-aht established a Tribal Park to ‘re-establish a healthy integration of economy and environment in which there is a balance of creation and consumption and a continual investment in biological and economic diversity.’

In many ways, Tribal Parks such as these represent First Nations' visions for sustainable management of their lands. It is a vision with power. Community representative Tsimka Martin believes that they can become ‘a way to start to heal our people’.

The Nature Conservancy, the Tla-o-qui-aht, and two other First Nations in Clayoquot Sound have formed a partnership that aims to strengthen local jurisdiction over resource decision making—putting people who have called this place home for generations in the position of ensuring it provides for future generations.





Clayoquot Sound, Emerald Edge, where TNC is working in partnership with local Indigenous communities © Bryan Evans

## **PRACTICAL AND ENDURING RESULTS**

Our approach seeks to deliver practical and enduring results—with benefits that people can walk on, float on, breathe, see and touch.

Our impact at the grassroots level is proof that social, environmental and economic good can work hand in hand. By focusing on tangible conservation that generates a ripple effect, we increase the support to achieve more and bigger things. We are:

- Partnering with local communities and indigenous peoples to make a tangible difference to daily lives. This involves building capacity so that people can continue to steward their lands and support conservation-based economies that benefit local communities.
- Inspiring others through visible wins that build momentum toward larger, long-term successes and building the capacity of the next generation of conservation leaders.
- Delivering results that showcase the value of nature and its impact on everyday life.
- Using science to demonstrate results and the magnitude of important gains, while recognizing the benefits of integrating community and cultural values into landscape conservation.

## **EMPOWERING COMMUNITIES**

The Supporting Emerging Aboriginal Stewards (SEAS) program, supported by The Nature Conservancy, is fully active in four First Nation communities, providing 300 youth leaders with hands-on experiences with their natural surroundings, history and heritage each year. SEAS emphasizes community ownership and blends conservation science with indigenous knowledge so that students experience first-hand how their communities and cultures are related to the surrounding environment. The impact of the program extends well beyond day-to-day learning experiences: initial outcomes show increased community interest and investment in post-secondary education, natural resource management and community leadership. We are now turning our attention to ensuring that these programs are self-sufficient and can continue to provide leadership skills and conservation experiences to youth leaders for years to come.

### **SCIENCE TO SUPPORT SUSTAINABLE PRACTICES**

Science is a powerful tool to serve local communities. Our science incorporates indigenous knowledge and principles, creating a new generation of modern and practical land and water management tools. These give local communities new approaches and technologies to make informed decisions and measure progress. They help identify new paths to economic development that respect people and nature—and provide a common measure of progress along the way. This approach showcases the value of nature in a framework that helps local communities share progress and garner new support.

### **SUPPORTING LONG-TERM, GREEN GROWTH**

Across the Emerald Edge, emerging local leadership is looking to replace short-term economic cycles with economies that work for nature and people—not just for the next generation, but for the next 500 years. It is vital to take this long view, even while we find ways to make more immediate impact.

Long-termism starts now. It involves giving steady support to leaders in local communities who are looking generations ahead, and developing long-range, integrated strategies that support local communities in making the shift to sustainable economies. Every individual conservation success adds to the overall long-term impact.

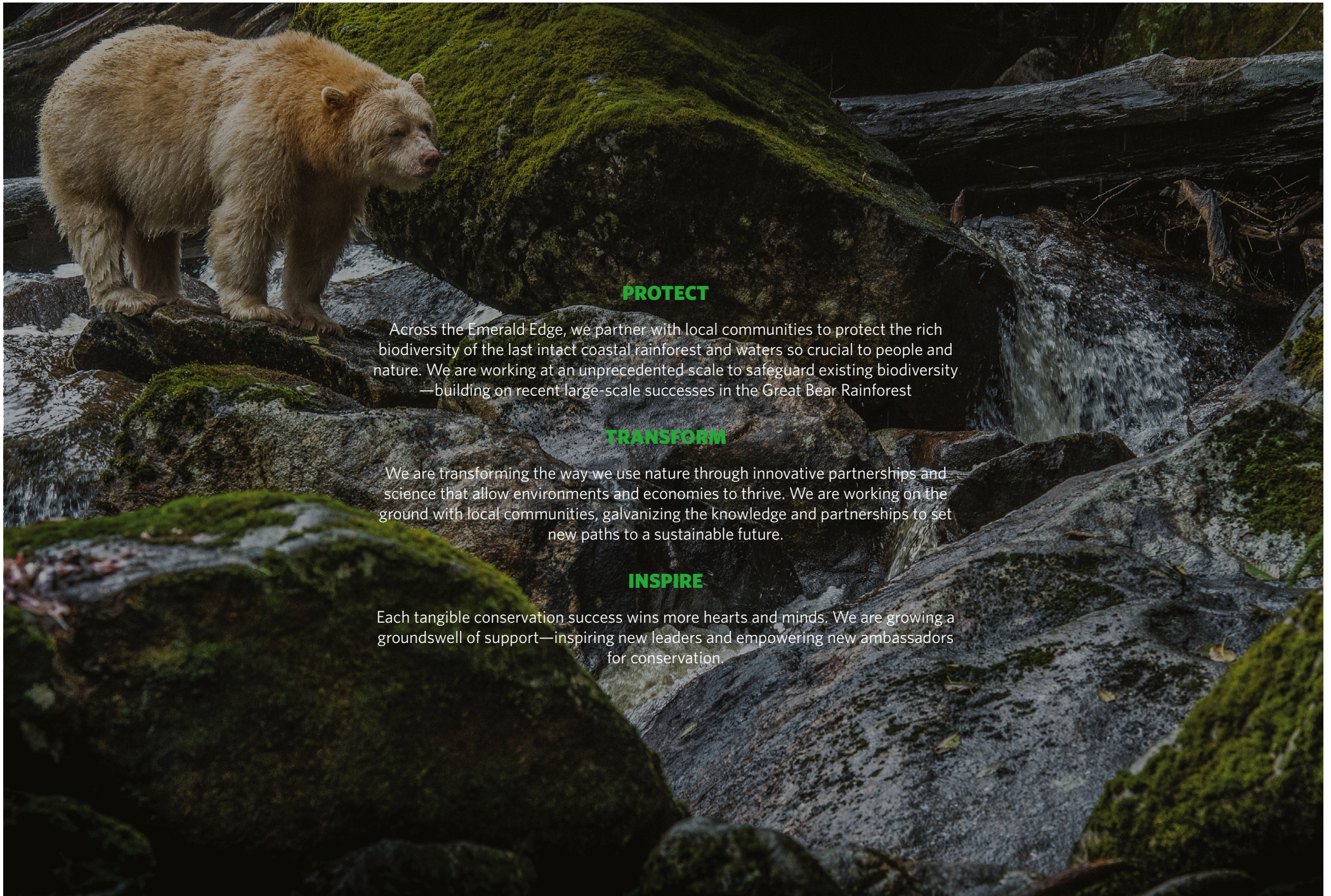
---

**“Our land use plan is to see millions of fish in the river and clean drinking water. We want to see a land use plan for 500 years of jobs.”**

Saya Masso, Tla-o-qui-aht Councilor and Resource Manager.

---





## PROTECT

Across the Emerald Edge, we partner with local communities to protect the rich biodiversity of the last intact coastal rainforest and waters so crucial to people and nature. We are working at an unprecedented scale to safeguard existing biodiversity—building on recent large-scale successes in the Great Bear Rainforest

## TRANSFORM

We are transforming the way we use nature through innovative partnerships and science that allow environments and economies to thrive. We are working on the ground with local communities, galvanizing the knowledge and partnerships to set new paths to a sustainable future.

## INSPIRE

Each tangible conservation success wins more hearts and minds. We are growing a groundswell of support—inspiring new leaders and empowering new ambassadors for conservation.



*Case Study*

## Protecting wildlife, landscape and culture—*Mongolia*

Mongolia harbors extraordinary biological and cultural treasures. Its sweeping landscapes are home to rare plants and animals, including the Bactrian camel, Gobi bear, Saiga antelope and wild herds of majestic Mongolian gazelle.

It is also home to a vibrant nomadic herding culture—between 30 and 40% of Mongolia's citizens are wholly dependent upon the health of the nation's grasslands and water resources, supporting themselves through livestock herding and subsistence hunting.





Young boy tends his family's herd of goats in the grassland steppe of Eastern Mongolia's © Nick Hall

### **GUIDING RESOURCE DEVELOPMENT ON A VAST SCALE**

Today, Mongolia is at a crossroads. Its vast natural resources have caught the eye of global markets, but as yet remain virtually untapped. Decisions made today, before mining, energy, and infrastructure development take their toll, are crucial. They will shape the future health of Mongolia's unbroken landscapes, of its free-roaming wildlife and of its citizens who rely on and treasure nature as their ancestors have done for centuries.

The government in Mongolia is seeking to preserve the country's nomadic culture and some of the world's last great deserts and grasslands. The government's objective is to protect 30% of the country's natural lands, while allowing for mining and development that will ensure its future viability. Recognizing this challenge, The Nature Conservancy has been working with the Mongolian government to develop a whole system, science-based approach to mitigation planning at a landscape scale—an approach the Conservancy calls Development by Design (DbD).

### **TAKING A LANDSCAPE-SCALE APPROACH**

At the invitation of the Mongolian government, the Conservancy began work in 2010 to support landscape-scale mitigation planning for Mongolia's Eastern Steppe region. This region is larger than the state of California and home to the world's largest intact grasslands, important for both wildlife and nomadic herding. The Conservancy's DbD work focused on identifying a portfolio of priority areas for conservation based on the region's biological resources, ecosystem services, climate change considerations, and projected development activities. The result has been an information system and landscape-

level blueprint to support decision-making for development, conservation, and land-use planning. The Conservancy completed this work in 2011 and it has supported the designation of several new national and local protected areas in the Eastern Steppe. Today Mongolia's national and local governments have protected 13 million hectares, or 45% of the Eastern Steppe, surpassing the 30% goal. Local protected areas, which make up much of the new lands under protection, will be maintained for nomadic herding and wildlife.

---

**“We think The Nature Conservancy's Development by Design initiative is very important for Mongolia if we want to pursue environmentally-friendly development in this country.”**

Oyun Sanjaasuren, chair of the United Nations Environment Assembly and former member of the Mongolian Parliament.

---

Following successful work in the Eastern Steppe, the Mongolian government requested the Conservancy take Development by Design to the rapidly developing Gobi region (completed in 2013) and then to complete landscape-scale blueprints for the remainder of the country (completed in 2015). In future, Mongolia will have a national mitigation framework and web-based decision-support tools for balancing economic development needs with environmental, social, and cultural values.

To complement progress on the national framework and tools, the Conservancy has worked with the Mongolian government to support the establishment of key mitigation policies including an amendment to the Environmental Impact Assessment law to require biodiversity offsets for mining and energy projects and the development of accompanying regulations and guidance for implementation.

An essential ingredient of all this work has been stakeholder engagement. This includes government, companies, academia, NGOs, and especially nomadic herders as they are the people most dramatically affected by changes to the landscape.

## **PROMOTING SUSTAINABLE GRASSLANDS**

Since the Conservancy's first days in Mongolia, we have worked closely with community members, preserve rangers and officials. In testing grassland management approaches in the Toson Hulstai Nature Reserve, the Conservancy's anchor site in the Eastern Steppe, we have seen evidence that our hard work to advance this approach is paying off. We have gained critical participation from local communities, reduced threats to grassland species and encouraged others to use the techniques tested here.

Approximately 200 herder families live in and around Toson Hulstai and benefit from our work to secure grazing rights and access, protect freshwater springs and create economic opportunities such as ranger positions. Now, eight herding communities around Toson Hulstai work closely with us on sustainable land use, recognizing that the practices their ancestors have used for centuries will sustain grassland resources and their livelihoods into the future. In the past three years, with the help of local governments and communities, the Conservancy has successfully abated critical threats to these grasslands.

---

“These past few years have demonstrated the giant steps forward that can result when multiple parties work together toward a shared vision. Here in Mongolia, that vision is one of ensuring that we can all benefit from economic development while protecting the vast, open landscapes that will support our rich natural and cultural heritage for generations to come.”

Enkhtuya Oidov, Mongolia Country Program Director.

---



A dry river valley in the Khongor Sand Dunes of the Gobi Desert Region of South Central Mongolia © Nick Hall



*Case Study*

## Advancing green growth, East Kalimantan, *Indonesia*

---

### **FOREST OF OPPORTUNITY**

East Kalimantan is on the island of Borneo in Indonesia. It has some of the last remaining large, untouched wilderness areas in the country—but deforestation remains a threat to its wildlife and local communities. The Nature Conservancy is working throughout the province to help protect a rare expanse of biologically rich tropical rainforests. It is the site for some of our most ambitious forest projects, which aim to protect wildlife, enrich local communities and innovate new models that can spur forest conservation worldwide.



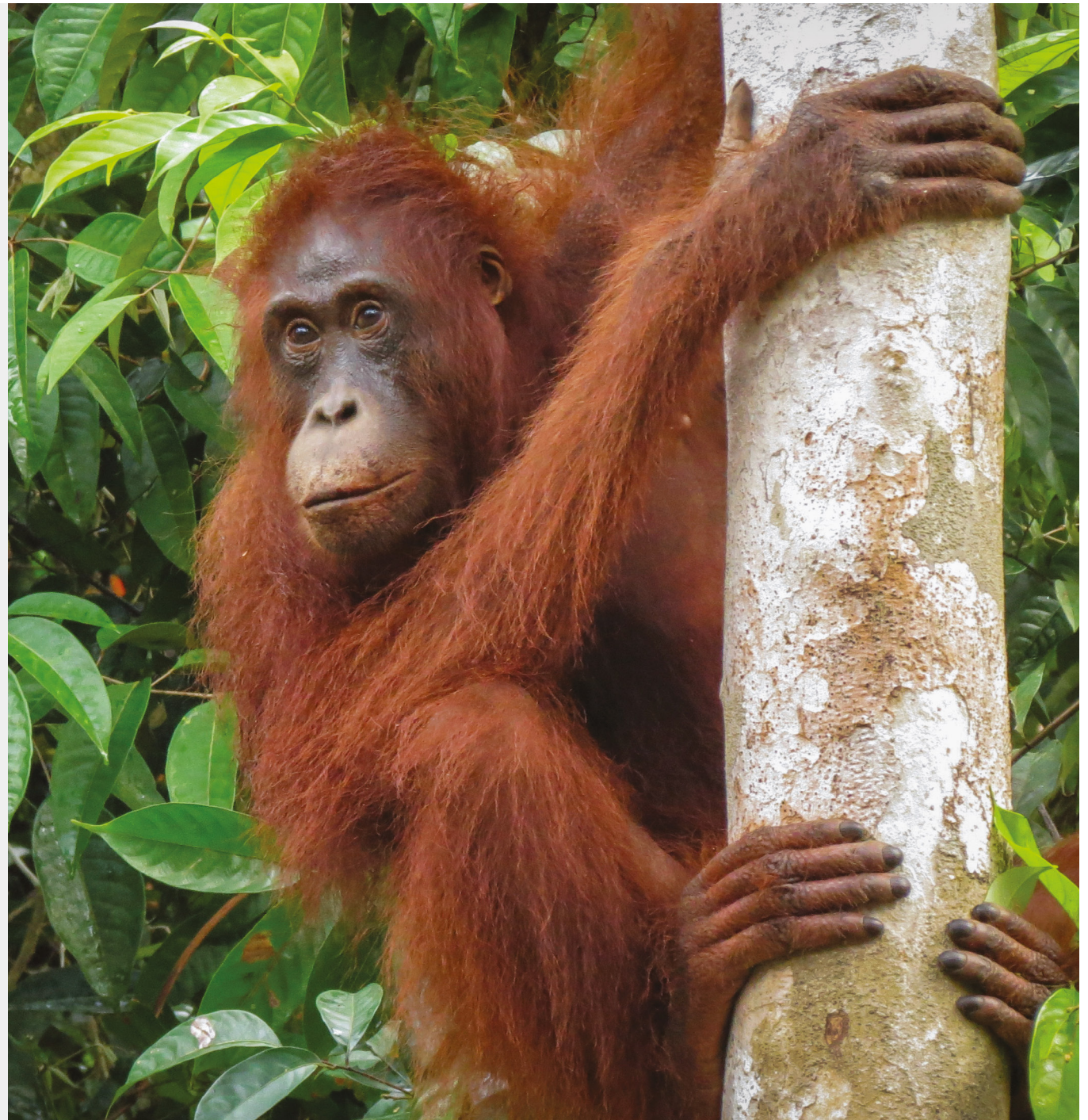


Dense tropical Wehea forest in the Kalimantan region of Borneo, Indonesia © Bridget Besaw

## ORANGUTAN CONSERVATION

East Kalimantan is home to *Pongo pygmaeus morio*, a rare subspecies of orangutan.

- There are approximately 61,000 orangutans left in the world, mostly in the rainforests of Borneo—in Indonesia and Malaysia.
- Orangutans share 97% of our DNA— they are one of our closest living relatives.
- Orangutans require large tracts of healthy forest for survival, and they help the forest grow by eating tree fruits and dispersing their seeds as they travel.
- Around 78% of the orangutan's habitat is now located outside of protected areas .



An orangutan in Tanjung Puting National Park in Borneo © Katie Hawk



## CHALLENGES OF TRANSFORMATION

East Kalimantan is a microcosm of the world's development and conservation challenges. Today, it is one of the most economically (and ecologically) wealthy provinces in Indonesia, and has become a global leader in efforts of tropical forest countries to accelerate the transition toward more sustainable models of development.

However, the region is also coming to terms with a 30-year transformation due to increased commercial logging, palm oil production, timber plantations, mining activity, small-scale community-driven conversion, and forest fires linked to El-Nino events. All of these have combined to open up once-remote areas and cause mass deforestation.

While there have been some short-term economic and social benefits from this land—and resource-intensive development model, the benefits have not matched the scale of the losses of natural capital.

Major government reform initiatives, potential for large-scale climate mitigation investment, and existing corporate sustainability commitments create an opportunity for changes for implementing sustainable development strategies within the region. However, these efforts have not yet produced concrete action, or the levels of co-operation required.

Landscape management efforts have historically been sectoral or focused on single-actors. Local community rights have not been clear and different government authorities have exercised shifting levels of influence. Transparency in licensing and decision making over land use has been low. As a result, plans and investments have been narrowly focused and have often pursued inconsistent objectives.

## SUSTAINABLE DEVELOPMENT OPPORTUNITIES

Since the early 2000s, The Nature Conservancy has been helping villages in Indonesian communities identify alternative approaches to forest use, to increase local knowledge of sustainable practices, and to secure stronger access to and control over forests and forest resources. Since 2009, the Improved Forest Management Program, supported by the Conservancy, has established Forest Stewardship Council certification in 1.4 million hectares of forest. It has also developed measures to quantify carbon emission reductions from reduced impact logging practices.

Positive momentum is continuing to build. In the past 10 years in East Kalimantan, there has been growing interest among local and global stakeholders in supporting improved management of tropical forest landscapes, both in terms of safeguarding carbon storage and delivering sustainable commodity production. The province has actively embraced these objectives.

Local, national, and international partners—including the Indonesian government, communities, the private sector and The Nature Conservancy—came together to support the Berau Forest Carbon Program (BFCP). The program works to provide low-carbon, sustainable development opportunities that achieve increased economic growth and long-term forest conservation. It provides a model for how Indonesia can pursue its economic development goals while reducing emissions and environmental impacts.

The Berau Program, declared a district-scale REDD+ (Reducing Emissions from Deforestation and Degradation) pilot in January 2010 by the Forestry Ministry, takes an integrated, large-scale approach to supporting sustainable economic development. The

program, which is the most advanced and visible district-level program in Indonesia, demonstrates how REDD+ can be applied across a political jurisdiction that is large and complex enough to provide important lessons for implementing a national REDD+ strategy but at a realistic scale for near-term results. It aims to protect the district's forest ecosystems and reduce carbon dioxide emissions by 10 million tons over five years.

The program operates at a district-level by increasing the capacity of government agencies, engaging relevant stakeholders and improving land-use planning and policy. It also uses site-based strategies to shift timber concessions to sustainable logging practices, regulate the expansion of oil palm plantations, establish effective management for forest protection, and engage local communities in natural and forest resource management.

## SUSTAINABLE FOREST MANAGEMENT

The Nature Conservancy works to maintain and protect existing forest cover, and through programs such as REDD+ and forest certification, we can scale up our work to protect and improve the management of forests.

In the province of East Kalimantan, seven logging concessions (covering 745,945 hectares) have been certified by the Forest Stewardship Council (FSC). A total of seven other forest concessions (390,265 hectares) are on their way to becoming FSC certified. Other concessions could be supported towards certification, while engagement with timber concessionaires could support the transition to legal, sustainable, and lower-carbon timber management practices.

## PURSUING SUSTAINABLE PALM OIL

Palm oil currently supplies nearly 70% of global demand for vegetable oil. As it has higher yields than any other oil seed and is the cheapest and most productive oil seed crop, palm oil production is expected to increase more than others, to meet growing demand.

Over the past decade, much of the land required for oil crop production has come at the expense of tropical forests. While Indonesia and Malaysia are by far the dominant global producers—together accounting for 86% of production—palm oil companies are rapidly expanding into Africa and Latin America. It is therefore of international importance to help establish sustainable production models in the palm oil sector to address deforestation and related emission of GHGs as well as halting loss of imperiled biodiversity and ecosystem services.

Around 3.2 million hectares of land has been permitted or licensed for palm oil in East and North Kalimantan while only around 944,000 hectares have been planted. There are still opportunities, therefore, to influence future land use choices and the application of permits. For example, mapping of suitable sites for palm oil development would assist by integrating information into land use planning decisions. Incentive agreements could help to relocate existing palm oil permits on forested land to low-carbon areas. Programs can also improve the efficiency of palm oil production and reduce its impact on biodiversity.

The Nature Conservancy, with partners, is developing a sustainable palm oil program focused on East Kalimantan, and Berau in

particular, which will bring government institutions, private sector companies, and local participants together. The program will involve improving the capacity of local government institutions, developing tools and approaches for better corporate and community practice, socio-economic and environmental analysis at provincial level and policy dialogue to inform future palm oil development.

## EMPOWERING LOCAL VILLAGES

Our work in Berau has sought to empower local communities to protect and manage forests through an approach, called SIGAP, which the Conservancy has tested since 2010 in three 'model villages'. SIGAP, in Indonesian, signifies inspirational community actions to effect change.

Our work has helped SIGAP model villages protect the forests on which their lives depend—forests that also protect critical carbon stores and wildlife populations. For example, in the past two years:

- The Ministry of Forestry allocated 8,000 hectares of forest lands to Merabu village;
- Communities in Biduk-Biduk resisted palm oil expansion that would destroy their forests and successfully lobbied the Berau government to give 2,000 hectares of those forests protected status;
- A logging company in Long Duhung village designated 1,500 hectares for community management.

After nearly five years of work, SIGAP model villages have a new wealth of green livelihood activities available to them, including selling forest products like honey, cultivating community rubber plantations established on already degraded lands and developing ecotourism programs.

---

**“These projects support local communities in protecting their traditional land by providing alternative activities for growth that do not reduce the amount of existing natural forest.”**

Bambang Wahyudi, former logger and now active in the management of the Improved Forest Management Program.

---



Fruit from the African oil palm at a palm oil farm in the Colombian Llanos © Erika Nortemann

---

“We believe development is a required process for Indonesia, but at the same time sustainability is a must. The Nature Conservancy’s mission is fully linked with what Indonesia needs.

We are using science not just for decisions in the field, but to provide better analysis for policy decisions on all levels.”

Wahjudi Wardoyo, Senior Advisor for Terrestrial Policy in Indonesia.

---

### DOING MORE

Although there has been significant progress and genuine commitment, efforts in East Kalimantan need to develop further if they are to fundamentally change the dynamics of landscape transformation and bring in results-based finance that would support reduction in deforestation-related emissions.

Supply chain-oriented strategies, including the ambitious Indonesian Palm Oil Pledge (IPOP) and the underlying single-company zero deforestation commitments, promise a great deal, but will need greater participation by governments, upstream suppliers, and communities. IPOP could solve the problem of avoiding conversion, but not the problem of how to legally protect, manage, and finance natural capital.

### DIVERSE PARTNERS

Many of the largest natural resource commodity companies in Indonesia are active in East Kalimantan province and are at the forefront of dialogue on sustainable commodity production— including Wilmar, Golden Agri Resources, Asia Pulp and Paper, Indofood, and others.

A number of development partners are active, including GIZ, World Wide Fund for Nature, Climate Policy Initiative, Daemeter Consulting, Sustainable Trade Initiative, Center for International Forestry Research, Global Green Growth Institute, and the World Bank. Significant financing is already in place or expected from the US (Millennium Challenge Account Indonesia; Tropical Forest Conservation Act; USAID), Germany (ForClime; GELAMA; BMUB Palm oil), Norway (various), the World Bank’s Forest Carbon Partnership Facility, and the BioCarbon Fund Initiative on Sustainable Forest Landscapes.





Carbon monitoring in the tropical forest in Berau, East Kalimantan, Indonesia ©Bridget Besaw

## A GREEN GROWTH COMPACT

The Conservancy sees a major opportunity to develop a Green Growth Compact in East Kalimantan that brings together key stakeholders and supports them in operationalizing existing commitments, generates additional commitments, and enables achievement of shared prosperity.

A Green Growth Compact would be founded upon a compelling vision for the future, a strong analytical base, and a negotiation process that generates customized solutions that create far better

outcomes for landscape stakeholders. As a signatory to the Rio Branco Declaration, East Kalimantan province has already committed to reducing deforestation by 80% if adequate long-term funding is committed. An expansion of that target to incorporate a focus on prioritizing natural capital to protect could expand the constituency for the compact.

**Indicative overall goal:** “By 2025, East Kalimantan has reduced deforestation-related emissions by 80% and achieved zero net deforestation through rigorous application of the mitigation hierarchy to avoid most impacts on natural capital and strategic restoration investments”.

GOAL	INDICATORS
<b>Economic growth</b>	<ul style="list-style-type: none"> <li>% increase in regional GDP</li> <li>Number of additional jobs created that align with Provincial Green Growth Strategy</li> <li>Perception of investment risk for land-related investments in the Province</li> </ul>
<b>Improved well-being of local people</b>	<ul style="list-style-type: none"> <li>Number of rural households that have increased income, livelihood opportunities (for both income and subsistence), and reliable access to energy</li> <li>Number of additional hectares of land under formal management of communities</li> </ul>
<b>Secured ecosystem services</b>	<ul style="list-style-type: none"> <li>Number of additional hectares of key watershed areas, essential and endangered forest ecosystems (including karst, forested peat land, mangroves, forested wetlands) under effective management in East Kalimantan</li> <li>Number of floods and person-days of flood-related displacement</li> <li>Tons of CO<sub>2</sub> emissions compared to agreed Reference Emissions Level (REL)</li> <li>Tons of CO<sub>2</sub> sequestered through stock enhancement</li> </ul>



## Case Study

# Creating Environmental, Economic and Social Wellbeing—Kenya's Northern Rangelands

For thousands of years, cattle herders have shared Kenya's northern grasslands with elephants, zebras, giraffes, rhinoceros and other wildlife—living in relative balance.

This balance has been altered by increasing drought cycles (as a result of the changing climate) and a growing population with accompanying demand for food and income. This creates pressure for more cattle and more grazing. As a result, the native pastoralist communities who depend on livestock-based livelihood system amass more cattle—with which comes more pressure on the land. This can lead to overgrazing, the destruction of habitat for wildlife, and even cause conflict among communities over limited space.





Samburu child with goats at West Gate Conservancy in Northern Kenya © Ami Vitale

Access to markets is an issue for pastoralists in Kenya, with long and risky treks a common feature. To make matters worse, during times of drought, the pressure to sell is more urgent. In recent years, droughts have been increasingly severe, and fear of mass cattle starvation drives herders to take more of their cattle to market, where they are forced to sell the underweight cows at low prices. Poverty rates in the region are among the highest in the world—around 50% in a year with adequate rainfall, and more than double that during extended droughts.

The 2007-2009 drought killed 60-80% of the livestock in the region and drove food prices up 150%, spurring migration of various ethnic groups looking for access to grazing lands—and leading to increased wildlife poaching and conflicts over limited natural resources such as water and forage.

Increasingly, northern Kenya also faces the effects of climate change, which threatens to deepen the region's vulnerability to poverty by reducing the productivity of these essential grasslands. Rainfall in East Africa has already declined by 15% since the 1980s, and climate change is expected to bring less predictable rains and more frequent droughts to the region.

### **IMPROVING LAND MANAGEMENT**

Faced with these threats, a wide range of approaches have been developed to protect the grasslands, preserve traditional ways of life and generate incomes that will enable communities to prosper.

Working alongside established Kenyan conservation partners such as the Lewa Wildlife Conservancy and the Northern Rangelands Trust,

The Nature Conservancy is working to reduce pressure to expand herds as families' needs grow, to create grazing plans that move cattle around in the right places at the right time, and to implement creative solutions that provide healthier rangelands.

By improving governance and raising awareness, these measures are beginning to restore historical land use patterns. Local pastoralists are improving how to manage and conserve their lands by adopting new land management practices, and making use of financing tools such as impact investing. They are bringing healthier livestock to market more efficiently, increasing mobility and the flexibility of land use, and generating greater returns. These practices are not only boosting livelihoods; they are also sequestering significant amounts of carbon, and improving the land outside existing protected areas that provides critical habitat for Africa's wildlife.

### **TRIPLE WINS**

Healthy grasslands are crucial for northern Kenya's people and its spectacular wildlife.

Conserving these grasslands holds enormous potential to generate triple wins—of higher land use yields, greater climate resilience, and increased greenhouse gas capture. The world's grasslands—here including savannahs, shrubland, tundra and grassy woodland—occupy 40% of the Earth's land area, and store more than 500 Gt of carbon in soil.

## COMMUNITY-LED CONSERVATION

Local communities and other stakeholders involved in biodiversity conservation began organizing community-based conservancies in 1995. In 2004, six conservancies joined together to form the Northern Rangeland Trust (NRT). Its mission is to develop resilient community conservancies which transform people's lives, secure peace and conserve natural resources.

Today, NRT provides support for 33 community-based conservancies representing 450,000 people across nearly 4.5 million hectares in northern Kenya's rangelands. Conservancy members use land management plans that map out areas for use by wildlife, livestock, settlements and social amenities. It is an integrated arrangement under active management based on their needs. With the leadership of NRT, Kenyan grasslands are recovering, wildlife populations are on the rise, and cattle herders are making more money than they have before.

## COMMUNITY GRASS BANKS: HOW DO THEY WORK?

- When rains are favorable, wildlife have the run of the buffer zones, while the community herds graze areas reserved for domestic livestock.
- When drought hits, the community opens portions of the buffer zones so livestock can graze grass that the community "banked" when rains were favorable.
- NRT helps conservancies manage community grasslands and optimize their value, providing a foundation of solid governance so that communities are equipped to address the many challenges they face.







Former lead scientist for TNC, Dr M. Sanjayan, with a ranger inside Northern Rangelands Trust, Kenya © Ami Vitale

The Conservancy supports NRT’s efforts with funding, conservation planning, rangeland monitoring, and geospatial and climate-change technical support. We are also helping NRT’s expansion into new geographies, including Marsabit, the Tana River Delta and northern coastal Kenya.

NRT-Trading—a new for-profit spin-off of NRT—is fostering the growth of enterprises, like livestock markets, mango pulp production, ecotourism and women’s bead craft, which build stronger communities and help fund conservation. Building on successes from the Great Bear Rainforest and Costa Rica, we are also exploring opportunities to create a trust fund that generates a permanent stream of funding for Kenyan conservation.

---

**“Our experience in Kenya has been life transforming; not as one big epiphany, but building over time. We see the world differently. We’re more flexible, more dedicated and, perhaps surprisingly, more optimistic.”**

Anne Knapp, TNC Trustee and Interim Chief Executive, NRT-Trading.

---

## **IMPROVING LIVELIHOODS**

In 2008, NRT introduced its innovative ‘Livestock to Markets’ (LTM) program. Instead of having to make the long trek to a buyers’ market, LTM allows herders to sell their cattle at a fair price directly to NRT in exchange for meeting agreed-upon conservation and governance targets on their land. NRT moves the cattle farther south, fatten them, and sell them at a higher price direct to butchers in Nairobi. The increased sale price covers the cost of the program and the capital revolves to purchase more cows from conservancies who meet the targets. It is a positive feedback loop that was piloted with grant money for four years.

To date, participating herders and their families have sold 7,000 cows into the program—roughly 1,000 per year—and collectively earned nearly \$1.5 million of income. Families have begun opening bank accounts to save a portion of their profits.

By controlling much of the supply chain, NRT has also been able to invest an additional \$80,000 from the sale of the cattle back into participating communities to pay for additional grassland conservation, wildlife guards, clinics, schools and ecotourism lodges.

## IMPACT INVESTMENT

The LTM program has been a huge success, paying more than \$1.9 million to 3,000 pastoralists with all participating community conservancies reporting net increases in wildlife numbers.

Thanks to a creative mix of philanthropy and impact investment, the program is now able to expand and fulfill its potential. Through the recently created 'NatureVest' initiative, investment capital is being brought to conservation. NatureVest represents a dedicated impact investment group for nature which enables investors to align their financial investments with their values.

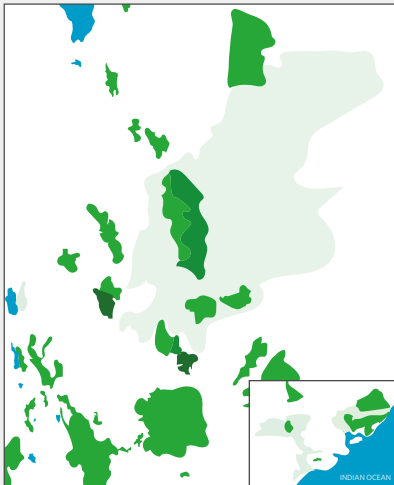
A zero-interest impact loan will enable LTM to grow nearly ten-fold to maximize its positive social and environmental returns. An additional \$3.5 million investment will enable herders to sell 10,000 cattle annually—10 times the current scale—and collectively generate millions in income each year. The investment will significantly expand the area of grassland in which NRT operates, benefitting a

larger swathe of natural habitat and more wildlife. A portion of the additional revenue NRT generates will be used to pay back investors over time.

By creating an opportunity to invest in conservation alongside a financial return, we will be able to exponentially increase the impact of the effort's core philanthropic funding. This complementary, amplifying effect is what makes the impact investment opportunity truly transformational.

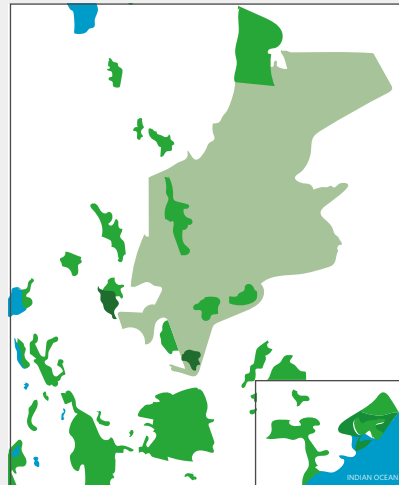
What is happening in Kenya today can happen all over the world. It's about stretching each conservation dollar as far as it will go.

Kenya's northern rangelands



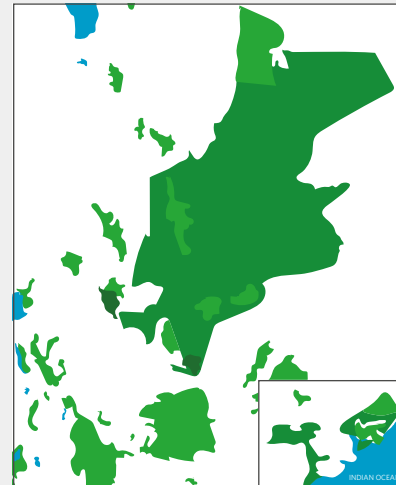
1996: 2 community conservancies spanning nearly 170,000 hectares

..the growth of community conservancies



2007: 15 community conservancies spanning nearly 1 million hectares

...and the expansion of territory covered



2014: 27 community conservancies spanning more than 3 million hectares

---

“As a pastoralist I do believe that the land without wildlife is a cursed land and the land with wildlife is a blessed land. So when you kill wildlife on your land, you bring a curse on your land...today we are not killing each other, we are living in peace and unity. Now our people are empowered, they know more about conservation and they love their own wildlife. This wildlife has really brought a lot to our lives as pastoralist communities in Northern Kenya.”

Josephine Ekiru, Chairwoman of the Nakuprat-Gotu Community Conservancy.

---

## NORTHERN RANGELANDS TRUST OUTCOMES

**IMPROVED GRASSLAND HEALTH:** Community conservancy grasslands had greater productivity and more moisture in the soil compared to similar grasslands outside the protection zones. Vegetation cover in the community conservancies increased significantly in both dry and rainy seasons in 2000 and 2007. There were grassland benefits not only within the wildlife zones, but also in the buffer and grazing zones—where grass growth increased because of better management.

**BETTER ACCESS TO RESOURCES:** People who were part of the conservancies had increased access to a variety of resources compared with those outside the conservancies. For instance, compared to control sites, conservancy residents had an average of 15% more young people attending secondary school because of scholarships provided by the conservancies, 40% better access to affordable transportation because of conservancy vehicles giving rides to villagers, and 35% better access to timber resources because of education efforts to protect large trees.

**STRONGER SOCIAL SAFETY NET:** During the 2007-2009 drought, some people in the conservancy communities were not forced to sell their livestock at very low prices because there was still grass in the grass banks to feed their animals. The grass reserves helped these communities to recover faster from the drought and gave them greater resilience against climate change impacts. The community patrols around their conservancies also had a widely appreciated benefit: People felt safer, and there was less banditry and cattle theft than in the control sites.

A herder from Northern Rangelands Trust community conservancies in Kenya © Ron Geatz



## REFERENCES

1. UN World Population Prospects
2. UN Food and Agriculture Organization (FAO)
3. Organization for Economic Co-operation and Development (OECD)
4. Breakthrough Institute, Nature Unbound
5. Intergovernmental Panel on Climate Change (IPCC)
6. Global Development Risk Assessment (GDRA), The Nature Conservancy (TNC)
7. OECD Environmental Outlook to 2030
8. GDRA, TNC
9. GDRA, TNC
10. FAO
11. GDRA, TNC
12. Rights and Resources Institute (RRI)
13. FAOSTAT and FAO Global Forest Resources Assessment
14. Bae et al, 2012; World Bank 2014
15. PWC, The World in 2050
16. FAO Global Forest Resources Assessment
17. FAO
18. World Resources Institute (WRI)



Conserving the lands and waters on which all life depends.

To learn more, visit [nature.org/global](http://nature.org/global)

**On the cover** Joao Batista Dos Santos Fortado herds cattle in Paragominas, Pará. Understanding that conversion to agriculture and cattle ranching is the greatest threat to the rainforest, the Conservancy works in municipalities of the Brazilian Amazon to implement strategies to control deforestation and promote the responsible production of soy and beef among farmers and ranchers. © Ami Vitale

© 2015 The Nature Conservancy. Printed in the UK on Forest Stewardship Council™-certified paper.





Tuppers Lake, the Swan Range and Bob Marshall Wilderness area in Montana, part of the Great Western Checkerboards Project © Steven Gnam

