



Global Landscapes Forum | Paris

Launching the new climate and development agenda

5-6 December 2015

Photo by Jonathan Guyot

Background Brief

Landscape restoration

This background brief was prepared for participants of the 2015 Global Landscapes Forum.



Why is landscape restoration important for achieving climate and development goals?

Increasing demand for food, fiber and raw materials is putting more and more pressure on (often) fragile landscapes. Today, about one-fifth of all cultivated land suffers from some form of degradation, such as salinization, deforestation, erosion, excessive fertilizer use, waterlogging and poor nutrient availability (ELD Initiative 2015). Degradation often goes hand in hand with the worst poverty, affecting the lives, health and livelihoods of hundreds of millions of people. About a third of the rural poor, 1.4 billion people, live on less favored agricultural lands (ELD Initiative 2015).

Comprehensive estimates by the Economics of Land Degradation Initiative put the total cost of damages to ecosystem services from land degradation at US\$6.3–10.6 trillion, or around 3.3–7.5 percent of global GDP, in 2008 (ELD Initiative 2015). Between 1990 and 2010, the net loss of carbon from soils and forests contributed around 12.5 percent of anthropogenic greenhouse gas emissions (Houghton et al. 2012). In a rapidly changing climate, the pace of deterioration is almost certain to speed up (ELD Initiative 2015).

The Sustainable Development Goals (SDGs) aim to mobilize global political will to stop and reverse land degradation, that is, to achieve land degradation neutrality. Done smartly, landscape restoration can also help make progress toward related goals, such as poverty alleviation, climate change mitigation and adaptation, food security and conflict resolution.

The loss of landscape quality propels people into food insecurity and hampers rural development; often, insecure tenure and land rights worsen the situation. Traditional responses to increasing food demand, such as the expansion of cropping and grazing areas at the expense of forests, are undermining the critical ecosystem support services upon which food and health ultimately depend. And the impacts of declining ecosystem services can propagate throughout the landscape and across borders.

Case study

The Tana-Nairobi Water Fund

Ninety percent of agriculture in Kenya's Tana watershed, northwest of Nairobi, sits on hillsides with a 75 percent incline, where roughly one million farmers work the fragile land (TNC 2015). The soil is soft and, stripped of its holding vegetation, Kenya's torrential rains readily wash it down into the Tana River, carrying away costly manure and fertilizer with it. What is highly valuable to Kenyan farmers becomes a major problem to downstream users: Nairobi's population relies on the Tana for 95 percent of their water and half of their hydroelectric power, but heavy sediment loads choke equipment and raise operating costs.

Until this year, farmers had little option but to keep doing what they were doing, even as they could see their lands stripped of this precious resource. In March 2015, however, a pioneering collaboration between conservation groups, farmers, government, scientists and big business was launched, with the aim of reducing soil loss along the Tana, and consequently reducing costs for farmers and downstream users alike.

The Nature Conservancy (TNC), working with the International Center for Tropical Agriculture (CIAT) and an array of other partners, launched the Tana-Nairobi Water Fund. The Fund is a public-private scheme that sees farmers paid by Coca-Cola,

East African Breweries and downstream utilities to protect and enhance their soil. Already underway is a pilot scheme involving 5,000 farmers in the upper catchment, under which they are trained in techniques such as trenching, terracing and planting trees and grasses, including bamboo. The aim is to cut sediment loads by at least half, depending on the season and locality. It is hoped the scheme will yield US\$21.5 million in long-term benefits to Kenyans – both farmers and downstream businesses.

The Fund's success rests largely on the use of land-use mapping and modeling by CGIAR's Research Program on Water, Land and Ecosystems to get the best environmental return on investment. In addition, CIAT is modeling land suitability so farmers have a good evidence base to plan cropping and other uses of their land.

The project is in its very early stages, but the broad collaboration, the business case and the commitment to working from a strong evidence base all bode well for local stakeholders. Those putting together restoration initiatives elsewhere will doubtless watch with interest to see what they can learn and whether Tana emerges as a model they can work with.



Landscape restoration is also becoming an attractive strategy for those involved in migration and humanitarian issues. Although the roots of conflict are often complex and deep, degradation can reinforce, and even trigger, fights over natural resources, social injustices and the displacement of masses of people. Restoration initiatives can potentially serve as a focal point for dialogue and partnerships between government agencies, disciplines, development and environmental organizations, and local stakeholders. Recent initiatives in Latin America, for instance, have captured the attention of a wide variety of actors, including the private sector. The landscape approach itself might be a way to catalyze collaboration between groups at different levels – groups that previously saw little reason to work together.

Soil carbon restoration unites the quest for development and climate goals, and, increasingly, there are calls from many quarters to explore it more resolutely (Atela 2012). The United Nations declared 2015 the International Year of Soils. Technically, the know-how to make a good start already exists; we understand conservation and restoration agriculture strategies, including social ones, and bold initiatives are underway (see Case Study). Degraded pastures can be improved, for example, and irrigation can be configured in new ways to improve the capacity of soils to hold carbon and moisture. At the urban–rural interface, food waste can be recycled as fertilizer, helping to build a circular economy.

New forests, although they do not necessarily recreate the complexity of the original ecosystem, also offer the chance to restore important ecosystem functions, such as erosion control, carbon storage and pest management. Agroforestry is known to result in more productive, ecologically healthy lands that are more likely to meet people's cultural and material needs than treeless alternatives (Mbow et al. 2012). If done smartly, with a good understanding of the way a landscape works, agroforestry can yield multiple benefits for people and the environment.

Worldwide, a variety of restoration initiatives are underway at all levels. The Bonn Challenge – a global collaboration of governments, non-governmental organizations and others – seeks to drive the restoration of 150 million hectares of deforested and degraded lands by 2020. Human wellbeing and ecological integrity are its twin goals, and already it claims to have made nearly 40 percent progress since 2011.

For millions of rural people whose future is jeopardized by climate change and land degradation, agroforestry and restoration agriculture offer pathways toward greater resilience and “climate-smart agriculture.” If the benefits of restoration are to be shared equitably and endure, however, strategies and techniques should be co-developed with local stakeholders – empowering them to make their own decisions according to their circumstances and needs.



What are some of the key issues?

When it comes to restoring soil carbon, there is a big difference between the theoretical potential and what is actually achievable.

Estimates of the physical potential for soil carbon are very large indeed, but social, economic, political, and sometimes knowledge factors continue to constrain what is achievable. Nevertheless, a great deal can be done, particularly in the developing world, and it should be the goal of proponents of the landscape approach to, as far as possible, close the gap between theory and practice.

Restoration of degraded lands is not simply about replanting forests.

The global restoration agenda needs to include both agroforestry and restoration agriculture (that is, production systems and practices that regenerate soil and imitate healthy ecosystem functioning), yet there is a sense from people involved that their respective fields have not yet received due recognition. The landscape approach may be the best way of resolving differences, inducing greater collaboration and striving for synergies, both among groups and with the Sustainable Development Goals.





Carbon markets will struggle to drive the widespread uptake of agroforestry and restoration agriculture.

The assumption that carbon will generate the finance needed still appears commonplace. But rather, and despite the fact that dozens of national and subnational governments have priced carbon in one way or another, the international carbon market is far from mature. Most finance for carbon restoration is voluntary, and such revenues as are available to farmers are small and unlikely to solve capitalization issues. Alternatives are required. In many cases, restoration is being driven by the potential for increased agricultural production, such as in parts of Africa, or for increased year-round access to clean water in others (e.g. Costa Rica). To local stakeholders, often, carbon is a co-benefit.

The goal of restoration is not, mainly, the recovery of primary forests.

This is, in many cases, unrealistic and ignores the aspirations of many rural people. Agroforestry can certainly yield important biodiversity benefits as well as contributing to the provision of important other ecosystem services, such as freshwater and soil protection (Mbow et al. 2014; Willemsen et al. 2013). The ultimate goal is healthy, working landscapes: a multifunctionality that restores hope, reduces poverty and underpins health.

Restoration is not simply a technical issue.

Restoration is, first, a development question with an environmental aspect and not chiefly a biophysical one. A landscape approach to restoration necessarily involves people, and people need to feel they are part of the landscape enterprise. Restoration has a technical component, certainly, but is unlikely to be successful if people are not central. In this regard, the social sciences have a

profound role to play in strengthening the restoration agenda. Understanding local decision-making processes and facilitating knowledge sharing are important components of successful long-term restoration initiatives. Landscape approaches that incorporate these elements help to create enabling conditions for enduring restoration.

Government commitments to large-scale restoration will not manifest as good, viable projects at the local level without more work.

In many cases, national goals set targets for a spatial area of new forests or recovered soils. However, an array of technical, social, economic and political issues make translating such goals into reality problematic. Many countries do not really know where to start with national restoration programs. Often, they lack mapping – socioeconomic and environmental – that would allow for prioritization of investment in the landscape. It is necessary to be clear about what is to be restored and where efforts will yield the greatest benefit for the available money. Often, appropriate systems to monitor, report, verify and maintain restoration works have not been established.

A truly “landscape” view is far from commonplace among researchers and practitioners.

While the theory of a whole-of-landscape approach is not new, the practice is still far from widespread. Often, the agriculture, forestry and environment – let alone development and health – sectors do not actively talk to one another or work together to resolve their differences. Apart from some good examples around the world, landscape thinking is absent from the bulk of discussions around natural resource management and community development. Integrated landscape management is still not woven into the curricula and training of most researchers, policy experts, and land managers.



What can participants learn about landscape restoration at the 2015 Global Landscapes Forum?

Participants will hear about examples of restoration programs and best practices from Central and South America, as well as the experiences of the Global Environment Facility and others. Discussion will focus on lessons learned in design and implementation, and how these might be applied in other parts of the world. Sessions will cover the impact of investments on communities, livelihoods and ecosystems. In particular, progress toward achieving the Bonn Challenge and other global goals will be topical.

Speakers will address questions of financing, policy mixes, incentives, and knowledge-support – of relevance to public officials and others. Central government representatives will learn the right questions to ask when designing restoration programs and what changes are needed internally to garner local buy-in. Public officials will also learn how to approach dialogue with colleagues outside of their ministry for a joint approach to restoration policy.

The theme aims to bring together a range of people from various areas of expertise, to share knowledge and views to make restoration initiatives work, particularly for those in greatest need, including smallholder farmers. The program also includes a high-level discussion on gender and landscape restoration.



Photo by Sahar Artonang



Who are the key audiences for the discussion?

Around the world, central governments are making bold plans to restore large areas of degraded land. Questions remain about what exactly these commitments mean in practice. There is a body of knowledge on restoration, but there is also much work still to be done: in integrative and inclusive decision-making, and tracking the effectiveness in social, environmental and economic terms.

For *governments and other donors*, investments need to go beyond simplistic commitments to restore millions of hectares. Instead, more attention should be paid to the quality of the restoration, to defining what is being restored and why, and to how people can benefit from better land-use planning and investment.

Interested in landscape restoration?

These sessions take a closer look...



Climate Smart Agriculture for healthy landscapes and livelihoods

Association of International Research and Development Centers for Agriculture (AIRCA), Centro Agronómico Tropical de Investigación y Enseñanza (CATIE)

Saturday, 5 Dec: 12.15 - 13.45
Room: 252A

Scaling up restoration, bringing down poverty – an assessment of opportunities and risks, from the Amazon to Africa's Mayombe Forest

International Institute for Sustainability (IIS), Agroicone, Ministry of Environment of Angola and AUGEO Africa

Saturday, 5 Dec: 17.15-18.45
Room: 252B

Landscape Restoration Snapshot – potential for achieving old and new climate ambitions

International Union for Conservation of Nature (IUCN)

Saturday, 5 Dec: 12.15 - 13.45
Room: 241

The role of agro-ecology in exploring innovative, viable adaptation measures for resilient smallholder coffee landscapes

Humanist Institute for Co-operation with Developing Countries (HIVOS), International Coffee Organization (ICO), Hanns R. Neumann, Coffee & Climate

Saturday, 5 Dec: 17.15-18.45
Room: 243

Managing and restoring natural tropical forests: Ensuring a sustainable flow of benefits for people in the context of global change

Agricultural Research for Development (CIRAD), International Union of Forest Research Organizations (IUFRO), Center for International Forestry Research (CIFOR)

Saturday, 5 Dec: 15.30-17.00
Room: 243

Putting pledges into practice in Latin America – an early assessment of Initiative 20x20 from science, policy and finance perspectives

World Resources Institute (WRI), International Center for Tropical Agriculture (CIAT)

Sunday, 6 Dec: 9.00-10.30
Room: Amphithéâtre Bleu

Odds and ends for restoring landscapes through agroforestry

World Agroforestry Centre (ICRAF)

Saturday, 5 Dec: 15.30-17.00
Room: 241

Resilient landscapes to reduce fragility, conflict and migration

World Bank, Program on Forests (PROFOR), TerrAfrica

Sunday, 6 Dec: 11.30-13.00
Room: Amphithéâtre Bleu

Fueling a debate: Sustainable wood energy as restoration option?

Federal Ministry for Economic Cooperation and Development (BMZ), Gesellschaft für Internationale Zusammenarbeit (GIZ), World Agroforestry Centre (ICRAF)

Sunday, 6 Dec: 16.30-18.00
Room: 243



Where are the key knowledge gaps?

- How can the restoration agenda be successfully brought to bear at the local and farm level, with social and economic as well as environmental benefits? Where are the case studies that serve as models?
- What combinations of forestry, agroforestry, grass cover, and restoration agriculture practices are needed to achieve what kind of restoration for what ends, including the health and wellbeing of local people?
- How do gender and equity issues affect land restoration? How can the benefits be shared equitably? What are the rights and tenure issues in large-scale restoration programs? And how can these best be overcome?
- How can agroforestry, habitat restoration and agroecology be financed for success? How can we make a business case for soil restoration – for farmers and outside investors alike?
- How do we accentuate synergies and negotiate trade-offs – economic, ecological, social – between restoration activities and other land uses?
- How can agroforestry and restoration agriculture contribute to enhancing food security and livelihood resilience in a rapidly changing climate? How can the risk of reversal of carbon sequestration be minimized?
- How can the various actors in a landscape, especially governments and their ministries, be brought together to work for the good of the whole?
- How can the landscape and restoration agendas be better woven into the curriculums of universities, the thinking of governments, and the strategies of non-governmental organizations?
- What are the best metrics for gauging the progress of restoration? And how can these be monitored cost-effectively?
- What are best ways to achieve a participatory approach that empowers communities?

Literature

- Atela JO. 2012. *The politics of agricultural carbon finance: The case of the Kenya Agricultural Carbon Project*. STEPS Working Paper 49, STEPS Centre: Brighton, UK.
- [IUCN]. 2015. *Bonn Challenge*. Washington, DC: International Union for Conservation of Nature.
- ELD Initiative. 2015. *The value of land: Prosperous lands and positive rewards through sustainable land management*. Bonn, Germany: ELD Secretariat.
- Houghton RA, House JI and Pongratz J et al. 2012. Carbon emissions from land use and land-cover change. *Biogeosciences* 9: 5125–5142.
- Louman B, Campos-Arce JJ, Mercado L et al. 2015. Climate Smart Territories (CST): An integrated approach to food security, ecosystem services, and climate change in rural areas. In Minang PA, van Noordwijk M, Freeman OE et al., eds. *Landscapes: Multifunctionality in Practice*. Nairobi: World Agroforestry Centre (ICRAF). 75–88.
- Mbow C, van Noordwijk M, Luedling E et al. 2014. Agroforestry solutions to address food security and climate change challenges in Africa. *Current Opinion in Environmental Sustainability* 6: 61–67.
- Murcia C, Guariguata MR, Andrade A et al. 2015. Challenges and prospects for scaling-up ecological restoration to meet international commitments: Colombia as a case study. *Conservation Letters* DOI: 10.1111/conl.12199.
- TNC. 2015. Upper Tana-Nairobi Water Fund BUSINESS CASE. Version 2. Nairobi: The Nature Conservancy.
- Willemsen L, Hart A, Negra C et al. 2013. *Taking Tree-based ecosystem approaches to scale: Evidence of drivers and impacts on food security, climate change resilience and carbon sequestration*. Ecoagriculture Discussion Paper No. 11. Washington, DC: EcoAgriculture Partners.



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About this Background Brief

This Background Brief was produced by the organizers of the 2015 Global Landscapes Forum based on input from session hosts and members of the Science Committee. It is not intended to provide an exhaustive analysis of the theme, but to establish key issues, as perceived by those who provided input. Any opinions expressed do not necessarily reflect the views of the organizers of the 2015 Global Landscapes Forum or partner organizations.

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