Global Landscapes Forum | *Paris*

Launching the new climate and development agenda

5-6 December 2015

Background Brief

Measuring progress toward climate and development goals

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

Why is measurement important for achieving climate and development goals?

To measure performance and progress toward goals, be they project goals or broader sustainable development goals, we need baselines, agreed metrics and common and reliable sources of information.

Accurate measuring and monitoring of landscape change is vital, not only for reporting on return-on-investment and the verification of results (e.g. in REDD+), but also for supporting decision-making. Monitoring data can inform and improve models, enabling national policy makers to "see" the implications for emissions productivity under various scenarios for land use, climate change, biodiversity, and food security policy (Bodin et al. 2014; DePinto et al. 2014; see also Case Study). Environmental and other data can also be used to inform adaptive management at the landscape scale.

Following years of negotiations, agreement on REDD+ was finally reached in Bonn earlier this year. This accord, together with years of multifaceted research on REDD+ in practice, set the stage for countries to more strongly pursue it as part of their national climate action plans.

For REDD+ to work – that is, to deliver equitable, efficient and effective outcomes, including suitable benefit sharing – proponents must prepare a credible and comprehensive monitoring, reporting and verification (MRV) system (CIFOR 2014). Putting carbon credits to market is next to impossible without one. Likewise, it is crucial to know how management schemes affect soil carbon if they are to be linked to global mitigation and local adaptation goals (Milne et al. 2015).

Work is underway in several countries, both developing and developed, to better understand and measure the flux of carbon dioxide and other greenhouse gases

in the landscape, including but not limited to forests. Indonesia, for instance, with international assistance, is developing an advanced national carbon accounting and reporting system (Krisnawati et al. 2015). And various countries have begun to establish baselines for national REDD+ programs (UN-REDD Programme 2014).

The fate of forests and soils is intimately bound to the climate. Net changes in land use account for about 10 percent of global greenhouse gas emissions (UN-REDD Programme 2014). In the past 25 years, it is estimated that about a quarter of all land has suffered degradation due to soil organic carbon loss (Milne et al. 2015). At the same time, the world's tropical forests store some 100 billion metric tons of carbon (UN-REDD Programme 2014), and the potential for soil and forest restoration is enormous.

For most people living in forest and agricultural landscapes, however, there are more immediate implications of land management decisions for livelihoods and development. These include the role of healthy forests and soils in buffering against extreme weather and market events, and the wide range of products, including timber and food, they provide, as well as important ecosystem services such as erosion control and pest management.

Metrics that measure trends in land cover and carbon are important, but so is keeping track of various ecosystem services and key socioeconomic and cultural impacts of land management decisions. This means gathering data not only on carbon sequestered, for example, but also on changes in nutrition, health, and school attendance, among others. Monitoring multiple key indicators of change also minimizes the risk of pursuing a single outcome (say, carbon) at the expense of others (say, equity or biodiversity). At the very least, it allows trade-off decisions to be grounded in quantitative data.

What are some of the key issues?

Stakeholders can often feel over-burdened by paperwork and expectations.

The tighter the rules on monitoring, reporting and verification, the higher the transaction costs and the harder it becomes engage stakeholders in REDD+ and similar schemes. On the one hand, if expectations are too light there is a risk corners will be cut and emission reduction and other goals will be compromised. On the other hand, if expectations are too heavy, paperwork acts as a deterrent to participation, which also compromises social and environmental goals.

There is not yet any broad agreement on indicators and sources of information.

Forest and other landscapes are complex, and the information needed to track carbon emissions and removals from land use is often plagued with uncertainty. Work is underway to get a much better grasp on the situation, but there is still little scientific consensus on methods, accounting rules, or best data sources. Moreover, environmental indicators use accessible data to monitor change, but this may lead to oversimplification, can be open to interpretation and is not always applicable at different scales. Comparing measurements between countries is still difficult and forging a comparable international body of research remains a significant challenge.

Different stakeholder groups don't always work together for whole-of-landscape management.

Despite the rise of integrated landscape management as a philosophy and a goal, there is still much work to do before agriculture and forestry researchers can work together more closely. Although the past few years have seen considerable progress and greater dialogue, there is considerable scope for collaboration. For instance, new whole-of-landscape approaches may bring solutions found in the forestry sector to the problems of agricultural emissions and food security.

We need to be realistic about investing in better landscape monitoring.

A commitment to more comprehensive, integrated measurement and monitoring strengthens landscape management. But it also creates a need for more realistic estimates of the money and time required, including the time of local community stakeholders. Global, national and sectoral targets for halting deforestation should take into account the need for reliable benchmarks and long-term comprehensive forest and landscape monitoring. Ultimately, as with other aspects of integrated landscape management, effectively measuring progress will mean forming intersectoral collaborations, including partnerships with those who live in the landscape itself.

Case study

Testing the carbon and economic impacts of land-use policies in Colombia

Climate change mitigation presents policy makers with another layer of challenges: how to design low-emission development strategies while strengthening food security and boosting agricultural productivity, and growing exports and the economy as a whole. A study by the International Food Policy Research Institute and International Center for Tropical Agriculture combines carbon, land-use and economic data to provide a national assessment of the impacts of various land-use policy choices on Colombia's emissions and economic development (DePinto et al. 2014). The study identifies win-wins, low-cost options, trade-offs and scenarios that should be approached with caution.

Colombian agriculture accounts for about 38 percent of the country's emissions, while contributing 7 percent to GDP and employing 18 percent of the population. Most producers are smallholders, but the country also has a strong ranching culture. The Colombian Amazon continues to undergo rapid change with expanding forestry and agriculture. Putting agriculture on a low-emissions path means transforming the way inputs – water, land, fertilizers, fuel, etc. – are used in farming, as well as making important decisions about the future of forestry and livestock production. Moreover, any national assessment must consider not just domestic affairs but also how a country's farm sector fits into global commerce.

The study found that some strategies, such as reducing the allocation of land for pasture, resulted in a win-win – raising revenues and carbon stocks while cutting emissions. In this case, lost income from livestock (a major source of methane) is compensated for by growth in other production systems with lower emissions profiles. Constraining deforestation in the Amazon, on the other hand, comes at an economic cost even as the carbon stock improved and emissions fell. Finally, oil palm expansion delivers only costs: higher emissions, lower revenues and depleted carbon stock.

A key finding was that, overall, forest carbon overwhelms possible increases in emissions from cropping. It would take 146 years for one additional hectare of cropland to make the same climate impact as one lost hectare of Amazon forest. While reducing emissions from agriculture remains important, it is also critical to consider the totality of land uses and policy impacts.

The challenge before DePinto and colleagues was to reconcile macroeconomic models with those that account for changes in carbon stocks and emissions. The authors used models and data readily available to the public to help Colombian policy makers evaluate trade-offs, opportunities and impacts of various mitigation policies in the country's farming sector. It is hoped that such a high level of transparency instills confidence in the results by all stakeholders, allowing for more informed policy choices and discussions. The framework is designed to be applicable to any country and should enable more informed policy choices and discussions, albeit always subject to local political-economic factors.

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

Discussions in this theme are focused sharply on solutions: to help move REDD+ and other environmental stewardship schemes forward with greater capacity to track performance. Speakers draw on a wealth of experience from practical applications in many countries to take stock of REDD+, discuss the lessons of the past decade and canvass ideas for next steps. Examples of best practice will be showcased, including: innovative grassroots approaches to low-carbon rural development, the Brazilian government's Amazon Fund and Colombia's experience in channeling scientific knowledge into policy making.

These practical examples should help participants get a good sense of the synergies and trade-offs between different goals in forestry and agriculture for climate change mitigation and adaptation. Discussions will look at how land-use change monitoring and modeling can support policies that balance different goals in the landscape. Speakers will also draw on lessons from the global comparative study of REDD+, looking at various sectors and countries to inform future implementation.

Who are the key audiences for the discussion?

Policy makers will learn that while there is work to be done, the research is sufficiently mature to help them make sense of climate and carbon issues in a landscape context. The past decade has seen a new portfolio of decision-support tools, at all levels, on a wide range of questions – from economic development to food security and emissions reduction. Big data, new technologies, up-to-date forest maps and innovative partnerships can lend land-use decisions and policies greater confidence that emissions and other goals will be achieved.

Interested in measuring progress towards new **climate and development goals**?
These sessions take a closer look...

It all begins at home – climate action with multiple scopes and scales for achieving INDCs

The Nature Conservancy (TNC), Governors' Climate & Forests Task Force (GCF), Food and Agriculture Organization of the United Nations (FAO)

Saturday, 5 Dec: 12.15 - 13.45
Room: 253

Amazon Fund, the world's biggest conservation experiment? From results-based payment to the experiences on the ground

Amazon Fund

Sunday, 6 Dec: 9.00-10.30
Room: 243

Up and down the scales of time and place: Integrating global trends and local decisions to make the world more food-secure by 2050

International Food Policy Research Institute (IFPRI)

Saturday, 5 Dec: 15.30-17.00
Room: 253

Uncertainty in tropical landscapes: Emerging data and models as a bridge between the past and visions for tomorrow

International Institute for Applied Systems Analysis (IIASA), Center for International Forestry Research (CIFOR), European Commission: Joint Research Centre and Directorate General for Climate Change Action

Sunday, 6 Dec: 9.00-10.30
Room: 241

REDD+ Forest Reference Emission Levels: Progress and challenges in developing countries

Food and Agriculture Organization of the United Nations (FAO)

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

Pixel perfection for carbon detection: How technologies and communities can curb global emissions from land-use change

World Resources Institute (WRI), Global Forest Watch Climate

Sunday, 6 Dec: 11.30-13.00
Room: 252B

Making a splash for SDGs and climate goals: Integrated water resource management and landscape approaches

Stockholm International Water Institute (SIWI), Center for International Forestry Research (CIFOR), CGIAR Research Program on Water, Land and Ecosystems (WLE)

Saturday, 5 Dec: 17.15-18.45
Room: 253

Taking stock of REDD+: Past, present and future

Center for International Forestry Research (CIFOR), Governors' Climate & Forests Task Force (GCF), Earth Innovation Institute

Sunday, 6 Dec: 16.30-18.00
Room: Amphithéatre Bleu

Large scale soil restoration for climate change adaptation, mitigation and food security – what's in it for smallholder farmers?

Institute for Advanced Sustainability Studies (IASS), Institute for Sustainable Development and International Relations (IDDRI)

Sunday, 6 Dec: 9.00-10.30
Room: 252A

The economics of ecosystems and biodiversity for agriculture and food

United Nations Environment Programme (UNEP)

Sunday, 6 Dec: 16.30-18.00
Room: 253

Where are the key knowledge gaps?

- Where do REDD+ and similar stewardship initiatives fit with other environment and development initiatives?

- How can we foster and enhance collaboration between agriculture and forestry? How can research best be channeled into good governmental decision-making?

- Who are the key decision-makers and influencers on measurement and monitoring for SDGs? What are their needs?

- What are the policy/technical opportunities and barriers in REDD+, and what changes should be made? How can REDD+ be harmonized with broader social, economic, development and trade initiatives?

- How can resilience, productivity and other benefits for smallholders best be aligned with mitigation goals?

- How do we keep track of multiple key socioeconomic, health and cultural indicators as well as biophysical ones? What are the most cost-effective ways to monitor several indicators simultaneously?

- How can disparities between key global forest indices be reconciled?

Literature

Bodin B, Ravilious C, Bastianelli C et al. 2014. *Synergies between REDD+ and the Aichi Biodiversity targets in Central Africa: How spatial analysis can support the planning of forest policies for climate and biodiversity objectives.* Cambridge, UK: UNEP World Conservation Monitoring Centre.

[CIFOR]. 2014. *Global Comparative Study on REDD+: Measuring Reporting and Verification (MRV).* Bogor, Indonesia: Center for International Forestry Research.

DePinto A, Akiko H, Creamer B et al. 2014. *Low emission development strategies for agriculture and other land uses: The case of Colombia.* Washington, DC and Cali, Colombia: International Food Policy Research Institute and International Center for Tropical Agriculture.

Harris N, Brown S, Hagen SC et al. 2015. Baseline map of carbon emissions from deforestation in tropical regions. *Science* 336(6088): 1573–1576.

Krisnawati H, Imanuddin R, Adinugroho WC, Hutabarat S. 2015. *Standard Methods for Estimating Greenhouse Gas Emissions from the Forestry Sector in Indonesia (Version 1).* Bogor, Indonesia: Research and Development Center for Conservation and Rehabilitation, Forestry Research and Development Agency.

Milne A, Banwart SA, Noellemeyer E et al. 2015. Soil carbon, multiple benefits. *Environmental Development* 13: 33–38.

UN-REDD Programme. 2014. Emerging approaches to forest reference emission levels and/or forest reference levels for REDD+. Rome: Food and Agriculture Organization of the United Nations.

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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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