

ISC Special Workshop, Bioversity Intl, 19 June 2018

(and ISC10 meeting of 18 June, Document 7)

Draft version of 8 June 2018

Sentinel landscapes

In line with three of ISC's key functions, namely to (i) provide strategic programmatic oversight, (ii) monitor FTA's delivery and (iii) oversee and strengthen FTA partnerships, the ISC decided at its 7th meeting (Nov 2017) that it would discuss with scientists involved in sentinel landscapes (SLs) the results of their work on SLs during a workshop to be organized back to back with next ISC face-to-face meeting. This will inform the recommendations of the ISC to the FTA Director on the future of the SL set-up within FTA.

The present note recalls the objectives of the creation of a network of Sentinel landscapes, main achievements during phase 1, main recommendations of the IAEA and main results of the Science workshop of 2017.

1) The objectives of the creation of a network of Sentinel Landscapes

As presented in the initial proposal (FTA, 2011), the objective of research Sentinel landscapes was to generate panel data to support the testing of hypotheses on drivers and impacts of land use change, as well as approaches to mitigate threats and maximize benefits both for environmental resilience and for the poor. Sentinel landscapes would also provide an instrument for integrating research and impact pathways, while building and exploiting potential synergies across all five of the components that comprise FTA.

The major justification for sentinel landscapes is the need for a common observation ground where reliable data from the biophysical and social sciences can be tracked in consort and over time so that long-term trends can be detected, and society can make mitigation, adaptation and best-bet choices.

The objectives of the Sentinel Landscape network were specified as follows: 1. Cross-regional comparison 2. Integrating biophysical and social data 3. Long-term presence (~ 10 years) 4. Co-locating research activities (share resources), between Flagships, with partners, and with other CRPs

As described in the FTA Proposal, a Sentinel Landscape is a site or a network of sites, geographically or issue bounded, in which a broad range of biophysical, social, economic and political data are monitored, collected with consistent methods and interpreted over the long term (FTA, 2011, p. 338).

A network of sentinel landscapes would be privileged locations for the collection of long-term data sets and the dissemination of scientific results to benefit farmer groups, NGOs, administrators, development projects, donors, government agencies and the broader scientific community, among others. They would further be excellent locations for fostering dialogue among stakeholders and for addressing contentious issues such as the sustainable exploitation of a disputed natural resource. Last but not least, they would provide excellent locations for assessing the uptake of research results and for overall impact assessment.

Using sentinel landscapes for at least a portion of the research under each component would give a strong boost to the integration of research across components and limit the risks of "research silos". This framework would promote comparative analysis at multiple scales, from intensive studies specific to a single location to national-, ecoregional- and international-level analysis using large-scale samples (e.g., to support global comparative research).

2) Sentinel landscapes during phase I of FTA

The FTA phase II proposal takes stock of the accomplishments as regards Sentinel landscapes.

During the Phase I of FTA (2012–2014) a network of seven Sentinel Landscapes (Figure 1) were successfully established by: selecting priority landscapes for FTA, forming interdisciplinary implementation teams, developing a standardized methodology following a “most different system design” to answer the overarching research question: “Does a variation in tree cover/tree quality affect any of the four system level outcomes (SLOs)”, implementing the methodology across the network of seven landscapes, a high-level FTA science event in December 2014 in Rome to share the results with the wider FTA scientific team and to jointly plan for activities in the next phase.

FTA was severely affected by the funding cuts in W1/W2 in 2015-2016. Prior to the funding cuts there were plans to use a substantial amount of the W1/W2 allocation for the Sentinel Landscape network, specifically to facilitate place-based research activities contributing to the Flagship-level IDOs within the Sentinel Landscapes. With the announced budget cuts in October 2014, in December of the same year it was anticipated that to complete the data collection, conduct a meta-analysis across landscapes, and publish the datasets in the open domain would require approximately 80% of the anticipated allocation for 2015. Further funding cuts through 2015 resulted in shrinkage of scientific cadres in several of the regional Sentinel Landscape teams and in funding shortages for processing the Sentinel Landscape data. To ensure that regional teams were able to complete their data collection activities and complete the Sentinel Landscape dataset, funding cuts were absorbed by cutting allocations to the method team that is responsible for developing the indicators from the collected data. The budget constraints also resulted in the Oil Palm thematic landscape being phased out earlier than anticipated, and have lowered the overall ambitions of SL network.

Overall a first set of data has been gathered and partly analysed. The second campaign of data collection has not been initiated.

The current list of Sentinel landscapes figures in Annex 1 and the list of published methods, data sets and publications in Annex 2.

3) The evaluation of the IEA

The Evaluation (IEA, 2014) acknowledges the importance of Sentinel landscapes and considers that overall, Sentinel Landscapes hold great promise.

It notes however that:

- First, there seems to have been considerable negotiation between FTA Centers about the location and focus of individual Sentinel Landscapes, sometimes leading to disagreements and considerable delays.
- Second, the integration of Sentinel Landscapes with other research appears to be somewhat of a challenge, with only Mekong and Burkina Faso having aligned ongoing FTA projects. Project teams and donors leading ongoing or planned research operating within Sentinel Landscapes have not always been easy to convince to adhere to data collection protocols defined by the FTA Sentinel Landscape Team. Importantly, the link between the Sentinel Landscapes and the different FTA components are not yet fully clear.
- Third, it is apparent to the Evaluation Team that there is a need for strong leadership of Sentinel Landscapes from the scientific point of view to inform and motivate researchers to work more holistically and linking relevant component research.

- Fourth, ensuring dedicated funding for long-term data collection activities, once Sentinel Landscapes have been chosen, has proved difficult until now. It appears challenging to raise long-term financing or financing for countries and areas that don't match current donor priorities.

The evaluation concludes that unrestricted FTA funds dedicated to Sentinel Landscapes are insufficient to guarantee ongoing tracking of even a core set of indicators over many years. By their very definition, the ecoregional public goods produced by this type of research only materialize if uninterrupted long-term data collection under the same protocol is guaranteed. This, in turn, requires sufficient and uninterrupted funding and support. The present set of Sentinel Landscapes is therefore in somewhat of a limbo, attempting to secure bilateral funding or to leverage or piggy-back on other research efforts.

And makes a dedicated recommendation:

Recommendation 5.

As part of the preparations for FTA's second phase proposal, the Evaluation Team recommends that the FTA Steering Committee re-assesses the relevance and the financial sustainability of the current set of Sentinel Landscapes and adapt the entire approach to Sentinel Landscapes in the FTA Phase II Proposal accordingly.

This recommendation is addressed to the FTA Steering Committee, the FTA Director, and the Lead Center BOT.

Key points ("must have's"):

- Strong scientific leadership is needed in order to increase the researchers' engagement in the pursuit of SL objectives.
- Sentinel Landscapes are integrated into FTA's overall theory of change and FTA research is increasingly associated with these sites.
- "Business cases" are formulated balancing minimal resource and support requirements (both international and by the host countries) to successfully operate Sentinel Landscapes over a period long enough to generate valuable long-term tracking data and balancing these with realistic assumptions about funding levels and stability and continued support in the CGIAR.
- The FTA Steering Committee, after being restructured (see recommendation 10), reviews the SL concept and operational plans to balance the value of expected results with operational requirements and likely future support.

4) Main lessons learned and conclusions from the Science workshop organized in 2017 in Bonn

The evaluation of FTA has recommended that the FTA Steering Committee re-assesses the relevance and the financial sustainability of the current set of Sentinel Landscapes and adapt the entire approach to Sentinel Landscapes accordingly (see box on Recommendation 5 of the evaluation).

As a preliminary step the MSU has organized in 2017 a science workshop grounded on the recognition that *Sentinel Landscapes* (SL) is at a turning point. In order to understand how to bring it forward in phase 2, we need a critical look at the new context in terms of international demand, the key questions to which FTA aims at providing answers, as well as the evolution of the funding environment, especially for long term observatories. Where does SL stand, what are the tangible results since its inception? What were the challenges during the roll-out in phase 1? How to move forward?

The discussions clearly showed how essential place-based research and data is to FTA in all its components. They also highlighted that gathering data for monitoring changes and for assessing performance of projects share some characteristics and differ on others. The “what to observe” can be the same, with a different focus, to monitor change and to measure how a project performs. It includes context characteristics, and consequences of changes. The real tension is on the “where to observe”, either where there is a big change, on a representative sample, or where there is enough work going on. It is also linked to scaling up/ scaling out.

FTA is supported by an incredibly rich number of projects in many different locations. The issue is how to manage integration between datasets, and of different dimensions within a dataset. The majority of place-based research is project-based and therefore driven by different objectives. Building a framework that would favor integration is a challenge for FTA partners. Data are often trapped in the research space (project, papers) that led to their generation. This leads to technical and conceptual silos, that are hard to escape. There is a need to build a framework for data collection with (i) appropriate protocols to improve data quality within the project cycle, and (ii) to promote integration within centers and within FTA.

There are already networks with a history of long term, place-based studies, such asILTER. How could Sentinel landscapes link with them? What would be its value added?

The workshop also reviewed challenges encountered in the rolling out of SL in phase 1 and considered three questions: 1) Did SL phase 1 managed to address the issues of co-location and common approaches to data? 2) What is the comparative advantage of the SL set-up? 3) What framework for research co-location in FTA in the future?

The discussion highlighted the need to make the distinction between monitoring global changes and assessing landscape projects’ results. Ways to improve the quality and cross relevance of place-based research and data gathering were identified. Co-location enables sharing of information complementing each other. It requires a specific mechanism to facilitate it, as well as funding for common approaches, starting with georeferenced data for bilateral projects. Involvement of local stakeholders and institutions is key but was rather the exception in the SL set-up. Then, appropriate implementation of the set-up also requires significant efforts in capacity building. Several means have been identified to improve long term place-based research.

Participants highlighted the specificities of any long-term monitoring program and the related constraints in terms of methodology and need for long-term resources. The pertinence and possibility of such an ambitious monitoring program on the long term was questioned. Is it the role of FTA to operate SL; or should it be to support countries and national systems in monitoring SDGs and changes?

The workshop concluded by identifying elements for a way forward.

There is a need to see what is available and give it back to local actors. To attract funding there is a need to show minimal data and analysis of it. It has been noted that SL has not been much demand driven. In that regard some participants recommended to ask the partners what they think about what has been done and “to give back to them”. What donors think about SL? Is the data available enough to convince donors? It was suggested to exploit the data already collected, site by site. Then ask what can be done with it, involving local partners, and to facilitate this process.

Participants agreed on the need to first take stock in three sites to check if the data that we have is relevant for anything. This analysis at site level will help understand what can be done in the future

and how, including what would be minimal resources. This may include reducing the number of sites and use co-location to strengthen the remaining ones. There are also methodological issues that will need to be considered. Among others, the need to start from the research questions, before working on the “how”. Finally, capacity development needs of local actors involved will need to be included.

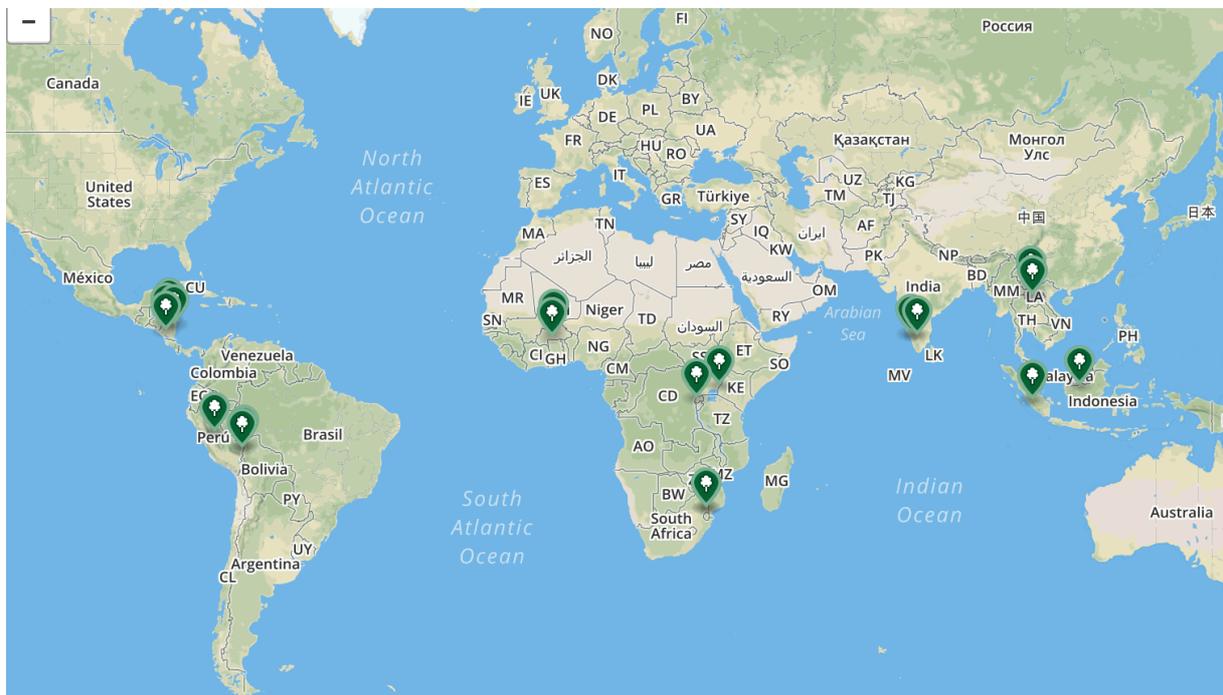
References:

Federica Coccia, Andrea Deisenrieder Marko Katila Florencia Montagnini Markus Palenberg (Team Leader) Carmenza Robledo, Evaluation of the CGIAR Research Program “Forests, Trees and Agroforestry” (FTA), Volume I – Evaluation Report July 2014. <http://iea.cgiar.org/wp-content/uploads/2016/09/FTA-Evaluation-Volume-I.pdf>

Annex 1: List of sentinel landscapes (from the FTA website)

Where selected 8 regional Sentinel landscapes:

- West Africa
- Central Africa
- Borneo
- Mekong
- Western Ghats
- Nicaragua-Honduras
- Western Amazon
- Nile-Congo



To which were added 2 cross regional sentinel landscapes:

- Oil palm: landscape, market chains and investment flows
- Tropical production forests observatory

Annex 2: Sentinel Landscapes Publications

1) Methods (from the Sentinel Landscape website, <http://foreststreesagroforestry.org/fta-sentinel-landscapes>)

Sentinel landscapes Baseline- Methodological overview (Version 22 August 2013)

http://www1.cifor.org/fileadmin/subsites/sentinel-landscapes/document/SL_Baseline.pdf

SENTINEL LANDSCAPE HOUSEHOLD MODULE, September 3 2013

http://www1.cifor.org/fileadmin/subsites/sentinel-landscapes/document/SL_Household_Module.pdfhttp://www1.cifor.org/fileadmin/subsites/sentinel-landscapes/document/SL_Household_Module.pdf

Four forms from the International Forestry Resources and Institutions (IFRI), dated July 2013, to be used to gather information on:

- Forest associations (form A)
- Forests (form F)
- Forest products (form R)
- Human settlements (form S)

A field guide from the Land degradation surveillance framework.

A protocol to describe stages of poverty, based on Anirudh Krishna (2004) Understanding Poverty: The Stages-of-Progress Method Economic and Political Weekly, Vol. 39, No. 39 (Sep. 25 - Oct. 1, 2004), pp. 4386-4388.

CROSS REGIONAL HOUSEHOLD SURVEY ON OIL PALM, Version October 16 2013, with no reference; but same format as the 4 IFRI referenced above.

2) Preliminary results (from the Sentinel landscape website)

Preliminary results/ Land Health Assessment within Mekong Sentinel Landscape (SL): Manlaxiang, janv 2015. 1p.

http://foreststreesagroforestry.org/wp-content/uploads/2016/03/Mekong_LDSF_Preliminary-Highlights.pdfhttp://foreststreesagroforestry.org/wp-content/uploads/2016/03/Mekong_LDSF_Preliminary-Highlights.pdf

Biophysical Baseline Surveys in the Nicaragua-Honduras Sentinel Landscape by Leigh Winowiecki (CIAT) and Tor-Gunnar Vågen (ICRAF), June - July 2013.

Progress Update on the LDSF Field Surveys: Nicaragua Sentinel Landscape, 2p, October 2013.

PAISAJE CENTINELA NICARAGUA HONDURAS, July-August 2013, 1p.

Land Health Data Analysis Workshop in the Western Amazon Sentinel Landscape. Three LDSF Sites Sampled in the Western Amazon Sentinel Landscape: Peru and Bolivia. Data analysis workshop in Puerto Maldonado, Peru. Leigh Winowiecki (CIAT), Valentina Robiglio, Martin Reyes and Tor-Gunnar Vågen (ICRAF), August 2015. 1p.

3) Data

On <http://landscapeportal.org/projects/1>, 53 couches, mainly on soil characteristics, erosion, ph, soil carbon.

A number of data sets deposited in Harvards Dataverse.

4) Other References (from google scholar)

van Noordwijk M. and G.B. Villamor. 2014. Tree cover transition in tropical landscapes: hypotheses and cross -continental synthesis. *GLPnews*, 10:33-37.

Dewi, S.; Noordwijk, M. van; Zulkarnain, Muhammad Thoha; Dwiputra, Adrian; Hyman, Glenn; Prabhu, R.; Gitz, V.; Nasi, Robert. Tropical forest-transition landscapes: a portfolio for studying people, tree crops and agro-ecological change in context. *International Journal of Biodiversity Science, Ecosystem Services & Management* 13 (2017)1. - ISSN 2151-3732 - p. 312 - 329.

Trip Report: Biophysical Baseline Surveys in the Western Ghats Sentinel Landscape (WGSL) by Leigh Winowiecki (CIAT) and Tor-Gunnar Vågen (ICRAF) November 2013, CGIAR, 1p.

Tatiana Gumucio, Info note: Gender Research Opportunities in the Western Amazon Sentinel Landscape, CIAT/FTA, 2016.

Hansen, L.; Innes, J.; Powell, B.; Bulkan, J.; Gergel, S.; Eddy, I, Historical drivers of landscape and dietary change in an agricultural frontier: Bosawas Biosphere Reserve, Siuna, Nicaragua, in E.L. Deakin, M. Kshatriya, T.C.H. Sunderland (eds.) *Agrarian change in tropical landscapes*. 139-189, CIFOR, 2016.

van Noordwijk M. 2015. Approaches to environmental services research in the CGIAR. World Agroforestry Centre (ICRAF) Southeast Asia Regional Program. Bogor, Indonesia. 64 pp.

Pierre-Marie Aubert, Marie Baranger, Roman Baudin, Anaïs De Fresnoye, Mathieu Gérard, Marine Grisot D'allancé, Quentin Guignard, Éloïse Ingadassamy, Caroline Mollion, Vincent Piton, Emmanuelle Rica, Julie Richard, Améline Vallet, Victor Zylberberg, Institutional mapping and forest landscape dynamics in the Western Ghats, ICRAF/CIRAD/FTA, 2014.

Lesley Potter, *Managing oil palm landscapes, a seven country survey of the modern palm oil industry in South East Asia, Latin America and West Africa*, occasional paper 122, Bogor, CIFOR, 2015.

Eduardo Somarriba, Geovana Carreño-Rocabado, Freddy Amores, Willan Caicedo, Samuel Oblitas, Gillés de Pélichy, Rolando Cerda, Jenny C. Ordóñez. *Trees on Farms for Livelihoods, Conservation of Biodiversity and Carbon Storage: Evidence from Nicaragua on This "Invisible" Resource*. In Florencia Montagnini, *Integrating landscapes: agroforestry for biodiversity conservation and food sovereignty*, p p 369-393. Springer, 2017.

Gumucio, Tatiana; Twyman, Jennifer; Clavijo, Monica. 2017. *Gendered perspectives of trees on farms in Nicaragua: Considerations for agroforestry, coffee cultivation, and climate change*. Working Paper. International Center for Tropical Agriculture (CIAT); CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS); CGIAR Research Program on Forests, Trees and Agroforestry (FTA). Cali, Colombia. 16 p. (CIAT Publication No.432)

Van Noordwijk, Meine & Pacheco, Pablo & Slingerland, Maja & Wibawa, Gede & Dewi, Sonya & Khasanah, Ni'matul & Gnych, Sophia. (2017). *Palm oil expansion in tropical forest margins or*

sustainability of production? Focal issues of regulations and private standards. Working Paper. ICRAF. 2017.

Factores socioeconómicos que influyen sobre la presencia de árboles en fincas del Paisaje Centinela Nicaragua-Honduras, en Nicaragua. Dos Santos Moreira Nayara. 2017. Turrialba : CATIE, 96 p.
Magister scientiae : Agroforestería y agricultura sostenible : Centro Agronomico Tropical de Investigacion y Ensenanza.