

Enhancing transparency in the land-use sector Exploring the role of independent monitoring approaches

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Key messages

There is a need for independent monitoring approaches (i.e. unbiased data, tools and methods) that stakeholders involved in land-use sector mitigation activities can rely on for their own goals, but which would also be perceived as transparent and legitimate by others and support accountability of all stakeholders in the framework of the Paris Agreement.

Independent monitoring is not a specific tool, a single system or a one-serves-all approach. It is rather a diversity of approaches and initiatives with the purpose of increasing transparency and broadening stakeholder participation and confidence by providing free and open methods, data, and tools that are complementary to mandated reporting by national governments.

We identify key elements of independent monitoring:

- transparency in data sources, definitions, methodologies and assumptions;
- free and open methods, data, and tools, which are truly 'barrier free' to all stakeholders;
- increased participation and accountability of stakeholders;
- complementarity to mandated reporting by countries;
- promotion of accuracy, consistency, completeness and comparability of greenhouse gas (GHG) emission estimates.

Independent monitoring should be considered an important mechanism for enhancing transparency in the land-use sector. Interested stakeholders can engage and benefit from independent monitoring approaches when starting to implement the Paris Agreement; we provide examples and recommendations as starting points.

The Paris Agreement poses new challenges

The 2015 Paris Agreement requires all countries to put forward nationally determined contributions (NDCs) to fight climate change. Many countries have included agriculture, forestry and other land-use (AFOLU) targets in their NDCs. They will need to account for anthropogenic emissions and removals from the AFOLU sector in a manner that promotes environmental integrity, transparency, accuracy, completeness, comparability and

consistency. This is especially problematic in many developing countries where monitoring capacities are low (Romijn et al. 2015), and the need for and potential of mitigation in the AFOLU sector is high (Roman-Cuesta et al. 2016a). In this context, NDCs can only be effective if contributions from the land sector are quantifiable and progress can be tracked unambiguously.

Quantitative evaluation of the NDCs is challenged by the lack of sufficient data and comprehensive information on the definitions, assumptions and methods applied by each country, as analyses of the intended NDCs have highlighted (Grassi and Dentener 2015). The Paris Agreement established the Enhanced Transparency Framework (see Box 1) to enable tracking, comparing and understanding these national commitments.

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Box 1. The Enhanced Transparency Framework of the Paris Agreement

Article 13 of the 2015 Paris Agreement establishes the Enhanced Transparency Framework (UNFCCC 2015). Within this framework, countries need to provide information necessary to track progress made on implementing and achieving their NDCs and on reducing GHG emissions. They must demonstrate good practices, and highlight needs and gaps to provide inputs to the five-yearly Global Stocktake. Information submitted by countries will undergo a technical expert review. This process is intended to be facilitative and will include assistance to developing countries to identify capacity-building needs. The new enhanced system is intended to be 'common' for all countries, has a built-in flexibility mechanism and is to be non-intrusive and non-punitive. Current work being undertaken at the United Nations Framework Convention on Climate Change (UNFCCC) concerns the development of common modalities, procedures and guidelines for the transparency of action and support.

The Paris Agreement also stresses the importance of stakeholder efforts to address and respond to climate change, including those of civil society, the private sector, financial institutions, cities and other subnational authorities. Thus, land-use sector information will not only be needed for improving national GHG reporting and global stocktaking, but also for guiding local mitigation planning, implementation of land-use activities, and the accountability of actions and stakeholders (i.e. for tracking corporate zero-deforestation commitments).

A considerable amount of independent, publicly available, comprehensive, spatial information on land cover, land emissions, land use, their dynamics and the associated carbon stocks and flows has become available (see Global Forest Watch⁵, LUCID⁶). This information can greatly assist with addressing some of the monitoring, reporting and verification challenges in the AFOLU sector. However, the discrepancies of estimates due to different conceptual and methodological approaches, inappropriate scales, uncertainty on data continuity, lack of data on uncertainties, and limited guidance on how to and how not to use such information limit their usefulness, and may raise questions regarding the legitimacy of independently gathered information with various stakeholders.

A variety of stakeholders (governments, private sector, land managers, etc.) will increasingly look for tested, trusted and reliable information, and for cost-efficient performance assessment methods and procedures. These would allow them to assess the state, dynamics and drivers of change of land resources, livelihoods, social protections and equity

indicators. The Enhanced Transparency Framework will increase the demand for independent sources of information, ready-to-use methods and open-source solutions for reconciliation, conflation analysis and uncertainty assessments. There is a need for independent monitoring approaches (i.e. authoritative and unbiased data, tools, and methods) that stakeholders can rely on for their own goals, but which would also be perceived as transparent and legitimate by other stakeholders, and which would support accountability of all stakeholders in the framework of the Paris Agreement.

What this infobrief is about

First, we discuss what independent monitoring means for different stakeholders. While independent monitoring is not a specific tool or approach, we explore elements that could characterize it. These elements can be used as a guide as to how independent data, tools and methods can contribute to the Paris Agreement, and to the Enhanced Transparency Framework in particular. We conclude with a series of recommendations on how stakeholders can engage with and benefit from independent monitoring.

While this infobrief focuses on monitoring of GHG emissions in the AFOLU sector, the proposed principles could also be useful for other sectors (e.g. the energy sector) and for other policy frameworks (e.g. the Sustainable Development Goals). In addition to GHG emissions, the independent monitoring of other factors related to climate change mitigation (e.g. biodiversity, REDD+⁷ safeguards) warrants more attention, however they pose their own set of challenges (e.g. Jagger and Rana 2014) which are beyond the scope of this infobrief.

Independent monitoring - What stakeholders think

Independent monitoring is not a new idea and in the past has been defined as the kind of monitoring that employs an independent third party. By agreement with state authorities, this third party provides an assessment of legal compliance, and observation of and guidance on official law enforcement systems. For example, independent forest monitoring has been used in voluntary partnership agreements between the European Union (EU) and timber-producing developing countries under the Forest Law Enforcement, Governance and Trade (FLEGT) Action Plan to improve forest governance and reduce illegal logging (Brack and Leger 2013). In the context of the Paris Agreement, independent monitoring can take on a much broader and more flexible role. It can contribute to a shared understanding of specific mitigation potentials, trust in data and definitions by all stakeholders, and objective information to guide implementation at local, national and landscape scales.

⁵ www.globalforestwatch.org

⁶ lucid.wur.nl

⁷ Reducing emissions from deforestation and forest degradation, and enhancing forest carbon stocks in developing countries (REDD+)

Table 1. What is independent monitoring? – Views from different stakeholder groups

Independent monitoring...	All stakeholders	Government (Annex I)	Government (Non-Annex I)	Intergovernmental organization	Non-governmental organization	Commercial organization (private sector)	Public company (state-owned)	Research institute and university	Donor agency	Local stakeholder	Journalist/media
...provides information that is increasing transparency, building confidence and broadening participation for multiple stakeholders	55%	39%	54%	54%	68%	65%	38%	53%	67%	54%	43%
...can be defined as methods, data and tools to estimate greenhouse gas emissions from land activities that are additional to mandated monitoring by governments	54%	58%	56%	51%	54%	45%	75%	53%	78%	62%	29%
...provides information that is accurate, reliable and customizable	54%	35%	50%	68%	67%	55%	38%	52%	56%	54%	43%
...provides information that is supporting countries to fill data and capacity gaps	49%	42%	50%	54%	58%	45%	25%	48%	44%	46%	57%
...provides data that can serve the purpose of independent verification by the UNFCCC roster of experts for reviewing the annual submissions of greenhouse gas inventories	43%	49%	39%	62%	40%	47%	38%	43%	22%	15%	29%
...provides information that is potentially serving as authoritative reference for many kinds of stakeholders	43%	38%	35%	51%	53%	39%	25%	41%	33%	46%	57%
...provides information that is independent from commercial interests	41%	33%	24%	49%	52%	39%	13%	44%	33%	46%	57%
...provides underpinning science to improve data	40%	33%	37%	46%	39%	26%	25%	48%	44%	39%	43%
...ensures that stakeholders, e.g. REDD+ countries, can have ownership and control over datasets and methods and consider them legitimate	38%	23%	44%	41%	43%	43%	0%	39%	22%	62%	29%
Number of responses	533	69	54	37	106	51	8	179	9	13	7

Colour code according to rank of percentages (1 = highest ranked percentage, 9 = lowest ranked percentage)

1	2	3	4	5	6	7	8	9
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REDD+ = reducing emissions from deforestation and forest degradation, and enhancing forest carbon stocks in developing countries; UNFCCC = United Nations Framework Convention of Climate Change.

Data from an online survey⁸ was used to analyse the views and needs of different stakeholders (state and non-state) on the use, accessibility and viability of different open data sources associated with forest area and land-use change, biomass and emission factors, and AFOLU GHG emissions. In this survey, stakeholders were asked to indicate their

views on what they perceive as independent monitoring (see Table 1). Most of them found it important that independent monitoring:

- provides information that is increasing transparency, building confidence and broadening participation for multiple stakeholders (55%);
- provides information that is accurate, reliable and customizable (54%);
- can be defined as methods, data and tools to estimate GHG emissions from land activities that are additional to mandated monitoring by governments (54%).

⁸ The survey was implemented in spring 2015 via an online questionnaire (Survey Monkey) and was distributed through various networks and mailing lists. The participants were also asked to indicate to which stakeholder group they belonged. In total, 658 people participated in the survey.

However, there were some notable differences among the stakeholder groups. For example, local stakeholders valued as most important (62%) that independent monitoring “ensures that stakeholders, e.g. REDD+ countries, can have ownership and control over datasets and methods and consider them legitimate”. Government (developed and developing), intergovernmental and non-governmental organisations, and journalists and media representatives found it also important that independent monitoring “provides information that is supporting countries to fill data and capacity gaps”. In addition, journalists and media representatives found it equally important (57%) that independent monitoring “provides information that is independent from commercial interests” and that it “provides information that is potentially serving as authoritative reference for many kinds of stakeholders”. Research institutes and universities, and to a lesser extent, donor agencies, found it quite important (48% and 44% respectively) that independent monitoring “provides underpinning science to improve data”, while this was regarded as less important by most other stakeholders.

The results of the online survey show that different stakeholders have different views on what independent monitoring means. This illustrates that independent monitoring is not a specific tool, one single system or a one-serves-all approach. It is rather a diversity of approaches and initiatives with the purpose of increasing transparency, and broadening stakeholder participation and confidence by providing free and open methods, data, and tools complementary to mandated reporting by national governments. The aim of these approaches is to improve the accuracy, consistency, completeness and comparability of GHG emission estimates from land-use activities on different scales; to support countries to fill data and capacity gaps; and to increase the accountability of mitigation actions.

Moving to practice – The elements of independent monitoring

It would not be feasible for a single centralized monitoring system, at national or global level, to address the variety of tasks and needs required, nor would it be possible to roll back the multitude of existing monitoring systems. Thus, we explore a set of elements that are important to consider in independent monitoring approaches to ensure a minimum standard of independence, transparency and relevance for climate change mitigation in the AFOLU sector. These elements are not only relevant for independent monitoring approaches, but also for state and non-state actors who seek to make their own monitoring systems more transparent and relevant for climate mitigation in the AFOLU sector. Broader application of these elements will hopefully stimulate the connection and interaction between different monitoring systems.

Transparency in data sources, definitions, methodologies and assumptions is a minimum requirement for comparing and understanding differences in AFOLU information, and for building trust among countries and stakeholders. Data sources, definitions, methodologies and assumptions should be clearly documented to facilitate replication and assessment, and to understand the limits of their applicability. The documentation should be complete, up-to-date and easily accessible for all relevant stakeholders.

Free and open access to methods, data, and tools with detailed documentation on data processing and creation creates many opportunities to provide better AFOLU data for various stakeholders. In addition, it makes use of public and private investments in monitoring and new technologies (e.g. remote sensing) to realise higher efficiencies. However, independent monitoring needs to be truly barrier free to all stakeholders. It must be cost free, easily accessible and clearly explained, so users can understand and use it easily.

The increased participation and accountability of multiple stakeholders (e.g. the private sector, local communities, non-government organizations) in land-use mitigation actions, decision-making and monitoring is essential to achieve successful climate change mitigation actions. However, willingness to participate, capacities and mechanisms to engage in land-use mitigation activities, and tracking of those activities are limited. Monitoring is not only a technical process but also has broader, often little known, political, economic and policy implications of great interest to multiple stakeholders – as a case study from Peru demonstrates (Kowler and Larson 2016). This case study made clear that the technical complexities of monitoring might influence who is involved, and that it should be made transparent what is being monitored, for what purpose and with what outcome. In addition, as there tends to be a lack of interest in monitoring carbon from the great majority of local stakeholders, it is essential to gain a greater understanding of the needs and interests of stakeholders through improved communication, trust and dialogue. Building such confidence and legitimacy are key objectives of independent monitoring. The engagement of various stakeholders requires information at different scales, in addition to national estimation and reporting, such as specific local information for communities, global assessments and mitigation planning on the landscape scale. Independent monitoring can enhance action and participation of non-state actors, in particular local communities and the private sector. This can be achieved by increasing awareness, dissemination and interactive acquisition of data via user-friendly, easily accessible and intuitive web portals (Pratihast et al. 2016) or via portable devices. For example, a new user-oriented online atlas offers the possibility to distinguish oil palm

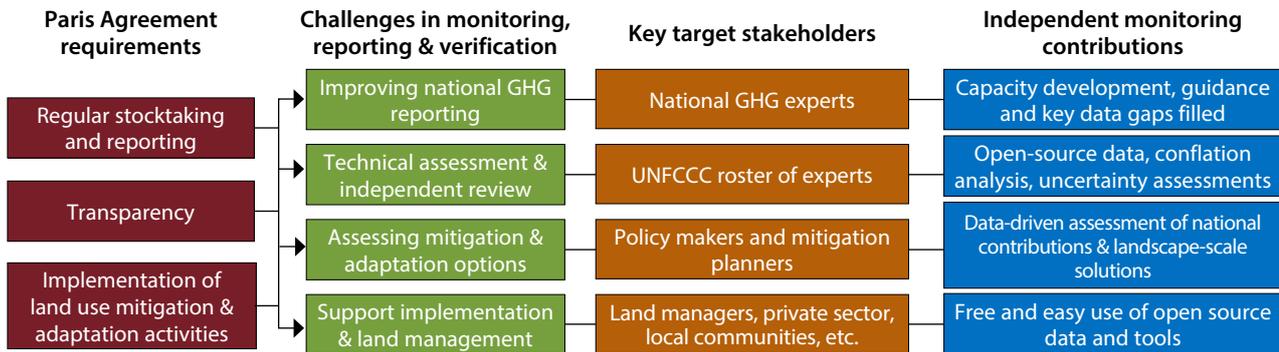


Figure 1. Linking Paris Agreement requirements with independent monitoring contributions

GHG = greenhouse gas, UNFCCC = United Nations Framework Convention on Climate Change.

companies who practiced deforestation from those who avoided deforestation in Borneo (see Box 2). This provides an opportunity for more transparency, more effective oversight by certification bodies and to hold companies accountable.

Independent monitoring should be complementary to mandated reporting by countries. The development of NDCs and regular stocktaking requires investments by countries to improve their GHG inventories (Grassi and Dentener 2015). In addition to mandated reporting responsibilities, countries need support for their mitigation planning and implementation. Independent monitoring approaches can support – but should not be a substitute for – countries’ mitigation planning and implementation, and related reporting for regular stocktaking, in particular in cases where in-country capacities are lacking. Independent monitoring provides an opportunity to integrate independent datasets to fill data gaps in countries and encourage continuous improvements. Integration of independent data is often not straightforward since there may be significant differences between independent studies and national reporting in terms of definitions, scope and methods. Data integration approaches can be used to reduce bias at the local level, by combining independent reference data with regional and global datasets (Avitabile et al. 2016).

Independent monitoring provides an opportunity to promote accuracy, consistency, completeness and comparability of GHG emission estimates from AFOLU by providing information that is accurate, reliable and customizable. It also allows for the assessment of differences in estimating, allocating and reporting GHG emissions (e.g. Harris et al. 2012). The differences between definitions of land-use categories required for UNFCCC reporting and regional or global datasets inhibit a barrier-free application at national level. However, with relatively

small investments the associated uncertainties can be quantified and overcome by comparing datasets and harmonizing definitions. For example, a comparison of various diverging AFOLU emission estimates gave more insight as to the sources of these differences (see Box 3). This is not only useful at the national level, but can also support technical assessments by UNFCCC experts and provide useful inputs to global stocktaking. There is a need for more expert-consensus guidance and experiences,⁹ training modules to build in-country capacities¹⁰, and an assessment of how independent monitoring can help build and sustain capacities.

With these elements in place, independent monitoring can make an important contribution to the implementation of the Paris Agreement. Figure 1 summarizes the challenges in monitoring, reporting and verification arising from several Paris Agreement requirements, the key stakeholders involved and the contribution independent monitoring can make. Land-use sector mitigation under the Paris Agreement requires more transparency and stakeholder accountability, and if these elements are applied, their engagement in monitoring can become an independent tool to stimulate action and confidence.

Independent monitoring can enable countries to develop NDCs which are specific, quantifiable, linked to high-quality reporting and can be assessed independently. It can provide supporting information to build trust with donors and the general public, to stimulate and compensate for mitigation actions at local, national and landscape scales.

⁹ www.gfoi.org/methods-guidance/

¹⁰ www.gofcgold.wur.nl/redd/Training_materials.php

Box 2. Online atlas distinguishes companies who practiced deforestation from those who avoided it over four decades.

The demand for palm oil and wood pulp significantly modifies land covers across Southeast Asia. Conservationists lament the loss of rainforests, and charge oil palm, pulp and paper companies with their destruction. Those on the plantation side argue that planting is done on already deforested degraded land, which is a cornerstone of sustainable development and compatible with certification criteria.

More transparency is required to distinguish oil palm companies who practiced deforestation from those who avoided deforestation, for more effective oversight by certification bodies, to hold companies accountable and to avoid a bad reputation for those that do not deserve it.

The new user-oriented online atlas offers the possibility to distinguish oil palm companies who practiced deforestation from those who avoided it (by establishing plantations on degraded lands). The current geographic scope is Borneo, which is shared by Indonesia and Malaysia – the world's largest producers of palm oil and globally important producers of pulpwood.

The online atlas tracks 42 years of old-growth forest loss and degradation by industrial logging, oil palm and pulpwood expansion. Certification bodies can: determine which companies actively cleared forest before planting, during which period of time, recently or long ago, before or after key policies (moratorium, Round Table on Sustainable Palm Oil and Indonesian Sustainable Palm Oil rules); calculate the area of forest actively deforested; and determine which companies avoided deforestation by planting on degraded lands, and calculate the area of avoided deforestation.

See <http://gislab.cifor.cgiar.org/dev/borneo12/>

Box 3. Explaining differences between land-use emissions data and AFOLU estimates

AFOLU estimates remain highly uncertain, jeopardizing the mitigation effectiveness of this sector. Global comparisons of AFOLU emissions have shown differences of up to 25% (Tubiello et al. 2015), highlighting the urgency of improved understanding of the reasons behind these differences. A comparison of AFOLU emissions datasets and estimates given in the IPCC Fifth Assessment Report (Smith et al. 2014) for the tropics in 2000–2005 gave more insight into the sources of these differences (Roman-Cuesta et al. 2016b).

When disaggregating the emissions by sources, the forest sector showed the largest differences mainly due to estimates from forest degradation and particularly fire. Agricultural emissions were more homogeneous, especially livestock, while croplands were the most diverse. Carbon dioxide (CO₂) showed the largest differences in estimates among datasets, while nitrous oxide and methane estimates were more homogenous.

Also, on the country level, there are considerable differences in AFOLU emissions (Figure 2). Identifying countries with low agreement among emission datasets can be useful for targeting future efforts to reconcile estimates.

Disagreements are partly explained by differences in conceptual frameworks (i.e. definitions), methods and assumptions. More complete and transparent documentation for all the available datasets is necessary to harmonize the datasets. A better dialogue between the carbon (CO₂) and the AFOLU (multi-gas) communities is needed to reduce discrepancies between land-use estimates.



Figure 2. Country level agreement for agriculture, forestry and other land-use emissions for the FAOSTAT, EDGAR and 'Hotspots' databases

Note: The categories of agreement are percentiles of the standard deviations, which represent data variability (i.e. high agreement = low data variability ≤25th percentile; moderate agreement = 25th–50th percentiles; low agreement = 50th–75th percentiles; and very low agreement = high data variability ≥75th percentile).

Recommendations on how stakeholders can engage with and benefit from independent monitoring

UNFCCC negotiators and reviewers

- Independent monitoring could play an important role in preparing harmonized reference data and modalities for transparency and accountability in the land-use sector. Modalities, procedures and guidelines to be developed under the Paris Agreement for enhancing transparency in the land-use sector should acknowledge the abundance of available data and tools by setting out basic principles for using such data sources for reconciliation and validation.
- Good practice guidelines need to be updated to reflect the availability of information derived from high-resolution global remote sensing images that can be used to complement national and local monitoring efforts for mitigation purposes.

Financing institutions supporting land-use sector mitigation

- Independent monitoring is a key component of confidence building and legitimacy, which are essential to safeguard investments in land-use sector mitigation and support stocktaking on local and global levels.
- Independent monitoring approaches should be carefully chosen to best reflect the interest of the user. Given the diversity of methods, data and definitions, specific attention should be given to safeguarding interoperability between approaches to enable convergence toward common estimates (such as actual emission reductions to be compensated for).

Monitoring community

- Development of targeted services and datasets that are able to serve the various land-use sector stakeholders on local, national and global scales is important. Facilitating barrier-free uptake of data and information is essential.
- Independent monitoring is not a specific tool, one single system or a one-serves-all approach. Different stakeholders have different views on what independent monitoring means for them and this needs to be acknowledged when developing datasets, tools and services.
- Datasets and services should be compatible with definitions and standards used in Intergovernmental Panel on Climate Change (IPCC) GHG accounting, or resulting uncertainties should be quantified and reduced by comparing datasets and harmonizing definitions.
- Achieving unbiased estimates of emissions requires the combination of different data sources that are not always fully compatible. Beyond comparison of datasets and harmonizing definitions, the use of reference data is essential to assess the accuracy and limitations of these datasets.

- Development of expert community-consensus guidance and training materials to make the best use of available data and information sources should be encouraged as it increases opportunities for participation, transparency and stakeholder maturity. A continuous data user–producer dialog should be established to improve independent monitoring practices.
- A framework for assessing and communicating the readiness levels of monitoring methods should be developed to track progress and inform countries on maturity, characteristics (precision, accuracy) and trade-offs of technologies.

Countries seeking to implement forest and agriculture-related mitigation actions and to improve GHG management

- The increased use of open and ready-to-use tools for participatory monitoring augments GHG reporting, planning and implementation of land-based mitigation policies.
- The use of data and tools for independent monitoring requires skilled professionals that are capable of interpreting data for national purposes. There are no ready-to-use datasets for such national level comparisons. We recommend that countries establish and maintain institutional capacity capable of analysing and interpreting independent data as reference or input for national estimations, and link local monitoring and reporting on mitigation activities with national estimation.

Other stakeholders (civil society, private sector, academia, etc.) interested in participative monitoring

- Many tools have an explicit participative character, in the sense that they allow users to contribute to improving estimates, such as by uploading data (e.g. www.geo-wiki.org). These tools should take into account different levels of sophistication depending on users' backgrounds and levels of training. We recommend developing a practice of 'data bridging', not imposing a one-size-fits-all system, but rather simplifying and streamlining the dialogue between data users and producers.

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