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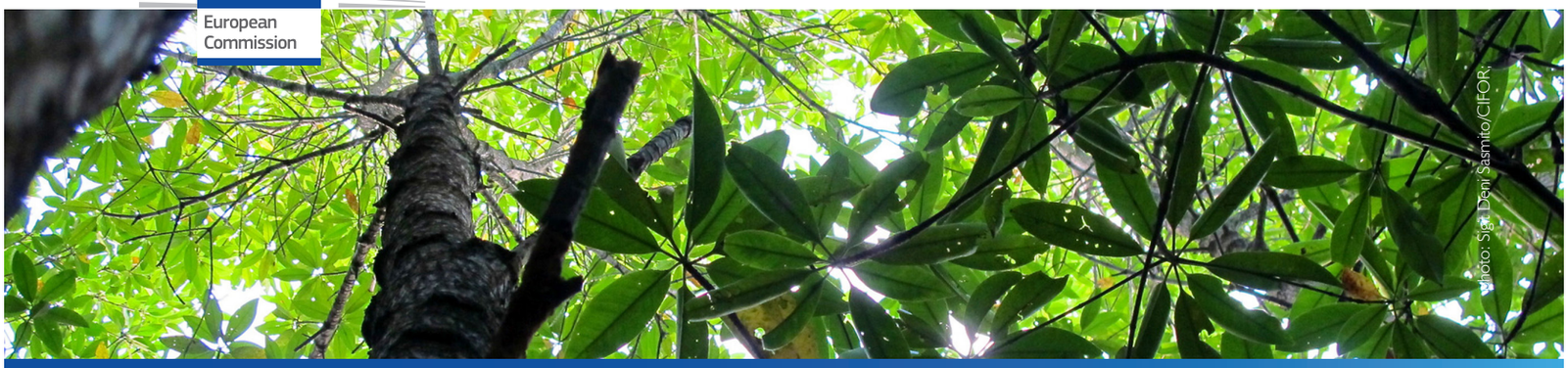


Photo: Sigit Deni Sasmito/CIFOR.

Climate mitigation in agriculture and forestry

The importance of transparent monitoring

Background

Global greenhouse gas emissions must be cut by 41-72% below 2010 levels by 2050 for limiting the increase in the global temperature to below 2°C. The land use sector, which includes agriculture and forests, accounts for about 10% of CO_2, and nearly a quarter of GHG emissions when CH_4 and N_2O are included. The Paris Agreement stresses the importance of the land use sector for mitigation and aims at the implementation of international rules and guidelines for national land policies.

Many countries have included land use sector targets in their nationally determined contributions (NDCs). They will need to monitor emissions and removals from the sector in a transparent, accurate, comparable and consistent way to verify the emission reductions achieved. There is a need for independent monitoring to assist countries with limited capacity to generate the data needed and fill data gaps.

The problem

More and more datasets and portals that serve this need have emerged recently (e.g. Global Forest Watch, OpenForis, Geo-Wiki). These support the upcoming monitoring, reporting and verification tasks in the land use sector. However, discrepancies between estimates, due to different conceptual and methodological approaches, inappropriate scale, lack of data on uncertainties, and limited guidance on how and how not to use such information, all limit their usefulness. This raises questions regarding the legitimacy of independently gathered information for various stakeholders. There is also a lack of awareness and of capacities to use these data. In the future, even more diverging methods, data and definitions are likely to emerge. These problems can contribute to user confusion and mistrust.

The solution

Definitions, methods and data sources need to be carefully chosen and clearly defined, to best correspond to the specific interest or needs of the user. They also need to be kept interoperable for users employing them, so that datasets can be made to converge towards common, broadly accepted values (such as agreements on actual emission reductions to be paid for). Under such circumstances, **transparency in monitoring needs to become a key element for confidence building**, which will help to safeguard investments in land use sector mitigation and support stocktaking at local and global levels.

Transparency in monitoring

Land use sector mitigation under the Paris Agreement, including its Transparency Framework (Paris Agreement Article 13), calls for more transparent approaches, in order to raise stakeholder accountability. A number of key principles form the basis for improved transparency:

- **increased accuracy and improved documentation of uncertainty;**
- **consistency and completeness of data and the appropriate scale;**
- **comparability, complementarity and interoperability of different datasets;**
- **reproducibility and adaptability of methods;**
- **improved access to data and tools for increased participation.**

If these principles are applied broadly, stakeholder engagement in monitoring can become an important means to stimulate

Box. Examples of efforts to increase transparency in greenhouse gas monitoring

1. Comparing land use emission datasets in agriculture, forestry and other land use (AFOLU). Exact information on gross fluxes of sources and sinks is an important basis for effective climate change mitigation, but global AFOLU emission estimates differ by up to 25%. A comparison of AFOLU emission datasets and estimates from the Fifth Assessment Report for the tropics (2000-2005) shows why they differ. It points to the need for a better dialogue between the carbon (CO_2) and AFOLU (multi-gas) communities, to reduce the discrepancies between the estimations.

link: www.wur.nl/en/project/Agriculture_Forestry_and_Other_Land_Use.htm

2. Online Atlas for greater accountability. The demand for palm oil and wood pulp has significantly modified land cover across Southeast Asia. Conservationists lament the loss of rainforests, and single out oil palm, pulp and paper companies for their destruction. Those on the plantation side argue that planting takes place on already deforested degraded land, which is a cornerstone of sustainable development and compatible with certification criteria. More transparency can help in distinguishing companies that have practiced deforestation from those that have avoided it. A new online atlas provides this information over four decades for Borneo. It tracks old-growth forest loss and degradation by industrial logging, oil palm and pulpwood expansion. Such information builds trust and confidence in numbers with different stakeholders.

link: www.cifor.org/map/atlas

3. Participatory portal for improving land use maps. Geo-Wiki is an online tool that provides users with access to global environmental spatial datasets, including land cover, forest, agriculture, biomass, and many more. It allows users to compare different products, provide feedback and local expertise. Users can display maps of the spatial agreement between pairs of land cover maps, along with the overall agreement in the forest and cropland domains. It is also possible to view a hybrid land cover map, created from existing land cover products and crowdsourced data. Such a portal helps identify the most suitable datasets and aids building data products of higher accuracy in a participatory fashion. Furthermore, Geo-Wiki can be used to collect reference datasets for validation and calibration activities as well as statistical information of land cover such as forest extent, cropland etc. Data can be collected by trained experts or volunteers. Gamification and other techniques are used to incentivise volunteers.

link: www.geo-wiki.org/branches/biomass

action and increase confidence. It will also create the grounds for **greater responsibility and accountability**. Transparent 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 the local, national and landscape scales.

Some examples illustrate the practical implementation of more transparency in greenhouse gas monitoring in the land use sector (see **Box**). These describe possible pathways to overcome the challenges noted here.

Independent monitoring

Independent monitoring is important for enhancing the goal of transparency in the land use sector. Users and producers of land use information can engage in and benefit from independent monitoring approaches. A number of actions are needed to support *users* of independent data for increased transparency in monitoring:

- **Develop guiding principles for assessing uncertainties associated with monitoring approaches and how to reduce them.**
- **Advance IPCC guidance regarding the inclusion of independent data and contributing to improved emission factors.**
- **Better tailor models and other tools towards reporting requirements and make them more consistent with current IPCC guidelines and country GHG reporting.**

Data providers can contribute to increased transparency in monitoring by the following actions:

- **Include the original data sources, clearly describe definitions, methodologies and assumptions to facilitate replication and assessment, and include accuracy assessments and uncertainties.**
- **Make methods for data production publicly available and preferably published in peer-reviewed papers.**
- **Provide regular updates of data and consistent estimates over time.**
- **Guarantee that data generation and access to the data are sustained for a long period.**
- **Display the institutional background of the data producer.**
- **Use European assets such as Copernicus services and the evolution of the ESA BIOMASS mission to deliver key free and open data to various stakeholders.**

Costs

Advancing towards increased transparency does not necessarily mean that large investments are required. Improved processes, guidance developments etc. can be achieved through **better coordination of activities at relatively low cost**. Medium costs occur for demonstration and collaboration projects that are also needed. But even high costs of investments into long-term operation of services (Copernicus) and new space assets are justified, especially when co-benefits for other sectors and other monitoring purposes are high.

More information including recommendations for specific groups of stakeholders is provided in
the Final Report "Independent Monitoring: Building trust and consensus around greenhouse gas data for increased accountability of mitigation in the land use sector", procured by DG CLIMA under contract N° CLIMA.A.2/ETU/2014/0008.
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