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> • ESTIMATING CARBON EMISSIONS FOR REDD+

The conditions for involving local people

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• Gilang ARIA SETA, Wahid ULLAH, and Arief WIJAYA

• The participation of local people in climate change mitigation is considered key to
• ensuring that their priorities are taken into account. This should help to design
• effective social safeguards and to improve equity in benefit sharing. The participation
• of local people has been explored in carbon emission Measurement, Reporting and
• Verification (MRV) for REDD+. The feasibility and sustainability of participatory MRV
• (PMRV) are not automatic and depend on its relevance to local people (including
• incentives to participate), their technical capacity and the existence of appropriate
• structures for MRV.

• **M**easuring, reporting and verifying the performance of developing countries in reducing carbon emissions is a key element of REDD+ (Reducing Emissions from Deforestation and Forest Degradation, and the role of forest conservation, sustainable forest management and the enhancement of forest carbon stocks), a mechanism to mitigate the effects of climate change. A harmonised method for collecting data on carbon emissions – MRV (Measurement, Reporting and Verification) – was proposed in 2009 by the UNFCCC COP15 (15th Conference of the Parties of the United Nations Framework Convention on Climate Change). This method is to be used by developing countries, enabling them to implement REDD+ and to receive performance-based financial incentives. Carbon emission estimates, obtained using remote sensing and ground carbon measurements, need to be reported at the national level following UNFCCC guidelines, templates and procedures. Verification of REDD+ implementation, applied at the national level, must follow an international and independent process managed by UNFCCC, from which the national and sub-national levels are excluded.

The advantages of involving local people

The participation of local people in REDD+, including the MRV process, is promoted not only for data collection, but also in order to implement local social safeguards and to ensure the benefits of REDD+ reach local people. The importance of protecting local people, including indigenous people, from the potential negative impacts of REDD+ was officially acknowledged during COP16 in 2011. The negative impacts include reduced access to land and important resources, and fewer sources of livelihood.

The advantages of local people participating in MRV (PMRV) are: it reduces the cost of MRV; it enhances benefit sharing; it builds capacity and empowers local people; and it contributes to monitoring the impacts of REDD+ on local livelihoods, ecosystem services and biodiversity. How can the expected benefits of PMRV be realised? To answer this, all of the dimensions of MRV need to be explored: measurement, reporting, and verification. By collecting and sharing data (measuring and reporting) about the ground

> The participation of local people may increase their opportunity to access REDD+ benefits

conditions in their territory, including carbon stocks, land cover change and the drivers of these changes, local people may increase their influence when negotiating alternative livelihood activities and incentives that reduce deforestation and forest degradation. Participatory verification could also help local people to: build trust and partnerships with REDD+ institutions; complement nationally aggregated data, so that it better reflects local realities; advise on issues such as permanence and leakage; and provide feedback on the effectiveness of social and ecological safeguards and equitable benefit distribution. But the participation of local people should be not taken for granted.

Four enabling conditions

A project was conducted in Indonesia to investigate the feasibility of involving local people in MRV (see box p. 4). Indonesia offers an interesting example, as it is relatively advanced in terms of readiness for REDD+, evidenced in its existing policy, legal and institutional infrastructures and pilot project implementation. The Indonesian REDD+ Agency, created in 2013, has highlighted MRV as a prerequisite for REDD+ implementation. However, the system remains at a preliminary stage and it is too early to determine to what extent local people will be involved.

> Motivation is influenced by the relevance of the activities to local people and by incentives

This research examined: personal motivations; incentives and conditions that could influence the sustainability of PMRV at the village level; and the feasibility of utilising participatory mapping of land cover and land use (including the identification of drivers of change) to complement remote sensing data. To learn from existing reporting structures, it also compared different participatory measurements, multi-level reporting and data verification processes and the institutional frameworks that support them in the health and forestry sectors, two systems that have been established for decades in Indonesia.

> Local people's capacity is shaped by their formal education and knowledge of forest ecosystems

This research was undertaken in three provinces of Indonesia: Papua, West Kalimantan, and Central Java. Research areas were selected outside REDD+ initiatives to capture village conditions prior to a carbon forestry project. The different sites show contrasting contexts in terms of environment (the presence and extent of natural forest), governance (different levels of decentralisation), economic pressure (private sector activities) and the presence or absence of community forest management regimes.

Four enabling conditions were identified for successful and sustainable local participation in MRV: relevance to local people; technical capac-

ity; a reporting structure informed by existing systems; and an appropriate verification system. In each research site, the project investigated how the local context determines the importance of these conditions in developing a PMRV model. How each site meets the four conditions will shape the manner and extent to which local people can be involved and the incentives most applicable to them. Contextual examples of each condition are provided below, while in-depth evaluations of the sites are ongoing.

Relevance to local people

Local people's motivation to participate in measuring, reporting and verifying carbon emissions from their forests is influenced by their perceptions of the relevance of these activities and the incentive(s) they receive for their involvement. Relevance is influenced by the following factors: the ability to incorporate measurements into their forest management practices and within various time constraints; their understanding of what is expected from them; their experience of comparable activities; and their perception of forest benefits for themselves and the wider world. For example, forest-based PMRV activities in Java would be more convenient during the dry season, when tree plantation and agroforestry activities take place. During the rainy season, the villagers are fully occupied with wet-rice cultivation.

To identify which local incentives are appropriate to the local context, several factors should be investigated: village development planning; local economic and structural needs (e.g. infrastructure and social assets, such as health care and education); and past experiences of benefit sharing, resource distribution and development projects. In the villages in Kalimantan, unclear village fund management has resulted in feelings of mistrust amongst villagers. To avoid potential social conflicts, qualification for and the distribution of benefits must be systematic and transparent, or should benefit all villagers, such as by providing a public good or infrastructure.

Technical capacity

Local people should have the technical capacity to measure and interpret changes in forest cover and carbon biomass. Such local capacity is shaped by knowledge of forest ecosystems. This local knowledge can be seen by the way people depend on and impact the forest.

Local capacity also depends on formal education; villagers need to have or gain the skills needed to measure, to take notes, to enter and interpret data, to prepare reports and to communicate the results to government organisations. In Papua, the cus-

tomary authority run by the elders puts them in the best position to identify changes in forest cover, thanks to their ecological knowledge, while the younger generation has the educational skills needed for documenting and reporting. Thus, intergenerational cooperation and participation is necessary. In areas where local capacity is lacking, there is a need for other actors to fill the gap or to indicate whether capacity building is required to enable local people to participate more effectively.

> PMRV can learn from other sectors how to build an efficient and sustainable reporting system

An appropriate reporting structure

Local people need a simple reporting mechanism to provide relevant data, yet what is reported needs to meet the standards for carbon accounting. They should be able to regularly and reliably report carbon and non-carbon information to the appropriate levels of REDD+ governance. Understanding existing reporting systems will clarify how information flows, as well as the design of reporting management and the villagers' reporting capacity. For example, in Indonesia, understanding the forestry sector and learning from the health sector (where experience is more advanced) can help to build more efficient and sustainable community-to-national reporting systems. For the last 30 years, village volunteers have been successfully reporting health data to the national level for use in monitoring, decision-making and programme planning.

The success of this system is particularly visible in Central Java, where village volunteers take advantage of good infrastructure (phone network, internet, roads) to consistently report their data in a standard format. On the other hand, in the remote parts of Papua, the lack of Internet and telephone connections means locally collected information must be physically delivered to the higher level. Reporting is infrequent due to the long and expensive boat journey required.

An appropriate validation system

A validation system needs to be designed that incorporates information reported by local people with remotely sensed data. Local people have spatial knowledge of their territory that can be displayed through participatory maps of land use and land cover. MRV needs to identify and localise land cover changes, especially forest degradation. This is difficult to do using remotely sensed data alone, as classification would be based only on canopy density.

Ecological and land-use based classifications provided by local people may be used to complement and verify observations provided by remote sensing analysts. For example, in Karanganyar, Central Java, land cover maps developed using remote sensing, when compared to participatory maps, revealed discrepancies that need further verification (Fig. 1). In Kalimantan, remote sensing analysis showed patches of medium-high

> PMRV requires international consensus, political will and institutional capacity

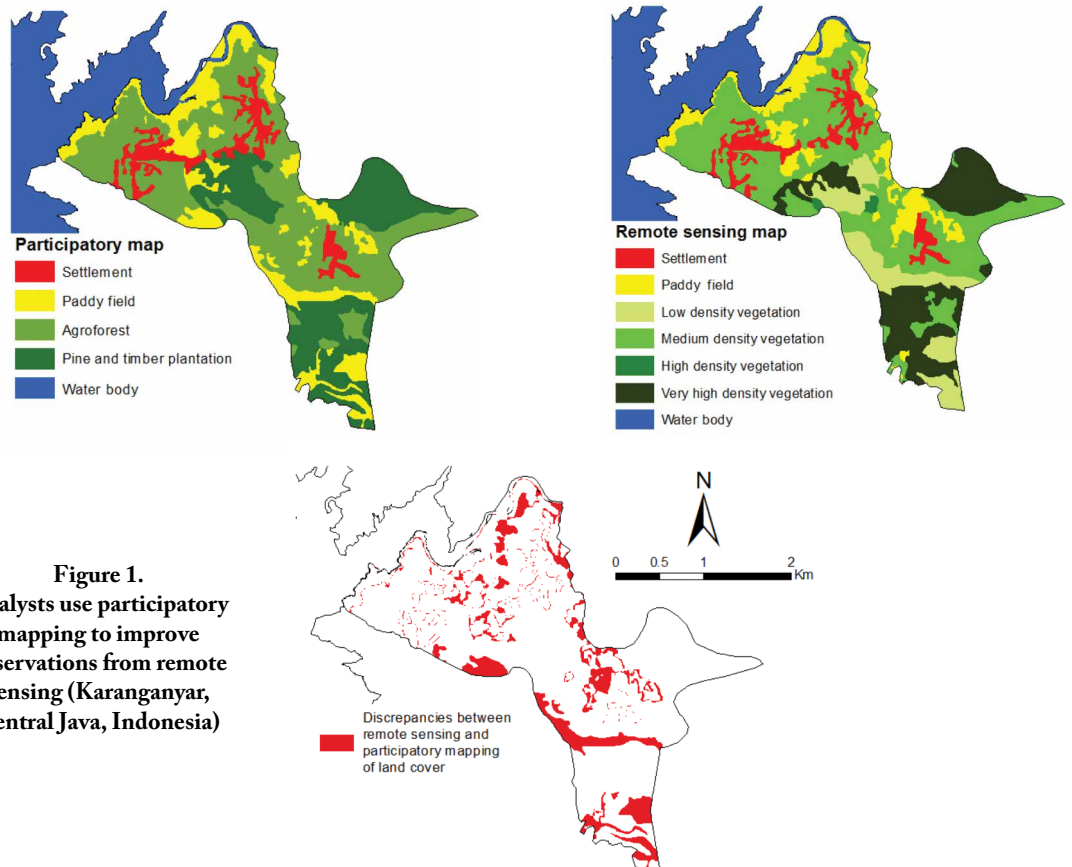


Figure 1. Analysts use participatory mapping to improve observations from remote sensing (Karanganyar, Central Java, Indonesia)

A few words about...

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Serge RAFANO HARANA, Gilang ARIA SETA, and **Arief WIJAYA** are spatial analysis researchers.

They all contributed to the Participatory MRV project.

• density vegetation that could not be identified
• by experts due to time constraints and difficult
• terrain. Through participatory mapping, villagers
• identified the area as *kerapah*, a unique tropical
• forest characterised by stunted trees growing
• in nutrient-poor waterlogged soils. By knowing
• which changes occur, and when and where, local
• people can track and signal land cover changes.
• Participatory mapping may inform local forest
• management by enabling villagers to visually
• represent the pace and drivers of their changing
• environment.

Embedding PMRV in local management systems

• Participatory MRV should be embedded in local
• management systems, with clear and tangible
• benefits, as other studies suggest. PMRV has
• primarily been inspired by conservation projects
• utilising community-based forest management
• (CBFM) approaches, which focus more on man-
• agement outcomes. The sustainability of these
• approaches has been attributed to the link
• between local data collection, management
• outcomes and external agency support. Com-
• munity forest management regimes could pro-
• vide a framework for implementing PMRV.
• However, only a small percentage of the world's

forest communities have legally recognised rights.

How these lessons can be adapted to areas without legally recognised community management systems and to a result-oriented measurement system is an area that requires further study. More examples showing participatory reporting and verification processes are also needed if locally collected data are to be aggregated and incorporated into a multi-level MRV system. The design and application of REDD+ PMRV to maximise carbon mitigation, advance co-benefits, and monitor the implementation of safeguards also require more in-depth investigation and additional examples.

The above characteristics of PMRV – to be relevant to local people; to adapt to local capacity; to use a simple reporting system and a validation system that incorporates local knowledge – are not enough to ensure feasible and sustainable PMRV. Participatory MRV also requires international consensus, political will and institutional capacity, something that is beyond the scope of this project and the conditions presented above. In addition, these conditions should be tested in other countries and across different socio-ecological contexts in order to identify the parameters for which PMRV will be successful, and those for which it will not. <



perspective

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PMRV website:

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