

# PARTICIPATORY CLIMATE CHANGE MONITORING: INVOLVING LOCAL STAKEHOLDERS IN MONITORING CLIMATE CHANGE AND MITIGATION

Why locally based monitoring may be useful to monitor reductions in emissions from forest degradation



A new generation of approaches to monitoring natural resources including carbon emission reduction uses locally based, participatory monitoring methods. Locally based monitoring of natural resources is monitoring of resources, pressures and resource use undertaken by local people who do not have a formal education in science. It may serve to ground-truth carbon stock data from remote sensing, reduce uncertainty and add governance aspects. This approach appears to be one of the most powerful land and resource monitoring tools, yet it does not seem to be fully included in the discussions on carbon emission reduction activities in developing countries.

## Introduction

Deforestation continues at an alarming rate. It results in release of greenhouse gases originally stored in the trees and in other organic matter.

Reducing and preventing deforestation is the mitigation option with the largest and most immediate carbon stock impact in the short term per hectare and per year globally. Most forest-clearing occurs in developing countries.

The Copenhagen compact of 2009 is likely to mandate forest conservation payments, because greenhouse gas emission abatement from forest conservation is much lower-cost than abating emissions from fossil fuels.

Carbon traders and donor agencies demand accountability, transparency and quantifiable achievements in return for their support.

In order to ensure the support of the people living in the forested areas, transparency, participatory decision-making and benefit sharing is necessary.

No common methodology is in place to estimate and verify carbon emission reduction benefits in initiatives to reduce forest degradation and improve land and resource management.

## Local knowledge and engagement: the key to success

Most efforts to develop carbon monitoring protocols in forests have focused on remote sensing tools and other 'externally driven' approaches, e.g. calibrating carbon storage to what is visible on a satellite image and developing an operational system with computer-based user facilities. In these approaches, professional researchers from outside the forest area to be monitored set up, run, and analyse the results from a carbon emission reduction monitoring scheme.

This approach is reliant on skills that are not locally available in most developing countries. Moreover, experiences suggest that remote sensing based monitoring is frequently perceived to be highly technical by resource managers, and as a consequence, may have limited bearing on forest management decisions in practice.

A related issue is that remote sensing based monitoring is often seen as paying inadequate attention to the objectives of other key stakeholders, besides professional forest managers, especially local communities in developing countries whose livelihoods are often closely impacted by the resources concerned.

We therefore propose a supplementary approach, where local people or local government staff are directly involved in data collection and interpretation, and where monitoring is linked to the decisions of local people, using methods that are simple, cheap and require few resources.

Experiences from several countries suggest that locally based monitoring can build local capacity and cooperation between local people and the authorities, and can thereby stimulate local action and result in rapid forest management interventions.

New analytical tools offer opportunities for combining the results of locally based monitoring to draw general conclusions and to track larger-scale trends (meta-analysis).

Locally based monitoring can be a powerful supplementary approach to remote sensing based monitoring, it can generate social capital, enhance the local ownership to carbon emission reduction efforts, and contribute to local accountability, transparency and benefit-sharing in such initiatives. Locally based methods are already being used for natural resource monitoring on a pilot basis in a number of countries, including Ghana, Madagascar, Nicaragua, the Philippines and Tanzania. Research is comparing the accuracy of locally- and scientist-based monitoring ([www.monitoringmatters.org](http://www.monitoringmatters.org)).



## How locally based monitoring can support climate change initiatives: The example of REDD

REDD documentation needs	Locally based monitoring can deliver
<b>How effective are the carbon emission reduction measures?</b>	
Is the forest thriving?	Growth estimates. Description of forest types, forest extent and forest health. Photos on-the-ground. Data on the causes of forest degradation
How much carbon is being sequestered?	Forest boundary mapping and other ground-truthing. Details on incremental growth of trees, forest canopy layers, tree heights, and soils. Data from both high- and low-carbon density forests, also from areas with persistent cloud cover
Prospects for land and resource management	Trends in threats that operate locally. Trends in the impacts of management interventions
<b>What are the environmental impacts of the carbon emission reduction measures?</b>	
Biodiversity	Trends in populations. Presence/absence of native species. Trends in ecosystem services delivered at local scale
Water	Estimates of changes in water regimes and sedimentation
Soils	Descriptions of changes in soil quality and possible erosion
<b>What are the social impacts of the carbon emission reduction measures?</b>	
Benefit sharing	Data on the extent, distribution and character of stakeholder benefits
Potential displacement of local people and resource rights	Data on the impacts of forest conservation measures on statutory and customary rights
<b>Do the carbon emission reduction measures comply with Good Governance principles?</b>	
Stakeholder representation and involvement	Participatory review data on how forest users and beneficiaries are represented in decision-making, including gender and poverty issues
Transparency and accountability	Data on governance, financial management and accountability of local institutions

REDD= Reducing Emissions from Deforestation and Forest Degradation



### Cost effective and sustainable

Costs of locally based natural resource monitoring vary with the intensity of data collection, accessibility of the area, density of forest management staff at the field level, and type of participation of the local stakeholders. The average cost of 15 schemes examined was 0.08 USD/ha/yr. The costs of field-based monitoring by professional scientists also vary widely but as an example for comparison, the programme for monitoring a forest area in Uganda cost 3.6 USD/ha/yr. Locally based monitoring appears to be consistently inexpensive relative both to the costs of effective management, and of field-based monitoring by scientists.

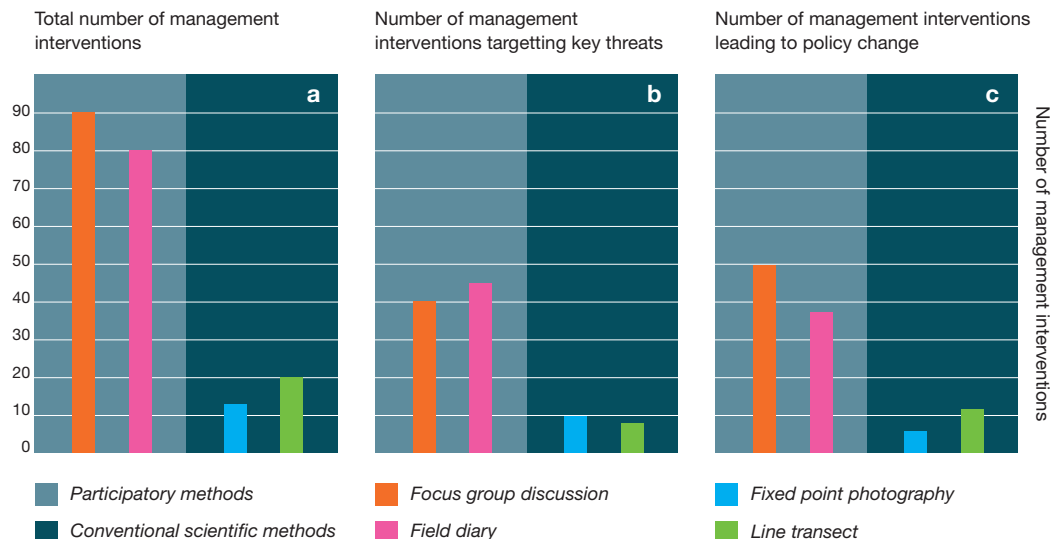
### The way forward

Three factors make locally based monitoring techniques particularly relevant. First, they can promote accountability of carbon emission reduction efforts. Second, they appear effective in incorporating evidence-based assessments in decision-making at the local level, and thus have considerable potential to influence on-the-ground management activities in favour of sustainable forest management. Third, they can generate ownership to carbon emission reduction efforts, and they can encourage equitable benefit-sharing at local levels and contribute to build social capital.

We therefore propose locally based approaches to environmental assessment as an important component of assessments of the effectiveness of actions to reduce forest degradation.

We also propose demonstration initiatives to further explore the potential of locally based approaches to monitor forest degradation and carbon emission reduction and to examine how locally based methods can best be linked to satellite based, remote monitoring.





This figure shows the cost efficiency of participatory and conventional scientific monitoring methods in generating natural resource management interventions in Philippine forests. (a) shows the total number of interventions generated by each method for the same recurrent investment, (b) shows the number of interventions that targeted the three most serious threats to the natural resources of each site, and (c) shows the number of interventions that led to policy change within local government and community institutions (Ambio 36: 566-570; 2007). These findings suggest that participatory monitoring is an unexpectedly powerful complementary approach that is capable of generating a much higher level of natural resource management intervention than conventional monitoring, even where conventional monitoring is already taking place.

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Locally based monitoring of natural resources... 'appear effective in incorporating evidence-based assessments in decision-making at the local level...thus having considerable potential to influence on-the-ground management activities.' Science, 2007 ([www.sciencemag.org/cgi/eletters/315/5818/1518](http://www.sciencemag.org/cgi/eletters/315/5818/1518))