UNIVERSITY OF COPENHAGEN

**Københavns Universitet**

# Locally-based monitoring and its relevance to management and research

Nielsen, Martin Reinhardt; Lund, Jens Friis; Byg, Anja; Theilade, Ida

*Published in:*
Development Briefs. Policy

*Publication date:*
2012

*Document version*
Early version, also known as pre-print

*Citation for published version (APA):*
Nielsen, M. R., Lund, J. F., Byg, A., & Theilade, I. (2012). Locally-based monitoring and its relevance to management and research. *Development Briefs. Policy*, (17).

Download date: 13. Nov. 2026

FOREST & LANDSCAPE

DEVELOPMENT
BRIEFS
POLICY
NO. 17 • JANUARY 2012

PHOTO: JENS FRIIS LUND

*A forest committee involved in locally-based monitoring in front of their office, Tanzania.*

# Locally-based monitoring and its relevance to management and research

Locally-based monitoring (LBM) has been proposed as a solution to overcome the costs of monitoring the condition and development of natural resources and ecosystems in developing countries. Based on a recent empirical study on LBM, this brief argues that careful attention should be paid to the incentives and power struggles surrounding the particular context within which LBM schemes are based as they will invariably shape the information produced and communicated.

**What is locally-based monitoring?**

We define LBM as the systematic measurement of variables over time involving local people in some or all stages of the collection, analysis and use of data. While often drawing upon local ecological knowledge, LBM denotes a highly, standardized approach that can be used by local people to generate information about natural resources in their locality. Depending on whether the involvement and training of local people goes beyond mere data collection, LBM

## Policy Recommendations

- Locally-based monitoring (LBM) signifies the systematic measurement of data on variables of relevance to natural resource condition and use over time involving local people in some or all stages of the collection, analysis and use of data.
- Careful attention should be paid to the incentives and power struggles surrounding the particular context within which LBM schemes are based as they will invariably shape the information produced and communicated.
- Mechanisms to assure transparency and accountability in LBM schemes are important to minimize the risks associated with the use of information produced and communicated under them.

may or may not deliver co-benefits in the form of local empowerment and capacity building that are usually associated with participatory or local approaches to natural resources management.

**Why the interest in locally-based monitoring?**

In recent decades, locally-based monitoring has been emphasized as a useful tool for conservation and sustainable resource management. The growing interest has been spurred by a realization that the costs of monitoring natural resources and ecosystems are prohibitive particularly to developing nations. The growing emphasis on participatory approaches to natural resources management has furthermore led to calls for monitoring schemes that are more relevant to and favour the active participation of local people. Considerable optimism has been expressed about the usefulness and cost effectiveness of LBM schemes in this respect (Danielsen *et al.* 2000, 2005). Proponents envision that by involving local people in the systematic gathering of information about natural resources and their use, data can be generated to support management decisions with particular potential where national authorities and local communities collaborate on resource management. It is, among others, expected that locally-based monitoring information can be used to assess whether the terms of management agreements specifying rights and responsibilities of the parties involved in collaborative natural resources management are fulfilled (Danielsen *et al.* 2003; Garcia & Lescuyer 2008).

*Table 1: Basic characteristics of the eight case study villages.*

| | Montane | Woodland |
|---|---|---|
| Village data | | |
| Population (per village) | 1,000 - 2,600 | 1,600 - 3,000 |
| Distance to Iringa town | 45 - 80 km | 20 - 60 km |
| Rainfall (mm/year) | 1,500 - 2,000 | 600 - 900 |
| Growing seasons | 2 | 1 |
| Main agricultural crops | Maize, beans, potatoes, green peas, various vegetables, tea, fruit trees | Maize, sunflower, beans, tobacco, millet, tomato, ground nut. |
| Forest data | | |
| Habitat type | Montane to upper montane forest | Dry miombo woodland forest |
| Forest area (ha) | 3,700 - 35,000 | 5,000 - 10,000 |
| Forest elevation (masl) | 350 - 2,570 | 1,200 - 1,600 |
| Standing stock (cum/ha) | NA | 45 - 70 |
| Main forest uses | Bushmeat hunting, pole cutting, medicine plant collection | Firewood for tobacco curing and selling, charcoal, grazing, timber. |

**What is the evidence from this case?**

The evidence presented here compares results from a LBM system used in 23 Tanzanian villages with forest transect surveys of wildlife densities and human disturbance in the forests and an audit of financial transactions done by researchers.

*Study area and methods*

The study was conducted in Iringa District, Tanzania where a LBM system was developed and implemented in 23 villages in the Udzungwa Mountains and adjacent woodlands in connection with a collaborative forest management project. The LBM was carried out by village natural resource committees (VNRCs) that were elected by the villagers and subsequently trained in the monitoring procedures by external consultants.

The LBM encompassed weekly patrols in the surrounding forests as well as procedures for summarizing information on ecological and resource use indicators, financial transactions, and management procedures in so-called monthly reports that are sent by the VNRCs to the District Forest Office. Four montane and four woodland villages were included in the study. The comparison was based on wildlife densities and human disturbances and financial transactions as reported in monthly reports by the VNRCs. This was compared with information obtained from forest transects surveys and audits of VNRC financial accounts, respectively, over the period 2003-2008. Interviews and participant observations formed the basis of an analysis of underlying reasons for observed discrepancies in the comparison.

*Comparing LBM with forest transect surveys*

The comparison was done in relation to the four montane forests only and with a focus on trends in human disturbance levels, as represented by density of hunting traps. The comparison in Table 2 shows that the information communicated by the VNRCs in monthly reports and their perceptions of trends as stated in interviews indicates a decreasing trend in density of hunting traps, whereas the transect surveys, in three out of four VNRCs, indicate the exact opposite. Accordingly, the information communicated by VNRCs in monthly reports and interviews is generally more positive as to the effectiveness of the collaborative management than what is indicated by the transect surveys.

*Comparing LBM with financial audit*

Comparison of information on incomes and expenditures reported by VNRCs in monthly reports with an audit of receipts and vouchers indicate a considerable level of discrepancies. Financial flows tend to be underrepresented in the monthly reports (see Figure 1 below). Discrepancies furthermore appear concentrated in discrete periods that in several cases correlate with cases of embezzlement. Most villages had experienced one or more examples of financial mismanagement leading to dismissal of VNRC members, and the audit revealed that 1-55 % of the total income recorded in receipts was unaccounted for in vouchers, cash or bank account balances. Finally, interviews with resource users, traders in forest products, and VNRC members revealed that an unknown share of financial transactions and resource uses were not recorded in the monitoring system due to evasion of control by forest users with and without collusion with VNRC members and village leaders.

*Underlying reasons for results*

Interviews and observations indicate that the production and communication of information through the LBM system

| Village | Monthly reports | VNRC statement | Transect survey |
|---|---|---|---|
| Montane 1 | ↓ | ↓ | ↑ |
| Montane 2 | ↓ | ↓ | ↑ |
| Montane 3 | ↓ | ↓ | ↓ |
| Montane 4 | 0 | ↓ | ↑ |

*Table 2: Trends in traps as reported in monthly reports; stated by VNRCs during interviews; and observed during transect surveys. Trend lines based on data reported in monthly reports from 2003 to 2008 were derived through linear regression of observations per hour patrolled. VNRCs were asked about their perceptions of trends during semi-structured interviews. Trends observed during transect surveys are based on distance sampling on village adjacent transects in 2001 and 2008. Here all trends are represented by a symmetric three point Likert scale (↑ = increase, → = no change, ↓ = decrease).*

*Settling a conflict over grazing in a locally managed forest, Tanzania.*

PHOTO: JENS FRIIS LUND

*Figure 1: Average income/expenditure reported in monthly reports less average monthly values recorded in receipts/vouchers for the period January 2003 to July 2008 from four montane villages (1-4) and four woodland villages (5-8).*

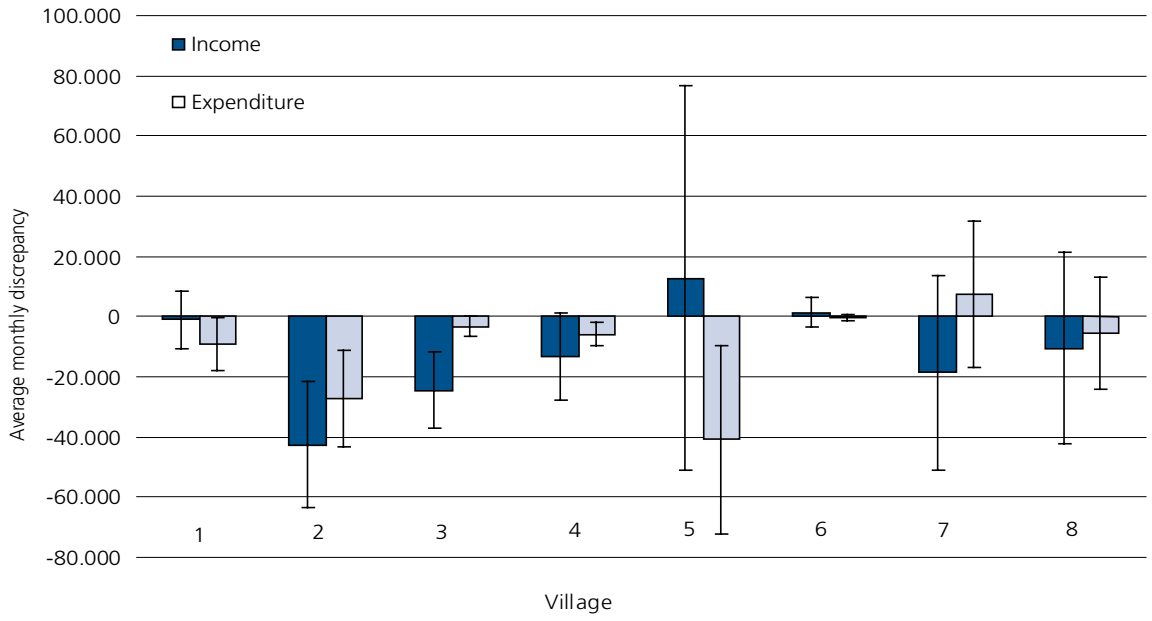

PHOTO: JENS FRIIS LUND

*Preparations for an illegal charcoal kiln discovered during forest patrol under a locally-based monitoring scheme, Tanzania.*

takes place in a context of power struggles over access to benefits from collaborative forest management. For many, VNRC membership was regarded a lucrative position in terms of salaries and allowances as well as access to illicit benefits through collusion with resource users and embezzlement. The real and perceived oversight by fellow villagers and the District Forest Office (that receives the monthly reports) implies that individual VNRC members appeared to have considerable incentives to report positive trends in ecological monitoring data and conceal discrepancies in financial management by withholding or only presenting one source of information. It is thus clear that the monitoring information understates the magnitude of financial flows and utilization levels – albeit to an unknown extent – implying that the communicated information is impaired in relation to assessing resource use patterns and ensuring sustainability.

**Concluding remarks**

The results from this case study indicate that information produced and communicated under locally-based monitoring systems is shaped by incentive structures and power struggles in the particular context within which they are embedded. Furthermore, the power struggles over access to the resources and benefits accruing from collaborative forest management found in our case study seem to be the norm rather than the exception in such processes (for a review, see Ribot *et al.* 2010). Accordingly, we urge policy makers to carefully consider the specific incentive structures and power struggles surrounding natural resource management when considering LBM as a means to overcome the costs of monitoring the condition and development of natural resources and ecosystems. Further, we call for attention to mechanisms assuring transparency and accountability in the way monitoring information is produced, used and communicated.

To know more about the case study see: *Nielsen, M.R. and J.F. Lund. 2012.* Looking for White Elephants? Production and communication of information in a locally-based monitoring scheme in Tanzania. Conservation and Society 10(1): 1-14. DOI: 10.4103/0972-4923.92188

*Authors: Martin Reinhardt Nielsen, Jens Friis Lund, Anja Byg and Ida Theilade*

***References***


*Danielsen, F., D.S. Balete and M.K. Poulsen (2000).* A simple system for monitoring biodiversity in protected areas of a developing country. Biodiversity and Conservation 9(12): 1671-1705.

*Danielsen, F., M.M. Mendoza and P.A. Alviola (2003).* Biodiversity monitoring in developing countries: What are we trying to achieve? Oryx 37(4): 407-409.

*Danielsen, F., A.E. Jensen, P.A Alviola, et al. (2005).* Does monitoring matter? A quantitative assessment of management decisions from locally-based monitoring of protected areas. Biodiversity and Conservation 14(11): 2633-2652.

*Garcia, C.A. & G. Lescuyer (2008).* Monitoring, indicators and community based forest management in the tropics: Pretexts or red herrings? Biodiversity and Conservation 17: 1303-1317.

*Ribot, J., J. F. Lund and T. Treue (2010).* Democratic Decentralization in Sub-Saharan Africa: Its contribution to forest management, livelihoods, and enfranchisement. Environmental Conservation 37: 35-44.



ISSN: 1903-7430 (ONLINE)



***Series editor***
*Jens Friis Lund*
*Danish Centre for Forest, Landscape and Planning*
*Rolighedsvej 23*
*DK-1958 Frederiksberg*
*Denmark*
*Tel. +45 3533 1500*
*www.sl.life.ku.dk*



*Development Briefs present information on important development issues. Readers are encouraged to make reference to the Briefs in their own publications, and to quote from them with due acknowledgement of the source.*



*This brief is an output produced under the Performance Contract between the Danish Centre for Forest, Landscape and Planning (FLD), University of Copenhagen and the Danish Ministry of Foreign Affairs (Danida).*