

SOCIO-ECONOMIC METHODOLOGIES  
FOR NATURAL RESOURCES RESEARCH  
BEST PRACTICE GUIDELINES

PARTICIPATORY MONITORING  
AND EVALUATION FOR NATURAL  
RESOURCE MANAGEMENT  
AND RESEARCH

**Irene Guijt**

*International Institute for Environment  
and Development*

© The University of Greenwich 1999

The Natural Resources Institute (NRI) is a scientific institute within the University of Greenwich, and is an internationally recognized centre of expertise in research and consultancy in the environment and natural resources sector. Its principal aim is to increase the productivity of renewable natural resources in developing countries in a sustainable way by promoting development through science.

Short extracts of material from this publication may be reproduced in any non-advertising, non-profit-making context provided that the source is acknowledged as follows:

GUIJT, I. (1999) Participatory monitoring and evaluation for natural resource management and research. *Socio-economic Methodologies for Natural Resources Research*. Chatham, UK: Natural Resources Institute.

Permission for commercial reproduction should be sought from the Managing Editor, Natural Resources Institute, Central Avenue, Chatham Maritime, Kent ME4 4TB, United Kingdom.

Production of this publication was funded under project R6800, by the Natural Resources Systems Programme of the United Kingdom's Department for International Development.

The Natural Resources Systems Programme is one of twelve research programmes funded by DFID's Natural Resources Research Department. Together they form DFID's Renewable Natural Resources Research Strategy (RNRRS), directed towards the priority problems in a wide range of developing countries. The Socio-Economic Methodologies component is charged with improving the design, delivery and impact of renewable natural resources research projects under the RNRRS. The priority is to make research more relevant to the needs of the intended beneficiaries, better targeted towards developmental rather than scientific objectives and leading to better uptake and impact of research outputs.

The Department for International Development can accept no responsibility for any information provided or views expressed.

Copies of this publication can be obtained by writing to NRI Catalogue Services, CAB International, WALLINGFORD, Oxon OX10 8DE, UK. When ordering, please quote BPG4.

**Natural Resources Institute**  
ISBN 0 85954 496 – 6

## THE RELEVANCE OF PARTICIPATORY MONITORING AND EVALUATION

Monitoring and evaluation (M&E) have long been important for funding agencies to assess actual change against stated objectives, and thus to judge whether development assistance has been successful or not. This has usually involved external experts evaluating against indicators that have been determined externally or through rigid, imposed monitoring procedures. Yet changes are afoot and organizations are increasingly using M&E for internal learning and continual improvement to their work. They also increasingly realize that this needs to happen with a wide range of stakeholders, thus making M&E more participatory.

Participatory monitoring and evaluation (PM&E) involves the assessment of change through processes that involve many people or groups, each of whom is affecting or affected by the impacts being assessed. Negotiation leads to agreement on how progress should be measured and the findings acted upon. It is a challenging process for all concerned as different stakeholders must examine their assumptions about what constitutes progress – and together deal with the contradictions and conflicts that can emerge.

For research managers of DFID-funded work, PM&E can stimulate a shift from assessing impacts based on DFID's perceptions of benefits to include the perceptions of the target population. PM&E can, therefore, provide more comprehensive information on efficiency, relevance, sustainability, impact and effectiveness of work in progress. By learning from mistakes *en route*, it can lead to timely corrective action. By highlighting the successes of people's efforts, it can increase motivation. The systematic and continual exchange of information can also strengthen working relationships. As the effectiveness of PM&E is based on sharing information, it requires careful identification of those who should share information and what information is worthwhile sharing.

### The growth in interest in participatory monitoring and evaluation

Four trends are stimulating the interest in more participatory forms of M&E in the natural resource sector, giving rise to a wide range of expectations about what it can deliver.

The first, and arguably most significant trend, has been the huge surge of experience with participatory appraisal and planning in general, and in the natural resource sector in particular. Participatory natural resource management has become an accepted ethic and practice in hundreds of Northern and Southern development initiatives and a logical extension of this has been rapidly growing interest in how to ensure wider participation in M&E. This has stimulated greater appreciation for an adaptive management approach in which research and implementation activities are mutually reinforcing.

Second, questions about M&E are arising from the natural resource policy sector. On the one hand, more information is being sought (notably in UNCED's Agenda 21) to provide answers to environmental problems and to improve the planning of conservation and regeneration efforts. On the other hand, the accuracy, feasibility and relevance of existing data collection approaches, 'traditional' M&E exercises and

policy processes are being questioned. The difficulty of pursuing environmental information for decision-making in times of rapid change and great uncertainty has raised questions about alternative approaches. Natural scientists have long aimed to provide information to enable more appropriate interventions, but for many situations their methods can be too costly and time-consuming to be useful. Thus, there is a growing interest in how the wider community can contribute to natural resource-related M&E.

A third trend relates to the desire to know if environmental regeneration efforts are a worthwhile investment. In part fuelled by growing scarcity of funds, pressure is growing in funding and implementing agencies to prove that money allocated to environmental management is having the promised impacts. This is particularly true of the investments made in community-based natural resource management efforts, many of which were made in good faith over the past decade and can be seen as a form of research. Now funding agencies are asking advocates of such approaches to prove the claims. This is matched by growing community concerns about environmental problems and the impact of their own local efforts at mitigating some of the excesses.

The fourth area from which PM&E is being stimulated and challenged is that of institutional change in general. Taking on board new principles such as ‘participatory development’ and ‘environmental sustainability’ has created tensions, as existing ways of working are challenged. Combined pressures to prove performance, while working more efficiently and effectively (given that past approaches have not always worked out very well), is encouraging organizations to ask how they can improve. PM&E can contribute to creating a stable organization that values critical reflection, and learns from success and failure alike.

### **Multiple purposes and benefits**

Given the range of different needs for information generation and sharing, PM&E is being asked to fulfil a range of purposes, each offering related benefits. Table 1 illustrates the high – and diverse – expectations of the benefits of PM&E. Those that recur in the literature are:

- empowerment of stakeholders to take action
- improved public accountability
- improved information provision for strategic planning at different levels.

## **SELECTED ISSUES IN PARTICIPATORY MONITORING AND EVALUATION FOR NATURAL RESOURCE MANAGEMENT AND RESEARCH**

### **Participatory monitoring and evaluation as a social process**

Viewing PM&E as ‘systematic communication’ focuses attention on its fundamental social and political nature. Social and political issues arise when stakeholders come together to determine what they want to understand and communicate, and particularly with M&E, the norms of success against which they compare reality. Each stakeholder group has different information needs, priorities and expectations of being involved in M&E. Some have more or less power to speak, greater or less

**TABLE 1: Purposes and benefits of PM&E**

Purpose	Benefit
To provide accountability of project and programme expenditure to funding agencies	<ul style="list-style-type: none"> <li>• A condition for receiving funding</li> <li>• More funding, if the outcome is positive</li> </ul>
To review implementation of projects/programmes	<ul style="list-style-type: none"> <li>• Better understanding of the realities and, therefore, more realistic and appropriate plans</li> <li>• Timely identification of bottlenecks in carrying out activities as planned, so timely adjustments to plans, schedules and/or budgets</li> <li>• Opportunity to improve the effectiveness and efficiency of activities</li> <li>• Knowing whether activities are achieving desired outcomes</li> <li>• Knowing whether activities are having unanticipated negative impacts that need correcting</li> <li>• Information to convince others of the merits of one's efforts, for example, when influencing policy makers</li> </ul>
To provide public accountability of local and national government programmes to communities	<ul style="list-style-type: none"> <li>• Local empowerment</li> <li>• Helps ensure that project and programme impacts influence and reorient policy</li> <li>• Encourages institutional reform towards more participatory structures</li> </ul>
To strengthen organizations	<ul style="list-style-type: none"> <li>• Better working environment as learning from mistakes eases performance fears</li> <li>• More motivated staff</li> <li>• Better programmes and, therefore, more locally appropriate development</li> <li>• Less waste of money and time</li> <li>• Local and staff empowerment</li> <li>• More self-development initiatives</li> </ul>
To understand and negotiate stakeholder perspectives	<ul style="list-style-type: none"> <li>• Reassessment of objectives and attitudes by funding agencies</li> </ul>
To provide information at different levels	<ul style="list-style-type: none"> <li>• Improved strategic planning at different levels</li> <li>• Checks and helps update our understanding of society and development</li> </ul>

capacity to analyse, and varying norms for trustworthiness of information. Thus, much of the current research on PM&E revolves around finding ways to help different people to identify clearly their information needs, and to negotiate common ground and acceptable forms of assessing information. Recognizing this basic conceptual issue can help those involved lay a solid foundation for the work, and to avoid viewing PM&E as a mechanical sequence of procedures using elementary participatory methods to understand simple indicators.

**TABLE 2: Motivation for agricultural monitoring in Brazil**

Participating groups	Motivation for participating in PM&E
Farmers	<ul style="list-style-type: none"> <li>• To improve management of their own farming enterprise</li> <li>• To activate the interest of other farmers not involved in sustainable agriculture</li> </ul>
Rural Workers Union	<ul style="list-style-type: none"> <li>• To evaluate impacts with more certainty and avoid unsubstantiated opinions</li> <li>• To prove to other farmers that sustainable agriculture practices can also benefit them</li> <li>• To convince other organizations that sustainable agriculture activities are worth supporting</li> <li>• To be able to evaluate better non-agricultural aspects of the union's work</li> <li>• To help with planning, knowing what works and what does not</li> </ul>
Local NGO	<ul style="list-style-type: none"> <li>• To evaluate the effects of technical and social innovations on ecological, social and economic well-being amongst smallholders in north-east Brazil</li> <li>• To report to funding agencies the extent to which efforts are meeting intended objectives</li> <li>• To help in planning and prioritizing activities</li> <li>• To have proof for advocacy purposes at the regional, state and, perhaps, national level</li> <li>• To enhance the capacity of farmers and unions for autonomous planning and implementation of sustainable agriculture activities</li> <li>• To strengthen the interaction of newly formed farmer experimentation groups</li> </ul>

### Participation in participatory monitoring and evaluation

Involving local people in M&E often proves to be limited to data collection. There appear to be three areas where such simplistic practices prevail.

First, PM&E immediately evokes images of village-level involvement. However, interpretations of 'participation' are broadening, expanding from empowering beneficiaries through PM&E to situations that refer to many more and different stakeholder groups. In some cases, no beneficiaries have been involved but fieldworkers have helped senior management to design the M&E, thus making it 'participatory'. If local empowerment through PM&E of renewable natural resources is a key aim, then careful thought is needed to ensure the inclusion of beneficiaries and not just of junior staff.

Second, most project-initiated processes make the rather tenuous assumption that participation by local people in M&E will benefit them. But this may not always be the case, nor may people's interests be what projects assume. What can safely be assumed is that people's objectives will be diverse. Table 2 describes a range of benefits as stated by those involved in participatory monitoring work in Brazil. The motivation of each partner influences how much time they are willing to invest in the work and those aspects on which they wish to focus their efforts.

A third assumption relates to the degree of participation of each stakeholder group in different stages of the work. Often local people's participation in M&E is limited to data collection, yet M&E requires three other core tasks:

- designing the monitoring or evaluation process
- compiling and analysing information
- using the lessons learnt.

What distinguishes the more innovative participatory processes is their inclusion of end-users in PM&E design.

### Baselines

M&E by definition compare changes over time, or 'before and after'/ 'with and without-project' situations – be it with or without indicators. However, the practical reality of most projects and programmes is that few have baselines against which to judge change nor the funding to create them.

Two factors make baselines even more complex in a participatory context. The most fundamental one relates to the very nature of participatory projects, which commonly start tentatively with small interventions. Only later, after an elaborate 'listening' phase, which may include some small trials, do they tend to undertake substantial and focused activities that can be monitored against baseline information. Given the uncertainty about the exact final orientation of such projects, how can they determine early on what information to collect for the baseline? However, such participatory projects also often start with some kind of participatory rural appraisal (PRA), which constitutes the beginning of a baseline – though perhaps not representing the ideal level of detail.

The second issue relates to the complexity of combining different perceptions of project components and bringing them together to define the measurement that represents the base case. Suppose that farmers, researchers and extension agents have agreed to focus research on soil nutrient cycles. Will they decide that the baseline should focus on biodiversity as a proxy of soil quality, soil nutrient content, biomass production, or all of them? Since natural resource research often involves far more than just a technical change, baselines should also deal with the economic situation, with institutions, with autonomous resource management groups, etc. How much time and effort should be invested in establishing a comprehensive baseline that meets these different information needs? A related problem is that of moving goal posts. If impacts are monitored or evaluated and objectives and activities have altered, then are impacts related to past or current objectives?

There are no easy answers to the thorny problem of baselines but clearly there is a need to rethink the role they play. The most streamlined baselines are objective-driven – they only measure the status of those aspects that are the focus of the research. However, the most common strategy is that of assessing increases or decreases from the first measurement. An alternative strategy is to develop a sequence of approximations that start with participatory appraisals to determine the outline of the collaborative research venture, and move towards clearer objectives that then form the basis for gathering baseline data. This notion of a 'rolling baseline' represents a middle-ground option between undertaking a comprehensive baseline and a totally retrospective impact assessment approach.

### **BOX 1 : Accuracy of impact assessment – the example of crop yields**

Casley and Kumar (1990) explain how easy it is to create a misleading figure about production gains – a very basic type of impact that many agricultural projects seek. Annual variation of rainfall is a major cause of changes in production figures, and even in irrigated areas available water fluctuates annually by 15–20%. The average coefficient of variation around cereal production trends from several countries is in the order of 15 %, they say. Trying to detect if an intervention has increased production yields by 4%, for example, would become a highly dubious statistical exercise unless many years of reliable yield data can be collected. This is usually beyond the life span of most interventions, not to mention the resources that this would require. Casley and Kumar conclude: "... the determination of yield or production trends [according to strict statistical requirements] in rain-fed smallholder farming areas may be impossible within the implementation periods of most projects".

### **Rigorous analysis and participation**

Baselines form one aspect of the pursuit of 'rigorous analysis' for which M&E systems aim. Accurate impact-related information is another aspect necessary for establishing the causes of changes and their link to the project. Even the use of conventional approaches to analyse cause–effect linkages is complex (see Box 1), as many other external influences will have affected the situation simultaneously.

In PM&E, there is often an extra tension between involving different stakeholders and their views on what constitutes 'trustworthy' data, and meeting conventional norms of rigour. The shift from an external expert-dominated approach towards one with more community involvement is provoking a review of what constitutes 'accuracy' or 'rigour', as different stakeholders bring their own norms of accuracy and trustworthiness of information into the process. Sometimes approximations are good enough for those involved, and excessive precision unnecessary or impossible. For example, the accuracy of a scratch mark on a wooden stick that farmers prefer to written percentages on a piece of paper might well be questioned by scientists. However, farmers' reluctance to use an alien but scientifically acceptable method would probably decrease the reliability of more conventional scientific measurements.

The question of ensuring both local participation and external validity largely depends on the level at which monitoring information is needed and by whom it is used. In a participatory process, negotiation about what each stakeholder group considers 'rigour' will be required. It also calls for greater acceptance of different information sources and the use of alternative methods for assessing reliability, other than through conventional scientific measurement.

### **Common errors en route**

As participatory M&E raises many questions for organizations, it is not surprising that certain basic errors persist.

**Lack of clarity about the end-use(r) leads to the collection of excessive amounts of overly detailed indicators.** Data does not necessarily lead to useful information and it is, therefore, critical to know exactly who is going to use the information that will be collected and for what purpose. Confusion can easily arise over who needs what kind of information and how they will use it, particularly when many stakeholders are involved (see Box 2).



**BOX 2 : Selection of indicators**

Fieldwork in Brazil on developing a PM&E system has been guided from the start by the question “who is the end-user of the information?”, particularly during indicator selection. Yet after the first round of monitoring, it was clear that the workload was too heavy. We reviewed each indicator again, asking ourselves: “Who has used this information or has concrete plans to do so and for what purpose? Is it still a relevant indicator?” This enabled us to discard those that were not being used actively – despite our initial expectations – and refine those that were relevant but needed to be more specific.

**Organizations often assume both local ignorance of, and local interest in M&E.**

In many cases, where community-based monitoring systems are developed, little time – if any – is spent on understanding the possibly very detailed local use of indicators and local ways of sharing information about change. Not building on what exists is a waste of precious time, resources and insights, but skill is needed to unearth local ways of tracking change. At the same time, many participatory monitoring systems are initiated with the assumption that local people will be keen to be involved. However, they are not necessarily interested in the same kinds of information as an NGO, government department or researcher. Therefore, information collection and analysis on a voluntary, unremunerated basis (as is often expected in participatory projects) is unlikely to be sustained unless the information has some direct relevance or value for community members.

**Imposing indicators and methods despite participatory intentions.** No matter how hard they try, organizations keen to facilitate the development of local monitoring systems often impose their ideas of useful indicators or methods to some extent. This is particularly the case if funding agencies stipulate certain indicators or procedures. It also occurs when professionals find it difficult to let go of their discipline-driven focus on specific indicators and scientific methods. However useful they may appear, if local interest is limited, sustainability of such indicators and methods is questionable and will not necessarily have a strong local learning impact. Indicators are discussed in more detail below.

**Inappropriate frequency.** To be useful, information needs to be collected at optimal moments and with a certain frequency. This seems like an obvious point but has been surprisingly problematic. In PM&E, some stakeholders might favour certain indicators that other stakeholders are responsible for collecting and analysing. Unless negotiated indicators are genuinely understood by all involved and everyone’s timetable is consulted, optimal moments for collection and analysis will be difficult to identify. When timetables clash, compromises of frequency and timing are needed.

**Starting too big/detailed too soon.** Those involved with PM&E often underestimate the length of time needed to build skills and negotiate what is to be monitored/evaluated. It is better to start simply and monitor only some aspects of the project/programme. Then, as experience grows and capacities build, the system can be expanded to include all the important aspects that are needed for good project implementation and to enable overall impact assessment. For example, in Brazil farmer-based research on agroforestry systems started by monitoring plant diversity, labour input and ground cover. After the first year, farmers and scientists decided to also include soil nutrients and the research process itself.

## CARRYING OUT PARTICIPATORY MONITORING AND EVALUATION

If PM&E is essentially a communication process, then it requires the creation of an information sharing system. The literature shows there are many different versions of how to plan an effective process with different stakeholders. But behind the diversity lies a common set of steps (see Figure 1). Continual review of the different steps is essential until the system has become fully integrated in the collaborative research process. For example, after the first round of data analysis and use, DFID should check again to see if its expectations of PM&E are being met, and reassess if different or more stakeholders need to be involved, and so forth.

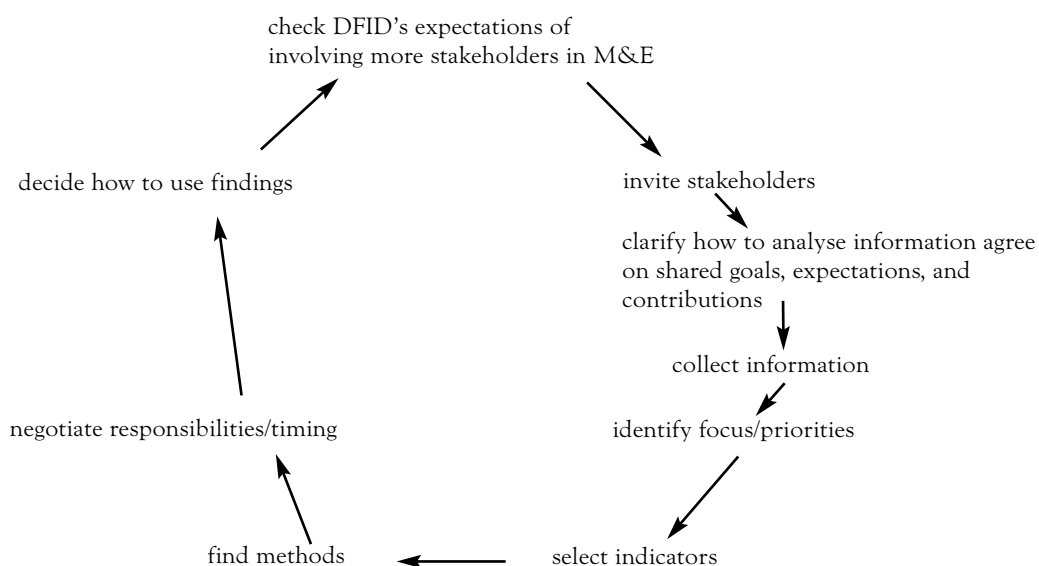


Figure 1: Common steps in PM&E (for DFID research)

### Before starting

Though each PM&E process is unique, experience suggests that, irrespective of the particular circumstances, several critical questions need to be asked before commencing.

- **Do you, as a research manager, really want to make the M&E for which you are responsible more participatory?** Before deciding to make M&E more participatory, think about the implications. Opening up the choice of indicators, methods, analysis, etc., to include more people with different views means that the process will probably be longer and require more compromises. It is critical to clarify what a more participatory M&E process can achieve for you that would not be possible with an externally driven and implemented approach. If you have to provide DFID with exact data on how many people are making use of, for example, a micro-credit programme for reforestation or by how much soil moisture increases under certain land management practices, and this information is of no interest to the people themselves, then do not try to force it into a participatory format. You might need to consider paying others to find the information or the beneficiaries themselves for the time they spend monitoring what is important only to you.

- **Who should be involved, and what will everyone's contribution be?** Many PM&E systems are fraught due to the exclusion of key groups or individuals at critical moments. Therefore stakeholder analysis is essential (see Grimble, 1998). Critical questions are: "Who has a perspective or knowledge that is essential? Whose capacity for monitoring/evaluation should be strengthened to ensure sustainability of development efforts? Whose absence will jeopardize the efforts? To what extent will participants change over time (e.g. if they are elected officials or seasonally absent farmers)?"
- **What are the collective goals of the PM&E process?** Discuss what everyone hopes to achieve by being involved in the process, as this can help to motivate participants for the systematic work required. The collective goals are useful indicators for regular reviews of the monitoring process itself. One outcome should be clarification of who would like to be a 'partner' in the process and with what tasks they want to be involved, for example, designing the system, information collection, analysis, or dissemination of findings. Participation must be based on a solid assessment of costs and benefits.
- **What is it that the stakeholders want to monitor or evaluate?** Clarify the objectives of the work that is to be monitored or evaluated. Normally, project objectives will be formulated in a prior planning phase and should be clear and available to everyone (usually in written form). However, in the context of participatory monitoring which involves more than one group, project objectives are not always specific enough or shared enough to enable a consensus to be reached on monitoring/evaluation priorities. Objectives must first be clarified and agreed. This step is particularly important for DFID projects as these often have highly specific logframe-based structures that are likely to reflect mainly the ideas of DFID project staff and not necessarily the priorities of farmers, government extension staff, NGO partners or other stakeholders.
- **What do the stakeholders need to learn and why?** This step involves choosing which of the existing objectives will be assessed and finding matching indicators. Rarely will resources and time allow for assessment of all short- and long-term objectives for each activity so priorities must be set. This step is difficult as each objective to be assessed may have many possible indicators. Keeping the end-user in mind keeps the indicators focused.
- **How will the participants find what they need to learn?** Agree on the methods, responsibilities and timing of information collection. The choice of method will depend on indicators, available time, skills, technology and resources. Some methods can assess several indicators at once, such as self-assessment forms or maps. Indicator-specific methods are needed not just for collection, but also for registering, analysing and sharing information. Test the methods and any instruments that are to be used to ensure that they are relevant, practical, trustworthy and feasible to apply. Consideration should also be given to training so those involved feel able to carry out their tasks to the standards required. Systematic information collection will need to be balanced with flexibility. Adjusting some methods or indicators during the process may be necessary if they cannot provide relevant or accurate information, or if external factors change.

### BOX 3: Structuring the M&E plan

Identify:

- who is going to collect and register which piece of information
  - who is going to collate information
  - who is going to analyse information
  - who is going to disseminate the final findings, how are they going to do it and with whom will they share it
  - where it is going to be carried out (which community/field, what is the sample size)
  - with which methods
  - when will all this happen (how often and which month/week/day).
- **How will participants make sense of and use the information?** After information is collected, it needs to be collated and analysed. As far as possible, those who participated in the information collection (and even those who are to use the information) should take part in the analysis to avoid misinterpretation of the information and findings. This is where PM&E differs from M&E using participatory methods. Agree beforehand how findings are to be used and by whom, so their content and the format in which they are to be presented can be tailored to the target audience(s). Following from the above a plan of the M&E process can be drawn up as described in Box 3.

### The limits to participation

PM&E is not just a matter of using participatory techniques within a conventional M&E setting. It is about radically rethinking who undertakes and carries out the process, and who learns or benefits from the findings; but there is no single way to define this.

Assessing how much participation is desirable and from which groups, depends largely on the purpose of PM&E. If the purpose is setting up locally sustainable processes of monitoring, for example, soil fertility, then local farmers and extension staff will need to be involved in the entire process: methodology design, information collection, information collation/calculation, analysis of findings, and dissemination of findings. If the purpose is internal project learning, for example, management of local soil fertility, participants can be limited initially to project staff but farmers' assessments of local indicators will be essential. If the issue is about improving accountability, then perhaps conventional M&E using participatory methods is required to find the information.

Assessing the need for participation by the possible stakeholder groups (community members, members of farmer experimentation groups, community organization leaders, NGO staff, others) can be guided by asking the following for each indicator:

- What is the relevance for each group of participating in methodology design, or is it the process of collating/calculating the information that is important, or only the final information?
- Who is going to use the final information? Those who are to use it should understand on what it is based, how it was calculated, etc.

- What skills does the analysis require? The more difficult, the more caution should be used in encouraging broad participation unless it is clear whom it will benefit and how.

### Supportive and constraining conditions

The scope for introducing more participants in M&E is a function of many factors, such as project objectives, available time and the inclination of the project team (Box 4). Within DFID, the use of logframes is also influential as it is mandatory at all levels of project and programme management. It usually requires the identification of indicators, thus placing a considerable constraint on the flexibility of using non-indicator-based approaches. Furthermore, the need to submit milestones irrespective of local dynamics causes tensions with the need for flexibility in PM&E and the need to continually review the relevance of indicators and project objectives. On the other hand, support within DFID for participatory processes and the current review of logframes are opportunities that those keen to pursue more PM&E can use, for example, to argue that indicators will be identified early on with all stakeholders and not in advance by the project team.

The nature of the organizations involved, and the careful selection of partners, are also critical for success. Work in one research site in Brazil indicated that when a partnership is still evolving, such as the local NGO and rural trade unions, or if there are few cohesive local groups that can carry the M&E efforts, then PM&E may be driven by one organization. (Yet interestingly, undertaking PM&E is helping to strengthen the organizations and the partnership.) In another research area in Brazil, the rural trade union/NGO partnership has thrived for 10 years and the union is well-established, thus making the PM&E initiative easier and more locally driven.

### Methodological complementarity

Participatory M&E is viewed – incorrectly – by some as using qualitative methods. Instead, it is about negotiating what needs to be assessed and measured, and then finding appropriate methods. Combinations of quantitative and qualitative, and more and less participatory or natural science-oriented methods are likely to emerge

#### BOX 4: Factors influencing people's sustained participation in M&E

- Perceived benefits (and partial or short-term costs) of PM&E
- Relevance of PM&E to the priorities of participating groups
- Flexibility of the PM&E process to deal with diverse and changing information needs
- Quick and relevant feedback of findings
- Capacity to act on recommendations that might arise from PM&E findings
- Degree of maturity, capabilities, leadership and identity of the groups involved, including their openness to sharing power
- Local political history, as this influences society's openness to stakeholders' initiatives
- Dealing with short-term survival needs of participants, while pursuing longer-term information needs (especially in natural resource management)
- Material support to make the PM&E possible (e.g. pens, books, training, etc.)

from discussions. Selection depends largely on the type of information needed, the skills of those involved, and the question of whose norms for precision dominate. In PM&E it is more likely that a mix of methods is used than with only one group of people. Table 3 shows one example of how different soil erosion assessment methods can be more or less appropriate for different audiences (note, however, that what constitutes ‘appropriateness’ is not defined).

Methods should be selected so they can eventually be incorporated into everyone’s everyday activities, especially in the case of participatory monitoring, as few people are likely to be remunerated for the effort involved. Where possible, the information collection, analysis and the use of the results should be undertaken by the same people, who should agree that the method is appropriate and they can understand it. Therefore, simplicity of methods is paramount. Other issues to consider when selecting methods that are relevant for stakeholders are as follows.

- **Which task does the method need to accomplish?** Must it assess, register, compile, analyse or show information for dissemination? Many methods can cope with both registering and analysing data, such as maps or forms, but others will be needed for collecting information and disseminating findings.
- **Is the method to be used for quantitative or qualitative information?** This will depend on the end-use and end-user of the information, the indicators selected and the available skills. Note that they are not mutually exclusive, for example, opinions can be clustered into groups and then counted, so becoming quantitative.
- **What unit of analysis does the method have to cope with?** Some methods are better for monitoring changes at household level, while others are only suitable if many households are involved or a certain geographic area is covered. For example, an impact flow diagram can describe the consequences of specific agroforestry research for an individual farmer’s household, the communal forest management group of which he/she might be a member, or the implementing NGO or government department.

**TABLE 3: Appropriateness of soil erosion assessment methods to different stakeholder groups**

Assessment method	Farmer	Researcher	Policy maker	Funding agency
Visual (rills, turbidity of run-off water, etc)	Excellent	Good	Poor	Poor
Stick in the ground	Good	Fair		
Total suspended solid	Fair	Excellent		
Run-off plots	Fair	Fair – good		
Soil horizon	Poor			
Vegetation/pedestal formation	Good			
Simulation/modelling	Poor	Excellent	Good – excellent	Good – excellent
Remote sensing	Poor	Good – excellent	Excellent	Excellent
Sediment deposition	Fair			

Source: Herweg *et al.* (1998)

- **What context and medium would be most appropriate?** Consider in which context the information is best collected, registered and analysed: individually or group-based. Also consider how the people involved prefer and are able to communicate, as this determines the choice of medium: written, oral, visual or dramatic.

Criteria that can be used to check overall suitability of methods are:

- validity: do the people who are to use the information believe the method is valid, i.e. are they able to assess the desired indicator with enough accuracy?
- reliability: will the method work when needed?
- relevance: does the method produce the information required, or is it actually assessing something similar but significantly different?
- sensitivity: is it able to pick up data variations sufficiently and be adapted?
- cost-effectiveness: is it producing useful information at relatively low cost?
- timely: is it likely to avoid delay between information collection, analysis and use?

### Selecting indicators

The question of ‘what are the right/best indicators’ dominates many discussions about M&E. This only intensifies when more participatory forms of working are pursued, as perceptions of what is ‘right’ or what are the ‘best’ indicators will inevitably differ between stakeholders. What is sometimes forgotten is that an indicator is simply a means to help communicate complex changes to a wider audience. Indicators describe and express conditions and represent some kind of simplification or approximation of a situation.

The most crucial question when selecting indicators is clarity about the end-users and end-uses of the information. It is also paramount to minimize the number of indicators to keep the M&E process manageable. Resolving these questions requires considerable discipline, compromise and hard decisions.

A PM&E system also has to be responsive to changing information needs as contexts change, to the changing skills of those involved, and indeed to changing levels of participation as new partners join and others leave (see Box 5). Particularly in participatory projects, adjustments to project objectives and activities are likely and may well change the relevancy of indicators. Therefore, indicators must be reviewed regularly to ensure that they are providing information that is relevant. However, any change to an indicator means reducing the possibility of producing time-series data. One approach is to limit indicator-based monitoring to longer-term, broader objectives that are less likely to change, but the less specific the objective, the more difficult it is to be clear about the cause–effect linkages that indicators represent.

Distinguishing between more immediate and longer-term objectives is important when selecting indicators. Monitoring often focuses on the immediate, more tangible, and easily accessible information like ‘the number of farmers trained’ (see Table 4). By comparison, evaluation will focus on assessing whether, for example, the training efforts are worthwhile and the effect of those trained farmers on their fields and households.

In participatory projects, ambiguity of indicators occurs easily as each group interprets an indicator in its own way. To avoid confusion during data collection,

**BOX 5: Choosing indicators**

Decision makers at every level and scale will find very different kinds of indicators relevant to their decisions, therefore, getting consensus about objectives and indicators will usually require negotiation. For example, municipal level agricultural research in Brazil involves many different kinds of farmers, farmer experimentation groups, community associations, university researchers, government extension staff, local NGOs and even international funding agencies. Each operates at a different scale with more immediate and local or longer-term and broader objectives. If these objectives are clear, then the easier it is to develop indicators.

indicators should be as specific as possible, including: the objectives to be achieved, characteristics to be measured, the time interval between measurements, and spatial coverage.

Choose indicators that are feasible to assess, analyse and disseminate with the available human resources and funding. But keep in mind that M&E is not just information collection, so information analysis and dissemination must also be included in the budget.

**TABLE 4: Four levels of objectives and related indicators for a workshop in pigeon pea intercropping**

	An objective tree (hierarchy)	Indicators
Input	Hold a training course (venue, materials, facilitators, knowledge, participants)	<ul style="list-style-type: none"> <li>• The extent to which all the inputs were provided as planned</li> <li>• If the training course took place</li> </ul>
	↓	
Outputs	Trained farmers	<ul style="list-style-type: none"> <li>• Number of farmers trained</li> </ul>
	↓	
Outcomes	Participants may apply their knowledge to their own field and/or teach other farmers who then adopt the technology	<ul style="list-style-type: none"> <li>• The number of people who are intercropping pigeon pea and attended the workshop plus those who did not attend</li> </ul>
	↓	
Impacts	Changes to quality of life arising from cultivation of pigeon peas	<ul style="list-style-type: none"> <li>• Increased milk production from cattle fed on pigeon pea</li> <li>• Increase in yields of subsistence crops (due to improved soil quality after nitrogen-fixing takes place)</li> <li>• Income from crop surplus</li> </ul>

## SUSTAINING PARTICIPATORY MONITORING AND EVALUATION

### Using the lessons

One of the factors that will motivate those involved in PM&E is the clear and direct usefulness of collecting and analysing information. For example, in Brazil farmers monitoring the costs of initiating agroforestry concluded after the first year that it was prohibitively expensive and have now found a way to be compensated for the



time they invest in their field research. What needs careful thought, however, is how to motivate stakeholders until such information emerges. This could take more than a year, particularly if time trends are needed before the information becomes useful.

Sometimes a less participatory form of M&E can provoke the curiosity of stakeholders to become more involved. For example, in Paraíba, data on community-based seed banks was collected by an NGO but then systematized and analysed with the local seed bank committees and communities. This event provoked much local discussion and has encouraged the seed bank committees to consider developing their own monitoring systems, rather than participate in the NGO-driven process. This was only possible because an opportunity was created for a larger group of stakeholders to reflect on what the information meant and was not inherent to the data collection method as such.

Active use of the information with stakeholders may not only improve the work, but also strengthen the groups involved. It is exactly these types of learning processes that makes collective monitoring and impact assessment so valuable.

### Keeping track of participatory monitoring and evaluation

PM&E is a new process for many organizations. Problems will arise that require continual review to see if the PM&E objectives are being met.

In Brazil six criteria were identified to help review the fieldwork (see Box 6). Discussion enabled refinement of the chosen methods, a rich exchange of information about dealing with application problems, and a focus on the end-use of the information. It also provoked debate about the reliability of information that showed clearly the different value systems between the university-trained NGO staff and the union representatives, many of whom have farming backgrounds.

#### **BOX 6 : Criteria for assessing Brazilian PM&E work**

Method-related criteria:

- the level of participation of farmers in the collection, collation, analysis and dissemination of the information
- time demand (for collection, collation, analysis and dissemination of the information)
- the degree of difficulty in applying the method (mainly related to collection and analysis)
- the potential to extend the application of the method beyond the current participants.

Indicator-related criteria:

- reliability of the information
- relevance of the final information (for different audiences – farmers, union, NGOs, donors, public agencies).

Other broader questions:

- Is the information collected useful for those involved and does it help them to achieve their aims?
- Is the information registration and analysis feasible for participants to carry out in the long term?
- Is the level of stakeholder participation appropriate for the overall purpose of the M&E system (i.e. for local learning or external accountability)?
- Is the facilitator facilitating or driving the process – what are the implications for sustainability?

### **Institutionalizing participatory monitoring and evaluation**

Many of the more complex challenges of PM&E arise when organizations realize the widespread repercussions of shifting to include more stakeholders in assessing the changes caused by their project/programme. Reporting procedures, budgets, indicators and the timing of monitoring change. While many are keen to learn more about the internal processes and external impacts in order to perform better, opening up a development programme or project to comments from a wider group of people can be threatening and provoke resistance to change, and may well only be possible under certain conditions.

Many questions persist that need more research. How can flexible and context-specific PM&E processes be better integrated with more rigid and standardized project cycles and logical framework structures? How can learning-driven PM&E be reconciled with M&E that is dominated by upward accountability and accountants? What are the real costs of PM&E and can this investment of time and money be sustained? How can capacity be built while also producing worthwhile information? How can organizations deal with the tensions between rapidly changing contexts and the continuity that M&E requires in order to draw useful conclusions?

An international workshop on PM&E identified a number of critical factors that appear to encourage a successful PM&E process (see Box 7).

PM&E raises many questions by simply inviting more and diverse stakeholder groups into the process. Yet it holds great potential to return to the basic aims of development assistance, through a collective process of tracking whether projects are making a difference that matters to the people who are living with the changes.

#### **BOX 7 : Factors that support PM&E**

Participatory M&E is easier if the participants:

- accept evaluation as an internal need and responsibility, and not as a threat
- value learning through experience, including errors
- understand the need for partnerships between sectors and disciplines, especially openness towards involving social sciences
- work in decentralized institutions
- are open to using qualitative indicators
- include funding agencies willing to experiment, and ‘champions’ (or advocates) for PM&E in the right places and levels
- include those with some skills in conflict resolution
- understand participation as a democratic, not extractive, process
- include high-level people who have the political will to see PM&E as an empowerment process
- include a process of carefully defining who ‘the community’ is, to avoid missing key people
- have established community awareness of the PM&E process
- are working within supportive legal/constitutional frameworks (so not in politically repressive situations)
- include people’s organizations who trust and have confidence in people’s potential
- have access to positive examples and skilled facilitators
- include a local community co-ordinator or other liaison person/institution
- allow enough time to develop the PM&E process
- ensure prompt feedback/use of PM&E findings.

## FURTHER READING

### Conventional M&E

BERLAGE, L. and STOKKE, O. (eds) (1992) *Evaluating Development Assistance: Approaches and Methods*. London: Cass/Geneva: Portland and European Association of Development Research and Training Institutes.

CASLEY, D. J. and KUMAR, K. (1988) *The Collection, Analysis and Use of Monitoring and Evaluation Data*. Washington DC: World Bank.

CASLEY, D. J. and KUMAR, K. (1990) *Project Monitoring and Evaluation in Agriculture*. Washington DC: World Bank.

COLEMAN, G. (1992) Monitoring and evaluation in agricultural and rural development projects: lessons and learning. *Journal of International Development*, 5.

GOLDSMITH, F. B. (ed.) (1991) *Monitoring for Conservation and Ecology*. London: Chapman and Hall.

MURPHY, J. (1993) *Monitoring and Evaluation in Agricultural Research: Concepts, Organizations and Methods*. The Hague: ISNAR.

PATTON, M. Q. (1997) *Utilization-focused Evaluation: The New Century Text*. 3rd Edition. Beverly Hills, USA: Sage Publications.

PATTON, M. (1980) *Qualitative Evaluation Methods*. Beverly Hills, USA: Sage Publications.

SPELLERBERG, I. F. (1991) *Monitoring Ecological Change*. Cambridge: Cambridge University Press.

### Participation in Development

BIGGS, S. (1989) *Resource-poor Farmer Participation in Research: A Synthesis of Experience from Nine National Agricultural Research Systems*. OFCOR Project Study No. 3. The Hague: ISNAR.

CHAMBERS, R. (1997) *Who Counts Reality? Putting the First Last*. London: Intermediate Technology.

FALS-BORDA, O. and RAHMAN, M. A. (eds) (1991) *Action and Knowledge: Breaking the Monopoly with Participatory Action Research*. London: Intermediate Technology.

GRIMBLE, R. (1998) Stakeholder methodologies in natural resource management. *Socio-economic Methodologies Best Practice Guidelines*. Chatham, UK: Natural Resources Institute.

IIED (1987– ) *Rapid Rural Appraisal Notes (1987–96); Participatory Learning and Action Notes (1996–)*. London: International Institute for Environment and Development.

NELSON, N. and WRIGHT, S. (1995) *Power and Participatory Development*. London: Intermediate Technology.

RENNIE, K. J. and SINGH, N. C. (1996) *Participatory Research for Sustainable Livelihoods. A Guidebook for Field Projects*. Manitoba: International Institute for Sustainable Development.

SLOCUM, R., WICHART, L., ROCHELEAU, D. and THOMAS-SLAYTER, B. (1995) *Power, Process and Participation: Tools for Change*. London: Intermediate Technology.

STIEFEL, M. and WOLFE, M. (1994) *A Voice for the Excluded. Popular Participation in Development: Utopia or Necessity?* Geneva: UNRISD/ London: Zed Books.

VELDHUIZEN, L. van, WATERS-BAYER, A. and DE ZEEUW, H. (1997) *Developing Technology with Farmers. A Trainer's Guide for Participatory Learning*. London: Zed Books/Leusden, the Netherlands: ETC.

WORLD BANK. (1994) *The World Bank and Participation. World Bank Operations Policy Department*. Washington DC: World Bank.

### **Participatory M&E**

#### *Conceptual*

ABBOT, J. and GUIJT, I. (1998) *Changing Views on Change: Participatory Approaches to Monitoring the Environment. SARL Discussion Paper 2*. London: International Institute for Environment and Development.

DAVIES, R. (1998) An evolutionary approach to organizational learning: an experiment by an NGO in Bangladesh. In: *Development as Process: Concepts and Methods for Working with Complexity*. MOSSE, D., FARRINGTON, J. and REW, A. London: Routledge.

ESTRELLA, M. and GAVENTA, J. (1997) *Who Counts Reality? Participatory Monitoring and Evaluation: A Literature Review. IDS Working Paper 70*. Brighton: Institute of Development Studies.

GUBA, E. and LINCOLN, Y. (1989) *Fourth Generation Evaluation*. Newbury Park: Sage Publications.

OAKLEY, P., PRATT, B. and CLAYTON, A. (1998) *Outcomes and Impact: Evaluating Change in Social Development*. Oxford: Intrac.

PLATT, I. (1996) *Review of Participatory Monitoring and Evaluation*. London: Concern.

RODENBURG, E. (1995) Monitoring for Sustainability. In: *A Sustainable World: Defining and Measuring Sustainable Development*. TRYZNA, T. C. (ed.) with OSBORN, J. K. Sacramento: International Centre for the Environment and Public Policy.

UNDP (1997) *Who are the Question-makers? A Participatory Evaluation Handbook*. New York: OESP, United Nations development Programme.

UPWARD (1996) *Self-assessment. Participatory Dimensions of Project Monitoring and Evaluation*. Los Banos: UPWARD.

*Practical*

AUBEL, J. (1993) *Participatory Program Evaluation: A Manual for Involving Stakeholders in the Evaluation Process*. Dakar: Catholic Relief Services.

DEFOER, T., KANTÉ, S., HILHORST, T. and GROOTE, H. DE (1996) Towards more sustainable soil fertility management. *AgRen Network Paper No. 63*. London: Overseas Development Institute.

ESTRELLA, M. (in press). *Learning from Change: Issues and Experiences in Participatory Monitoring and Evaluation*. London: Intermediate Technology.

FEUERSTEIN, M-T. (1986) *Partners in Evaluation: Evaluating Development and Community Programmes with Partners*. London: Macmillan.

FITHRIADI, R. (1995) *Summary Report of the Training Exercise on Farmer-level Planning, Monitoring and Evaluation. North Sumatra, Indonesia. 25 Aug–2 Sep 1995*. Bangkok: FARM/ Bogor: FAO-APAN.

GOHL, E., GERMANN, D., PREY, J. and SCHMIDT, U. (1997) *Participatory Impact Monitoring (four part publication)*. Stuttgart: FAKT.

GUIJT, I. (1998) *Participatory Monitoring and Impact Assessment of Sustainable Agriculture Initiatives: An Introduction to the Key Elements. SARL Discussion Paper No. 1*. London: International Institute for Environment and Development.

HERWEG, K., STEINER, K. and SLAATS, J. (1998) *Sustainable Land Management: Guidelines for Impact Monitoring (Workbook)*. Berne: Centre for Development and Environment.

HOGGER, R., KUCHLI, C., ZIMMERMAN, A., ENGLER, M. and VOKRAL, E. (1997) *Monitoring – Keeping in Touch with Reality*. Berne: Swiss Agency for Development and Co-operation.

IIED (1998) *PLA Notes (Special Issue on Participatory Monitoring and Evaluation) 31*. London: International Institute for Environment and Development.

IIED (1998–) *Soil Fertility Research Series*. London: International Institute for Environment and Development.

ILEIA (1996). Tracking change. *ILEIA Newsletter for Ecologically Sound Agriculture*, 12 (3). The Netherlands: ILEIA.

LIGHTFOOT, C., DALSGAARD, J. P., BIMBAO, M. and FERMIN, F. (1993) Farmer participatory procedures for managing and monitoring sustainable farming systems. *Journal of the Asian Farming Systems Association* 2: 67–87.

MARKS, S. A. (1994) Local hunters and wildlife surveys: a design to enhance participation. *African Journal of Ecology*, **32**: 233–254.

MCCRACKEN, J. and NARAYAN, D. (1998) *Participation Toolkit*. Washington DC: World Bank.

NARAYAN, D. (1993) Participatory evaluation: Tools for managing change in water and sanitation. *World Bank Technical Paper No 207*. Washington DC: World Bank.

NEF (1998) *Communities Count! A Step by Step Guide to Community Sustainability Indicators*. London: New Economics Foundation.

NOPONEN, H. (1997) Participatory monitoring and evaluation. A prototype internal learning system for livelihood and micro-credit programs. *Community Development Journal* **32**(1): 30–48.

PFOLH, J. (1986) *Participatory Evaluation: A User's Guide*. New York: Pact Publications.

PIETRO, D. S. (1983) *Evaluation Sourcebook for Private and Voluntary Services*. InterAction.

RUGH, J. (1992) *Self-evaluation Ideas for Participatory Evaluation of Rural Community Projects*.

STOCKDALE, M. C. and AMBROSE, B. (1996) Mapping and NTFP Inventory: Participatory assessment methods for forest dwelling communities in East Kalimantan, Indonesia. In: *Recent Approaches to Participatory Forest Resource Assessment*. CARTER, J. *Rural Development Forestry Guide 2*. London: Overseas Development Institute.

UPHOFF, N. (1991) A field methodology for participatory self-evaluation. *Community Development Journal*, **26** (4).

WOODHILL, J. and ROBINS, L. (1998) *Participatory Evaluation for Landcare and Catchment Groups. A Guide for Facilitators*. Canberra: Greening Australia.