CHAPTER

10

Monitoring and evaluation systems[1]

Introduction

Elements of a monitoring and evaluation system

How do we know that a strategy for sustainable development has been successful, or is on the right path? Not only do strategies have multiple objectives, but also strategy activities will change over time and so will social, economic and environmental conditions. This presents a considerable challenge for monitoring and evaluation, but one that must be met, since the whole point of a strategic approach is to learn and adapt. The central monitoring and evaluation requirement is, therefore, to track systematically the key variables and processes over time and space and see how they change as a result of strategy activities (Spellerberg 1991). To do this requires:

Four monitoring tasks to keep an NSDS is on the right track

- measuring and analysing sustainability;
- monitoring implementation of the strategy;
- evaluating the results of the strategy;
- reporting and dissemination of the above findings.

Measuring and analysing sustainability is necessary to determine the state of the society, the economy and the environment, the main strengths and weaknesses, the issues for the strategy to address, and underlying factors. The most productive way to approach this is to undertake an indicator-based sustainability assessment, supplemented by spatial analysis and possibly other contributing measurements and analyses. The indicators chosen for the assessment need continued monitoring to identify trends, detect (and, if possible, anticipate) change and track progress. This is covered in detail in Chapter 5, pages 132–162.

Monitoring implementation of the strategy (page 321) is necessary to ensure standard management oversight and accountability. Regular monitoring is needed of the following factors to assure that strategy activities are proceeding well:

1 This chapter has benefited from review comments and additional material provided by Robert Prescott-Allen, Canada.

- *inputs* in terms of financial, physical and human resources applied to the strategy and its related activities;
- *process quality* in terms of how strategy principles are satisfied (eg people-centred, participation, integration, commitment generation, see Box 3.1);
- *outputs* in terms of the generation of strategy products (goods, services and capacities) by agencies involved in the strategy;
- *outcomes* in terms of access to, use of, and satisfaction with strategy products (which are not necessarily under the control of agencies involved in the strategy);
- the *performance of individual strategy actors* in implementing the strategy, in terms of the effectiveness and efficiency of their service provision and management.

Evaluating the results of the strategy (page 324) is necessary to correlate actions with specific changes in human and environmental conditions, test the strategic hypotheses (choice of priority issues, analysis of underlying factors, prescription of actions), assure accountability, capture lessons and develop capacity through learning.

Reporting and dissemination (page 325) of the above findings is necessary to feed back key messages to key stakeholder groups, and thus enable them to continuously improve their behaviour, the strategy itself and its component activities. Much of the guidance from Chapter 7 (Communications) is directly relevant.

Data for the required monitoring, sources and CSD indicators are listed in tables in the Appendix

Tables A.1 and A.2 (see Appendix) illustrate the *range of data, sources and timing* for the different kinds of monitoring outlined above.

Some – or too frequently all – of these elements have been missing from many strategies in the past. Typical problems associated with the lack of a monitoring system are illustrated by Box 10.1.

Box 10.1 A strategy without regular monitoring and evaluation – Pakistan

The mid-term review of Pakistan's National Conservation Strategy (NCS) found an almost complete lack of routine monitoring of outputs, outcomes and impacts in relation to sustainability indicators, and a lack of policy links between the NCS coordinating body and NCS-inspired projects. This had meant that the possibilities for learning were far fewer than there could have been. During eight years of implementation the (quite coherent) strategic objectives had fragmented into hundreds of unconnected component activities with no feedback mechanism (except for a narrow monitoring of some inputs, notably government expenditure). The NCS review therefore tried to install a simple baseline and framework for correlating sustainability outcomes with strategic processes in future.

> *Good M&E likely would have changed the prevailing perception of the NCS being a static reference 'document' to appreciation of its potential as a dynamic process to improve future economic, ecological and social well-being. Finally, it would have contributed to a culture of transparency and learning.*

Source: Hanson et al (2000)

Principles of successful monitoring and evaluation

Five principles for effective monitoring and evaluation

From experience, effective monitoring and evaluation can be described as follows:

- *Constructed and developed as a system* that combines the functions described in the previous section, and makes them a core part of the overall strategy management system. Very few countries, and especially developing counties, have formal monitoring and auditing capacities and procedures in place for strategic planning frameworks. However, in most, several government agencies and significant NGOs and business associations will already be conducting some of the monitoring

functions required as inputs to the strategy monitoring system. As an example, Table A.1 on page 327 lists the kinds of agencies that can offer monitoring inputs on poverty-related issues. The challenge is to bring these together.

- *A mix of internal and external exercises.* Internal approaches help with self-reflection, learning and adaptation. External exercises complement this by offering balanced judgement (by independent and/or multi-stakeholder groups). This is described in 'Formal internal and external monitoring' below, with approaches for ensuring participation on page 315.
- *Driven by strategy objectives* rather than (as so often at present) by the availability of data. This allows the generation of focused information rather than being overwhelmed by comprehensive (and not always useful) data. Monitoring everything is impossible. It is impossible in *theory* because we do not know enough about natural, social and economic systems to know all the aspects we could record – and new techniques and approaches are being developed all the time. It is impossible in *practice* because there will never be enough resources – time, money, equipment, expertise – to record everything. Therefore, data selection is necessarily selective.
- *Related to good baseline data* to be able to compare 'before and after' or 'with or without action' situations. Many countries already undertake regular stocktaking such as state-of-the-environment reports (see Box 10.8), which could be built on to become comprehensive sustainability assessments. Chapter 5 discusses some of the analytical methods that can be used for such stocktaking. Data quality also needs to be assured; principles for this include (Carson 2000):
  - integrity and objectivity in the collection, compilation and dissemination of statistics;
  - methodological soundness (eg following international standards, guidelines and agreed practices);
  - accuracy and reliability;
  - serviceability (timeliness, consistency and policy relevance);
  - accessibility (including assistance to users).
- *Organized into a consistent framework.* The pressure–state–response framework has been used, although it is better suited to environmental monitoring than more comprehensive sustainable development needs. This is discussed further on page 318.

Further guidance is offered by the more general Bellagio principles for assessing progress towards sustainable development (Box 10.2).[2] These principles have much in common with those for NSDSs in Box 3.1.

Who should undertake monitoring and evaluation?

Formal internal and external monitoring

INTERNALLY DRIVEN MONITORING (CONDUCTED BY LOCAL STRATEGY STAKEHOLDERS)

Those directly concerned – local decision-makers and affected groups – have the most to gain from monitoring and evaluation, and should be centrally involved. By participating, they will know better what to do to achieve their objectives. Participatory approaches are important, and strategies need to make special efforts to involve affected communities (page 315).

Local strategy stakeholders should participate in internal monitoring, but there can be conflicts of interest …

2 The Bellagio Forum for Sustainable Development launched an international science and policy dialogue to improve existing sustainable development indicators so that they are user-friendly and robust. The dialogue has been carried out through the International Institute for Sustainable Development (IISD), the World Conservation Union (IUCN), the Earth Council and the Institut für Wirtschaftsforschung.

Box 10.2 The Bellagio principles for assessing progress towards sustainable development

In November 1996, an international group of measurement practitioners and researchers from five continents came together at the Rockefeller Foundation's Study and Conference Centre in Bellagio, Italy, to review progress to date and to synthesize insights from practical ongoing efforts. The following principles resulted and were unanimously endorsed.

These principles deal with four aspects of assessing progress towards sustainable development. Principle 1 deals with the starting point of any assessment – establishing a *vision* of sustainable development and clear goals that provide a practical definition of that vision in terms that are meaningful for the decision-making unit in question. Principles 2–5 deal with the *content of any assessment* and the need to merge a sense of the overall system with a practical focus on current priority issues. Principles 6–8 deal with key issues of the *process of assessment*, while Principles 9 and 10 deal with the necessity for establishing a *continuing capacity* for assessment. Assessment of progress towards sustainable development should consider the following aspects:

1 **Guiding vision and goals**
- be guided by a clear vision of sustainable development and goals that define that vision.

2 **Holistic perspective**
- include review of the whole system as well as its parts;
- consider the well-being of social, ecological and economic sub-systems, their state as well as the direction and rate of change of that state, of their component parts, and the interaction between parts;
- consider both positive and negative consequences of human activity, in a way that reflects the costs and benefits for human and ecological systems, in monetary and non-monetary terms.

3 **Essential elements**
- consider equity and disparity within the current population and between present and future generations, dealing with such concerns as resource use, over-consumption and poverty, human rights, and access to services, as appropriate;
- consider the ecological conditions on which life depends;
- consider economic development and other, non-market activities that contribute to human/social well-being.

4 **Adequate scope**
- adopt a time horizon long enough to capture both human and ecosystem timescales – thus responding to needs of future generations as well as those current to short-term decision-making;
- define the space of study large enough to include not only local but also long distance impacts on people and ecosystems;
- build on historic and current conditions to anticipate future conditions – where we want to go, where we could go.

5 **Practical focus – Be based on:**
- an explicit set of categories or an organizing framework that links vision and goals to indicators and assessment criteria;
- a limited number of key issues for analysis;
- a limited number of indicators or indicator combinations to provide a clearer signal of progress;
- standardizing measurement wherever possible to permit comparison;
- comparing indicator values to targets, reference values, ranges, thresholds or direction of trends, as appropriate.

6 **Openness**
- make the methods and data that are used accessible to all;
- make explicit all judgements, assumptions and uncertainties in data and interpretations.

7 **Effective communication**
- be designed to address the needs of the audience and set of users;
- draw from indicators and other tools that are stimulating and serve to engage decision-makers;
- aim, from the outset, for simplicity in structure and use of clear and plain language.

8 **Broad participation**
- obtain broad representation of key grass-roots, professional, technical and social groups – including youth, women and indigenous people – to ensure recognition of diverse and changing values;
- ensure the participation of decision-makers to secure a firm link to adopted policies and resulting action.

9 **Ongoing assessment**
- develop a capacity for repeated measurement to determine trends;
- be iterative, adaptive and responsive to change and uncertainty because systems are complex and change frequently;
- adjust goals, frameworks and indicators as new insights are gained;
- promote development of collective learning and feedback to decision-making.

10 **Institutional capacity:** Continuity of assessing progress towards sustainable development should be assured by:
- clearly assigning responsibility and providing ongoing support in the decision-making process;
- providing institutional capacity for data collection, maintenance and documentation;
- supporting development of local assessment capacity.

Source: www.iisd.org

EXTERNALLY DRIVEN MONITORING AND EVALUATION (CONDUCTED BY AGREED INDEPENDENT BODIES OR BY DONORS)

Unbiased opinion and independent expert analysis can make a critical contribution to understanding, such as where special expertise is needed (air, soil and biodiversity assessment, etc) and where impartial judgement is called for. An external assessment can give stakeholders new insights and avoid or overcome conflicts of interest in self-assessment. Independent monitoring and auditing can be used to measure the performance of organizations against their mandates and to assess compliance with rights, powers and responsibilities. So far, independent auditing of government performance (at any level) in relation to strategy development and implementation is rare.

… which impartial, external expertise can avoid, while providing stakeholders with new insights

The official procedures for auditing public expenditure that exist in many countries could possibly provide a useful model, as in Canada where the Auditor General's office looks at government bodies' performance in terms of sustainable development. The model of independent commissions, both one-off and on a continuing basis, could also be useful (Box 10.3).

Box 10.3 The use of Commissions to hold government to account – Ghana and Canada

In **Ghana**, the 1992 Constitution mandated a Commission on Human Rights and Administrative Justice to act as an ombudsman, national watchdog and redress mechanism. It is a formal monitoring mechanism to ensure accountability, human rights and compliance with proper and fair procedures in the administration of state affairs.

In **Canada**, a Commissioner of the Environment and Sustainable Development holds the government accountable for the 'greening' of its policies, operations and programmes. Federal ministers must table departmental sustainable development strategies in Parliament. The Commissioner monitors and reports to Parliament on the progress of government departments in implementing their action plans and meeting their sustainable development objectives.

Donors can also play a role in monitoring

The role of *donors* in monitoring strategies is considered in detail in the OECD DAC policy guidance for development cooperation on NSDSs (OECD DAC 2001a).[3] In summary:

- *Donor agencies themselves* need to ensure that support for the monitoring of a country's strategy is not aimed at their own internal accountability needs, but is primarily for the purpose of helping a country's own learning, and improving progress towards its agreed objectives and goals. However, such indications of progress can be used to assess the contribution and possible impact of agency support.

3 OECD DAC (2001a) also includes guidance on monitoring the response of donors and on monitoring progress in NSSDs at the international level, issues which are outside the scope of this Resource Book.

- At the *national level*, donor agencies can play an important role in supporting and advocating the development of indicators and monitoring instruments for a country's own assessment of progress towards sustainable development. Only if such instruments are nationally owned are they likely to be successful.
- At the *operational level*, agencies can support capacity building for statistical analysis and research to monitor strategy progress towards nationally defined objectives. This could include the development of systems which ensure that national policy and programmes are reviewed and revised to reflect impact at the local level.

Box 10.4 offers 20 questions to help monitor and evaluate donor roles in relation to strategies.

Box 10.4 Development agency performance in supporting strategy processes: 20 questions

1. To what extent is the agency's country assistance strategy based on, and aligned to, the partner country's sustainable development strategy?
2. What specific programmes does the agency finance to support this strategy?
3. To what extent do they respond to the principles outlined in Box 3.1?
4. To what extent does the country assistance strategy analyse and respond to the partner's capacity for strategies (eg participation, analysis)?
5. To what extent is this done jointly with other agencies and country partners?
6. What actions has the agency taken to promote convergence, complementarity and coherence between strategic frameworks in the country?
7. When providing support in sectors, how does the agency foster relevant cross-sectoral linkages and policy coherence?
8. To what extent are activities supported by the agency coordinated with those of other bilateral and multilateral development agencies, and is this under the leadership of the partner country?
9. What support for such country-led coordination is the agency providing, and is it working?
10. How is the agency sharing experiences gained in relation to strategies?
11. How are issues relating to strategies for sustainable development, and the principles contained in Box 3.1, included in the agency's staff training programmes?
12. How are agencies learning internally from their assistance to a country's strategy process?
13. What changes has the agency made as a result of this learning? How have staff incentives changed?
14. What special efforts has the agency made to support and facilitate civil society participation in strategy processes?
15. How does the agency safeguard policies and how does the application of strategic assessment methodologies relate to a country's strategic planning framework?
16. To what extent does the agency encourage and support the application of strategic assessment methodologies when supporting sector wide approaches (SWAPs) and policy reform?
17. To what extent is the agency able to provide long-term funding for strategic planning processes?
18. If the agency is providing shorter-term funding (eg annually), how has the agency ensured that this contributes to a country's longer-term strategy for sustainable development?
19. To what extent is the agency funding clearly linked with the national budget of the country?
20. In what ways has the agency promoted a broadening of ownership and joint agreement around achievable strategy targets and outcomes?

Source: Adapted from OECD/DAC (2001a)

LINKING INTERNAL AND EXTERNAL MONITORING

Independent and internal assessments should be complementary

Independent assessments are likely to be most valuable if agreed and commissioned by multiple strategy stakeholders and if they build on internal assessments, rather than if they are imposed from outside, such as by a donor. For example, an external review of the Pakistan NCS was used to pull together and to weigh up various internal processes of monitoring and evaluation done by government and NGOs, as well as through local roundtable discussions (see Box 10.5).

Box 10.5 The process to review Pakistan's National Conservation Strategy

Steps: The following tasks were undertaken:

1 Agree on an analytical framework on sustainable development, for use throughout Review.
2 Focus group discussions on the changing context.
3 Review development of institutions proposed by the NCS (Secondary review).
4 Review the progress of provincial and district strategies.
5 Create a database of all projects relating to the NCS.
6 Review a sample of these projects.
7 In light of the above, review the overall NCS process and its management.
8 Produce a draft synthesis report, summarizing findings and recommendations.
9 Multi-stakeholder debate on findings and ways forward.
10 Produce and disseminate final report.

Studies: Nine component studies were prepared by government, private sector and NGO bodies, and by mixed teams, over the course of a year:

1 A report of stakeholder consultations on improvements to sustainability at federal and provincial levels, and the role of the NCS.
2 A database on public sector investments in the core areas of NCS, 1992–2000.
3 A study of resourcing for NCS implementation.
4 A study of changes to environmental legislation.
5 A study of institutional development for NCS implementation.
6 A review of progress and impacts of provincial and district conservation strategies.
7 A review of mass awareness and education initiatives.
8 A study of the contributions of the private sector and NGOs.
9 A scoping study of environmental, economic and social trends and futures for reorienting the NCS.

An overview report was prepared by an independent 'External Review Team' using this material:

10 Pakistan's National Conservation Strategy: Renewing the Commitment to Action. Report of the Mid-Term Review (Hanson et al 2000).

Prospectus: Finally, a prospectus for a revised approach to the NCS (in fact, for an NSDS) was prepared following discussions between the External Review Team and NCS stakeholders.

Applying NSDS principles to the monitoring exercise: The External Review Team noted that the review process itself succeeded by applying principles compatible with a successful NSDS:

> *The review 'wove a cloth' combining a complex mix of players, interests, competing sectors, federal and provincial government departments. This process was essential for building consensus on the purpose of the review and for addressing the varying perceptions and interests of key actors. It was hindered by the limited culture for a consultative approach within the government and, at various times, by the cumbersome governmental rules of business. In a sense, the review had to* rekindle the spirit of participation and inquiry that had characterized the formulation of the NCS – *overcoming inertia and educating many of the actors who were new to the NCS.*

Source: Hanson et al (2000)

Participatory monitoring and evaluation

Participatory monitoring and evaluation approaches have evolved over 20 years …

At the local level, participatory monitoring and evaluation (PME) has been developed over more than 20 years to 'shift emphasis away from externally-controlled data-seeking evaluations towards recognition of locally-relevant or stakeholder-based processes for gathering, analysing, and using information' (Estrella 2000). With this emphasis now having shifted effectively in many countries, it would be wrong to think of

Box 10.6 Guidelines for participatory monitoring and evaluation

There is now a huge literature on PME. Useful entry points are IIRR (1998), Abbot and Guijt (1998) and IIED (1998c). A news service is provided at www.mande.co.uk, focusing on developments in monitoring and evaluation methods relevant to development projects and programmes with social development objectives. A range of guidelines and manuals for aiding development practitioners in carrying out PME can be found on the ELDIS development information service hosted by the Institute for Development Studies, University of Brighton, UK (www.ids.ac.uk/eldis). Some of the PME guidelines and manuals are widely applicable. Others are relevant to specific sectors, to use by different actors, or to various aspects of either monitoring or evaluation. There are a number of broadly relevant manuals, mainly developed by the large donor agencies for use by their staff and partners. Examples include:

- **Participatory monitoring, evaluation and reporting: online manual**, PACT (an advisory organization for NGOs) manual designed for South African NGOs.

  This manual explains why participation is important and how to achieve effective stakeholder participation; the role of monitoring in sustaining progress toward better organizational effectiveness; how evaluation helps an organization to assess its capacity; and the critical role of reporting in keeping stakeholders informed. It then deals with applying the Organizational Capacity Assessment Tool (OCAT) in practice, together with examples. A step-by-step guide to designing and implementing a Participatory Monitoring, Evaluation and Reporting (PME&R) information system is included. Although it has been specifically adapted for use by South African NGOs, OCAT can be used by NGOs in other countries (see www.pactworld.org).

- **Assessing Progress Towards Sustainability (IUCN)**

  (This manual) focuses on the development and application of methods and tools for system, project and institutional assessment, including a participatory approach to engaging stakeholders in defining the key sustainability issues affecting their lives, and practical ways of measuring change in human and ecosystem condition related to these issues. This includes a way of developing and combining indicators into a sustainability index or rating, and training, capacity-building and networking for field practitioners engaged in assessment activities. (It) includes case studies from Colombia (Sierra Nevada de Santa Marta), Zimbabwe (District Environmental Action Plans) and India (Integrated Resource Management Plan, Tumkur District, Karnataka State). (The document is also available in Spanish and French, see http://iucn.org/themes/eval/index.html)

- **Who are the Question-makers?** (UNDP)

  Provides the information needed, and helps to develop the sensitivity and skills required, to support evaluations that place greater emphasis on stakeholder participation in the evaluation process. Parts one to four, which present an overview of the participatory evaluation approach, include:
  - *a brief description of the evolution of the participatory approach;*
  - *a comparison of participatory evaluation with more conventional evaluation approaches;*
  - *a discussion of the role of participation in UNDP;*
  - *a description of the framework of a participatory evaluation and a discussion of some of the practical issues involved in doing such an evaluation.*

  Part five consists of a stand-alone package developed around the case study 'Money and Mambas'. It describes an attempt at undertaking a participatory evaluation of a rural water supply and sanitation project and focuses on the practical aspects of applying participatory evaluation techniques:
  - *pre-planning, including negotiation of the TOR, assessing the participatory evaluation context and identifying enabling and inhibiting factors surrounding that context;*
  - *collaborative planning with stakeholders;*
  - *data-gathering and analysis;*
  - *reflection and follow-up.*

  This case study is presented as a training module, which can be the subject of a mini-workshop to introduce staff to the practice of participatory evaluation. It is suggested that this exercise can be accomplished within 3 to 4 hours.

- **Mid-term Participatory Evaluation Guidelines (CARE)**

  (An) example of a detailed outline for the participatory evaluation of a development project.

- **Community Toolbox (FAO)**

  Manual on methodologies for Participatory Assessment, Monitoring and Evaluation (PAME). Includes: an overview; separate chapters on participatory assessment, participatory monitoring and participatory evaluation; methods for analysing and presenting information; suggestions for 23 tools for applying this (eg handling group meetings, mapping, theatre, videos).

- **Conducting A Participatory Evaluation (notes from USAID)**

  Short set of methodological tips on how to undertake a participatory evaluation.

- **Participatory Impact Monitoring (PIM) (GTZ/GATE)**

  Short, simply written pamphlets explaining methods and justifications for participatory monitoring. Series includes:
  - group-based impact monitoring;
  - NGO-based impact monitoring;
  - application examples;
  - the concept of participatory impact monitoring;
  - keywords and bibliographical abstracts;
  - selected reading examples.

PME as a highly distinct category of monitoring and evaluation, with expert or external M&E as another category. First, the most useful assessments are technically sound *and* shaped by their users (decision-makers at whatever level, from households upwards), and therefore are a mixture of 'expert' and 'participatory'. Second, although some M&E methods are so technical that their potential for participation is limited, many methods are, in fact, quite open or neutral: they can be conducted by technicians alone or in highly participatory ways. Third, outside agents are usually involved in participatory assessments and often have a significant influence on them – an influence that can be masked and sometimes hidden entirely by the label 'participatory'.

Nevertheless, the term 'participatory monitoring and evaluation' is useful to describe a wide range of practices. For the purpose of sustainable development strategies, PME should be taken to mean monitoring approaches that develop partnerships of multiple stakeholders for efficient, effective and socially inclusive monitoring.

… covering a wide range of approaches – in three broad categories

Abbot and Guijt (1998) note the many approaches to PME. They place them in three broad categories:

- methodologies based on the *visualization* techniques of participatory rural appraisal (see Chapter 6 page 194);
- those that use *oral testimony* to uncover patterns of environmental and social change;
- those that adapt methods of *assessment* to make them more accessible to local people.

There is also much literature, and many guidelines, now available on PME (Box 10.6).

Monitoring methods and indicators often meet the needs of many stakeholder groups, but this is not always the case. This highlights the need for negotiation between stakeholders to reach consensus on the objectives, methods, indicators and end-users of the monitoring process. Reaching such agreement will

Such monitoring processes need to be negotiated by stakeholders, so they support overall strategy processes

increase the chances that the system will work and be supportive of the overall strategy process. Many of the national and more local PME initiatives listed in Box 10.6 have adopted such an approach.

GTZ's QUIM approach to 'Qualitative Impact Monitoring' of Poverty Reduction Strategy Papers (PRSPs) combines a *technical policy analysis* of poverty-related policies and programmes with *beneficiary assessments* based on Participatory Rural Appraisal to reveal local people's opinions of the poverty situation and government programmes. It thereby combines a hard, top-down thrust with a softer, bottom-up position and contributes to improved programme–beneficiary relationships (GTZ 2001).

More details on community-based monitoring are given in Box 10.7.

When should monitoring and evaluation be undertaken?

Assessment from the outset establishes a baseline for regular monitoring

Assessment should commence from the outset of a strategy process to establish a baseline. But, as monitoring and evaluation are integral to a continuous improvement approach to decision-making, they should be regular and integrated activities rather than sporadic and separate events. The benefit of regular assessment is that it encourages participants to rethink priorities, reset objectives and rechart their course of action. It keeps the strategy working as a *system*, rather than an (increasingly out of date) master plan.

Table 10.2 suggests some typical frequencies for assessment, which will depend on the following:

- The work plans of component activities. Input, output and process indicators will change more frequently, and they can be monitored as part of a regular management information system (eg monthly).
- How rapidly and significantly conditions are changing. Outcomes and impacts take time to emerge and become apparent, and are relatively expensive to assess. Annual assessments, or every 3–5 years, would normally be acceptable.
- The magnitude of the risk to human or ecosystem well-being. A higher level of risk would warrant more frequent monitoring.

The 'pressure–state–response' framework for monitoring – its utility and limitations

Use in state-of-the-environment reporting

A common approach for linking many variables that can be used to signal …

The pressure–state–response framework is an approach for linking a great number of variables that need to be monitored to assess the state of the environment. As such, it has both utility and limits – limits that are being stretched with its more recent application to the even more complex issue of the state of sustainable development.

The framework can be applied at a national level, at sectoral levels, at the level of an industrial firm or at the community level. The framework follows a holistic cause–effect–social response logic. Sustainability indicators are selected, based on variables, which signal *pressure, state and response*:

… pressure …

- The *pressure* that society puts on the environment; for example in the form of demands on resources (leading to resource depletion) and demands on ecological processes (leading to pollution). Pressure indicators are based on measurements or on model-based estimates of actual behaviour. Consequently, they are particularly useful in formulating policy targets and in evaluating policy performance. They can also be used prospectively to evaluate potential environmental impacts of socio-economic scenarios or proposed policy measures.

Box 10.7 Community-based monitoring and indicator development

Community-based monitoring: Given the lack of coverage of trade-offs and distributional differences in national sustainability indicators, the local level is the best way to obtain, for example, equity indicators. Local communities can play critical roles in tracking the 'bottom-up' realities, which an NSDS should be addressing, and in assessing the strategy outcomes and impacts of strategy activities. Traditional community fora have been used to air views, discuss problems, monitor changes and reach decisions affecting local people, and have been an important mechanism for local monitoring and accountability. But many of them have fallen into disuse or have been replaced as governments have introduced formal administrative structures at local levels and as political parties have established local organizational units. Traditional ways still exist in many countries and local people respect these systems that could again play a useful role. In some countries, traditional chiefs continue to play a key and powerful role in local monitoring, governance and decision-making (see Chapter 6). But they often behave in unaccountable ways. Some problems of accountability can be overcome through establishing local democratic structures (which is a medium to long-term affair).

Development programmes can also catalyse action. In Nepal, for example, local communities are increasingly becoming involved in collecting baseline data for sustainable development programmes, and NGOs and CBOs have developed participatory tools for community use in monitoring their sustainable development activities. In some countries, informal citizen monitoring is on the increase. For example, during the last three years in Bangladesh, a leading NGO (Proshika) has facilitated a broad participatory process to monitor the government's poverty alleviation targets and budgets. This is quite different from, but a useful complement to, the household-level monitoring that is required on social, economic and environmental conditions which so far is best supplied through efficient survey/questionnaire approaches.

Community-based indicator development: MacGillivray and Zadek (1995) suggest that there should be three processes for community-based indicator development:

- *Outsiders* with indicator expertise can first make a list of possible indicators that might be of use to a community. Examples include: indicator species prevalence, birth weight, literacy rates and soil erosion rates. These indicators might be derived from sustainable development literature or from their own personal experience.
- *The community* should discuss the utility of indicators. A small group of people proficient in the local language and culture should agree a local word to use. In Uganda, the word chosen was 'signpost'. Everybody recognized what it was and what it was not: a signpost points to something else, but is not itself the thing it points to. The South African team used the concept of a tool to measure a child's school progress – the school report card. Next, through internal (facilitated) consultations, the community should develop its own list of indicators of sustainable livelihoods. Community indicators of sustainable livelihoods often provide useful insights into community dynamics and coping strategies, by revealing trade-offs and priorities.
- *A joint process* of indicator selection should be undertaken by both the community and the outsiders. Community-based indicators should be selected for collection by the community (thus the issue must be one in which they are stakeholders) while also being upwardly compatible with higher-level monitoring and evaluation concerns. Thus, it is necessary to find common ground between the statistician and the community, and a possible trade-off between professional standards and practicality or realism from the community point of view. If communities are involved in monitoring indicators, there needs to be motivation, and mechanism(s) for feedback into a local information system so that the process of indicator measurement is not purely extractive. It should contribute to local understanding and empowerment, and not simply aim to satisfy external needs.

… state …

- The resulting *state* of the environment (especially the incurred changes) compared with desirable (sustainable) states. State indicators cover the major characteristics of natural, physical, financial, social and human capital assets, individually or in a combined manner. They can be obtained variously from national accounts, poverty monitoring, natural resource inventories and remote sensing, sector information systems and demographic monitoring – although it is not always the case that variables pertinent to sustainability are currently collected.

... and response

- The *response* mainly in the form of political and societal decisions, measures and policies. Response indicators measure progress towards regulatory compliance or other governmental efforts, but don't directly tell what is happening to the environment. Response indicators need to be able to ascertain the most relevant policy or programme in relation to any given driving force or state indicators. Further investigation of any given response, of course, leads into the territory of impact assessment.

The framework is generally accepted, and many countries find it useful for state of environment reporting (Box 10.8). Core lists of environmental issues – and of relevant pressure–state–response indicators – have been, and are being, developed by several organizations to do this, building on initial work by the OECD. Italy, for example, publishes a national state of the environment report using this framework every two years, and is setting up a national monitoring system along the same lines.

Box 10.8 State of the environment reporting

State of the environment reporting (SOER) is a general term used to describe the compilation and review of data collected over a period of time, usually 2–5 years. Reports generally provide a comprehensive review of the status and trends of different natural resources and ecological processes (air, soil, water, etc) often correlated in some way with pressures arising from public issues (child health, noise, employment, training, etc) for the particular time period, noting policy responses. SOERs collate existing data from different monitoring systems and programmes. They provide analysis of this data to clarify trends in relation to some base line. GIS-generated data may be used for graphic representation.

Sometimes, there is involvement of stakeholder institutions and the public. In Lancashire County, UK, more than 70 organizations formed an 'Environment Forum' to jointly collect and analyse environmental data for the 'Lancashire Environmental Audit'. Such network-based approaches to SOER can increase access to data and information that is not normally made public. In addition, it facilitates the interpretation of data by knowledgeable stakeholders during the process of data selection and analysis.

Use and limitations for monitoring sustainable development

Figure 10.1 illustrates how the pressure–state–response framework has been broadened to cover *'driving forces'–state–response*, covering a range of human activities, processes and patterns affecting social and economic systems as well as the environment – and thereby opening up possibilities for its application to a wide range of capital stocks necessary for sustainable development (in this case, agricultural systems). The European Environment Agency, following a proposal from Denmark, expands the approach further to a 'driving forces–pressures–state–impacts–response' model for its state of environment reports, because it also invites assessment of the adequacy of policy responses to pressures on natural resources (Baldock 1999).

There is now a working list of 134 indicators of sustainable development developed by the CSD (Table A.2; see page 328), which is undergoing voluntary testing by countries from all regions of the world. The goal is to have an agreed set of such indicators available for all countries to use by 2002. The CSD aims to produce a flexible list from which countries can choose indicators according to national priorities, problems and targets.

The pressure–state–response framework works well for such environmental assessments (for which it was designed). However, it is less well suited to sustainability assessment because it treats human aspirations and activities merely as environmental problems. Although the CSD tried to get round this by changing pressures to 'driving forces', users found it increasingly hard to disentangle states, driving forces and responses (eg responses are often driving forces). It was also cumbersome to identify an indicator for each state, driving force and response.

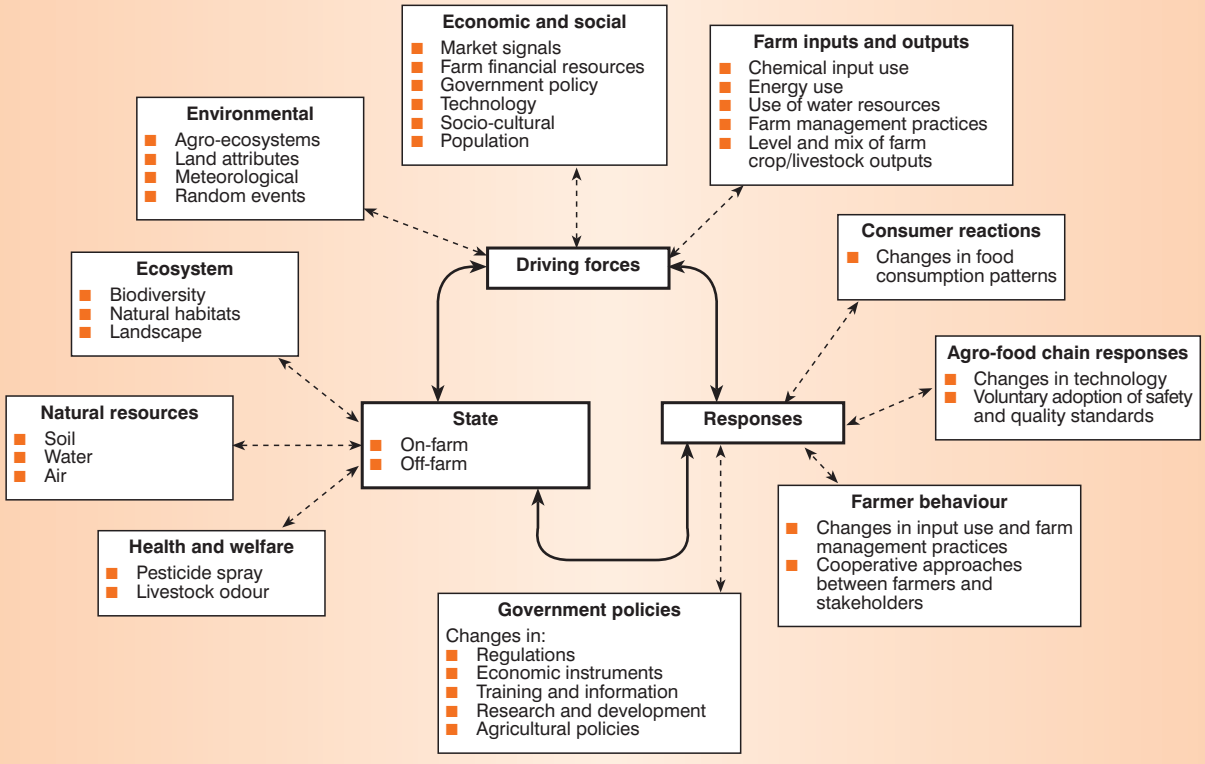
Note also that the *sustainable livelihoods framework* (Chapter 5, page 124 and Figure 5.2) groups particular components of livelihood: their capital assets, their vulnerability/opportunity context, and all the

institutional structures and processes that may transform livelihoods. As such, it can provide an analogous pressure–state–response model for (participatory) monitoring at the level of livelihoods.

Monitoring the implementation of the strategy and ensuring accountability

To date, there has been little attention to tracking strategy processes …

Despite the burgeoning efforts to monitor progress towards sustainable development, very little attention has been given to tracking the actual processes involved in strategies and their impacts. Even in PRSPs – one of the more recent frameworks to emerge, which espouses a focus on process and participation – this need is not routinely addressed. For example, in their recent review of PRSPs, Booth and Lucas (2001) note that 'the authors of many of these plans have listed a wide range of traditional indicators in a fairly indiscriminate way', many of which 'derive from routine administrative/facility returns or management information systems … and it is very difficult to identify any evidence of community involvement in the proposed indicators'. They concluded that most indicators selected have been brought together from those already agreed for separate projects, programmes and concessional loans, and are not integrated in any overall rationale.



Source: OECD (1997a)

Figure 10.1 The driving force–state–response monitoring framework as applied to sustainable agriculture

Strategy implementation monitoring covers:

- *Inputs*, in terms of monitoring financial, physical and human resources applied to the strategy and to its component activities. An example would be the proportion of government recurrent and

… but the components need to be monitored

investment expenditure spent on activities identified as a priority by the NSDS. Such information is frequently collected by finance or line ministries. It was collated by the Pakistan NCS, but on its own was agreed to be inadequate.

- *Process quality*, in terms of monitoring how strategy principles are adhered to and developed (eg people-centred, participation, integration, commitment generation, etc; see Box 3.1). Indicators for these process components will need to be developed. Because of the qualitative nature of strategy processes, often a questioning approach will be best for monitoring (as used by the OECD DAC dialogues), rather than an approach of assessment against indicators. Chapter 5 (pages 161–172) lays out the component mechanisms in NSDSs, possible questions to ask, and methods that can be used to answer them. Table 5.13 may be found to be particularly helpful.
- *Outputs*, in terms of monitoring which specific strategy products are generated by the agencies involved in the strategy. Examples include roundtables, workshops, publications, media events, methodologies and guidelines, for which an 'inventory' should be kept. Annual reports by the strategy secretariat are good ways of reporting on outputs.
- *Outcomes*, in terms of monitoring access to, use of, and satisfaction with strategy products. Such outcomes are not necessarily under the control of agencies involved in the strategy. For example, roundtables are an output because the strategy team can organize them; but attendance at each roundtable and the decisions made are outcomes, which depend on stakeholder behaviour. In Burkina Faso, satisfaction with reforms in government tendering procedures is seen as an important indicator of the reform programme. It is usually more difficult to assess outcomes, and special surveys (questionnaires, focus groups, interviews) may be needed so that information is collected direct from the beneficiaries.
- *Accountability for implementation* – monitoring the performance of individual strategy actors in implementing the strategy, encouraging them to report to other stakeholders and monitoring related capacity constraints. This is discussed further below.

Monitoring the performance of strategy stakeholders, and mutual accountability

Four key questions for assessing government performance …

Monitoring stakeholder performance focuses on the actions being taken to achieve the overall goals and the specific targets established in the strategy. Key questions that need to be addressed in monitoring and evaluating performance of government include:

- Are *official statistics and data of good quality*, and the institutional and technical arrangements for coordinating data from different sources effective for routine monitoring (page 310)?
- Are the *administrative and/or sectoral management information systems* (government as well as other stakeholders involved in implementation) operating to necessary quality standards? Do they enable feedback for learning and accountability purposes?
- How do *budget allocations and releases* accord with strategy objectives and with sectoral/sub-sectoral priorities; and how do releases reach their destinations within particular sectors?
- Does the performance represent *value for money?* How do the outputs produced match up against the inputs provided, and against the outcomes in terms of stakeholder use and satisfaction with the outputs?

These questions can be addressed using standard government audit procedures, adjusted as necessary. For example, many Local Agenda 21 programmes have established internal audit procedures to review how existing procedures and practices might support or hinder the implementation of agreed action plans, and to

Box 10.9 Internal audits for implementing Local Agenda 21

Internal audits can be undertaken by external consultants or can be organized as participatory processes involving municipal staff. Two key elements are the audit criteria *and the* audit protocol*. The criteria should test the consistency of current municipal practices, procedures and policies with the goals, targets and action strategies of the LA21 Action Plan. The protocol consists of a set of procedures that will be used by the auditor(s) to determine performance relative to the criteria. Based on the internal audit, a municipality can identify and define what procedures, rules and standards will need to be reformed in order to support implementation of the plan. An inter-departmental committee can serve as an internal stakeholder group to review proposals generated by staff and prepare a comprehensive proposal for procedural reform to be submitted to department heads or directly to the elected municipal council.*

Following such internal audit and reforms, systems need to be established to ensure that future actions or plans are consistent with the objectives of the Action Plan. For this purpose, a variety of environmental management systems *(EMSs) have been designed for both private and government application. These systems establish the organizational structure, responsibilities and procedures that will be consistently used by the municipality to achieve its goals and control its impacts. Typical EMS procedures require systematic internal reviews of proposed development activities before these proposals are submitted to decision-making bodies. These procedures identify the extent of possible impacts that a project might have and define when a detailed environmental or social impact assessment should be undertaken to help mitigate negative impacts.*

Source: ICLEI (1996a)

provide a framework for introducing the action plan to all municipal departments and agencies (Box 10.9). In addition, a range of 'quick and dirty' approaches can provide a useful rough check on official information reported (see Box 10.10).

… can be addressed using standard government audit procedures

Box 10.10 The value of 'quick and dirty' monitoring

'Quick and dirty' methods of monitoring, such as participatory beneficiary assessments, implementer self-assessments, using focus-group methods, 'exit polls' and light-weight service-delivery surveys, can provide an indispensable rough check on formal information – often reported slowly and unreliably through official channels. They can also provide a more dynamic type of input into the strategy process, a means of highlighting problems while there is still time to act on them, and mobilize public interest and pressure at the same time.

Source: Booth and Lucas (2001)

Because a strategy is a multi-stakeholder affair, government accountability is only part of the requirement. A major challenge is to get all the major stakeholders and institutions to report on their own actions in a candid, consistent and regular way. This requires, in effect, the establishment of a system of accountability among all the major actors and sectors: large institutions, businesses, key interest groups and even individual households, as well as government. This approach is considerably different from traditional one-way processes in which, for example, business reports to government, government reports to society, but civil society and its organizations do not report back to either.

A system of accountability is needed for all the main stakeholders and institutions

For Local Agenda 21, ICLEI (1996a) suggests that an ideal system would accomplish the following:

- *Provide a schedule and guidelines for all actors to report to each other. The best guidelines would assure that reports from different parties can be aggregated to determine the joint progress being made to achieve a specific target.*
- *Establish a set of indicators to measure performance in achieving targets (the reporting system should provide the stakeholder group or municipal planners with the data needed to determine the present value of these indicators).*

- *Provide a periodic opportunity for all actors to meet together to review each other's performance relative to their commitments and targets, and to discuss how to better coordinate their actions.*
- *Provide an opportunity to expose local residents to the different projects and campaigns being implemented, and to inform them about how they can participate.*
- *Link the performance reporting process to relevant statutory planning cycles of the municipality, such as annual budgeting, so that the municipality can adjust its plans based on the actions taken by other sectors.*

The city of Hamilton-Wentworth, Canada, has introduced an annual Sustainability Day to accomplish the objectives of mutual accountability among many stakeholders (Box 10.11).

Box 10.11 Annual Sustainability Day: Hamilton-Wentworth, Canada

Each year, the Canadian municipality of Hamilton-Wentworth organizes a Sustainability Day to bring together all the organizations and institutions in the city that have committed to implement their Vision 2020 Action Plan. Workshops are organized for different actors to meet together to discuss implementation of the different aspects of Vision 2020. There is an exhibition for local organizations, businesses and municipal departments to distribute reports and display their activities to the general public. Educational study tours are organized for citizens to visit and learn about project sites or new municipal facilities. All members of the Regional Council are invited to attend this event and, due to public expectations, most councillors do attend. In this way, Sustainability Day offers an opportunity to inform and engage decision-makers prior to annual budget deliberations, elections or other planning activities.

Hamilton-Wentworth used its first Sustainability Day to undertake a survey on possible indicators to measure performance in implementing Vision 2020. These performance-based indicators have been used to prepare an annual 'Report Card' on Vision 2020 performance, which is presented and discussed at each annual Sustainability Day. A similar approach in Bangalore, India, called the Citizen Report Cards process, is used to evaluate the municipality's performance in the area of service delivery.

Source: ICLEI (1996a)

Monitoring and evaluating the results of the strategy

A continuous improvement approach to NSDSs requires monitoring of the 'big picture' …

The continuous improvement approach to an NSDS necessarily puts far more emphasis on monitoring strategy results than the previous 'linear' approaches. Strategy impact assessment involves: the identification of specific changes in the well-being of people and ecosystems – from *monitoring the 'state' of sustainable development* (discussed in Chapter 5, page 171); and correlating such changes with the strategy and its component mechanisms and activities – from *monitoring strategy outputs and outcomes* (discussed on page 322). To do this well requires clarity in the strategy objectives and, hence, clarity in the indicators selected, coordination between the various monitoring and analysis tasks, a good baseline and a systematic approach to monitoring.

… but sometimes focused impact assessments will be needed

In addition to this routine, systematic monitoring, it will occasionally be necessary to undertake focused *impact assessments to evaluate* more directly the impacts of the strategy and/or key strategy products, to analyse apparent correlations that look interesting, and to assess how the strategy has impacted on institutional and governance conditions such as:

- values, habits and practices;
- knowledge;
- technologies and infrastructure;
- institutions (laws, incentive systems, organizations and their relations).

Such impact assessments will entail the collection of relevant information directly from those who are affected (households, organizations, etc), which may best be organized through specially commissioned studies.

Monitoring and evaluation of strategy impacts is complicated by the fact that there are many other influences such as markets, events and macro policies which will have significant influences – albeit the strategy will be trying to track and intervene in them. Furthermore, there is invariably no good baseline data available at the start of an NSDS, a common problem of 'umbrella' initiatives such as strategies (which are cheaper and easier to embark on without a baseline). Neither is there a control case.

This was the case in Pakistan and so the approach used to assess the impacts of Pakistan's NCS is instructive. Essentially, it triangulated information. A matrix similar to that shown in Table 10.1 was used to bring together two types of information:

Information on impacts and strategy mechanisms can be compared …

- Information from those stakeholder groups who, on a sectoral or geographic basis, had identified specific positive *sustainability impacts* (biodiversity conserved, poverty reduced, etc) but had only an idea of the reasons why (whether projects, or changed policy or other factors were the cause).
- Information from close strategy stakeholders who were familiar with the mechanisms used and promoted by the NCS (eg how well the strategy improved awareness and participation) but had only an idea of what impacts these mechanisms led to.

… generated through studies and workshops

In Pakistan, this information was generated through a mix of special studies and workshops – as no routine monitoring system had been put in place (refer back to Box 10.5). The results revealed how some of the commonly cited improvements in sustainability were the result of activities that were directly planned by the NCS. Others had been identified by the NCS as good examples to follow. Further improvements arose separately from the NCS (notably initiatives of the private sector – as it had been subject to different drivers for sustainability, eg export markets). But the conclusion was that all the successful initiatives were considered to offer lessons for how the NCS *could* evolve in the future, especially as:

> *It is also quite evident that the NCS has* not *yet managed to influence the key socio-economic concerns of poverty alleviation, economic development, and environmental quality of life—in terms of policy, legislation, investment, incentives or a full set of activities on the ground. The NCS awareness work and projects have demonstrated what* could *be done for sustainable development: bringing this into the mainstream is the challenge for the next phase of the NCS.* (Hanson et al 2000)

Disseminating the findings of monitoring exercises and feedback to strategy decisions

Key information should be fed back to stakeholders

Reporting and dissemination of the findings of monitoring is crucial so that key messages can be fed back to stakeholder key groups, enabling them to continuously improve their understanding and behaviour, the strategy itself and its component activities.

Feedback has been one of the most overlooked and yet most valuable tools for the implementation of strategies. Governments (whether national or local) can never be in a position to monitor and guide all the actions or organizations, businesses and citizens in complex societies. For this reason, a feedback system is necessary to disseminate information so that organizations and individuals themselves can learn from progress or problems and can make wise choices. As suggested by ICLEI (1996a), such a system should provide both recognition and rewards for positive behaviours and disincentives or punishments for detrimental actions in order to guide the regulation of behaviour without the need for external control.

Table 10.1 Example matrix for linking impacts with strategy mechanisms

Impacts (examples): / Mechanisms (examples):	Biodiversity conserved	Ecological processes protected	Poverty alleviated	Environmental health improved	Economic efficiency improved
Information management					
Communication					
Participation					
Prioritizing					
Investment					
Coordination					
Capacity building					
Empowerment					
Learning					
etc					

Note: The matrix was used in Pakistan as an aid to assessment, rather than a presentational tool. As an aid to assessment, it helps in offering a checklist of mechanism and performance categories, in organizing information and in pointing to what is important and what can be neglected. But if used to present information it would imply that very many 'cells' need to be assessed and treated equally – which would not be helpful for strategic analysis

Source: Hanson et al (2000)

The first and most fundamental requirement of a good feedback system is to disseminate appropriate information to the different stakeholders and 'audiences' in the country and in local communities. The primary information requirements are (a) the status of conditions, and (b) preferable behaviours and actions.

The impact of such information is greatly influenced by who prepares it (eg government or municipal departments, individual experts or businesses), who disseminates it (eg government offices, elected officials, NGOs, community organizations, individuals) and the vehicle used for dissemination (eg meetings, written reports, the media). Generally speaking, in designing a feedback system, the familiarity, credibility and accessibility of information sources should be optimized. Chapter 7 discusses in detail the elements of a strategy information system and optimum approaches.

The second key element of feedback is consistency (page 320) and regularity (page 318). If this is assured, people gain confidence that their actions will be appropriate, will be noticed and will be rewarded.