SOCIO-ECONOMIC METHODOLOGIES
BEST PRACTICE GUIDELINES

STAKEHOLDER METHODOLOGIES IN NATURAL RESOURCE MANAGEMENT

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INTRODUCTION

The development in the 1990s of stakeholder analysis in natural resource management has largely stemmed from concern that many projects have not met their stated objectives because of non-co-operation or even opposition from key stakeholders, who believed they would be adversely affected by change. Moreover many interventions that have been perceived to be successful by their designers, have in fact achieved their success only at the expense of certain stakeholders — often local resource poor people.

Stakeholder analysis recognizes the different interest groups involved in the utilization and conservation of natural resources and provides tools that help to identify and resolve trade-offs and conflicts of interest. Stakeholder groups cut across society as a whole and range, for example, from formal or informal groups of men or women farmers to government bodies or international agencies and multinational companies. Renewable Natural Resources Research Strategy (RNRRS) managers are most likely to be concerned with groups operating at village level, within a commodity sector or with institutional interests in natural resources sector development.

Stakeholder analysis has considerable value in assisting researchers to take account of potentially conflicting objectives of efficiency, equity and sustainability. These conflicts are fundamental in the field of natural resource management, particularly where there is increasing resource scarcity and where common property resources are concerned.
Stakeholder analysis is likely to be of use to researchers in two main ways:

- **Improving the selection and design of research projects:** the explicit consideration of potential trade-offs between different stakeholders helps avoid the unexpected, facilitates good design, and improves the likelihood of successful implementation

- **Addressing better the distributional, social and political impacts of research projects:** explicit analysis of the interests of, and impacts of interventions on, different stakeholders (including the poor and less powerful) can help ensure that research outputs are designed effectively to meet the needs of those intended.

CONCEPTS

Stakeholder analysis can be defined as a methodology for gaining an understanding of a system, and for assessing the impact of changes to that system, by means of identifying the key stakeholders and assessing their respective interests. The key stakeholders in natural resource research are subsistence farmers and other small-scale natural resource users, but stakeholders may equally include development practitioners, policy makers, planners and administrators in government, commercial bodies or non-governmental organizations (NGOs).

The most fundamental division between stakeholders is likely to be between those who **affect** (determine) a decision or action — and those who are **affected** (whether positively or negatively). The distinction may not be absolute, however, as some groups (e.g. local people) may be involved in natural resource management in both active and passive ways.

Stakeholder analysis also distinguishes between conflicts and trade-offs. 'Conflicts' are situations of competition and potential disagreement between two or more stakeholder groups over the use of one or more scarce resource. A 'trade-off' is the process of 'balancing conflicting objectives' within a single stakeholder group. Conflicts and trade-offs often occur together and the likelihood and intensity of both tend to increase when, with development and population growth, the resource becomes scarcer and more highly valued.

Local level conflicts may arise between different on-site stakeholders, such as settled farmers and migrant livestock herders, or between on-site and off-site stakeholders. Such conflicts frequently originate from breakdowns in systems of common property management, under pressure from population growth, economic activity and sometimes the incursion by outside interests (see Case Studies).

APPLICATION AND USE

Stakeholder analysis is particularly relevant to the analysis of natural resource management where issues are characterized by:

- **Cross-cutting systems and stakeholder interests** Natural or physical systems, such as aquifers and watersheds, are frequently central to natural resource problems but cut across social, economic, administrative and political boundaries. Where this is so, problems are likely to affect a large number of different stakeholders at local, regional and national levels with different agendas and sets of interests.

- **Multiple uses and users of the resource** Different aspects of natural resources may be valued by different stakeholders. Forest resources, for example, may be valued by logging companies for the commercial timber of certain tree species, by local people for different species and products, by ecologists for the existence of integral forest ecosystems, and by pasturalists and would-be settlers for the land on which the forest is located.

CASE STUDY: LAND USE CHANGE IN CAMEROON — DIFFERENT VIEWS OF FOREST DEGRADATION

A form of shifting agriculture incorporating forest fallows has long been practised in the tropical forests of the Cameroon, and local authorities are concerned about its effect on deforestation. In the late 1980s a project was instigated with overseas aid to establish timber plantations on land that had been cut and burnt, cultivated for up to two years, and left to recuperate.

There were, however, markedly different interpretations of the situation. Project authorities held that shifting agricultural practices were degrading and depleting the forest, and it was highly desirable to establish plantations of valuable timber species on what was seen as abandoned land. Local people, however, suggested that their agricultural system was sustainable and did not cause deforestation. What degradation there was, they said, was caused by the project. The project was replacing forest fallows left to regenerate naturally by a few introduced species of no value to them. They said the new habitat was much less biotically diverse than the secondary forest it replaced and did not provide the non-timber forest products and game habitats long used by them. They also argued that recently fallowed secondary forest was more valuable than the dense forest it replaced because less labour was required to convert it to agricultural land. Indeed, they deliberately selected shorter fallows for growing certain crops, trading-off the fertility losses against the higher economic returns to labour input (labour was the major limiting factor).

A rider should be added. In this locality forests were not under great pressure and, at least for the time being, the shifting agricultural system was sustainable. In other circumstances, however, increasing population may impose severe pressure on resources, and forests will degrade and diminish. Whether or not it is acceptable to convert forests to agricultural land can only be judged from local circumstances.

Source: Author's observations

- **Subtractability and temporal trade-offs** Natural resources such as soils and water may be non-renewable or 'gifts of nature' which can be depleted or contaminated but cannot be created. Some resources, such as aquifers, may be subtractible and appropriation of the resource may adversely affect future supply. Natural resource management is often conducted in the context of a degrading resource base which threatens future welfare, a fact which gives rise to difficult questions concerning optimum rates of exploitation and conservation.

- **Multiple objectives** Natural resources are subject to potentially crucial differences between economic, social and environmental concerns and the best interests of different stakeholders. Potential differences include those between wider society and local people.

- **Unclear or open-access property rights** Where traditional management systems are breaking down as a result of demographic, economic and political pressures, property rights are often unclear. In these situations the economically rational actions of individual resource users may not be compatible with community interests, leading to degradation.

- **Negative externalities** Where impacts are in part off-site or delayed, individual decision-makers will not bear the full costs of their actions and market distortions occur. Thus prices do not reflect true values and inadequate weight is given to the future flow of benefits (e.g. to future generations) and to off-site costs (e.g. downstream impacts). Note, however, that not all externalities are negative — soil eroded from upland slopes may replenish the fertility of fields below as well as silting up dams and irrigation systems.

- **Untraded products and services** Natural resources may produce multiple products and perform a variety of natural functions and services that are not traded competitively and have no monetary value in the market-place. Where they are traded, prices are likely to

CASE STUDY: CONFLICTS AND TRADE-OFFS IN PARK MANAGEMENT: PHU WIANG WATERSHED, NORTH EAST THAILAND

Phu Wiang is a small watershed which is one of the last remaining well-preserved forested areas in central parts of North-East Thailand. The relationships between different stakeholders and the impact of environmental policy on them was investigated during a workshop on stakeholder analysis held in the area (January 1994). A matrix was developed to identify the stakeholders and the conflicts and complementarities that exist between them, and from this it becomes clearer as to what trade-offs between objectives were or should be made.

Government departments	✗ ✉				
NGOs	✗ ✉				
Wood-based industry	✗ ✉	✗			
Non-resident land owners		✗			
Local people	✗ ✉	✗ ✉	✓	✗	✗
	Government departments	NGOs	Wood-based industry	Non-resident land owners	Local people

Conflicts of interest are represented by ✗ complementarities by ✓ and co-operative action by ✉
Source: CHAN, Man-Kwun (1995) *Tree Resources in Northern Thailand: Local Stakeholders and National Policy.* Chatham, UK, Natural Resources Institute.

reflect only the cost of extraction rather than the resource value itself or the cost of its depletion. This applies to most water, forest and grazing resources, and the greater part of the world's biological diversity.

- **Poverty and under-representation** Land, water, rangelands and forests are essential to the livelihood systems of the majority of the world's poorest people, and those most directly dependent upon them are often the poorest. Stakeholder analysis can highlight the needs and interests of people who are under-represented both politically and, in terms of limited buying power, economically.

STAGES IN STAKEHOLDER ANALYSIS

There is no blueprint for conducting stakeholder analysis and flexibility and common-sense are essential, however a simple flow chart indicates the essential steps involved.

Stages in Stakeholder Analysis

- Clarify objectives of the analysis
- Place issues in a systems context
- Identify decision-makers and stakeholders
- Investigate stakeholder interests and agendas
- Investigate patterns of inter-action and dependence (e.g. conflicts and compatibilities, trade-offs and synergies)

Clarification of objectives

In setting objectives it is necessary to consider the issues to be addressed — the principal ones for researchers are initial project design, research implementation and subsequent targeting of research outputs.

The first step involves drawing up working definitions concerning the **problem** that needs to be addressed; the **objectives** and intended outputs of the research; the relevant **decision-makers**; and how the outputs will be targeted. These will then form the basis for building an analytical framework on which further enquiry will be based.

For a research project the problem might be the occurrence of rapid destruction and degradation of a forest area, the underlying causes of which are unclear. The main objectives of the research would then be to gain a better understanding of how the various stakeholders involved in forest management are contributing directly or indirectly to this degradation.

Developing an understanding of the system

Researchers may or may not be fully familiar with stakeholder analysis approaches and the systems and issues they are trying to clarify. Under these circumstances it is worthwhile to undertake an initial rapid appraisal to obtain more information on systems and issues. In undertaking this and subsequent stages, researchers may wish to call upon individuals with specific skills in stakeholder analysis or with specific knowledge of the systems under investigation, or the use of informal approaches.

The sort of questions that are likely to be addressed at this stage include asking each stakeholder group about how they themselves use and manage the resource in question. For example, What direct goods and services do they extract from the resource? What indirect (including environmental) goods and services do they provide? What restrictions do they face over the use of the resource? What *de jure* and *de facto* rights or claims do they have over using and managing the resource? What are the forms and degree of management of the resource in question?

As well as questioning stakeholders directly about their uses, interests and management of the resource, information can be complemented by indirect investigation, through the observation of stakeholders' actions and behaviour, or evidence of this behaviour. Their *de facto* practices may for a number of reasons be rather different from their interests expressed to the researcher.

Natural resource systems can be viewed as interdependent ecological and socio-economic systems. For example, an Indian forest — an ecological unit in itself — may provide the basis for indigenous forest dwellers, livestock keepers and forest-fringe farmers. The livestock keepers may graze their livestock in the forest and gather lopped branches, leaves and fodder for carrying to the farm for use as feed and bedding. The manure and compost may later be carried to the fields for the maintenance of nutrients and organic matter in arable farming. The livestock in turn will feed off residual crop material and fertilize (dung) the land or the forest.

Where the problem is one of land degradation or deforestation, it is necessary to understand where the system is breaking down, what the immediate and underlying reasons are, and who the decision-makers are. The starting point for understanding is an acceptance of the rationality — at all levels — of decision-makers, whose behaviour can be predicted, given enough knowledge of their particular circumstances. While the immediate causes of degradation may be obvious, understanding the underlying factors may require a deeper understanding of stakeholder interactions.

Finally, it is useful to question stakeholders regarding their system boundary and decision-making frame. For example, it is important to understand what a stakeholder sees as his/her decision-making environment, what factors he/she perceives as lying within his/her control and what lie outside it. These systems and their boundaries would form the basis of any modelling that might subsequently be required.

Identifying decision-makers and stakeholders

Criteria need to be developed to select those stakeholder groups that are relevant to the research being undertaken. For example, the criteria required for analysis of the effectiveness of research differ from those where the aim is to address the social and distributional impacts of research. If the main interest is in overall environmental or economic effectiveness, i.e. will the research work?, the primary consideration for selecting stakeholders will be the inclusion of those groups whose interests, resources, and position of power/authority imply that they are likely to affect substantially the way in which the research will operate or fail to operate in practice. If, however, there is equal or greater concern for the equitable distribution of benefits and costs, the selection criteria will be based on considering all those groups who in some way will be affected by implementation. This may include those who have interests, claims or rights (ethical or legal) to the benefits of the research, or to some measure are likely to bear its costs or adverse impacts whatever its overall worth.

There are a variety of tools which can be used to identify stakeholder groups, including those used for the rapid appraisal undertaken to develop an understanding of issues within a systems context:

- information from key informants
- information from focus groups, i.e. identify a stakeholder group that is clearly of importance to the issue to be researched, and then to work with that group to identify others
- secondary data, i.e. such information can be used at a rather generalized level to identify groups, e.g. in terms of age, gender, activities, geographic region etc.

Whichever approach or approaches is/are used, there is a need to verify or test the initial set of stakeholders that have been identified. Each of the stakeholders/stakeholder groups should be questioned as to whom they perceive the other main stakeholders to be, and what the relations between different stakeholders are; this will also help to gain an idea of their interests in the issue in question. Groups can then be categorized in order to select only those with a significant interest in the objective of the research.

Although the identification and selection of stakeholders is required at an early stage to allow the rest of the stakeholder analysis to proceed, it is emphasized that verification and possible revision of the list of groups included should be kept in mind throughout the process. New information acquired may reveal previously unrecognized stakeholders, or may show that a particular stakeholder is less significant than originally assumed.

Investigating stakeholder interests, characteristics and circumstances

There are a variety of strategies for data collection on stakeholder interests and analysis for the various groups that have been identified. Field experience points in particular to the usefulness of informal, semi-structured interviews (using simple check-lists of key topics) both with individuals representing one stakeholder group, or with a number of representatives from different stakeholder groups. Oral case histories have also helped in understanding changes over time and the dynamics of the system. Quantitative as well as qualitative techniques of data collection and analysis can also be used, for example using cash incomes from selling forest products as a partial indicator of **dependence** on a forest resource, or using preference ranking for determining the perceived value to stakeholders of different types of trees.

The issues to be covered in discussions with stakeholders are likely to include the following:

- What do they know about the research project, the accuracy of this understanding, and what don't they know?

- What general improvements to the management of the resource in question would they like to see? This question has to be qualified by the knowledge that, however sophisticated village people may be, their level of experience is unlikely to enable them to foresee all the likely changes that the project will bring about.

- What do they think about the proposed management solution offered by the research? What are the actual and perceived costs and benefits to the stakeholder, including opportunity cost of benefits foregone? Is the distribution of costs and benefits deemed to be fair? Who is seen to win, and who to lose?

- How could the research proposals be improved (from the stakeholder's view point)? What would he/she be willing to pay or sacrifice for these improvements (labour, income, compromise with other stakeholders)?

As in other stages there is a need for cross-checking. Stakeholders can be asked about their views on other stakeholders' use of the resource, and how he or she interacts with other stakeholders over the use and management of that resource. Such approaches may be particularly important for certain topics, e.g. a group might not mention their own involvement in illegal activities, but may be willing to talk about the illegal activities of other groups.

STAKEHOLDER TABLE

Stakeholder group	Nature of interest	Potential research impact	Relative importance of interest	Importance of group *	Influence of group †
Primary stakeholders					
Female-headed households	Improved food security	High	High	High	Low
Male-headed, surplus producing households	Improved income	Medium	Medium	Low	High
Secondary stakeholders					
Colloborating (NAR) research bodies	Sustaining effective programmes of research and funding	High	High	Medium	Medium
Ministry of Agriculture	Increasing production via 'progressive farmers'	Low	High	Medium	Low

Source: Adapted from ODA, 1995

* Indicates importance to the natural resource project/programme leader
† Indicates importance and representation within local/national power structures and institutions

Analysis of interests, drawing upon the tools noted above, seeks to identify a number of key areas of information. For example, information is required upon the actual and potential conflicts of interest that may exist between stakeholders. Similarly it is necessary to discover the importance of issues (e.g. research agenda and research outputs) to specific stakeholder groups, the relative importance of stakeholder groups themselves and their power and influence. All this information can usefully be brought together in a stakeholder table.
Researchers and research managers may find such tables particularly useful for analysing risks and assumptions underlying research proposals, processes or dissemination mechanisms. For example they can help to identify stakeholder groups' lack of influence or vulnerability to groups with vested interests that do not coincide with research objectives or outputs.

Identifying patterns of interaction between stakeholders

Interactions between differing groups of stakeholders will be partly a function of the degrees of power and influence that groups have, including key individuals. Such links may take a variety of forms — conflict, co-operation and dependency — with corresponding opportunities for resolution, analysis of trade-offs and synergies.

One useful way of gaining an understanding of conflicts is by discussing a past concrete case of conflict; what gave rise to it, and if and how it was resolved. The use of group meetings or interviews that involve people who represent different stakeholder groups is likely to be a helpful technique, although the success in promoting informative and peaceful discussions will depend on a number of factors, including the existence of intermediaries who are respected and deemed impartial by all the parties involved.

Co-operative or collective management of natural resources, including the institutions, rules and values that govern it, has been fairly widely documented and analysed, particularly in relation to the management of common property resources. This approach includes the identification and understanding of the nature of existing kinds of co-operation between different stakeholders (e.g. Oakerson, 1992), as well as pinpointing opportunities for developing co-operation in the future (e.g. Wade, 1987).

However, the common property resources literature provides little insight on co-operation or conflict where there are a large number of stakeholders with very different interests in the resource: in contrast, stakeholder analysis is aimed precisely at dealing with such complex situations. Experience indicates that matrices can be a useful analytical tool for identifying and assessing the significance of conflicts of interest and co-operation between different stakeholder groups (see Thailand Case Study). Cross-checking mechanisms, e.g. asking stakeholders about their perceptions of the activities and attitudes of others, are also important.

As well as identifying patterns of interaction, stakeholder analysis is also interested in the reasons behind conflicts and co-operation, both to increase understanding of a specific situation and to be able to draw general lessons about what factors are likely to lead to conflict or successful collective action. Whilst the existence of conflict will usually be associated with competing interests between the groups involved, and co-operation rooted in some kind of shared or complementary interests, other factors are likely to affect the likelihood and nature of conflict and co-operative action. A provisional check-list of such factors would include:

- the nature of power and authority relationships between stakeholder groups
- socio-cultural relationships between groups: many situations of conflict are encouraged or strengthened by ethnic, religious or cultural divisions and consequent ill-feeling between the groups
- historical contexts: co-operative action between different local communities, or between local communities and government officials, is more likely to occur over a new issue if there has been a history of co-operation over other issues in the past. Conversely, if there is a history of conflict between two stakeholder groups, the emergence of shared interests over a particular issue may not be enough to overcome the conflict
- legal institutions: co-operation and co-operative institutions are more likely to exist if there are legal institutions to support them, e.g. if the legal system officially recognizes community or other collective ownership/management rights to grazing or forest land.

Analysis of trade-offs will require a series of investigations into the stakeholders involved and the decision-making criteria they are using when they choose a particular management or resource-use strategy. Information will also be required on the actual and perceived costs and benefits to the stakeholder of following their chosen behaviour or actions, including perceptions of any external costs and benefits of their actions and decisions. This information could be gained by asking about alternative uses of the resource, and discussing different situations in the past or hypothetical situations in the future where certain variables are changed, e.g. the market price of a resource product or availability of labour.

RESEARCH NEEDS AND OPPORTUNITIES

Natural resource degradation is most likely to occur where markets do not function well and signals are transmitted that undervalue resources (for reasons relating to institutions and property rights, tradability of goods and services, the presence of externalities, and risk and uncertainty). However, there is a lack of integrated research methodologies for analysing the

complementarities and trade-offs between developmental and environmental objectives. To address these concerns empirical research is required in three main areas:

- Acquiring empirical knowledge of the key stakeholders and the factors governing their resource allocation and investment — this includes stakeholder preferences, decision criteria and perceived costs and benefits in natural resource conservation and management together with understanding of the wider structural and policy context which may govern individuals' economic behaviour.

- Learning from related social science methodologies and incorporating relevant aspects into the analytical methods outlined here — this includes exploring principles and techniques from political economic theory, institutional economics, cost-benefit analysis, decision theory, participatory and social actor appraisal, and multi-criteria analysis.

- Developing knowledge of the scope for action by researchers in the design and implementation of research and research outputs and in the resolution of conflicts — this includes development of understanding of specific stakeholder approaches for particular circumstances, the manner in which local stakeholders should or should not be involved, different degrees of intensity of stakeholder analysis, and the use of stakeholder analysis at different stages in the project cycle.

The above may be of particular value when focused upon the development of methods to elicit the interests of macro-level stakeholders — an area where methodologies are currently much less advanced, e.g. with respect to the agendas (hidden as well as overt) of government officials and large commercial organizations who have a stake in natural resource management. Political science and administration may have much to contribute in this arena.

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