IIED Natural Resources Group

Integrating Local Values in Natural Resource Assessment: A review of Assessment Tools

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CONTENTS

1. INTRODUCTION

1.1 Objectives and approach

As part of its cross-Programme work on Natural Resources, IIED set out to 'develop and refine *integrated methodologies* for assessing NR potentials, priorities and impacts' which focus on the needs of the poor and environmental limits, and which make the trade-offs apparent. To this end, a review of NR assessment tools was conducted to examine approaches for integrating local people's assessments of natural resources, which reflect local values and priorities, and 'expert' or scientific assessments, which usually inform policy making and planning. The review drew largely on research and experience in different IIED programmes[1] in a process designed to promote internal learning, whilst consolidating IIED's knowledge on this issue for a broader audience. This report presents the findings of the review, and identifies key challenges for improving the integration of local values in NR assessment, as well as priorities for further research (Section 3).

The review process involved an internal workshop held in February 2003, interviews with research staff and a review of selected internal and external literature. Papers were prepared for the workshop examining different NR sectors and assessment tools, together with tables reviewing the integration of local and expert values in different sectors/tools (see Annex I and II).

This report is thus very much a collaborative effort, with text, comments, ideas etc, contributed by a number of IIED staff: Sonja Vermeulen, Bansuri Taneja, Maryanne Greig-Gran, Camille Bann (consultant), Ced Hesse, Camilla Toulmin, Saleemul Huq, Hannah Reid, David Satterthwaite, Gordon McGranahan, Nazneen Kanji, Duncan Macqueen and Barry Dalal-Clayton[2].

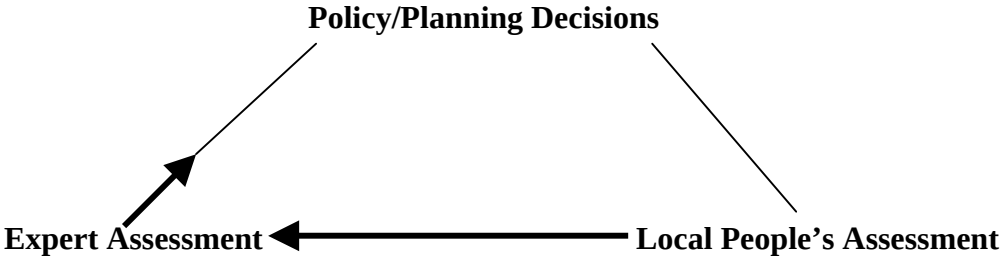
A range of NR sectors/themes and assessment tools are reviewed: biodiversity, climate change, agriculture, forestry, rural planning, drylands, urban environmental hazards, economic valuation and participatory monitoring and evaluation. Some areas of IIED's work could not be fully explored within the scope of the review, notably on soil and water assessment and Environmental Impact Assessment.

The report examines the extent of integration of local people's values in the different sectors and tools, approaches for integration, constraints to integration and ways to improve integration - both the technical approaches and the conditions and processes needed. It focuses in particular on the integration of local and expert assessments before delivery to the policy and planning decision-making process, rather than in the decision-making process itself (as crudely depicted in figure 1).

[1] Biodiversity and Livelihoods, Climate Change, Drylands, Environmental Economics (EEP), Forestry and Land Use (FLU), Sustainable Agriculture and Rural Livelihoods (SARLs), Human Settlements, and Strategies, Planning and Assessment (SPA).

[2] Steve Bass, Michel Pimbert and other members of IIED's Natural Resources Group provided inputs for defining the focus of the review. Krystyna Swiderska, Sonja Vermeulen and Bansuri Taneja were responsible for overall coordination of the process.

Figure 1



In practice, information may equally be channelled in parallel from expert and local peoples' assessments, while local peoples' assessments can incorporate elements of technical or scientific assessment. Furthermore, policy is not just made at higher levels as the figure suggests, and the integration of local values cannot be divorced from governance issues and politics even at the assessment stage.

1.2. Why integrate local values in natural resource assessments?

The re-orientation of rural development and natural resource strategies towards poverty reduction and sustainable development objectives in recent years requires much greater emphasis on the priorities of poor and marginalized communities. Decisions about natural resource use and management at policy and planning level have traditionally been guided by technical, scientific and economic assessments of natural resource potentials, priorities and impacts, without considering the priorities and perspectives of local resource managers. This has tended to be the case whether in the context of global environmental conventions, land use planning or sectoral interventions in forestry, agriculture etc.

Nevertheless, some innovative approaches for assessing and integrating local people's natural resource related values and priorities have emerged in recent years, which offer important ways forward. These approaches have shown that local people often have more sophisticated technical knowledge and understanding about natural resources than external 'experts'; significant dependence on natural resources even in areas thought to be of little local value; and very different perspectives, priorities and values relating to natural resources than external assessors and policy makers. These differences not only reflect differences in local and national economic priorities, but also in culture, beliefs and worldviews.

With many countries increasingly opening up to Foreign Direct Investment and moving towards land and natural resource privatisation, it will be critical to ensure that local people's use and dependence on natural resources is assessed, so that impacts on livelihoods can be fully understood and taken into account in decision-making. Similarly, approaches for implementing global environmental concerns need to balance global priorities with those of local communities to avoid imposing costs on the poor (eg. from restricted access to resources) and maximise potential livelihood opportunities. Furthermore, diverse local cultures often have valuable knowledge to offer for the development of sustainable and equitable natural resource management strategies in key sectors.

1.3. What do we mean by 'integrating local values'?

Natural resource assessment tools typically include surveys, maps, inventories, computer modelling (eg. Geographical Information Systems), and economic studies. Economic and social assessments often involve household surveys, where local people act as the source of information for externally driven assessments. The 1980s and 90s saw a considerable increase in the use of participatory approaches for NR appraisal and project design (especially by NGOs), which emphasise active community involvement and the importance of local knowledge. Local communities also regularly carry out their own natural resource assessments for community use, but there is very little documentation of such assessments.

Conventional assessments, such as household surveys, which use a predefined set of questions to serve a predefined need, are essentially extractive and unlikely to reveal any meaningful information about the value of natural resources to local people. They normally focus on marketed products and often ignore the range of other natural resource values – including subsistence, indirect use, cultural and spiritual values.

Assessing local people's values requires community participation in decision-making for framing the assessment and formulating the conclusions. It implies some degree of participatory or group work to enable communities to make collective decisions, rather than relying only on individual informants. The integration of local people's and 'expert' assessments also requires community participation in defining the overall conclusions to be presented on the basis of both assessments, and negotiation where information or interests conflict.

It became evident whilst compiling this report that there are different perceptions of what it means to integrate local people's values in NR assessment. Some people would argue that any assessment that is initiated externally is essentially extractive, and that, to really assess local people's values, the impetus for the assessment needs to come from the community and the assessment should be conducted entirely by the community (it can then be used to contest external assessments/decisions).

It might therefore be useful to consider the following typology or hierarchy of integration of local values in natural resource assessment:

1. Local people act as informants for an externally framed and led assessment.
2. Local people participate in framing the assessment, but not in defining the conclusions, or in subsequent decision-making.
3. Local people participate in framing the assessment, analysing the findings and determining priorities, to feed into external decisions.
4. Local people participate in framing the assessment, in determining priorities and in subsequent external decisions relating to the assessment.
5. Local people initiate, frame and conduct the assessment to inform their own natural resource decisions, as well as external NR assessments and decisions.

2. INTEGRATION OF LOCAL VALUES IN KEY SECTORS AND TOOLS

2.1 Economic Assessment[3]

Economic and market studies are amongst the most commonly used assessments in decision-making about natural resources. Cost/Benefit Analysis (CBA) is used to assess alternative land use and management options for a particular area, while macro-economic data often informs the design of policies and interventions for a particular sector or product (eg. to improve marketed production). Available macro-level statistics tend to focus on natural resources of national economic value (eg. timber), rather than those of particular importance for local people (eg. Non-Timber Forest Products - NTFPs), except in some cases where these are also of national economic importance.

Much economic assessment of natural resources has involved an external expert asking local people questions, for example about how much produce they sell, and then deciding what is important. Often the focus is on marketed products and ignores the range of non-market values associated with natural resources. For this reason economic assessment often fails to yield any meaningful information about local people's values and priorities.

However, most economic assessment methods can in theory be adapted to better reflect local people's values by adding a 'local' step to the process, although different techniques have varying degrees of potential. There are also some types of value associated with resources, eg. cultural and spiritual values, that do not lend themselves easily to monetary valuation. The key differences from conventional approaches lies in *what* is assessed; how results are interpreted; and how local people are involved in the assessment.

What is assessed

While conventional economic assessment might concentrate on estimating the commercial value of timber in an area of land, or the returns from converting forest to other land uses such as agriculture, a local-level assessment would use valuation techniques to assess the value of the resource to local people. Such an approach would typically examine direct use values for local people of timber and NTFPs. A number of valuation studies also attempt to assess indirect use values ie. environmental functions and the more intangible non-use values (existence and bequest values). Most economic valuation studies of non-use values have, however, concentrated on estimating existence values among those who do not live near the area being assessed but who nevertheless wish to see it preserved. Local cultural and religious values are generally acknowledged to be less amenable to valuation in monetary terms although some studies have attempted to do this. Even though monetary valuation of non-use values is challenging and for many can lack credibility, economic approaches can still be useful for highlighting trade-offs between different land use and management options.

[3] This section is based on inputs from Camille Bann, Consultant to IIED's Environmental Economics Programme (EEP), Maryanne Grieg-Gran, EEP, and Duncan Macqueen, FLU.

Economic estimates of non-marketed goods and services have been instrumental in demonstrating the economic benefits of sustainable natural resource management compared to other management options. In the Ratanakiri province of northeast Cambodia, for example, where forests are coming under pressure for timber, plantations etc, a study was undertaken to compare the economic benefits of commercial timber versus sustainable use of the forest by ethnic communities[4].

The study involved direct use household surveys in five villages, a participatory process to design the survey (community meetings, focus group meetings with key villagers/women and resource mapping), and a forest inventory. It focused on NTFPs of local value (fuelwood, bamboo, rattan, ralva nests, wildlife and medicines), and found that a high proportion of species are used, with dependence of 60-100% per household as a proportion of income. Given this high dependence, alternative land use could bring serious local poverty issues, unless benefits accrue to those who depend on forest products. This and similar studies show that direct use surveys can reveal significant information about local values and perspectives, as well as providing data for economic analysis.

How results are interpreted

The CBA framework identifies the 'best' land use or management strategy based on economic efficiency – ie. net economic returns. The criterion is that those who gain from the strategy must be able in theory to compensate the losers and still be better off. But this criterion is often not used in practice, nor is there a breakdown of the winners and losers. Stakeholder and distributional analysis (using direct surveys, as outlined above, or social assessments), is essential to understand the impacts of alternative land uses on different stakeholders, so that appropriate compensation can be defined. It is rare that such analysis is carried out with the result that if compensation is offered at all, it is usually determined on an arbitrary basis. In Ratanakiri, for example, local communities are being offered a one off payment of $36 per hectare, whereas the lower estimate for NTFP value alone found in the local valuation study is considerably higher, at $208 per hectare per year.

How local people are involved in the assessment

Many economic valuation techniques are survey based (eg. contingent valuation, market price valuation and surrogate markets/travel cost method), involving the application of questionnaires to a sample of households. The sampling approach enables generation of quantitative information which can be extrapolated to the wider population. Surveys are often criticised for being externally driven and designed, without much grounding in community realities. Some survey-based methods, such as contingent valuation or contingent ranking, can be used to assess cultural and spiritual values by eliciting estimates of willingness to pay. However, because it is difficult to estimate such non-use values, economic surveys tend to predispose the assessment to values that can be easily quantified - hence, cultural and spiritual values are likely to receive less emphasis than local people might assign.

Much depends on how survey methods are applied and the extent to which local people are involved in the design of the survey. Participatory methods are often

[4] Bann, C. (1997). An economic analysis of tropical forest land use options, Ratanakiri province, Cambodia. The economy and environment program for Southeast Asia.

presented as an alternative to surveys to allow communities to define their own approach. However, it is increasingly recognised that a combination of these approaches can be useful.

In IIED's Hidden Harvest project, which set out to assess the role of wild resources in local livelihoods, the methodology was created by combining economic principles and methods with those related to Participatory Rural Appraisal (PRA)[5]. The approach emphasizes community participation throughout the valuation process – from defining the process to analysing the results and identifying conclusions. The external 'experts' act as facilitators to assist valuation by the community. The idea is to enable the community to conduct its own CBA, based on its assessment of the value of different resources and land use options, so that it can then challenge external natural resource assessments and policy decisions that could adversely affect it[6].

The Hidden Harvest project involved a number of case studies in areas where the existing use of wild resources is threatened in some way by external developments. The project arose because, in the early 1990s, conventional agriculture and forestry research focused on major commodity crops and paid little attention to the role of wild resources in community livelihoods. Little was known about their economic value and how to assess it. The project demonstrated that areas of land thought to be of little value or unused do in fact have significant economic and non-use value for local people. It also identified the need to make the use and findings of such valuation methods more locally relevant, so that they are of more direct use to local people in defence of their access and use rights to wild resources.

In the Hidden Harvest approach, economic and participatory methods are used in combination to answer particular questions about the importance of wild resources to local livelihoods (eg. what is their marketed value; their indirect and non-use value etc). Participatory methods, such as group discussions, resource mapping and ranking and scoring of resources/options, help to generate the information needed for economic valuation, including vital information on seasonal variation in resource use and socially differentiated use and value. They can also provide more qualitative information on non-use values by showing how the community ranks different types of value or environmental function. Both approaches build on the information generated by the other to create a more comprehensive picture of resource use and value[7]. This methodological merger forms a middle ground between costly and lengthy resource assessments, on the one hand, and making assumptions about or ignoring local resources, on the other[8]. However, combining the two approaches can be complex in practice as they are based on very different principles – particularly those related to norms of trustworthiness of data.

[5] PRA provides an approach for natural resource appraisal which recognises the importance of local people's understanding of their environment. It incorporates a range of flexible and adaptive interviewing and diagramming techniques.

[6] Within the scope of the Hidden Harvest project, it was not possible to assess the value of alternative land uses, as required for CBA.

[7] Irene Guijt, Fiona Hinchcliffe and Mary Melnyk (1995). The Hidden Harvest. The value of wild resources in agricultural systems. A summary. IIED SARLs and EEP.

[8] Maryanne Grieg-Gran and Irene Guijt (1998). Local perspectives on forest values in Papua New Guinea: the scope for participatory methods.

If local resource values are required to inform policy-making at regional or national level, then statistical rigour is likely to be emphasised more than local understanding of resource use and contribution to the research process. However, participatory methods can lay the groundwork for other methods, providing the basic information about the community necessary for research design. They also provide a means for cross-checking of research findings and ground-truthing. Their strength in comparison to more conventional methods is that they can permit more community involvement in the discussion of research priorities, the formulation and challenging of assumptions and the interpretation of findings. For this involvement to be effective, participatory methods for assessing NR values need to be applied on an iterative basis to allow for community feedback and subsequent reformulation.

If the aim of the local-level valuation is to inform decision-making by community members, then participatory methods can be critical for stimulating debate about resource values. The resulting values may not meet standards of statistical rigour or may be more qualitative in nature, but they take on meaning for community members because they have emerged from local discussions. Initial estimates need to be presented to the community, then modified and worked through again with the community. Ideally, the values generated should also feed into national policy debates on NRM, but this challenge proved elusive in the Hidden Harvest project. It would imply a more comprehensive and rigorous local valuation process, with iterative cycles of community validation, and the findings would need to be channelled into relevant policy forums. Both processes would require skilled facilitation and considerable resources, but this could be a worthwhile way of bringing local perspectives into relevant policy forums.

Conclusions

The potential to integrate local values in economic assessment exists, at least for direct use values that are relatively easy to quantify in economic terms. The main problems are resource and time constraints to do the extra local assessment and stakeholder analysis. Undertaking robust valuation exercises is not cheap, particularly where surveys are involved. Combining economic valuation with participatory approaches also requires considerable resources in terms of facilitation and community time.

However, even where local assessments are conducted, they rarely define the course of action, particularly in low income countries where there are strong vested interests. In the case of Ratanakiri, the Environment Ministry was very supportive of the study, but political priorities were elsewhere and the Ministry was not powerful enough to influence the decision. Nevertheless, each local level valuation can be useful to demonstrate the dependence of communities on natural resources and highlight the potential impacts of certain land use decisions on their livelihoods.

While economic assessment of local natural resource values may be necessary for policy makers, and for communities to defend their natural resource rights, some people would argue that, to effectively assess local values, the approach should be entirely defined by the community, rather than based on an economic assessment framework. In other words, a locally credible approach should be used, and the findings should then be presented in ways which are nationally and internationally credible, without necessarily using an economic framework.

The Sustainable Livelihoods framework could provide the basis for developing an alternative approach to economic valuation. To determine how different development options will affect different capital assets (social, financial, human, physical and natural), and hence which option will be most effective, the capital assets need to be quantified to allow comparison between them. Criteria and indicators could be used to score the level of each capital asset - for instance, from unsustainable (0), to sustainable (10), to abundant (20)[9]. A similar scoring system could be used to assess the different values associated with natural resources, and allow comparison between them. Cultural values would fall under 'social capital'.

2.2 Biodiversity Assessment[10]

Biodiversity is so all-encompassing (the variety and variability of genes, species and ecosystems) that it is impossible to measure. Assessments therefore have to select small sub-sections of biodiversity, leaving them particularly open to value-based judgements in determining what gets measured. Traditionally, the biodiversity conservation agenda has been guided by scientific studies, and technical bodies such as the Biodiversity Convention (CBD)'s Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA). SBSTTA's functions include providing assessments of the status of biological diversity and assessments of the types of measures taken in accordance with the CBD.

Scientific assessments focus on global values (indirect, non-use, deep ecology), are quantitative and expensive, and use available rather than ideal data sets. But there are some very 'neat' tools, which are rigorous, accurate and easy to communicate. Policy driven assessments conducted by countries in response to the CBD (eg. biodiversity inventories) rarely have a specific purpose, other than fulfilling the CBD's requirements. Some donors are committed to addressing local values in biodiversity assessment but lack understanding of how this can be operationalised. Community assessments are utility and species based but difficult to extrapolate/scale up to policy level because they are conducted at such local level. Facets such as seasonality emerge – eg. a high dependence on biodiversity during drought.

The most energetically promoted means of assessing biodiversity are those of wealthy conservation lobbies, based on non-use values. This is not to say that poor people would decline to support non-use values, but the issue is that their views and values are shamefully absent from prevailing national and international approaches to biodiversity assessment and management[11]. For example, current CBD work to develop biodiversity indicators is dominated by a focus on global values.

Although biodiversity policy has started to become more people-centred in recent years, large and influential conservation NGOs are helping to maintain the emphasis on global values by focusing on the protection of 'hotspots' of endemic/threatened species. This approach can conflict with local peoples' values if access to natural resources is restricted by protected areas. In some countries, the science based approach has historically served the interests of a small elite, who seized control of

[9] Duncan Macqueen (2001). Measurement malaise – is the SL approach inoperable? (Draft).
[10] This section is partly based on inputs from Sonja Vermeulen (Forestry and Land Use Programme)
[11] Sonja Vermeulen and Izabella Koziell. (2002). Integrating global and local values. A review of biodiversity assessment.

land to establish protected areas and profited from the resources (eg. game hunting in South Africa).

While it is now generally accepted that conservation planning should account for human presence, there are sometimes limiting notions amongst the conservation community regarding the role of local communities. Some major elements of protected area management, such as economic incentives and development interventions, seem to maintain a largely passive role for communities. Other management options, such as monitoring, patrolling and designation of core areas, are largely seen as the responsibility of protected area staff, outside the framework of participation. Reluctance to fully engage communities is often underpinned by the assumption that villagers are a threat to conservation[12].

There are, however, examples of innovative approaches that put local people at the centre of biodiversity assessment. In India, NGOs have worked in several states to facilitate community initiatives to record biodiversity and its uses in Peoples' Biodiversity Registers (the State of Kerala has included PBRs in its five year plan). This fairly extensive recording of local peoples' biodiversity values, coupled with the development of local biodiversity action plans under India's highly decentralised and participatory National Biodiversity Strategy and Action Plan process, should help to bring wider recognition of local values. Some of the NGOs involved in developing local biodiversity action plans intend to present them to local authorities for formal adoption as part of the national biodiversity plan.

The nature of the assessment and who benefits is in the choice of data. Biologists often look at a particular species they are interested in such as birds, but these are not necessarily indicative of levels of other species, or indeed of value to all people (for farmers in West Africa, birds are pests). Assessments should disaggregate the different biodiversity values to different groups, address a specific purpose, and use different indicators depending on the purpose (rather than general indices).

Measures of local biodiversity values can be combined with national or global biodiversity values using methods for integrating multiple measures. In the categorisation method, different criteria are combined to give an overall value or categorisation. For example, the categorisation of hotspots combines criteria for endemism and threat. A local value, such as the contribution to food security, could be substituted or added. The categorisation method is commonly used for combining multiple global conservation values, but has not been widely applied for co-assessing global and local values. Other methods include the equation method, where different measures are weighted according to their importance and combined into a single index; and the graph method, which plots out indices of different values separately on opposite axes, and hence keeps the trade-offs explicit.

However, without consensus among stakeholders regarding how measures should be derived, an index of biodiversity will always be questioned. A principles-based approach, using a set of principles which are agreed by a wide group of stakeholders but which allow local flexibility, may be well suited to biodiversity assessments

[12] Robert Steinmetz. (2000). Ecological surveys, monitoring and the involvement of local people in protected areas of Lao P.D.R. Evaluating Eden Series. Discussion Paper No.13.

which incorporate both global and local values. Principles provide the fundamental questions that an assessment needs to answer, which is a good starting point for choosing what to measure.

The real constraint to integrating local peoples' values in biodiversity assessment is not technical, but has to do with governance – giving people the space to participate in decision-making about an assessment and negotiate with other stakeholders when values differ or conflict. The CBD's ecosystem approach provides an opportunity for making the case, as it emphasises the need for mechanisms to facilitate local peoples' involvement in resource management.

2.3 Climate Change Assessment[13]

In the climate change arena, policy has been predominantly informed by scientific and technical experts, notably through the Intergovernmental Panel on Climate Change (IPCC), whose periodic assessments led to the negotiation of the UN Framework Convention on Climate Change, and continue to inform the annual Conference of the Parties. At national level, assessments are required by the Convention to record gas emissions and develop mitigation strategies for reducing emissions. In addition, countries are required to assess potential impacts of climate change and vulnerability, as the basis for developing National Adaptation Programmes of Action (NAPAs) for coping with adverse impacts.

While there may be little scope or need for local people to contribute to emissions inventories, local peoples' assessments and knowledge about the physical environment are needed to adequately assess vulnerability (eg. to identify the most vulnerable regions and communities), and, even more so, to develop adaptation strategies which build on existing capacity to deal with climate related stress. So far, there has been little integration of local assessments in the work of the IPCC or the development of NAPAs, although some work to gather local peoples' perspectives has begun, and the need to do so is increasingly recognised by experts and policy makers as attention shifts from mitigation to adaptation activities. Indeed, NAPA guidelines provide for a combination of top-down and bottom-up analytical approaches. What is proposed, and being conducted, cannot however be described as 'participatory' – local people are largely considered as sources of information rather than determinants of priorities.

Understanding local values and priorities becomes particularly important in land use decisions to mitigate climate change under the Clean Development Mechanism (CDM), where, for example large monoculture plantations or protected areas promoted as carbon sinks may not be the best option for the rural poor[14]. The CDM has two main goals: to allow developed countries to achieve part of their emission reduction obligations through emission reducing or mitigating projects in developing countries; and to assist developing countries which host CDM projects to achieve sustainable development. CDM projects must be in line with national sustainable

[13] This section is largely based on inputs from Saleem Huq and Hannah Reid (Climate Change Programme)

[14] Stephen Bass et al. (2000). Rural livelihoods and carbon management. IIED natural resource issues paper.

development objectives[15]. Thus a project which does not address the needs of communities would meet fewer of the CDM requirements. However, sustainable development criteria for CDM projects are still being developed, and it appears that all those proposed to date have been top down.

Overall, the climate change debate is still very science dominated and has only recently started to move into the development arena. As with biodiversity, conflicts between global priorities and those of local people will inevitably become more pronounced as activities come down to local level and livelihood implications emerge. There are at present few national 'development oriented' organisations dealing with climate change issues, although at international level the NGO lobby group Climate Action Network includes both environmental and development-oriented NGOs.

2.4 Rural Planning[16]

Although extensive natural resource surveys have been carried out, surprisingly little of this information is actually used in rural planning and policy making. Formal natural resource assessments usually involve technical surveys, for example, topographic, hydrological, geological, soil and land use surveys, forest inventories etc. Yet such surveys are usually divorced from policy making and planning at any level. This is partly because the data tends not to be available at the right scale, or in a form which is meaningful for rural planners and policy makers. It is often gathered without a specific purpose in mind, has rarely been well maintained and tends not to be very reliable.

Local communities often have considerable knowledge about natural resources, including ecological conditions, economic and social aspects of resource use, and associated cultural values. Yet indigenous and local knowledge of the land has long been ignored by technical specialists and policy makers alike. Despite the fairly widespread use of participatory approaches in NGO and donor projects, there has been little progress in their institutionalisation in formal assessment and planning processes, and in combining them with natural science based data. The links between these activities remain dysfunctional - they are undertaken by separate professions with very different cultures and there is no common appreciation of their systems of value and modes of operation.

Social scientists have traditionally used techniques such as questionnaires to gather information about natural resource management, which allow large numbers of people to be surveyed and the use of statistics to determine reliability. However, such methods are not good at revealing local complexities – they remove much of the contextual grounds for understanding data, assume the researcher and interviewee have the same values, and cultural and other factors affect the type of response. Multiple perspectives – so essential for understanding land resources and land use – are lost. Participatory approaches, such as maps and transects to locate NRs, matrix scoring and ranking techniques to assess their value, and seasonal calendars to assess

[15] Louise Aukland et al. (2002). Laying the foundations for clean development: preparing the land use sector. A quick guide to the Clean Development Mechanism. IIED natural resource issues paper.
[16] This section is largely based on: Dalal-Clayton B., Dent D. and Dubois O. (2003). 'Rural planning in developing countries: Supporting natural resource management and sustainable livelihoods'.

changes in use/importance over time, are invaluable for understanding the myriad perspectives of natural resource use at local level.

However, it is often difficult to quantify this context specific information, which emphasises relative rather than absolute values or measurement. As a result, participatory methods are often viewed as informal and qualitative and hence considered to yield information of poorer quality. People still ask 'but how do they compare with real data?' Rigour or accuracy is traditionally linked with measurement, statistical tests and replicability. However, criteria of rigour can be applied to participatory approaches to show that technically the information is just as good as any other method. Good facilitation is the key to generating sound information through participatory methods.

Participatory approaches provide information which is very specific to the local context, which means it is often too detailed for policy makers and not analysed in terms of policy implications. Nevertheless, policy analysis can be enriched by presenting the findings of participatory approaches as case studies.

The emphasis on decentralisation in recent years provides potential opportunities for strengthening local peoples' participation in natural resource assessment and decision-making. However, in many countries decentralisation has not been effectively translated into practice and local community priorities are still not taken into account in rural planning, except in the context of NGO or donor funded projects which incorporate participatory planning approaches. Often, political interests and 'hidden institutions' (vested interests, patronage etc) continue to have far greater influence over rural planning decisions than any kind of natural resource information, whether expert or local, particularly where natural resources have high commercial value and foreign interest (eg. forests in parts of Central Africa).

In countries where decentralisation policy has been genuinely pursued in practice, such as Senegal and Mali and parts of Latin America, there are examples where institutional reform has enabled local people to participate in rural planning decisions (eg. in small municipalities in Bolivia). In some cases, governments have experimented with pilot projects of decentralisation, handing over control over natural resource management (including assessment) to local communities. Such experimentation is more common in resource poor areas, such as the Takieta forest in Niger (see section 2.6 on Assessment in Dryland Areas).

Integrating local peoples values and priorities in formal natural resource surveys will require a change in the attitudes of experts and policy makers and a recognition that local people often have valuable information to offer. Professional specialisation means that technical experts rarely have the kinds of skills needed both to conduct scientific surveys and work with local people to assess their priorities and values.

Even where local peoples' priorities are assessed, unless there are representative government structures in rural areas that enable local people to participate in decision-making, there is no guarantee that local priorities will be taken into account in the subsequent decision-making process. Institutional mechanisms are therefore needed to ensure that community interests are effectively represented in decision-making fora (eg. local authorities) and enable communities to negotiate over competing claims and

priorities. Efforts to enhance community bargaining power and build confidence between different groups may be required for effective negotiation. By establishing their own organisations, associations or cooperatives, local people can begin to strengthen their political voice.

2.5 Participatory Monitoring and Evaluation[17] (PM&E)

PM&E assesses the impacts of projects and interventions with the participation of local people, providing a tool for local people's priorities and values to be integrated in the assessment[18]. Local people participate in the design of the assessment (defining the objectives, selecting indicators), and in the gathering and analysis of data. PM&E emerged because conventional monitoring and evaluation can lead to an incomplete understanding of a situation, and is entirely extractive. Participatory approaches allow unexpected outcomes and cause-effect relationships to be identified, which might not emerge using predetermined indicators, and, although they are still essentially extractive in nature, they seek to maximise learning for the benefit of local people.

PM&E can be used as an assessment approach in its own right, combined with conventional monitoring as a parallel exercise or used for specific steps, eg. to describe the context and help to identify relevant monitoring questions; to verify the findings from conventional approaches or provide background information to assist with analysis. Similarly, conventional monitoring can be used to help outline the framework for PM&E.

PM&E involves a process of discussion and negotiation to design the approach: to identify assessment objectives, indicators and methods, which serve both external and community needs as far as possible, and agree on the level of community participation at each stage of the assessment. Understanding the end uses and end-users of the exercise is important to ensure the information gathered serves a purpose. There may be an issue of reconciling different world-views – eg. external assessors may have a different understanding of what needs to be assessed and how. Indicators need to be accurate, but also resonate and be meaningful for local people. For real synergy which benefits both parties, there may be a need for intermediaries who can communicate between the different approaches. Furthermore, participation may not be limited to the community – when end-users such as project staff are involved in the assessment, they are more likely to act upon the results.

While participation means giving local people the freedom to choose their own parameters and methods of measurement, flexibility is often constrained by the time and standardisation requirements of external organisations. However, there are examples where qualitative approaches which are not indicator based have been used, based on narratives of changes and the reasons for these, which allow the response to be largely determined by community perceptions and aspirations, rather than the needs of the external 'agency'. Qualitative data can be quantified in some cases, for example by using the area under cultivation rather than soil depth as an indicator of the success of soil conservation measures.

[17] This section is largely based on inputs from Bansuri Taneja (SARLs Programme)
[18] 'Monitoring' is the measurement of variables and processes over time, while 'evaluation' is the analysis of data gathered to judge the effectiveness of an intervention.

Methods for PM&E range from participatory tools such as mapping changes over time, or wealth ranking before and after an intervention, to innovative approaches such as logframe analysis adapted for community use, or merging GIS with social assessment. Participatory mapping can have various spin-offs: from enhanced community cohesion and understanding of resource rights, to making community rights visible to local authorities and companies. In some cases, community maps have been signed off by district officials thereby becoming semi-official documents which can stand up in a court of law.

PM&E is a useful tool for assessing and adjusting a project intervention and promoting local learning, while conventional monitoring is better for producing detailed scientific data at fine resolution, which might be needed to inform a wide range of decisions and assess broader trends. However, participatory assessment does not necessarily compromise accuracy or quality of information, as is sometimes assumed, and triangulation techniques using information from different groups/sources can be used to verify data. As with participatory planning, good facilitation, and a good relationship between the facilitator and the community, is critical to the quality of information generated.

It is difficult to scale up participatory data to higher levels (eg. regional or national) as the data is collected at very local level. Monitoring at higher levels or over larger areas can be achieved by having multiple assessment sessions at different levels of social organisation (household, community, municipality), so that representatives can carry information from lower to higher levels. The assessment may need to be tailored or particular information selected in order to be relevant at the policy level.

2.6 Assessment in Dryland Areas[19]

Natural resources in dryland areas are unstable, unpredictable and highly dispersed because of unpredictable rainfall – people never know exactly when and where they will need to go to find resources. This unpredictability has been by-passed by many planning tools, which either try to control the problem or ignore it. For example, the carrying capacity tool is used to determine the maximum livestock or wildlife population that a habitat or ecosystem can support. Promoted by the World Bank, the concept has been applied to pastoral systems in Africa and has provided a planning and management tool which has formed the basis of many proposed development interventions. It was, however, developed in North America, where conditions are fairly stable, for plant ecosystems that are limited by grazing rather than rainfall (based on plant succession theory). It is also a very expensive tool, requiring calculations of biomass to determine how many animals an area can support (this is sometimes done by computer modelling).

In the Ngorongoro Reserve in Tanzania, the carrying capacity tool was used to show that there were too many animals and people in the area and to try to justify the eviction of people. For pastoral communities, the concept of being allowed to keep x number of 'tropical livestock units' (eg. 3.5) in a given area is somewhat bizarre. They view carrying capacity differently – as opportunistic carrying capacity, based on high mobility according to rainfall, the use of mixed herds, social relations and

[19] This section is largely based on inputs from Ced Hesse and Camilla Toulmin (Drylands Programme)

negotiation to access resources. A number of papers have been written about how inappropriate the tool is, but its use continues without modification, often as a means to serve political or vested interests.

Famine early warning assessments are conducted in a similar way – they are based on macro-level data about simple access to food. Famine risk is perceived very differently by local people, who have more complex socially based models for ensuring food security.

The study of dryland ecology is relatively new and policy makers still tend to have a poor understanding of dryland ecosystems – eg. the desertification control paradigm (deserts change frontiers naturally and are not necessarily are advancing), and the rain/mobility issue described above. In some cases, there may also be a reluctance to understand or accept certain concepts for political reasons. Furthermore, the need to be flexible and adaptive is very unpalatable for government planners and regulators. For pastoralists, local rules governing natural resource management are based on relationships of reciprocity and flexibility. There is no sectoral division of land use – the same piece of land often can be used for a variety of uses at different times of the year (eg. for cultivation in the rainy season, as pasture in the dry season).

The large size of many dryland countries means that logistics are an important constraint to participation of poor rural communities in natural resource assessment and planning processes. At the same time, the perceived low value of natural resources in general means that governments tend not to see the need for natural resource management – they would usually prefer to use the land for other forms of development (eg. mining, commercial farming, wildlife conservation).

Many countries in West Africa are pursuing policies of decentralisation on paper, but have yet to introduce the legal and institutional forms of support that encourage and legitimise decentralised management systems. Countries tend to have inflexible, centralised and comprehensive legal frameworks, which effectively keep control of decisions in the same hands. Decentralisation may be on one track, while sectoral policy frameworks remain unchanged. In Mali and Senegal, however, more concerted efforts are being made to put decentralisation policies into practice.

Where there is a real movement towards decentralisation, the level of local participation in natural resource management is improving, although there is still some way to go in getting those responsible for decentralisation to change their attitudes to local people and recognise that they have useful knowledge. There has been some interesting experimentation with decentralisation, for example in the Takieta Forest in Niger, where management of natural resources has been transferred to local communities as a government pilot scheme to inform national policy[20]. Local communities conducted their own natural resource assessment and developed local management systems and institutions.

The transition from public to community based management was facilitated by an external project, which helped to build confidence amongst communities that they

[20] Gill and Kees Vogt (2000). Shared management of common property resources. A case study from Takieta, Niger. Securing the Commons No.2.

were really being given full management responsibility and rights. The project also provided guidance for local resource assessment, for example on mapping and visual representation techniques, while allowing communities the freedom and time to adapt these (eg. choosing their own codes and orientation methods). The local assessment identified 22 user groups each exploiting the forest in a unique way. It came as a surprise to many (particularly local authorities and government services) that such a 'poor resource' could have so many users and it definitely showed the advantage of 'users' identifying 'users'.

The ability of local people to influence natural resource decisions can also be strengthened by developing tools that allow them to take power where it is offered. For example, in Senegal, local people were trained in participatory planning methods, such as natural resource mapping, in their local languages, in order that they might influence land use planning processes at the level of local government[21]. Although a useful tool for planning was designed and tested (LOHU), it hasn't yet contributed in any significant way to ensuring that local people's concerns are integrated into the more formal planning process. The main problem is that there has been little uptake of the planning tool because local people lack understanding of the government planning process it seeks to influence, and hence do not see its potential to make a difference. An additional capacity building process may therefore be required. Furthermore, there is always the risk that community planning processes will be hijacked by local elites; and that community maps will be rejected or not considered sufficiently 'technical' by local government (eg. if they do not have a scale).

In practice, however, there is little formal land use planning and natural resource assessment for policy or planning in West Africa. Sectoral plans – such as national forest action plans – are largely a paper exercise conducted in response to donor requirements, and tend not to be very systematic. Furthermore, improving natural resource management in West Africa is more an institutional than a technical challenge. Feedback from local people to experts and policy makers is most needed on institutions and laws to make decentralisation work better. In the Delta region of Mali, a network of organisations for decentralised natural resource management (NRM) asked the government to assist with drafting legislation on pastoral management. The government has listened to the suggestions of the group, although the extent to which these have been taken on board is unclear.

Improving the institutional framework is itself important for enhancing local peoples' involvement in natural resource assessment. When local people are just consulted in processes which are essentially top-down, as is often the case, they tend to lose confidence in the government and technical experts and motivation to get involved in future processes.

[21] Mamadou Bara Gueye (IIED) et Mamadou Amadou LY (ARED). (1996). LOHU: MARP adaptée en langue pulaar.

2.7 Agriculture Assessment[22]

In the agriculture sector, Poverty Reduction Strategy Papers (PRSPs) are a key mechanism at national level where local peoples' and expert assessments are being sought in parallel and integrated in the policy process. However, in many countries, the feeling amongst civil society is that PRSPs have done little to incorporate recommendations which are new or progressive. There has been some disillusionment with the extent to which the World Bank's major study 'Voices of the Poor' has been taken into account.

Intervention decisions in the agriculture sector are often based on economic data on marketed production and trade, and information from scientific research stations. For example, the government extension programme to revive cashew nut production in Mozambique does not take into account the constraints which farmers face in buying new varieties, pruning and replacing old trees. This top-down approach to defining the intervention provides only a basic understanding of the problem and is usually less effective. Yet the general perspective of the government is that local people do not know enough to merit consultation and are risk averse; while donors tend to be more concerned with linking producers to the private sector, than conducting local assessments. A research project has therefore been initiated by IIED to examine local peoples' perspectives on the constraints faced and priorities to be addressed, and provide feedback to the national programme[23]. The example of the cashew sector also highlights the issue of gender in natural resource assessment – in a major World Bank study, heads of households were interviewed rather than women who do most of the on-farm work and much of the marketing, thus providing only a partial picture of the situation.

Some of the tools promoted by the World Bank are household surveys, such as socio-economic and living standard surveys. Although local people are the source of information, such surveys do not necessarily reflect their values and priorities since they are framed and analysed externally. Participatory approaches, designed to elicit local peoples' perspectives and priorities, have been used quite extensively by some actors, particularly NGOs and donors, and have been widely adapted for different sectors and purposes. However, it appears that they have not become embedded in routine government assessments in many countries. Participatory approaches are likely to be more common in countries with a well established NGO sector, high level of donor intervention, and democratic and inclusive government. They also tend to be more widely used in project planning than for monitoring and evaluation. But there is often a lack of communication between quantitative and qualitative (eg. participatory) assessments, and quantitative (eg. economic) assessments carry more weight with policy makers.

There is evidence that the agricultural research community is moving towards incorporating qualitative approaches in research impact assessment, thus providing a mechanism to improve feedback on local peoples' priorities into the research agenda. For example, the International Food Policy Research Institute (IFPRI) has taken steps

[22] This section is partly based on inputs from Nazneen Kanji (SARLs Programme)
[23] Carin Vijfhuizen, Carla Braga, Luis Artur and Nazneen Kanji (2003). Gender, Markets and Livelihoods in the Context of Globalisation. A study of the cashew nut sector in Mozambique.

to integrate qualitative and quantitative studies in assessing the policy impact of its research.

A recent paper by CIFOR (Centre for International Forestry Research) and others[24] points out that, within the international research centres of the Consultative Group on International Agricultural Research (CGIAR), impact assessment has largely focused on germplasm adoption with relatively little attention to institutional impact, and almost none to Integrated Natural Resource Management (ie. the multiple aspects of NRM, including economic and socio-political aspects affecting local producers). The paper examines the rationale and methodologies for assessing the impacts of research on integrated NRM systems and for incorporating participatory approaches in the assessment. It argues that such a radical departure from conventional impact assessment is consistent with moves towards greater use of action research, greater participation and a stronger focus on poverty eradication.

The participatory component is part of a social learning process amongst stakeholders to enable adaptive management, which is likely to increase the effectiveness of NRM. Unlike conventional monitoring, it also allows unexpected outcomes to be identified. Systems models are used to determine 'what would happen anyway' and compare this with the situation found with the intervention. Such analysis can be conducted as a multi-stakeholder participatory process as there is now software which is highly accessible to local stakeholders. In the Landcare programme in Australia, extension groups involving a wide cross-section of rural people are using techniques such as GIS and aerial surveys to assess natural resources.

The research project 'Participatory Approaches to Veterinary Epidemiology' (PAVE), coordinated by IIED's Sustainable Agriculture and Rural Livelihoods Programme, investigates options for using participatory appraisal in veterinary epidemiology, focusing on animal health services in pastoral areas in Africa. The use of participatory techniques in the area of animal health is itself innovative. The project has adapted participatory methods (eg. ranking and scoring) to assess livestock problems, and examined how the quality of participatory data can be assessed using 1) scientific criteria and 2) participatory evaluation, and how the two approaches can be combined[25]. It has shown that local people have the same knowledge as that generated through scientific assessment.

In terms of the conditions and processes needed to enhance the integration of local and expert assessments, there are many parallels with the integration of local peoples' concerns in policy and planning decision-making processes. In both cases, mechanisms are needed to enable local people to voice their views and participate in decision-making, issues arise around who's worldview or priority counts, and processes of negotiation are needed when values and priorities diverge. Hence, approaches for deliberative and inclusive policy decision-making, such as citizen's juries used to assess policy options, could be adapted for use in decisions concerning NR assessment.

[24] Bruce Campbell et al (2001). Assessing the performance of natural resource systems. Conservation Ecology Volume 5, Issue 2.
[25] Nazneen Kanji and Laura Greenwood (2001). Participatory approaches to research and development in IIED: Learning from experience.

2.8 Forest Assessment[26]

Assessment of forestry natural resources occurs at different levels (international, national and local) and for different purposes (policy development, monitoring and conservation, land-use planning, commercial management, social and environmental impact assessments etc.). Since forests are often loosely understood to be 'areas in which trees occur' and since trees play such an integral part in both commercial, conservation and socio-culturally orientated systems, there are inevitable overlaps with the assessment tools described in other sections in this report. Nevertheless, there are some peculiarities to the forest sector which can be highlighted.

The forest sector has undergone a quite marked evolution over the last forty years and this is reflected in the assessment frameworks and tools employed. The predominant view of forests as primarily strategic economic resources (originating in the colonial needs for timber as early as the 1600s) led to the depletion of Northern resources, the origins of plantations and attempts to annex and manage tropical forests. The complexity of managing tropical forests for timber while ensuring the sustainability of those few commercial species amongst thousands of non-commercial species led to a raft of different inventory techniques. These were coupled with conventional economic assessments within business planning frameworks. Such techniques require high levels of mathematical competence and are not suited to local participation.

The rejection of an exclusively commercial model of forest use in countries such as India in the early 1920s reintroduced the idea that forests were indispensable in meeting the subsistence and entrepreneurial needs of local communities. This second 'social' dimension of forests led in the 1960s to the development of the role of forests in the attack on economic underdevelopment culminating in the 1978 World Forestry Congress in Jakarta on 'Forestry for People'. With such an emphasis the practioners of forestry adopted and adapted a suite of social science assessment methodologies for forest assessment (e.g. PRA etc). These are routinely used in all aspects of modern forest assessment. The best of these allow local peoples to shape decisions about the designation and management of different types of forest (from farm forests / agroforestry and common property resources to high forest management and watershed conservation). The worst examples of 'participatory assessment' simply legitimise the interventions of outsiders, and it is almost unheard of for local peoples' views to shape the structure (as opposed to content) of forest development assistance. Moreover, there has been a worrying increase in jargon in such assessment techniques, which is at times a function of researcher territoriality and career ambition rather than a genuine advance in the interests of local peoples.

At the turn of the millenium the International Labour Organisation began to promote in a concerted fashion the fact that forestry remains an important source of paid labour (often the only source) in isolated rural areas but that such employment is amongst the most dangerous and most abused of any profession. Recent criteria and indicators for labour standards and conditions in forestry have therefore been developed and promoted based on international conventions in the field.

[26] This section was written by Duncan Macqueen (Forestry and Land Use Progamme)

The 1972 Convention for the Protection of World Cultural and Natural Heritage introduced a third important dimension to contemporary forest resource assessment - the evaluation of cultural and biological diversity. The former is worth emphasising since it has since been largely eclipsed by the subsequent CBD and CITES. Yet 300 million indigenous peoples, while only 5% of the worlds population, represent 90% of the world's cultural diversity on whose lands (often forested lands) occur more than 80% of the worlds remaining biodiversity. The assessments of biodiversity described elsewhere have become a routine part of the arsenal of forestry assessment. Such assessments have underpinned the development of a variety of understandings of sustainable forest management (SFM). These in turn have spawned numerous certification systems (the best known of which is the Forest Stewardship Council - FSC) which rely on nationally defined criteria and indicators of the sustainability of forest practice on social, environmental and economic systems. Certification systems require some form of accredited assessment of natural resources and the social, environmental and economic impacts of commercial activities. Templates for the development of such criteria and indicators have been produced as assessment tools by a range of national and international agencies (perhaps the best known are the nine booklet set of CIFOR). Such templates and certification procedures require a certain degree of consultation with local people but are necessarily complex in order to ensure that adequate standards are set and met. The extent of local people's inputs to the development of such criteria and indicators varies.

The evaluation techniques required to assess the value sets of different forest cultures and empower them are still in their infancy. A Forestry and Land Use programme project has been reviewing such assessment tools. In Guyana it has also documented community visioning by indigenous Makushi to assess aspirations for their future and that of their natural resources and to measure outsiders' interventions against these. An attempt was made to translate findings into the terminology of the sustainable livelihoods framework so that they are meaningful to development actors. This work has highlighted some dilemmas, for example, how to present the real aspirations and values of indigenous people – such as cultural integrity - in terms understood by the systems that assess forests and communities in predefined boxes such as those of the sustainable livelihoods framework. The process of assessment can empower communities to defend their communal values and aspirations.

By the early 1990s a forth dimension to forestry was formalised under the 1993 Framework Convention on Climate Change (FCCC) and the 1997 Kyoto Protocol. The central part which forests were assumed to play in global climate control led to the rapid development of a host of techniques to assess carbon balances, sinks and flows. Moreover, an associated trading mechanism under the Clean Development Mechanism required a range of economic assessment and market mechanisms to ensure that carbon offsets could be secured in transient forest resources. These assessment tools are highly mathematical and not accessible to local peoples. Nevertheless, there has been considerable work on the mechanisms by which local communities might benefit from carbon payments - and once again, this has involved the development of community based assessment and accounting tools and protocols.

It is clear that a wide range of assessment tools are needed for the contemporary forester. Yet these assessment tools do not always carry weight at the different levels at which forestry is assessed. At the international level, the Tropical Forestry Action

Plan was heavily promoted from the 1980s onwards by the Banks and donor community with little regard for local concerns and with a strong economic and environmental assessment base (promoted by militant environmental NGOs alerted to the alarming pictures of rainforest fires). More recently the international emphasis has switched to the development implementation, monitoring and evaluation of national forestry programmes (nfps) under the direction of firstly the Intergovernmental Panel on Forests (IPF), its successor the Intergovernmental Forum on Forests (IFF) and now the United Nations Forum on Forests (UNFF). These have varied but have used a more balanced selection of resource assessment techniques to underpin negotiated solutions to forest-dependent issues. Also worthy of mention is the International Tropical Timber Organisation (ITTO) which provides an international forum for the assessment and discussion of tropical timber stocks and trade.

At the national level such international frameworks led firstly to National Forestry Action Plans (NFAPs). But many NFAPs remained exercises on paper only lasting only as long as donors propped them up - they failed to catalyse the detailed actions expected of them. In general, this was because they were done quickly, often by foreign experts, and failed to engage with political and economic reality to show not only *what* needs to change, but also *how* it can change, and how such change can be sustained. Many one-off institutional reform approaches stimulated by such plans have left legacies of huge and unsustainable recurrent transaction costs. The current focus on nfps is potentially more bottom-up and orientated towards catalysing negotiated change, but if nfps are to succeed they need to avoid the mistakes of previous internationally driven calls for forest sector plans.

At the local level the general picture is one of marginalisation from the often-centralised decision making processes. The ideals of local engagement are often well intentioned, but usually expensive and therefore donor funded, sporadic and often superficial. The problem is not so much the lack of available assessment tools but the political will or financial resources to apply them. Numerous donor supported nfp processes have attempted to institutionalise living processes of discussion around forests. Some of these have had a good deal of success. But with the prevailing mantra of individualism, acquisition, competition and growth, the prospects for redistributing decision making power to marginalized forest communities are slim - not absent, but slim.

2.9 Assessing Urban Environmental Hazards[27]

Although not focused on natural resources, experience with assessing urban environmental hazards, eg. disease carried in faeces, provides some useful insights on the challenges for making expert assessments more responsive to local peoples' values and priorities. Almost all the assessments used for policy and planning decisions in the urban water and sanitation sector are conducted by technical experts. In formal assessments of urban environmental hazards, attempts are often made to obtain (economic) valuations from local residents, but local residents are only rarely involved in framing the problems, identifying issues, or contributing their knowledge of local environments and risks.

[27] This section is based on inputs from David Satterthwaite and Gordon McGranahan

The quality of information in 'expert' assessments is often questionable. For example, professional judgements of what is 'improved' can be misleading – adding one latrine may be counted as an improvement, without considering issues of accessibility (eg. having to pass through a hostile neighbourhood) and quality (eg. being filthy to use, badly lit etc.). National statistical offices have been set up specifically to provide information for national policy makers and serve their needs, leaving them open to political interference. These information systems have not yet shifted to really address the needs of local people.

However, there are cases where community assessments conducted by local peoples' organisations are used by policy makers, who recognise that this is sometimes the only way to get useful detailed information. Local people have conducted their own detailed assessments for use in negotiation – they invest the time to do this because they realise that there is potential for change. This usually happens where local organisations have been formed (eg. around community credit and saving schemes), which allow communities to engage in political activity to influence decisions. In rural areas, communities are more dispersed and further removed from political processes and hence may be less able or inclined to federate for political activity.

As with natural resources, different approaches for assessing urban environmental problems facing low income households and communities are promoted by different actors. These range from contingent valuation, to household surveys, to participatory rapid assessment. Each technique can provide important and often complementary insights[28]. It may therefore be best to keep these tools separate rather than trying to integrate them into one assessment. Trying to force economic rigour onto participatory assessment, for example by combining it with contingent valuation, is likely to limit its potential to reflect local values and perspectives.

[28] McGranahan G.,Leitman J., Surjadi C. (1998). Policy and practice. Green grass and brown roots: Understanding environmental problems in deprived neighbourhoods. Journal of Environmental Planning and Management, 41(4).

3. CONCLUSIONS

There is a danger that valuation exercises focused on estimating global and national values will exclude local values and opinions and hence be ill informed as to the pros and cons of natural resource management options for local communities. However, the appropriate mix of local people's and expert assessments in any circumstance depends on the particular *purpose* and audience of the assessment. If the main purpose of an assessment is to serve community NRM needs, then communities should frame and conduct the assessment themselves. Where local people are the intended beneficiaries of an intervention, they should be actively involved in assessing the problem, defining the intervention and assessing its impact. However, where detailed technical or scientific data is required, and communities are not affected by decisions made on the basis of the data, it may not be necessary to engage local people in the assessment.

3.1 To what extent are local values integrated in natural resource assessments?

It is evident from this review that, overall, there is very little integration of local people's values in the prevailing technical assessments of natural resources used to inform policy and planning decisions. The use of participatory approaches is still largely confined to NGO and donor projects, rather than being part of routine NR assessments. Similarly, local valuation studies have tended to be confined to environmental NGOs and researchers, and government departments concerned with environment and indigenous peoples. However, recent years have seen increased emphasis on the use of local assessment tools by more 'mainstream' actors - international research institutes and government departments for forestry and agriculture (in some countries), often as a result of donor influence. The biodiversity and climate change conventions are also beginning to recognise the need for local people's assessments.

The findings can be summarised as follows:

- *Economic assessment*: Macro-economic data focuses on natural resources of national rather than local value. Economic surveys often ignore the range of non-market values that local people assign to natural resources. Local people's values are rarely assessed as part of Cost Benefit Analysis for land use decisions, partly because of the cost implications. While local assessments are sometimes conducted by environmental researchers where sustainability is threatened, they rarely define the course of action due to competing economic interests.
- *Biodiversity assessment*: Local people's views and values are largely absent from prevailing national and international assessment tools, which are based on global non-use values and promoted by wealthy conservation lobbies. However, the need to assess utility values is starting to be recognised by the Biodiversity Convention.
- *Climate change assessment*: Assessments are mainly scientific and technical. The need to involve local people in vulnerability and adaptation assessments is beginning to be recognised, although largely as sources of information.
- *Rural planning*: Indigenous and local knowledge has long been ignored by technical specialists who conduct natural resource surveys, partly because it is not perceived to be useful. Vested interests often dominate planning decisions, particularly where natural resources have high commercial value.

- *PM&E*: As with participatory planning, PM&E tends to be confined to certain NGO and donor projects, rather than used routinely in government interventions.
- *Dryland areas*: Important tools such as carrying capacity assessments do not reflect local values, and prevailing understanding of the relationship between people and natural resources often fails to adequately reflect local realities. Constraints include political and vested interests, as well as perceptions that local people do not have useful knowledge.
- *Agriculture:* In some countries, government interventions are based on macro-economic data alone, as local people are thought to lack knowledge and be risk averse. In most, it appears that participatory approaches have not been embedded in government interventions. There is often a lack of communication between qualitative and quantitative assessments, which carry more weight. Some research institutes are starting to incorporate qualitative impact assessments.
- *Forestry*: A multitude of different social, environmental and economic assessments are routinely used in forestry to serve a variety of ends. While integration of local people's views is integral to some of these assessment tools, the necessary political will, institutional capacity and funding is often absent.
- *Urban environmental hazards*: In formal assessments of urban environmental hazards, attempts are often made to obtain (economic) valuations from local residents, but local residents are only rarely involved in framing the problems, identifying issues, or contributing their knowledge of local environments and risks.

3.2 What technical approaches are needed to improve integration of local values?

For local values to be assessed, the conventional household survey approach is not enough. Local people need to participate in designing the assessment to decide what is measured, to have some degree of freedom to express their views outside the boundaries of the assessment, and to participate in the analysis to decide what is important. Who frames the assessment largely determines where it lies on the continuum between consultation and participation.

Adapting CBA and economic surveys to incorporate local values:

1. CBA for land use decisions should not only identify the best economic option, but also conduct a stakeholder and distributional analysis to identify stakeholder values, the impacts of different options on different stakeholders and the trade-offs involved.
2. Most economic valuation methods can be adapted to better reflect local values, although different techniques have varying degrees of potential. Many techniques are survey based, which means that a local assessment step can in theory be quite easily added to the process. Local values can be assessed by focusing on resources of value to livelihoods (eg. NTFPs as well as timber), assessing non-market as well as market values, and involving communities in survey design and analysis.
3. Direct use surveys can reveal a wealth of information about local values as well as data for economic analysis. However, intangible components such as cultural or spiritual values, which can be as or more significant for local people, are difficult to quantify in economic terms, though not impossible. Approximate values can be assigned using survey based methods such as contingent valuation or ranking to elicit willingness to pay.

4. Some people and communities feel that economic frameworks are inappropriate and inadequate for assessing cultural and spiritual values, and would prefer to use a qualitative scoring approach, with these values weighted relative to other values. The difficulty of assessing cultural values in economic terms is likely to weight the assessment in favour of more easily quantifiable values. However, qualitative scoring approaches risk being sidelined even more than local economic valuation, as they cannot be extrapolated or scaled up to the wider population, and used in economic analysis (eg. CBA).

Using participatory approaches

1. Participatory approaches offer an alternative to surveys that allow communities to define their own assessment approach. While economic assessment may be needed for policy decisions and for communities to defend their rights, participatory approaches are best suited for revealing local values and knowledge, including multiple perspectives and local complexities needed to fully understand resource use. They can generate vital information on seasonal variation and social differentiation in resource use, and qualitative information on the importance of indirect and non-use values (eg. environmental functions and cultural values).
2. Participatory approaches are often perceived to yield information of inferior quality because they emphasise relative rather than absolute measurement. However, criteria of rigour can be applied to show that technically the information is just as good as any other method. Triangulation techniques can be used to cross-check data with information from other sources.

Combining different assessments and values

1. Different techniques (eg. contingent valuation, household surveys and participatory approaches) can provide important and often complementary insights when used in *parallel*. Economic methods can be *combined* sequentially with PRA to enable communities to participate at each stage of the assessment (design, analysis, verification etc) and provide a more comprehensive picture of natural resource use. This can be a less costly way to assess local values than conducting a rigorous economic study, although it does require considerable resources in terms of facilitation and community time.
2. Because economic and participatory approaches emphasise very different principles of data quality, *merging* the two methods risks undermining the effectiveness and unique value of both. For example, PRA will be constrained if economic rigour is forced onto it, while contingent valuation will be constrained if PRA is used to generate economic data. It may therefore be best to conduct participatory assessments in parallel (or sequentially) and present them as a distinct component of the overall assessment, as long as the results of both assessments are incorporated in the overall conclusions and policy implications identified.
3. Local values can be combined with national or global values using methods for integrating multiple measures. For example, a local biodiversity value could be substituted or added to criteria for endemism and threat to arrive at an overall categorisation of a biodiversity hotspot. However, using an overall measure, which incorporates very different values, will hide relative values and trade-offs between them, as well as any biases and assumptions in the calculation.
4. Because participatory assessments are conducted at very local level, and are very context specific, it can be difficult to scale them up to the level of expert

assessments. One approach is to conduct participatory assessments at various levels (eg. community and municipality), so that community representatives can carry information from lower to higher levels – but this does not get around the problem of extrapolating qualitative data. In some cases, qualitative assessments can be quantified to provide scientific measures or monetary values. Alternatively, certain technical assessment methods (eg. systems models and GIS) can be adapted to enable community participation.

3.3 What conditions and processes are needed to improve integration?

It is evident from this review that, in many cases, the real constraint to integrating local people's values in natural resource assessments is not technical, but has to do with governance – allowing local people to participate in decision-making about assessments and negotiate with other, often more powerful, stakeholders when values differ or conflict.

Using a principles-based approach for defining assessment approaches:
Where there are widely held and sometimes divergent global, national and local stakeholder values, as in the case of biodiversity and climate change, developing a widely agreed set of principles for assessment design, which allows local flexibility, would help to build acceptance of the need for integrated approaches. Without consensus among stakeholders over how measures are derived, any index of natural resource status or change will always be questioned.

Improving mechanisms for civil society participation in assessment design/review:
Local people are weakly represented or absent from many fora and processes that define assessment approaches, at both international and national levels, for example, the work of the CBD, conservation NGOs, protected area managers, development agencies (eg. the World Bank), government technical services, statistical offices, NR consultancies and research institutes. Established assessments could be reviewed by civil society representatives to better reflect local values.

Improving communication between qualitative and quantitative assessments:
Participatory assessments have been used quite extensively by NGOs and also in some donor projects, but tend not to be considered in expert assessments that inform policy making and planning. Greater interaction is needed amongst the technical/scientific community and development NGOs/practitioners to strengthen communication links and information flows, improve understanding of each others' needs, and build acceptance of the utility and quality of participatory methods.

Changing attitudes of policy makers and experts:
Policy makers and experts should recognise that local people have valuable technical knowledge about natural resources and their value, which would improve the quality of policy decisions (in terms of effectiveness, equity and environmental sustainability), so that local assessments are factored into the ToRs and budgets of routine NR assessments.

Engaging both technical experts and development practitioners:
As conducting a technical assessment and facilitating a local assessment requires quite different skills, often found in different disciplines or professions, conducting

integrated assessments will require collaboration between technical experts and development practitioners.

Improving political representation and governance:
Local people need to be given the political space to act on their political rights to get their values integrated in expert assessments and subsequent decision-making. Even where local assessments are conducted, they rarely define the course of action. In some cases, expert assessments are themselves not used in policy and planning decisions and hence do not provide a useful vehicle for getting local values addressed. Furthermore, policies and plans are themselves not always implemented effectively. There is therefore a need to strengthen:

- Political representation of local people, at both national and local government level.
- Accountability to local people and transparency in decision-making so that decisions are not dominated by 'hidden' political or vested interests.
- Decentralisation of decision-making and resources to improve local peoples' access to decision making processes.
- The influence of government departments for environment and indigenous peoples over more powerful natural resource departments (eg. forestry, agriculture).

Strengthening local capacity for NR assessment:
Enhancing community capacity to conduct natural resource assessments in ways that are meaningful to experts and planners can help them to take advantage of political opportunities when they arise (eg. capacity for participatory mapping, understanding of government assessment and planning processes).

Building confidence amongst communities:
Institutional mechanisms that can be accessed by local people, eg. bottom-up planning processes, are needed to strengthen local people's confidence in their ability to influence decisions, improve relations between local people and external actors and enhance local motivation to conduct externally relevant assessments. Participatory policy and planning processes themselves provide opportunities for local people's values to be expressed (as in the case of India's NBSAP).

Addressing institutional constraints of donors:
Institutional constraints often force donors to use technical experts to conduct NR assessments. Donors are often aware that it would be better to integrate local people's assessments, and, despite time and resource constraints, it is important that they continue to promote local assessments in their work, and that of their counterparts, if they are serious about meeting poverty reduction objectives.

3.4 Areas requiring further research

A number of approaches for assessing local values relating to natural resources and integrating them with technical assessments exist. In some sectors, such as forestry and agriculture, there is already a fair amount of experience with participatory appraisal and local economic studies, and the main challenge lies in mainstreaming such tools in routine government assessments. In others, such as biodiversity and

climate change, emerging tools for assessing and integrating local values need to be further developed, tested and refined, as well as mainstreamed.

Mainstreaming local NR assessments in national and international assessment processes will require research to identify opportunities and address constraints at three levels:

1. Political: convincing key institutions of the need to adopt local assessment tools. PRSPs and the MDGs offer possible entry points for encouraging their adoption in rural development and NR sectors (eg. agriculture); while the growing concern of the Rio Conventions to demonstrate links with poverty reduction objectives could provide an entry point for promoting local assessments for biodiversity and climate change.
2. Technical: reviewing the range of existing global, national and local assessment tools to determine which lend themselves best to integration, and examining options for tailoring assessments to improve the technical fit - in terms of the type of data, its quality, scale etc.
3. Institutional: addressing barriers such as limited technical and financial capacity, and time; integrating local assessments in existing procedures and guidelines; and providing incentives for their use (eg. professional rewards).

It would be useful to explore the above challenges in relation to – and in collaboration with - key institutions which conduct NR assessments. In addition, mainstreaming of local assessments will require further work to:

- document and disseminate experience with institutionalising local assessments to provide case study examples and lessons – including examples from respected institutions (eg. international research centres, forestry departments);
- conduct local assessments to make their results available for integration in national/global assessments.

To ensure that the results of local assessments are taken into account, there is a need to explore mechanisms to enable local people to participate in decision-making for NR assessments, and ways to improve NR governance more generally, particularly in low income countries where there are strong vested interests. Donors have an important role to play in encouraging governments and others to adopt local assessments, as well as in providing financial and technical support.

<u>Tools for assessing local values</u>

In terms of the tools for assessing and integrating local values, there are a number of areas requiring further research, which are relevant for all NR sectors:

Mainstreaming local economic valuation: Local valuation studies need to be mainstreamed in CBA so that they become part of routine economic assessments. This will require further work to identify ways to overcome the institutional barriers to mainstreaming – both the capacity constraints (eg. lack of funding and time), and the political constraints (eg. competing priorities and vested interests). It would be useful to review experience where institutionalisation has been achieved, and explore the challenge with a particular agency which is willing to adopt local valuation.

However, given the apparent reluctance to take local values into account in CBA, the following activities could be pursued, building on the Hidden Harvest project[29]:

- conducting local valuation studies as a means to raise awareness of local values and the need to take local values into account;
- feeding the results of local valuations into NR assessment, planning and policy processes, as well as fora dealing with poverty reduction and rural development;
- working with communities to fine-tune local assessment approaches so that they are more locally relevant and can be used by communities to defend their rights without requiring external support.

Assessing intangible NR values: Using economic valuation to assess cultural and spiritual values relating to NRs is difficult, and risks under- or mis-representing such values. Further work is needed to develop alternative approaches for assessing cultural and spiritual values which adequately reflect community values, but which can also be effectively communicated to technical experts and policy makers. It would be useful to work with different cultural communities to better understand how they feel their cultural and spiritual values should be expressed, and examine options for communicating and integrating these values in existing assessment and decision-making tools. The Sustainable Livelihoods Framework could be explored as a possible alternative to economic assessment. However, given that economic assessment (eg. CBA) is the most commonly used approach for assessing NR values, it would also be useful to examine ways to improve economic approaches for assessing cultural and spiritual values.

Institutionalising participatory planning and evaluation tools: Despite the wealth of experience with participatory approaches for NR appraisal and planning, it appears that little progress has been made with institutionalising these in routine government planning. It would be useful to get a clearer picture of the extent to which participatory planning and evaluation approaches have been adopted by different actors, including different government departments. Some work has already been conducted on institutionalising participatory approaches in government and conservation agencies[30], which can be built on and further explored in relation to particular NR sectors, institutions and assessment tools. There is also a need to convince technical and policy experts of the utility and technical soundness of data generated through participatory approaches.

Scaling up local assessments: Further work is needed to address problems of scale - how to scale up the findings from very local level to higher levels at which technical assessments are generally compiled. This will require an examination of the technical options for scaling up, for example quantifying qualitative data to allow extrapolation, and also of the processes needed (eg. participation of community representatives in assessment fora at higher levels). While quantification may be necessary to scale up data, imposing external requirements risks constraining participatory tools, making

[29] The Hidden Harvest series includes a literature review and bibliography, country case studies (Botswana, Zimbabwe, Nigeria, Brazil and Papua New Guinea), and a methodological review.

[30] See 'Transforming bureaucracies: Institutionalising participation and people centred processes in natural resource management – an annotated bibliography' (2000), by V. Bainbridge et al; and 'People-Oriented Approaches in Global Conservation: is the Leopard Changing its Spots?' (2002), by S. Jeanrenaud; IIED/IDS Institutionalising Participation Series. Other work on this issue includes IIED's MARP project, and recent work on scaling up participation in water supply and sanitation.

them more extractive and less representative of local values. Recent donor requirements for statistical rigour in participatory projects have raised ethical concerns amongst practitioners, prompting a group of UK-based NGOs to develop a Code of Conduct for the use of participatory research to generate numbers.

Documenting community assessments: Research is needed to document local community's own natural resource assessments to inform the development of locally relevant assessment approaches, provide information on local values, and enhance awareness of the wealth and value of local knowledge.

Research priorities by sector: Refining and institutionalising local assessment tools

Biodiversity assessment: Building on recent research (eg. IIED's study on integrating local and global biodiversity values[31]) and experience (eg. people's biodiversity registers in India), work is needed to refine and institutionalise approaches for assessing local biodiversity values, including to:

- Further develop tools for assessing certain indirect values (eg. ecosystem services) and direct use values (eg. safety-net functions that enhance resilience to stress, such as drought and famine).
- Examine how particular agencies and assessment tools could incorporate local assessments (eg. the CBD, conservation agencies and protected area authorities).
- Field test and refine emerging approaches for integrating local and global values (eg. in biodiversity hotspot classification).
- Develop an agreed set of principles for assessment design, which addresses both local and global values, and is formally adopted by CBD Parties (this could be linked to the 2010 target of reducing the rate of biodiversity loss).

One problem facing the integration of local biodiversity values is the lack of data. Local biodiversity assessments need to be conducted much more widely so that data on local values for different eco-regions and groups/cultures is available for integration in formal assessment and monitoring efforts.

Climate Change assessment: Emerging participatory approaches for vulnerability and adaptation assessment, and for their integration with technical assessments, need to be far more widely applied, tested and refined. Specific activities include:

- Reviewing and consolidating experience to date with participatory approaches for vulnerability and adaptation assessment, and providing guidance on their use;
- Working with the relevant Climate Change Convention body (eg. the IPCC) to identify ways to institutionalise local assessment in the implementation process.
- Exploring ways to integrate local assessments in land use decisions under the Clean Development Mechanism.
- Developing an agreed set of principles for assessment design to gain wide acceptance for the need to combine local and scientific assessments.

Drylands: Some established NR assessment tools need to be modified to integrate local values – a notable example is the carrying capacity tool. Much has been written on the need for this – further work could build on this thinking and start putting into

[31] Sonja Vermeulen and Izabella Koziell (2002). Integrating global and local values: A review of biodiversity assessment.

practice through field testing. Dryland ecology is a relatively new area, and established understanding of dryland ecology is often misguided – it would be useful to conduct a myth-busting exercise, drawing on both ecological evidence and community perspectives, and to look more closely at the reasons why such myths are perpetuated (including political motives and vested interests).

Forestry: As this sector is relatively advanced in the use of local assessment tools, it would be useful to document and disseminate examples where such tools have been adopted to assist and encourage others (in the forestry sector and beyond) to adopt similar tools. Local assessments are increasingly used, not only by NGOs but also by more mainstream institutions, such as the FAO Forestry Resource Assessment Programme and government forestry departments. However, their institutionalisation is still far from systematic - further research is needed to address key constraints such as lack of political will, institutional capacity and funding.

Agriculture: As with forestry, a range of tools for assessing local values are available, but the extent to which local assessments are conducted varies depending on the organisation and country. Again, it would be useful to examine experience with the adoption of local assessment tools, to provide examples and lessons from institutions which have achieved this, and to examine the constraints to institutionalisation.

ANNEX I - Workshop Papers

1. Integrating Local Peoples' Assessments of Natural Resources within the Economic Assessment Framework

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February 2003

The economic valuation of natural resources has developed significantly both theoretically and practically over recent years. Estimates of non-marketed goods and services have been instrumental in illustrating the economic benefits of sustainable natural resource management compared to other management options within, for example, a cost-benefit analysis (CBA) framework. However the economic assessment approach is not without its critics. One line of criticism is its perceived inability to adequately represent the interest of (poor) local communities. It is postured that being based on consumers' willingness to pay (wtp) it is unable to adequately represent the value and importance of a resource to the poor, whose wtp is very low. Furthermore, resource assessments focused on the global value of a resource may not adequately consider the implications of managing the resources for the global good on local livelihoods. A more general criticism is that the valuation process is undertaken by 'experts' using complex approaches, which are difficult to communicate to concerned parties, and without consultation with local stakeholders. In this paper I would like to discuss the ways in which individual valuation approaches *are* being employed to integrate the concerns and values of local communities and the additional steps that might be undertaken to ensure that these interests are more fully represented. The analysis is based on the economic valuation of a tropical forest, although the process would be equally applicable to other natural resources – wetlands, coral reefs etc.

The range of economic valuation techniques are variously categorised in the literature - a common categorization is presented in Table 1[32]. Table 1 also indicates the potential for the individual valuation techniques to incorporate local values in their assessment process. An important point to note is that many of the economic valuation techniques are survey based (travel cost method, contingent valuation), or will typically need to employ surveys in order to generate the information needed (approaches using market prices). This presents the opportunity for local community participation and hence the integration of local and 'expert' values. The most obvious case for this is the valuation of direct use values such as non-timber forest products (NTFP) through the use of a direct use household survey (see below).

[32] These valuation techniques are well documented in the literature and are not elaborate on here.

Table 1. A Categorization of Valuation Approaches and Potential to Integrate 'Expert' and Local Values

Types of Approach	Description	Potential Integration of 'Expert' and Local Values
Market price valuation. Including estimating the benefits of subsistence production and consumption	Typically requires undertaking direct use surveys (i.e., household surveys of direct users of the resource). Therefore capable of revealing a wealth of information on local values.	HIGH
Surrogate markets approach. For example, travel cost method (TCM) and substitute goods approach	Use of the substitute goods approach would typically require use of direct use survey. TCM is survey based. Unlikely to reveal local values if focussed on foreigner visitors.	HIGH MEDIUM
Production function approach. This approach focuses on the biophysical relationships between forest functions and market activities	Requires detailed physical data, plus information on market prices and quantities produced. Households surveys may be required to determine quantity of products being produced	MEDIUM
Stated preference. Contingent valuation and its variants (e.g., contingent ranking, choice models, conjoint analysis)	Survey based. Unlikely to reveal local values if focussed on global values and survey of non-residents.	POTENTIALLY HIGH
Cost-based approaches. Replacement cost approaches and defensive expenditure	Considered to be second best techniques.	LOW

The most commonly used framework for an economic assessment of a natural resource is Total Economic Value (TEV), which recognises the direct and indirect use values and the non-use values of the resource. Table 2 identifies some key component values of a tropical forest and the valuation techniques that might be applied to estimate those values. The scope of the individual value components and associated key stakeholders are also summarised in Table 2.

Table 2. Component Values of a Tropical Forest and Analytical Scope

Component Value	Scope	Valuation Techniques	Stakeholders
Timber	Local – National	Market prices	Timber companies
Fuelwood	Local	Market prices Direct use surveys	Local communities
NTFP	Local	Market prices Direct use surveys	Local communities
Tourism	Local – National - Global	Market prices Travel cost method	Local Communities National government Tourism businesses Global community
Hydrological functions	Local – Regional	Production function approaches Cost based estimates	Local communities Farmers Water utilities
Biodiversity	Local – National – Global	Contingent valuation	Local communities National government Pharmaceutical companies Global community
Carbon storage	Local – National – Global	Market price Damage cost avoided estimates	Local communities National government Global community

A natural resource may be of local, regional, national and global significance, and of importance to many different stakeholders for a variety of reasons. Very often the different resource values will be in conflict with one another. One group's loss will be another group's gain. Such realities have important implications for the assessment process. In order to be comprehensive the impact of natural resource management options on all stakeholders should be considered.

Not surprisingly, local values are typically the easiest to quantify, and their assessment offers the greatest scope for local participation. Often market prices can be used in the assessment process. Direct use surveys are typically required however to understand the quantity of the resource being collected and used, and to determine sustainable harvesting practices. Direct use surveys typically collect basic socio-economic data and can incorporate follow up questions on local views on natural resource management practices. Box 1 provides an example of valuing NTFP using direct use surveys.

Some resource values are regional in nature – such as the hydrological benefits of a tropical forest. Hydrological functions are most commonly measured using the production function approach and cost based estimates. Such approaches can be undertaken without soliciting the views of the local communities. Additional steps are therefore important to understand the dependence of local communities on the resource base and their views on management options. Such information could be

derived through a direct use survey carried out in conjunction with the estimation of the resource's hydrological value, or a separate social assessment could be undertaken.

Box 1: Using Direct use Surveys to Value NTFP in Ratanakiri, Cambodia

Ratanakiri province is located in the northeast of Cambodia. At the time of study (1996), the area had had little contact with the outside world. Ratanakiri is home to twelve ethnic minorities, representing 85% of the provinces' population, who for centuries have lived off the forest. Recently however, the traditional way of life of the local ethnic communities (who have no legal right to their lands) has been threatened by a number of commercial concessions. A land use study was undertaken to compare the economic benefits of commercial timber versus the sustainable use of the forest for traditional uses (Bann, 1997). The study would have been impossible without the cooperation and knowledge of the local people. Direct use household surveys were undertaken in 5 villages within the study area known as Tapean Forest. The final survey was designed based on focus group meetings with key members of the village (village head, village healer, members of the women group). A general meeting was also held to introduce the project. In addition to asking the information needed for the economic analysis (i.e., the price and quantity of products collected), the survey instrument covered general attitudes and use of the forest (e.g., rankings of how important respondents felt the forest was to them, and questions on why the forest was important), solicited socio-economic information, and sort views on current concession agreements, harvesting techniques and forest management. A forest inventory was also undertaken covering a half hectare of forest. The inventory identified 189 types of trees and 320 species of ground flora and saplings. The survey team went through the entire inventory list with elders of the villages and the village healer to determine local names and uses of the inventorised species. Of the 189 types of trees, 100 are used by the villages for a range of purposes (e.g., food, house construction, fuelwood, medicine), while over 201 of the ground flora and saplings identified are used for traditional purposes.

In my experience the economic estimation of local values such as NTFP offers a perfect opportunity for integrating local values. Direct use surveys can be written so as to reveal a wealth of information on local values and perspective in addition to the data needed for the economic analysis. I have carried out such surveys in Vietnam, Malaysia, Cambodia and Turkey.

Many NTFP valuation studies have been criticised of overestimation due to the fact that often NTFP values are site specific and studies have taken estimates for small sites and extrapolated them to larger areas without accounting for likely price effects (elasticity of demand). In other cases NTFP simply can't compete with other land uses. However, perhaps the more relevant indicator of value is not the absolute value of NTFP but the percentage of household income (traded and subsistence) derived from NTFP. A number of NTFP valuation studies have shown local community dependence on NTFP to be very high. In Ratanakiri for example, only 30% of households earn a salary of up to $340 a year, while the benefits from NTFP per household are estimated at $325-3,925 a year. Clearly NTFP can constitute a substantial fraction of household income, so that even if such values fail to compete with alternative land uses, serious local poverty issues can arise if the benefits of competing land use do not accrue to those who lose the forest product in question.

A critical area is ensuring that the economic assessment of global natural resource values incorporate local community values (see Box 2). Many tropical forest valuation studies show global values (i.e., biodiversity and carbon storage functions of forests) to account for the lions share of the resources TEV. Forest areas of extreme scenic beauty and/or housing rare fauna and flora may also be of global tourism value. These resources might be managed locally, but are also subject to much wider claims

as public goods. There is a danger that the assessment process will focus on estimating these global values based on surveys of foreign visitors or non-use beneficiaries without understanding the local importance of the resource. This approach is short-sighted. Unless local resource users are presented with the incentives to sustainably manage the resource it is unlikely that efforts to conserve global resources will be successful.

A recent review of tropical forest values shows carbon values (along with timber) to be high relative to the other components of TEV (Pearce and Pearce, 2001). This suggests that carbon values are highly relevant to the conservation / sustainable management argument and that efforts should focus on the estimation and capture of these values. There is a concern however that efforts to capture global carbon values through the emerging international market have / will be detriment of local livelihoods. More research on the impact of emerging markets for carbon on the poor is needed (IIED has been evolved in this work). A clear understanding of local values is clearly vital in this respect and should be factored into the assessment process.

Box 2. A Contingent Valuation Study of the Mangroves of Benut – Malaysia.

Benut mangroves is one of the 17 mangrove sites found in Johor state, Southern Malaysia. The site is important to many different stakeholders. For example, local communities depend on the mangrove resource for fuelwood and fishing, while the area is of interest to business and local government for commercial purposes (conversion to shopping malls, industrial ports). This site is also an Internationally Important Bird Area and therefore of global biodiversity value. A contingent valuation study was undertaken of Malaysians living around the mangroves of Benut, and of non-Malaysians in KLIA airport in order to estimate non-use value (Bann, 1999a). The primary purpose of the CV study was to estimate wtp for the protection of Benut mangroves with a focus on its high biodiversity value. CV is the only valuation technique capable of capturing non-use values and therefore has many potential applications to the estimation of global biodiversity assets. However, biodiversity is often thought to be too complex a concept to communicate to local communities through the CV process. This study is one of a few of its kind.

The wtp of local communities was estimated at RM1 per household per month, and given a population of 12,650, the annual wtp by locals to protect the mangroves of Benut amounts to RM151,800 ($40,000). On a per hectare basis this represents $24 a year. This is low considering that the average monthly income in the State is RM1,216 and the high dependence of local communities on the mangroves resources. This might be explained by income constraints faced by poor households creating a divergence between the use and the wtp for the resource, and the possibility that households consider themselves to have a right to the resource and are therefore unwilling to pay for it. While local wtp for protection of Benut mangroves was low, the CV was able to reveal much about local values. For example, the survey instrument contained a section on the attitudes towards Benut mangroves. Respondents were asked to rank a list of social and environmental problems within the state in order to put in perspective their concerns over the mangroves resources, there were also asked eight attitudinal statements on mangrove wildlife and management. Other questions sought information on knowledge and use of the mangroves, benefits derived from them, familiarity with information presented, perceived damage to mangroves under current management, and socio-economic characteristics. The local survey revealed a high appreciation of the non-use benefits of the mangroves (however wtp is correlated with the direct benefits). Furthermore, 91% of respondents found the survey interesting and 93% found it educational. The survey of non-Malaysians reveals a high wtp for the protection of Benut mangroves and its global diversity. This value has been conservatively estimated at

US$12.5 million. Although the explanatory power of this model is low. By carrying out a CV study of both uses and non-users of a resource it was possible to get a good local perspective on a global resource. Direct use surveys were also carried out at five mangrove sites in Johor (including Benut) providing additional information on local values and dependence on the mangroves (Bann, 1999b).

It is important to stress that stated preference techniques can be nested within an even wider family of participatory approaches for eliciting information about household natural resource use and valuation. Participatory appraisal methods can accommodate hypothetical resource use statements, but are more commonly used for a stocktaking exercise of what direct and indirect uses are made by households. Participatory methods are often far more detailed and in many ways less extractive than CVM surveys and there is much to be gained from integrating the methods.

Cost Benefit Analysis

Economic valuation of forest components is often undertaken as part of a cost benefit analysis (CBA) of alternative management / land use options[33]. Valuation is based on wtp and is therefore constrained by ability to pay, while the CBA framework defines the 'best' land use or management strategy based on economic efficiency (projects and policy proposals are judged according to the size of their net economic benefits). CBA therefore does not necessarily concern itself with *who* wins and *who* loses. It is enough that in theory the winners could compensate the losers so that everyone would be better off (such compensation rarely happens in practice) for the option to be preferred.

I have mentioned above the many ways in which the various valuation approaches can be used to provide information on local peoples' values (e.g., surveys and additional analysis based on survey findings to determine, for example, local community dependence on the resource from a livelihoods perspective). Importantly, the valuation process can provide information on who gains and who loses and by how much which paves the way for appropriate compensation mechanisms. The valuation process can also highlight inequities in the compensation process. For example in Ratanakiri, local people were being offered a one off payment of $36 per hectare for their land by concessionaires, while the lower bound estimate of NTFP alone was $280 per annum. In Johor, fishermen were offered less than two months lost income in compensation for declines in fish productivity occurring over fourteen months as result of nearby developments.

Other adjustments can also be made. For example, distributional weights to account for the low ability to pay of the poor, or sustainability constraints to protect the integrity of the resource base.

Typically important concerns such as equity, intergenerational effects, the sustainability of resource systems, or social risk aversion needed to be factored into the decision making process. CBA is therefore best seen as an important tool for meeting the objective of sustainable management that should be complimented where necessary by other analytical procedures (e.g., social impact assessments).

Distributional Analysis

It is important that the assessment process is able to identify the different stakeholder values in order to understand the impacts of different land uses on different

[33] Other evaluation tools could also be used, e.g., Cost Effective Analysis (CEA)

stakeholders and the trade-offs involved. As discussed some of the valuation techniques provide more scope for this than others, in addition the focus of the analysis is another important factor influencing exactly whose values are taken into consideration. There is the danger that valuation exercises focused on estimating global and national values will exclude local opinions and thereby be ill informed of the pros and cons of natural resource management options on local communities. Where local values are not adequately represented additional steps are needed – e.g., distributional analysis / stakeholder analysis

In the past such parallel types of analysis have been fairly rare. One explanation for this is resource constraints. Undertaking robust valuation exercises is not cheap especially where surveys need to be undertaken. Additional analytical steps are not then typically factored into the process, although the information they can provide would be fundamental to the decision process. A holistic 'ecosystem approach' to economic valuation is also rare (typically due to a lack of resources and time). Few, if any, studies look at both the on-site and off-site aspects of alternative land uses, despite the fact that an understanding of such interactions and linkages can be central to the setting of appropriate incentive mechanisms for sustainable resource management.

All stakeholders need to be provided with the right incentives if resources are to be sustainably managed - natural resource valuation has a key part to play in informing the design of such incentives mechanisms. Without an understanding of the economic costs and benefits of alternatives, poor policy choices (perverse incentives) and misallocation of funds can occur. However, few studies simultaneously incorporate valuation estimates into the design of incentives[34]. This requires an understanding of the 'incentives' facing stakeholders for and against alternative land uses. These incentives will be embedded in existing market, political and institutional structures, both on and off site. Such an analysis can indicate how conservation values might be made explicit through, for example, the creation of new markets, institutions and enabling policies and legislation. Ideally therefore, such analysis should be factored into valuation studies.

Conclusions

Economic valuation offers many opportunities for integrating local peoples' natural resource values into the assessment process. In particular, survey based valuation approaches can be easily structured to capture the desired information while serving a participatory function. There are however some key ways in which economic valuation approaches can be improved so as to greater reflect local community perspectives. These include:

(i) More emphasis on stakeholder analysis / distributional aspects. This is important for determining who gains and who losses, and hence for the setting of fair compensation packages and/or appropriate incentives systems.

(ii) A greater emphasis on local impacts incorporated into studies focussed on global resource valuation.

[34] See Aylward *et al*, 1999 for a detailed analysis of market and policy incentives affecting land use decisions made by land-holders in an upland tropical watershed in Costa Rica. Such examples are rare.

(iii) Where the valuation exercise is possible without undertaking any discussion with local people, other studies need to be carried out alongside the economic valuation study e.g., Social assessments, PRA.

Finally, economic valuation and CBA is best not viewed in isolation but instead used alongside other expert assessment processes. Social and cultural values, historical claims, distributional impacts and other political factors need to be given due weight alongside economic efficiency within the assessment process.

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2. THE ROLE OF PEOPLE'S ASSESSMENTS IN THE CLIMATE CHANGE ARENA

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The flow of information and analysis feeding into policy making (both globally and nationally) in the climate change arena over the past decade and a half has undergone a number of evolutionary changes. The following is an attempt to characterise the flow of information that has fed into policy making (particularly at national level in developing countries) over this period with a view to assessing the role that "local people's assessments" have played (or not played) and how such assessments can play a more integral part in future.

Information Flows into Policy Making

Information flow into policy making can be characterised (crudely) as involving either (i) expert assessments or (ii) local people's assessments (see figure 1). Relationships between policy makers, local people and experts can be seen as two-way streets with information flowing in either direction between each group of stakeholders. These 'streets' are each discussed separately below:

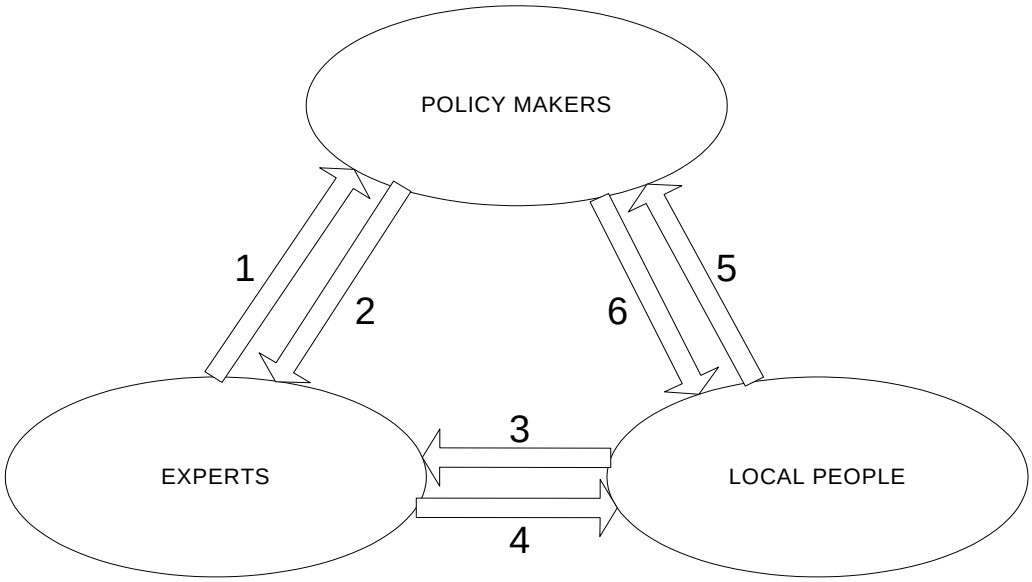

Figure 1: Flow of information between policy makers, experts and local people.

1. Experts to Policy Makers:

This is the traditional route through which information and analysis has flowed in the climate change arena. At the global level, periodic assessments of the Intergovernmental Panel on Climate Change (IPCC) have provided information for policy makers who in turn decided to negotiate and ratify the United Nations Framework Convention on Climate Change (UNFCCC). These periodic assessments have also informed the UNFCCC through the annual Conferences of Parties (COPs).

A similar expert-driven assessment has also been the basis of policy development at the national level. National Communications have been submitted to the UNFCCC by each signatory country (both developed as well as developing countries). These national expert assessments have been in two broad areas, namely:

(i) Greenhouse gas emission inventories and mitigation strategies:
All the countries that have signed and ratified the UNFCCC are obliged to undertake national assessments of their respective country's greenhouse gas emissions from different sectors (transport, industry, land use and forestry, etc). These have been done through common use of various tools, models and emission factors (as provided by IPCC guidelines). In addition, countries have carried out assessments of how they could reduce emissions of greenhouse gases and suggested "mitigation" strategies for reducing future emissions through national policy interventions.

(ii) Climate change impacts, vulnerability and adaptation assessments:
In addition to emissions inventories and mitigation strategies, countries have also been required to carry out assessments of the potential national impacts of climate change and to identify the most vulnerable sectors, regions and populations within each country. This has been done using the IPCC's seven-step guidelines for impacts assessment based on global climate change scenarios from different general circulation models (GCMs). Countries have then been required to come up with "adaptation strategies", which are strategies for coping with the identified adverse impacts of climate change. Since the seventh COP in Marrakech, the least developed countries (LDCs) have been provided with special funding (through a new fund called the "LDC Fund", which was created at COP7) to carry out national adaptation plans of action (NAPAs) over the next year or so. The NAPA guidelines provide for a combination of top-down as well as bottom-up analytical approaches.

2. Policy Makers to Experts:

At the global level there is a significant flow of information from global policy makers to the UNFCCC through the latter's Subsidiary Body for Scientific and Technological Advice (SBSTA), where experts are brought in to provide advice and assessments on various issues (including, but not exclusively, through the IPCC). Thus the research agenda in the climate change field is to a great extent driven by the demands of the international policy making community.

At the national level there is information flow from policy makers to experts on various issues (e.g. on national mitigation strategies). However the extent to which countries are able to carry out analyses depends on their scientific and expert capacities. Thus, whereas most developed countries are able to draw on the national experts to provide information and respond to requests, most developing countries (with a few notable exceptions) are unable to do this as effectively.

3. Local People to Experts:

Thus far in the climate change arena there has been little opportunity to incorporate information from local people into expert assessments, as most of the analysis has been of a top-down technical nature requiring expert input only. However, as the process evolves, especially the development of adaptation strategies, recognition that there needs to be greater input from local people into policy making processes is growing. This is particularly important at the national level but also at the global level. The impacts of climate change are unlikely to fall randomly and are likely to be most adverse for the most vulnerable regions and communities. In order to adequately assess vulnerability, information must therefore be specific to regions and communities, and will need to include local people's own assessments. The need for such assessments is even stronger when adaptation strategies are developed, as these should be based on people's existing capacities to deal with climate related stresses and how those existing capacities can be strengthened. Thus to carry out the next generation of adaptation assessments and provide useful advice to policy makers it will be increasingly necessary to combine both the traditional top-down approaches with more bottom-up approaches involving local peoples' assessments and inputs (see figure 2).

4. Experts to Local People:

The importance of information flow from experts to local people in the climate change arena is increasing recognised. For example, the latest IPCC reports have been widely publicised and made available through the media all over the world, and summary reports are increasingly translated into different languages. Article 6 of the UNFCCC also requires countries to make information on climate change issues available to the general public.

In the mitigation arena there is clearly a well-understood need to make all the relevant actors aware of their respective responsibilities to reduce greenhouse gas emissions. While this is most important for the Annex I countries who have committed to reducing their emissions under the Kyoto Protocol, it is also important for developing countries who may wish to take advantage of opportunities available through the clean development mechanism (CDM). Thus a number of awareness-raising and capacity-building exercises have been carried out in many developing countries to inform local people (as well as relevant stakeholder groups) about the needs for mitigation of greenhouse gas emissions.

In the vulnerability assessment and adaptation arena, information flow from experts to local people is also important, as people who are most likely to suffer the adverse impacts of climate change (both in developed as well as developing countries) need to be provided with the necessary information for them to be able to take precautionary measures to deal with these impacts. There is therefore a growing emphasis on developing tools to provide local people (and relevant stakeholder groups) with the information needed for them to take action.

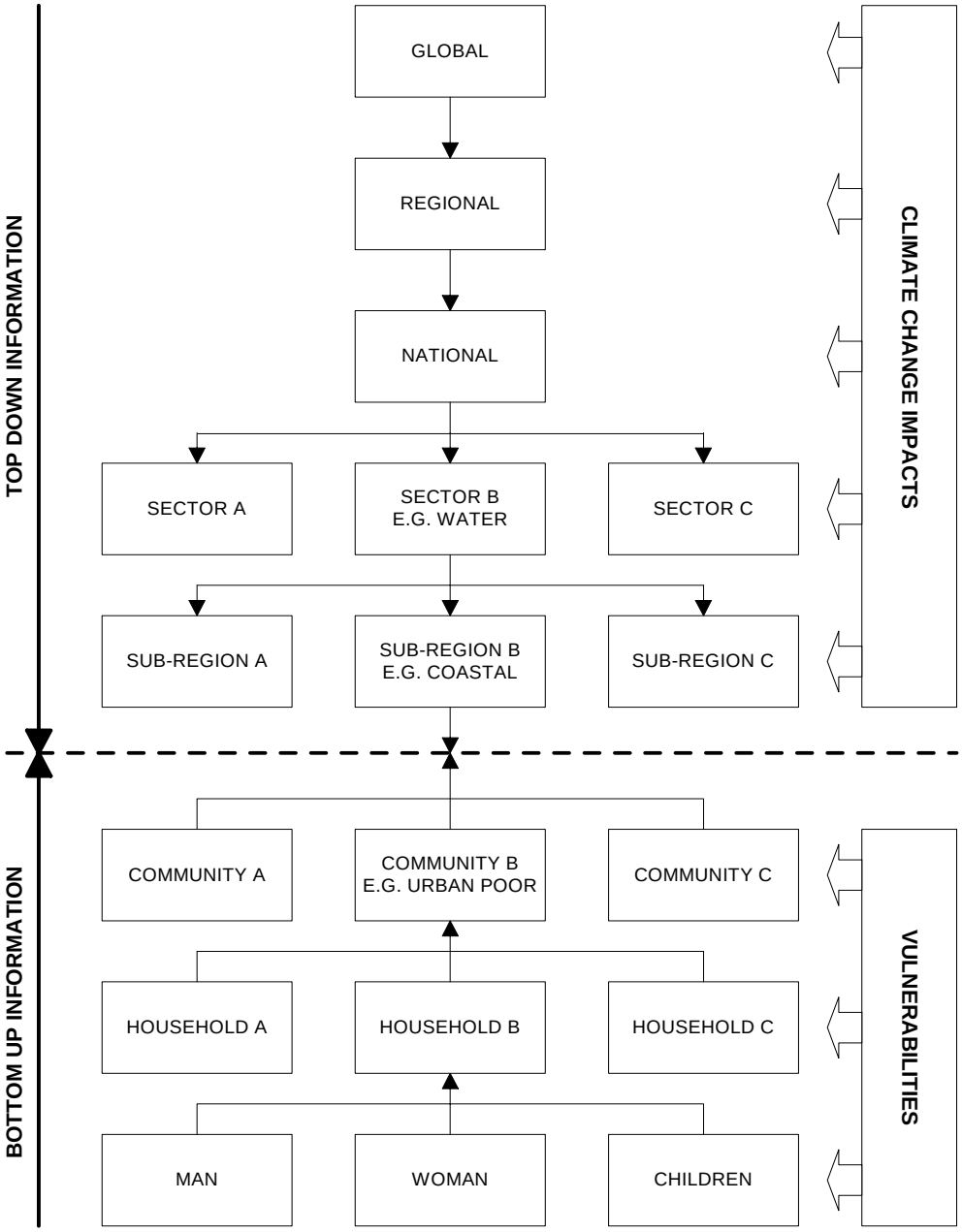

Figure 2: Assessing climate change impacts and vulnerability at different sectors and levels. Harmonising top-down and bottom-up information flows

5. Local People to Policy Makers:

This communication channel is essentially a political one through which people are able (or unable) to inform policy makers about their concerns. Its effectiveness is heavily dependent on the forms of governance and democracy practiced in different countries. At the global level, the concerns of people are fed into the policy making process primarily through NGOs and other civil society based organisations participating in and lobbying at the COPs. These efforts have at times been quite effective.

However, at the national level, efforts to provide inputs into national policy making have been relatively unsuccessful to date. It is possible that with growing public

awareness of the issues, mechanisms to provide policy makers with inputs from local people may improve. The problem is most severe in developing countries where the most vulnerable communities are (almost by definition) the poorest and hence least able to affect policy makers.

6. Policy Makers to Local People:

This communication channel has been characterised by policy makers (both at global and national levels) taking decisions and informing (or imposing them upon) local people. There have been few attempts to provide local people with relevant information and knowledge to date, but this is gradually changing, and governments (in both developed and developing countries) are increasingly trying to provide local people with the information they require to take necessary actions, or at least to explain national decisions to them.

Conclusions

It is clear from the evolution of issues in the climate change arena that the focus has moved over time from experts and scientists to policy makers (initially globally and then nationally), and that only lately has the need to inform and involve local people been recognised. However, there is a clearly growing recognition, both amongst experts as well as policy makers (both globally and nationally) that local people and communities need to be informed and their inputs obtained in order to deal with the problem of climate change.

References

IPCC, TAR
Marrakech Accords
UNFCCC, Article 6

3. Integrating Local Peoples' Natural Resource Values in Rural Planning

Krystyna Swiderska, February 2003

Rural planning is concerned with planning for development, land use and the allocation and management of resources. It occurs at a number of levels – community, district, provincial and national. This paper looks at the use of natural resource information in rural planning, the integration of local peoples' assessments in technical assessments and ways to enhance such integration. It is largely based on a recent publication by Barry Dalal-Clayton, David Dent and Olivier Dubois, "Rural planning in developing countries: Supporting natural resource management and sustainable livelihoods" (2003).

The use of Natural Resource Information in rural planning

Rural planning for natural resource management needs to be informed by both specialist technical knowledge and local knowledge. Technical information about natural resources is gathered by surveys: topographic, hydrological, geological, soil and land use surveys, forest inventories, biodiversity stocktaking etc. However, baseline surveys of natural resources are usually divorced from policy making and planning at any level, and from stakeholder and community participation. Futhermore, most plans for rural development and land use have not been effectively implemented because important sectors of society (eg. local communities, investors etc) have been left out of the planning process.

Extensive natural resource surveys were carried out during the 1950s-1980s, often as part of externally funded programmes led by foreign experts. These were usually not linked to a specific use, and remained very technical without interpretation into a form which is accessible and meaningful for rural planners and policy makers. Little effort has been made to store or maintain the information, and there is often a gap between the scale at which information is needed and the scale of available information which can be provided quickly and cheaply. Thus, little of this technical information is actually used in natural resource related policy and planning decisions.

Local communities often have considerable knowledge about natural resources, including ecological conditions, the economic and social aspects of resource use, and associated cultural values. Yet indigenous and local knowledge of the land has long been ignored by technical specialists and policy makers alike. Despite the fairly widespread use of participatory planning approaches in NGO and donor projects, there has been little progress in their institutionalisation in formal assessment and planning processes, and in combining them with natural science based data. The links between these activities remain dysfunctional. They are undertaken by separate professions with very different cultures and there is no common appreciation of their systems of value and modes of operation.

Social scientists have traditionally used extractive techniques such as questionnaires to gather information about natural resource management. These allow large numbers of people to be surveyed and use of statistics to determine reliability. However, such methods are not good at revealing local complexities – they remove much of the contextual grounds for understanding data, assume the researcher and interviewee

have the same values, and cultural and other factors can affect the type of response. Multiple perspectives – so essential for understanding land resources and land use – are lost.

Participatory approaches (eg. PLA) are invaluable for understanding the myriad perspectives of natural resource use at local level. Tools include:

- social mapping to identify diverse socio-economic groups and understand how wealth affects dependence on NRs;
- Seasonal calendars to show how NR use/importance varies over time;
- Maps, models, transects to locate NRs and understand changes over time;
- Matrix scoring and ranking techniques to assess the value of NRs;
- Product flow diagrams and tenure maps to understand how access to resources is controlled, and who is involved in resource use and management.

However, it is often difficult to quantify this context specific information. Issues are discussed in groups and there is an emphasis on relative rather than absolute values or measurement. As a result, participatory methods are often viewed as informal and qualitative and hence considered to yield information of poorer quality. People still ask 'but how do they compare with real data?' Rigour or accuracy is traditionally linked with measurement, statistical tests and replicability. However, criteria of rigour can be applied to participatory approaches to show that technically the information is just as good as any other method. Good facilitation is the key to yielding sound information through participatory methods.

Participatory approaches provide information which is very specific to the local context, which means it is often too detailed for policy makers and not analysed in terms of policy implications. Nonetheless, policy analysis can be enriched by presenting the findings of participatory approaches as case studies.

Political constraints to integrating local values

Planning is not a neutral technical activity, it is highly political. Even if information generated through local peoples' assessments were available in a form which is meaningful for technical specialists, planners and policy makers, there is no guarantee that it will be taken into account when decisions are made. In recent years, the trend towards shifting responsibility for planning and management from central government agencies to regional and local government would appear to provide enhanced opportunity for local people to inform and influence natural resource decisions. The devolution of authority to the lowest level that is consistent with effective action will make the best use of local knowledge (women are often most actively involved in land use and hence most knowledgeable).

Decentralisation has taken different forms in different countries. In many countries (eg. in West Africa), decentralisation policies, and the shift in rural development objectives from production oriented to poverty focused, have yet to be translated into practice. Administrative decentralisation has not been accompanied by devolution of power from central government, or any real shifts in control over natural resources from the state to local resource managers, with a few recent exceptions (eg. pilot projects of decentralisation in areas with poor natural resources such as the Takieta forest, Niger). Devolution has most often occurred in social sectors (eg. health and

education), while central governments have been reluctant to cede control over land and natural resources, particularly where foreign interests bring high revenues (eg. central African forests). Even under devolution programmes, the state tends to retain a relatively high level of control on issues of rights over land and rights to earn an income from NRs.

Where devolution has occurred, there is often a lack of communication and contact between communities and the lowest administrative levels. Local authorities tend to resist formalised interactive participation as it reduces their own discretion, and have little incentive to enhance synergy with civil society. True decentralisation of natural resource management decisions is rare because it requires issues of land tenure and control over resources to be addressed, which threatens the wealth, power and influence of local and national elites. Decentralisation has not addressed what has been called the 'invisible institutions problem' – where individuals seek financial gain from assets they control but do not own, through patronage, personal power struggles and negative attitudes to participation. However, in some countries, particularly in Latin America, concerted efforts have been made to institutionalise real decentralisation of power and resources and improve local accountability mechanisms.

Local communities tend to be unaccustomed to having formal authority to make their own decisions on natural resource management, and are usually reluctant to accept responsibility for resource management unless they have ownership rights, or at least management rights. Furthermore, they often lack information about their formal roles and rights to manage natural resources.

Suggestions for a way forward

Barriers to institutionalising participatory approaches in routine natural resource assessments need to be addressed. Institutions and programmes are reluctant to invest in developing human resources needed to undertake participatory assessments as they are evaluated according to tangible physical and financial targets. Promotion is often linked to the ability to fulfil administrative tasks (providing reports, statistics etc) rather than performance in management. *Use of participatory approaches also requires radical changes in behaviour and attitudes towards local people*. Professionals tend to feel threatened by a loss of status and power if they have to deal with local people as equals and include them in decision-making.

The greatest barriers to community participation in external assessment and planning processes are disparities in power and mutual mistrust (control of land tenure determines power over social affairs). *Institutional mechanisms are needed to ensure that community interests are effectively represented in decision-making fora and enable communities to negotiate over competing claims and priorities*. Where fora for discussion have been established, they are often dominated by government representatives, while those established by donor agencies often lack legitimacy. *Efforts to enhance community bargaining power, and build confidence between different groups, may be required for effective negotiation.*

Where there is devolution, candidates for election to local authorities are often members of village elites who behave as such, except in remote areas mainly

populated by ethnic groups whose representatives tend to be elected alongside elites. Women and mobile groups such as pastoralists are often poorly represented in local councils, and there may be local resistance to their empowerment. *Mandatory inclusion of marginal groups or NGOs in local councils may therefore be required.* Community-level groups can be empowered through the development of alliances eg. local associations or cooperatives, which help to establish credibility vis-à-vis other stakeholders, particularly the State.

4. <u>Participatory Monitoring and Evaluation – lessons for integrating "expert" and "local" opinions in NR Assessments</u>

Bansuri Taneja, Sustainable Agriculture and Rural Livelihoods Programme

- What is PM&E? Though the terms monitoring and evaluation are invariably used together, monitoring usually refers to the " systematic measurement of variable and processes over time" (Spellerberg 1991, in Abbot and Guijt,1998), a measurement that gives information, which is then a means to an end. The information is not an end in itself. Evaluation is usually the end to which that information is put - a judgement on the intervention in question, whose effects are being monitored, based on the information obtained from the monitoring exercise but also other sources. Evaluations may contain recommendations for the future.

- Evaluation, or analysis of the data gathered through monitoring, if carried out by different people than those who collected the information, or in a vastly different context, can lead to an incomplete understanding of a complex environmental situation based only on indicators. Hence, PM**&**E becomes important.

- Participatory M&E has arisen partly out of a critique of more conventional monitoring methods. Concerns around conventional monitoring that PM&E culd addresss include limited scope of monitoring, limited scale of monitoring (insufficient detail). PM&E will help to arrive at information that is relevant to the poor people in rural areas, and will recognise their central role in planning and managing their use of the environment. It also reflects a logical progression of the participatory approaches to resource appraisal. (Abbot and Guijt, 1998). The general purposes of monitoring, which would apply equally to participatory monitoring, are support to decision making and planning and accountability. PM&E would in addition enhance local capacities for recording and analysing change.

  PM&E has been combined with conventional monitoring in 4 different ways:

  a) improving conventional monitoring – by describing context, which helps to identify relevant monitoring questions
  b) verifying findings from conventional approaches, and providing background information to help in analysis.
  c) Conventional monitoring helping to outline the frameworks within which pm&e is carried out, and
  d) Complementary monitoring – conventional/discipline specific monitoring and evaluation methods used alongside more participatory ones, swapped with participatory ones, or with the two methods used sequentially.

- The P in M&E is **mostly with explicit reference to monitoring exercises rather than for evaluation *per se***. That said, there is a fair amount of evaluation also taking place, as organisations that give credence to local perceptions in what they choose to monitor also are usually open to these perceptions in making decisions. Where this is not the case (not encountered

frequently in the literature seen) , the 'PM&E' can be seen as a more extractive process.

The contexts in which PM&E is carried out a) usually have devolved decision making, though this is only apparent for the project intervention; b) local learning and feedbacks are emphasised.

Most documented experiences have been initiated by external support organisations, only one instance of a government department- led PM&E has been documented (Rai, 1998).

- Performance and change on the basis of an intervention is monitored in most cases, hence the **information sought can be narrowed down somewhat** – indicators/information sought can be delineated on the basis of the objectives of the intervention. In contrast, baseline information is repeatedly referred to as a challenge to gather because of its scope - understanding a complete set of causal factors and all relationships between variables is a near impossibility. Further, not knowing the direction a project may take, or the possibility of new objectives being added to the project, make a set of baseline information vulnerable to becoming irrelevant. This problem of unlimited scope is likely to be a special challenge in NR assessments , with attendant difficulties for the choice of indicators.

  Cromwell (in Lawrence and Elphick, 2002) points out that while assessing biodiversity on-farm, changes in farmers' asset base (ecological and other) as well as changes in livelihood goals should also be considered. Pointers for measureing such change may be learned from PM&E exercises.

- People cannot be expected to participate because the external agency wishes them to. Forcing the issue may result in an extractive exercise. At the same time, it has been noted that interest may need to be generated, or time spent collecting data compensated with payments.

  Considering P inPM&E, it is important that 'consensus' methods that may be important for empowerment of the community of the whole, and for identity formation, can disguise inter- and intra- household differences. One way to deal with this in an assessment exercise has been to conduct focus group discussions with different resource user groups, and then put the information from different groups together at the end – a facilitated process allowing the weaker groups' points to be considered on more equal footing than would have otherwise been possible (Alcorn, 2000)

  It is also important to remember that in an integrative exercise, it is likely that people will gather information that is interesting and relevant *to them*. e.g. farmers need not be gathering information that is relevant primarily to the internal workings of the NGO.

  It has also been pointed out that PM&E will only work in the long run if it contributes to the learning of the group, not only to the satisfaction of the researcher. Caveats applicable to all participatory exercises – to not be extractive but contribute to empowerment, apply here.

- **Understanding the end use/user of the monitoring exercise is very important**. The nature of the indicators chosen, and of the information gathered/unit of measurement, should based on the eventual use of the information. Different kinds of information is needed to persuade fellow

farmers of the desirability of sustainable agriculture practices, than is required to persuade donors or academics that the agriculture being practiced is sustainable.

- For a successful collaboration, the **meanings of the terms need to be well understood** by all concerned, especially the community being approached for PM&E, in the first instance. E.g. In a PM&E in Palestine, it was found that the word used for monitoring conveyed the meaning of controlling in Arabic, 'generating a negative feeling amongst staff even. 'Indicators' was replaced by 'signposts' (pointing to something rather than having meaning in and of itself) in one area in Africa, while in Brazil site the word 'signpost' was not useful at all.

  Similarly, even once the indicators have been chosen, what is meant by each indicator is liable to be subject to interpretation and differing understandings. e.g. local variations on contour ploughing may complicate collection of data on acreage under such form of ploughing as propagated by a project intervention.

- **Choice of indicators is the most crucial part of the process**.

  In a perfectly "participatory" or community- led process, the dynamics of the community's understanding of the , e.g. environmental or livelihood, situation and the interrelationships thereof would be allowed to impose themselves on the "technical agencies' " ways of doing things. There are likely to be time and standardisation requirements that in most cases preclude such an approach. In such an event, as well as for learning processes, it becomes important to negotiate the choice of indicators. [As the bottom up approach has been suggested for biodiversity assessments as well, the desirability and experience of negotiated indicators in PM&E may merit further exploration]

  In an integrated attempt, indicators must be negotiated, a) so as to be of relevance and resonance to all concerned, and b) because pre-determined indicators may close minds of experts to unexpected information, links, cause-effect relations, and c) to mitigate power discrepancies. It is important that external monitors and evaluators do not impose their parameters and indicators. PM&E in such a case would end up being rather extractive.

  There are many different sets of criteria to evaluate indicators [see Appendix].

  - Categories of indicators: GTZ (1997, in Abbot and Guijt 1998) categorised indicators for soil-related monitoring thus:
    - Indigenous or experiential- used by the farmers/community and reflect experienced changes
    - Scientific or technical indicators- global disciplinary and quantitative
    - Proxy or surrogate indicators.- helping to relate scientific methods to farmers experiences. E.g. changes in crop species or time spent weeding as a proxy for soil fertility.
  - Indicators for monitoring can be divided into *process/output indicators* and *impact/outcome indicators* Process indicators measure how the activities were planned, and impact indicators measure the ability of the activities to meet their objectives.

- While choosing indicators, ensuring an accurate understanding of cause- effect relationships in the face of causative factors *external to the intervention* is sometimes overlooked.
- Indicators can be complicated- in one agricultural monitoring exercise it was found that sustainability was not seen to be reflected only by stable yield or crop composition. There thus needs to be space for diverse understandings in choice of indicators.
- Following from the above –indicators can often change in the course of a monitoring exercise, due to emerging clarity about end uses (e.g. does the monitoring need to serve internal project needs, or convey information to external entities?) or changed perceptions of what can be or needs to be measured. Given that assessment is more a one off exercise, is there scope for changing indicators in assessment? A trade off between avoiding complications due to changing indicators, and accuracy achieved from changing to more relevant indicators may arise. This may constitute a problem where standardised, and esp. time series data are being sought for external communication. More flexibility in the understandings of M&E when it is carried out participatorily might be needed.
- Can the pressure-state-response model of understanding environmental conditions, subject only to conventional scientific monitoring so far, be adapted to participatory M&E? Can 'proxy' indicators be found that would relate to 3 phases of this model
- Explicit discussion with local communities of the need for replication of the M&E methods (to cover different sites within the project area), and for quantitative measurements and sampling procedures, can encourage them to use methods which are more amenable to scientific interpretation. Indicators while used for assessments as well, have been found to be better for measuring change (Lawrence and Elphick, 2002).

- It is interesting to note that non-quantitative, non-indicator based monitoring methodologies have also been tried. Based on narratives and community perceptions of significant changes, reasons for those changes, etc., this method allows the response to be largely determined by community perceptions and aspirations, rather than by needs of the "agency".

- The **unit of analysis is very important**- is the evidence of change being sought at the level of the community, municipality, family/household or special interest group? (the difficulty of having participatory data for regional and national levels, e.g. for reporting to MEAs, is apparent). The choice of indicators will vary accordingly (levels of aggregation and specificity needed), as will the collectors of that information, and the locus of the eventual analysis.

  Monitoring at higher levels or over larger areas can be achieved by having multiple sessions at different levels of social organisation, so information can be carried from lower levels to higher ones by representatives (Bandre,1998)

- **Triangulation techniques used to verify information** by obtaining answers to the same question from different groups/sources, has been a part of monitoring exercises. In one case, discussion ensued where discrepancies arose, leading eventually to a consensus view. However this process may also reveal areas/groups/issues that need more attention. (Bandre,1998)

  In another instance, it was found that taking community perceptions up to the district administration built credibility of the NGO and of the whole community mapping process because it showed commitment to verifying information (rather than pushing what could be seen as a biased view), and that the NGO wished to take the administration's views into account as well. This also enabled community perceptions to be taken more seriously. Instead of being seen to unsettle officials with penetrating questions, the evaluators were seen as messengers bringing community concerns to the fore. The colourful presentation of the materials contributed to an informal atmosphere, and the evaluators gained some insight into the potential involvement of the officials, which they may not have otherwise achieved (Harnmeijer, *et al.* 1999).

  In experiences with assessment exercises, it has been noted that triangulation has shown correlations between community estimates and more scientific survey methods(Lawrence and Elphick, 2002).

- **Rigour *vs.* participation tradeoffs exist**. Detailed information at fine resolution on environmental variables that could be available from conventional monitoring will not necessarily be available from PM&E. The question that must then be asked is if such data is necessary for the end use/user of the information/monitoring? Insofar as PM&E usually has objectives of local learning, and adjustments to the project intervention, the resonance and accessibility to the community may be more important than obtaining generalisable information or information in minute detail. The problems of rigour could be more significant if looking for information to inform a wide range of future decisions, as is often the case with assessments. However, the importance of end uses in assessments is also coming to be recognised. The rigour vs. participation trade-off may be less onerous in PM&E than in assessment as currently understood, as PM&E information is more directly suited to an end use, and the required level of "rigour" can be defined. Of course, this also throws up questions of who defines what rigour is, who is considered expert and what is trustworthy. There is also an unresolved tradeoff to be made between site specific data and data that can be aggregated to obtain a more regional/larger scale picture/understanding of trends.

  Qualitative data can be quantified in some instances, going some way towards a middle ground, e.g. if the success of soil conservation measures is measured through a proxy indicator such as area under contour ploughing rather than a measurement of soil depth, the acreage can be quantified. This acreage might be a more sensitive indicator than knowing how many farmers attended training programmes. However, if more detailed data than farmers normally require is needed for the monitoring (e,g, yields) , a degree of error may need to be accepted, or triangulation can be considered (with its attendant tradeoffs for participatory benefits?). Conversely, to deal with difficulties with

collecting precise quantitative data, percentages have in one case been illustrated by notchmarks on sticks instead of numerically on paper.

There exist differences in worldviews that also need to be reconciled for any effective collaboration to take place. E.g. in a participatory monitoring attempt in Alaska, the scientists wanted to record moose populations and the relationship with Aleut hunting levels. Aleut on the other hand wanted to pay attention to the falling levels of water in the marshes, and the beaver damming that lay behind it and concomitant decrease in food supply, as part of the explanation for fall in moose populations. In this particular instance a common ground could not be found, but it might be possible to arrive at a joint understanding of the variables that need to be measured.

- For a well integrated M&E exercise, **negotiation/discussion** between community and external people is needed for deciding on

    - Who participates at what stage?
    - Goals of the M&E
    - Indicators
    - Methods
    - Who does the analysis and are all happy with the conclusions?

In a Brazilian experience, 4 distinct groups (farmers, trade union members, NGO staff, and academics) involved in developing a monitoring methodology met repeatedly to decide on:

i) prioritising which of 28 activities would be evaluated
ii) identifying objectives in short, medium and long time frames for each of these activities
iii) merging objectives arrived at by different groups to come to a common understanding of the activity
iv) choosing objectives which would be monitored.
v) Identifying indicators for each chosen objective
vi) Selecting feasible methods of collecting information on these indicators- how often measurements woud be taken, who would take them.
vii) Who the final information would be shared with and to what purpose.

Other have found it useful to concentrate on a common set of information that is useful to all parties concerned (Harnmeijer *et al*., 1999; Guijt et al. 1998), rather than including elements of interest to the various stakeholders to come up with an large and potentially unmanageable agenda.

Lawrence and Elphick (2002) note that for realy synergy wehich provides benefits for both parties, what may be needed is intermediaries who are able to communicate between different approaches.

- **Time is a vital ingredient** that must be factored in for well-integrated M&E exercises.

- Guijt (1998) provides a set of questions that could serve as a **tool for helping to integrate expert and local opinions and methods**. These questions, asked of all stakeholders in the M&E, could lead to a well integrated exercise:
    a) What is the unit of analysis? What should it be?

b) What context should the information be collected in(e.g individually or group based) ; what should be the medium of collection of information(oral, visual, dramatic?)?
c) Should the information be qualitative or quantitative?

- Harnmeijer et al. (1999) point out that participation need not be seen only as participation of the affected community. Evaluations involving, e.g. project staff, are more likely to be acted upon. They also show that a table delineating high medium and low levels of 'participation from end-user', does not necessarily reflect reality; a well integrated/ highly participatory exercise may not be marked consistently 'high ' on counts such initiation, purpose, question-making, role of evaluator, etc. but combine different levels of participation from different parties to deliver a good PM&E.

  Not all information can be got from the community either. Harnmeijer *et al. (*1999) also talk of data aggregated and analysed at district-level by staff, which helped to understand the project's efforts to make local authorities accountable to communities.

  Researchers carrying out participatory assessments have felt themselves to be empowered by the process. Also, w.r.t assessments, the question has been raised of there being transfer of skills to in-country staff by the exercise, in the context of mainly western researchers carrying these out. (Lawrence & Elphick 2002)

Methods – Logframe analysis is being adapted for use with communities (Sewagudde 1997 in Guijt, Arevalo & Saladores, 1998) – with simplified stages and words, etc. Other innovations include - merging GIS, social auditing, and psychological assessments; new applications of existing methods, eg. wealth ranking before and after intervention; goals represented pictorially being turned into indicators (Rai, 1998). Harnmeijer *et al.(1999)* give an example of ToRs of the project being turned into hypotheses to be tested by the M&E, which in turn give rise to specific questions. Base maps used over a period of time have been found to be a useful way of standardising information across time, while also allowing flexibility/changing information.

Sensitivities need to be respected – e.g. using pictorials of phases of the moon instead of smiling or frowning faces to portray degree of benefit from an intervention, or extent to which a particular activity has taken place. (Rai, 1998)

Mapping: an assessment tool, the potential of mapping for political empowerment and strategic purposes has drawn significant attention recently. Participatory mapping is perhaps one of the most visible areas where external methods and community information and opinions come together. Participatory mapping is shown to have various spinoffs, from encouraging community cohesion, understanding resource ownership/rights and internal allocation, passing on information between generations that would otherwise have died out, to making community presence and rights visible to authorities and companies and encouraging negotiations between neighbouring communities (Alcorn 2000). There is also an instance where mapping of lands used by mobile peoples in the Kalahari deserts, even while freezing borders possibly inappropriately, can be crucially important for asserting their presence/identity and resource rights vis-à-vis administrative authorities. Maps signed off by district

officials have meant they become semi- official documents, and can then “stand up in a court of law”, a significant strategic move especially in light of the statement (with respect to the rigour vs. participation trade-off) that PM&E information needs to be usable, not be valid in a court of law. Such developments can have important ramifications for the credence given to local assessments and information in policy and legal situations.

In terms of the selection of information put on a map, drawing parallels with the choice of indicators in M&E or assessment Alcorn (2000:12) says:

> “ The context in which the map will be used to exercise rights is important for selection of data. If the idea is to protect the area from being classified as appropriate for ranching, for example, the map should document the details of the current land use. Conservation NGOs may encourage communities to include the known distribution of large populations of particular species, or other data, in addition to the data types identified on sketch maps. The process of mapping knowledge of these species will raise awareness about their status. If local resource management policy review is one of the objectives, then environmental issues should also be mapped so that the scale of any problems can be assessed”

Assessment – scaling up from site specific information to regional, national and international scales is seen as one of the most significant challenges.

- it has been said that reflecting integrated information in policy fora is the more challenging task
- “Instead of asking whether local assessments fit national needs, we can turn the question around and ask what is interesting for national policy people, in what has been done locally. The production and advocacy of local information, which is demonstrated to be valid, reliable and useful, may do more to demolish the spectre of vast insatiable data needs (for national monitoring and reporting) than a top down approach which seeks to apply a uniform data collection approach”. (Lawrence and Elphick 2002)

Appendix - Sets of criteria to evaluate indicators

I SMART: specific, measurable, attainable, relevant, time framed.

II Valid – does it measure what we think it is measuring and not something else?
Measurable -
Verifiable -
Cost effective –
Timely – can it track changes at the time you want to know of these changes?
Simple – clarify whether the indicator is simple to use, measure or interpret.
Relevant - does it have meaning for people/resonate with them?
Sensitive- does it give information about degree?

III Indicators ought to be accurate as well as resonate with the people who are going to be using them. Seattle residents chose number of wild salmon returning to spawn as an indicator because it

i) reflected something about the long term environmental and social health of the community
ii) was accepted by the community
iii) was attractive to the local media
iv) and was logically and scientifically defensible.

In this case the indicator was reflective of water quality and other sustainability variables, and thus 'accurate', but resonated with the community for not necessarily that same reason.

IV Indicators should, to avoid ambiguity and problems of validity and reliability be as specific as possible and include:

-The objective or target it is aiming to achieve
- the characteristic that will be measured
- the time interval
- spatial coverage.

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ANNEX II – Tables on the Integration of Local Values in NR Assessment Tools

1. **Biodiversity Assessment** (Sonja Vermeulen)

EXPERT ASSESSMENTS

NR Assessment tool	Purpose	Scale of measurement	General utility	Communicability / policy application	Potential for integration
IUCN's red data books	Evaluation of extinction risk of species	National; more recently local	High: usually based on secondary data	High: simple, emotive categories; worldwide application	High: local or national values could also be expressed in simple categories
Checklists	Multiple applications	Local or national	Medium to high: cheap sampling method but identification may be expensive	Low: difficult to express higher scale patterns	High: possibility for incorporation of local names and uses
SI/MAB Plots	Study and monitoring of biodiversity in protected areas	Local	Low: large scale and long-term, requiring high expertise	Low: complex scientific analysis needs careful spin to become a policy tool	Medium: holistic approach and potential for indicator verification
Hotspots and ICBP EBAs	Identification of priority conservation sites	Global	High: usually based on secondary data	High: readily comprehensible and visually communicable indices	Low: scale too large, though concept could be adapted at more local scales
GHI	Prioritisation of sites for tree conservation	Local or national	Medium to high: minimal field costs but sometimes high cost of identification	High: readily comprehensible and visually communicable indices	High: already successfully adapted to include local economic values
GAP & GIS	Collation and analysis of spatial data	Global, national or sub-national	Low: high hardware and technical costs plus variable need for primary data	Low: has already met with considerable resistance from natural resource managers	High: socio-economic and biological layers could be compared
Indicators, including CBD, UNEP-WCMC, CIFOR & WWF-IUCN	Multiple applications: based on using a small number of variables to track total biodiversity	Global, national or local	Variable: dependent on scale, data availability and need for verification	Medium to high: simple and powerful indices, but can be misconstrued or difficult to integrate	Medium to high: potential to include locally relevant indicators, but integration is a challenge

CBD	Tracking progress against aims of CBD	National	Under debate: core set of indicators will need careful trade-offs between cost and comprehensiveness	Medium: a commonly agreed set of indicators could aid international debate, but is prone to disagreement and glossing over local differences	Medium: the CBD process is slow and vague, but remains flexible enough to allow considerable local adaptation
Natural Heritage	Selection of sites of outstanding global value	Local	Not clear	High: due to the high support from national governments and international bodies, giving Natural Heritage sites high prestige	Low: Natural Heritage sites are chosen to reflect global value, and trade-offs with local values are not made explicit
CSD and international development goals (DAC/ OECD)	Measuring progress towards sustainable development and poverty alleviation	National	Not clear	Low: indicators are optional and poorly developed, adding bureaucratic load more than utility	Medium: proposed indicator sets have focused on global non-use values, but are open to local selection and adaptation
Sida	Environmental impact assessment	Local, national	High: comprehensive checklist of factors to consider, but low requirements for primary data	High: dynamic, utilitarian view of biodiversity that incorporates multiple perspectives	High: emphasis on stakeholder relationships, protection of knowledge, and local biodiversity values
DFID	Award of PIMS biodiversity policy objective mark	Local, national	High: efficient scoring system and computer-based records	Medium: an internal audit system, but broad opportunity-oriented approach includes training and capacity building as well as conservation	Medium: includes local capacity building, but retains emphasis on biodiversity of global value
FSC certification	Audits of forests against principles of sustainable forest management	Local	Medium: usually based on scanty secondary data	Medium: certification is an increasingly recognised market and policy tool, but the treatment of biodiversity in audits is imprecise	Medium: good links between biodiversity and desired outcomes for all stakeholders, but low investment so far in eliciting local values
RTTT	Benchmarking of supermarkets	Local	Not yet clear, but explicit efforts to transfer costs to supermarkets as well as suppliers	High: potential for high consumer buy-in	Medium: inevitable trade-offs with values held by consumers in wealthy countries
Biodiversity credits	Derivation of economic value of land in terms of biodiversity	Local	Not clear	Medium: simple composite indices will be needed for biodiversity trading, but the potential of a biodiversity market is still to be seen	Low: local values are unlikely to be tradeable in a broader market

PEOPLE'S ASSESSMENTS

Ethnobotany	Documentation of names and uses of local biological resources	Local	Medium: depends on knowledge and reliability of key informants	Low: extrapolation above local levels difficult	Low: remain focussed on local issues with few techniques to scale-up or weigh up against considerations of public good
Ecological anthropology	Open-ended evaluation of biodiversity values	Local	Low: high investment of expertise, communicated mainly to academic audience		
PRA	Multiple applications	Local	Medium to high: mainly simple techniques but sometimes high investment of time demanded from local people		
Economic valuation	Deriving monetary values for non-marketed resources	Local, national, global	Low: reliable estimates require intensive primary data collection	Medium: clear, financially oriented messages, but basis considered dubious	High: explicit means for measuring and combining different values
Multi-disciplinary landscape assessments	Development of tools to express local biodiversity values in terms meaningful to higher-level policy-makers	Local	Medium: current high requirements for expertise will decrease when methods have been developed	High: specifically designed to facilitate communication and weigh up alternative land use options	Low: so far focussed on local direct use values
Irulas	Tracking availability of biological resources	Local	High: well incorporated into daily resource use	Low: narrative, song-based style unsuitable for broad-scale policy inputs	Low: locally specific rather than transferable techniques
People's biodiversity registers	Transfer of local / expert knowledge and wisdom into public realm	Local	High: standardised methods under clear categories; mix of group and local expert interviews	High: standardised methods detract from recording local uniqueness but allow broad view for policy-makers at state and national levels, drawing attention to wide range of values	Low: so far no means for combining or trading off local values, let alone external values

2. Climate Change Assessment (Saleemul Huq)

NR Assessment tool (name/type of tool; developed/applied by)	**Purpose** (what is measured, at what scale and why)	**General utility** (eg. cost-effectiveness, communicability)	**Integration of 'expert' & local values** (extent of integration/approach)	**Potential for integration/ ways to improve integration** (conditions, approaches, processes)
A. Prevailing/ 'Expert' 1. Greenhouse Gas Emission Inventories (IPCC Guidelines)	GHG emissions from different sectors (eg. industry, transport, land use, etc)	Expert tool/model driven.	*To what extent are local values assessed/incorporated? How?* All expert – no local knowledge input.	Very little possibility for local knowledge inputs.
2. GHG Mitigation Strategies (computer based models – LEAP, MARKAL)	Policies and measures to reduce GHG emissions.	Expert tool/model driven	Local data needed but not local knowledge.	Increasing scope for local knowledge in Clean Development Mechanism (CDM) project development.
3. Climate Change Impact Assessment (standard IPCC methodology)	Assessing impacts of climate change on sectors (agriculture etc), and population (coastal population etc).	Mostly expert driven – but requiring local (expert) knowledge.	Integration needed of 'local expert' and 'global methods/tools'.	Scope for better incorporation of local knowledge in future.
4. Adaptive Strategies for Climate Change (NAPA, APF – new tools/guidelines)	To develop national adaptation strategies.	Still being done. Expert and local knowledge driven (in theory).	Greater integration of expert and local knowledge is needed.	Extensive scope for local knowledge inputs in future.
B. Peoples' Assessments 1. Potential impacts and adaptation in vulnerable communities.	To identify potential impacts of climate change and adaptation strategies at community level.	Still very experimental (done in a few countries only – eg. Bangladesh, Pacific Islands etc).	*To what extent do the results feed into 'expert' assessments? How?* Very much driven by local knowledge, through participatory assessment methods.	Great potential for carrying out many more such exercises at community level in future.

3. Forestry Assessment (Duncan MacQueen and Sonja Vermeulen)

NR Assessment tool (name/type of tool; developed/applied by)	**Purpose** (what is measured, at what scale and why)	**General utility** (eg. cost-effectiveness, communicability)	**Integration of 'expert' & local values** (extent of integration/approach)	**Potential for integration/ ways to improve integration** (conditions, approaches, processes)
A. Prevailing/ 'Expert' Government and private sector classifications	Assessment of commercial timber potential. Scale of measurement: Local, national.	Medium utility: usually a combination of primary and secondary data, with differing levels of accuracy and cost-effectiveness. Medium communicability/policy application: historically major (or sole) input to national-level policy debate, but decreasing credibility as non-timber forest functions are given greater value.	Low: very narrow view of forest resources, without linkage to synergistic or competing social or environmental values	Low
FAO forest assessments	5-yearly global forest resource assessments. Scale of measurement: National.	Low utility: based on non-accountable country level inputs – hence results can be dubious and out-dated High communicability: widespread use in international discussion, especially outside the forestry sector.	Low: no incentive to incorporate local values	Low
Certification (FSC)	Audits of forests against principles of sustainable forest management. Social, economic and environmental aspects of sustainability of a forest operation. Scale of measurement: Local.	Expensive to the company, complex. Medium utility: usually based on scanty secondary data. Communicability/policy application: Medium: an increasingly recognised market and policy tool	*[To what extent are local values assessed/incorporated? How?]* Medium. Predefined but based on previous tests – local values are checked in field interviews**.** Good links between NR values and desired outcomes for all stakeholders, but low investment so far in eliciting local values.	No obvious ways, other than enhancing investment in assessing local values in the field.
Criteria and Indicators (C&I) (eg. CIFOR and WWF-IUCN)	Policy, ecology, social and production aspects of forestry monitored at national level. Multiple applications: based on using a small number of variables to track forest resources against criteria. Local measurement.	Good in theory but complex and costly to do well – and beyond the capacity of some. Variable utility: dependent on scale, data availability and need for verification. Medium to high communicability: simple and powerful indices, but can be misconstrued or difficult to integrate	Local management and benefits explicitly assessed.	Potential to include locally relevant indicators exists - just needs to be operationalised. But integration is not very easy in practice
National Forest Programmes (NFP) (International Agencies)	Extent of resources, policies, legislation etc. assessed	Very useful. Quality depends on people involved.	Depends on the context and people involved.	NGO catalysts distil out the views of the main stakeholders
Forest Inventories (Usually Finns)	Forest composition and timber volumes	Quite straight forward but laborious	None- it does not aim to deal with social issues.	None.

B. Peoples' Assessments PRA (eg. participatory forest mapping) (Everybody)	Everything – quickly – especially social elements of forestry interventions. Mapping to delineate forest boundaries and assess resources. Scale of measurement: local.	As good as the people doing it. Medium utility: lead-in time may be high, but methods cost-effective. Communicability/policy application of maps: Medium - depends on legal recognition of local agreements	Can feed into C&I or NFP approaches.	Maps can be useful in securing local property rights, plus raising of local capacity for political action
Governance Pyramid (Just IIED/World Bank)	Enabling context and processes evaluated to improve forestry	Unwieldy and politically sensitive – quite complex to do well.	Local values should be surveyed but 'policy' implications are difficult to explain.	Needs ownership by the national government.
Community Visioning (Guyana)	Peoples' aspirations for the future and how to measure outsider projects against them	Very useful and empowering for communities	Local values portrayed in Sustainable Livelihoods terminology to make intelligible for development actors.	Already very good. The President of Gayana would like to use it for the PRSP.
Power Mapping (Forestry and Land Use Progamme, IIED)	To view different perspectives of who controls/determines resource use.	Useful for negotiating new deals for resource use.	Local and expert values are compared directly.	None.
Market analysis and development (developed by FAO), e.g. Vietnam	Analysis of local forest and non-forest resources to ascertain market opportunities. Measurement: Local	High utility: Early stage priority setting means effective use of resources. Medium communicability/policy application: Medium: fairly locally specific, but with high chance of proving good returns.	High potential for integration: economic success meaningful at both local and higher levels	
Community-based environmental assessment (developed by IUCN)	Simple framework for monitoring and action. Local measurement.	High utility: High: based on simple ranking exercises using locally relevant indicators. Low communicability: Low: difficult to scale-up or communicate beyond community level	Low potential for integration: congruence unlikely between internal and external indicators / priorities	

4. Assessing Urban Water and Sanitation Conditions (David Satterthwaite and Gordon MacGranahan)				
Assessment tool (Name/type of tool; developed/applied by)	**Purpose** (what is measured, at what scale and why)	**General utility** (eg. cost-effectiveness, communicability)	**Integration of 'expert' and local values** (extent of integration, approach)	**Potential for integration/ways to improve integration** (conditions, approaches, processes)
A. Prevailing/ 'Expert' 1. Water quality tests applied by technicians	Measuring water contamination. Faecal contamination most widely relevant in low-income settings. Most often used within water networks.	Costly for large-scale application. Often misses decline in water quality between tap and mouth. Good for communicating that a problem exists.	Does not explicitly incorporate local needs/priorities, but can be very useful complement, because it can sometimes get at quality issues that are difficult for users to perceive.	Post tap tests could help inform 'experts' and 'residents'; source tests could be made more available to users, but are costly and prone to misinterpretation.
2. Household surveys of water, sanitation (and health) applied by enumerators et al	Representative sample of households for indicating water and sanitation conditions e.g. in relation to policy targets	Cost savings can be achieved by good sampling, but produces little local detail and relevance (relies on limited no of standard questions). Communicates to physical planners.	Generally proceeds from expert perspective, rarely capturing local perspectives or issues. Misses local complications that have extreme relevance for local health and convenience	'People's assessments' could provide basis for better survey design, and better interpretation of survey results. Raising 'other' issues such as convenience. Need to seek women's views.
3. Contingent Valuation surveys of water and (sometimes) sanitation	Household samples, to measure willingness to pay for water and sanitation provision – mostly applied in context of e.g. pricing issues.	Costly given single function. Have been used (perhaps too effectively) to promote cost recovery through user fees for water. Communicates best to economists.	Attempts to capture local values through revealed preferences, while providing information relevant to 'experts'. Information rarely if ever fed back to residents.	Attempts have been made to integrate with participatory assessments, with debatable results – perhaps better as a complement.
4. Geographical Information Systems	Can include variety of information, from water and sewerage pipes to census data but needs 'on the ground' data to be useful	Costly to create initial mapping system. Once a GIS exists, can be cost effective means of presenting new results. Not good for presenting sample surveys. Communicates best to the media savvy.	Some attempts have been made to feed GIS with results of participatory appraisals; Can in principle be presented back to residents.	Potential for using to help challenge official statistics using local knowledge is quite high, but does not seem to have been exploited.
B. Peoples' Assessments 1. Participatory assessments as part of government/donor programmes and projects	Establishing community priorities for standards and for quality for improved provision and preparedness to contribute to capital and maintenance costs	Should reduce gap between external and local priorities. More chance of gendered perspectives. Often difficult for external agencies to reconcile their preferences and modes of working with local concerns	Depends on how external agency views participation (ie where on Arstein's ladder...is it seen only as a means to make implementation easier?) and the tools and methods they use	Extent to which external agencies allow real participation and are prepared to respond to what participatory processes prioritize
2. Locally driven assessments as part of negotiation with authorities or utilities	Demonstrate scale of need; can produce very detailed and accurate 'slum maps' and 'slum censuses' to encourage action and provide information base for such action	Community-driven assessments can be very cheap & gender/child aware; usefulness depends on willingness of local authorities or water/sanitation utilities to discuss & implement responses. Can also form basis for community-directed action.	Integration of expert and local values depends on technical competence of community-suggested actions and on willingness of local professionals and authorities or utilities to listen and modify their approaches.	Potential for integration much influenced by the extent of the space for democratic processes, political and/or bureaucratic space for such negotiations and support for urban poor groups organizing (representative federations of urban poor with great potential)