

## 1 Introduction

Understanding local natural resource management issues requires a range of methods which helps uncover complexity, difference and the dynamics of change. Advocates of community-based sustainable development approaches have often adopted the suite of methods associated with participatory rural appraisal and other related approaches to assist with local-level problem diagnosis and planning. Such methods are now commonplace in a wide range of local level natural resource and rural development planning frameworks. These come in various guises, including district or village environmental action plans, community natural resource management plans or *gestion de terroirs* approaches and participatory forest or watershed planning approaches. Many of these have undoubtedly encouraged local level reflection on natural resource issues, often involving local participants in the process.

While such approaches are unquestionably a step in the right direction, away from the top-down, externally imposed planning regimes of earlier development interventions, they do have some potential shortcomings. Most of these lie in the conceptualisation of the key issues of 'community', 'environment' and 'institutions' embedded in these approaches. While often not explicit about such concepts, such approaches tend to adopt implicitly a set of assumptions about each: assumptions carried to the field by the implementors of such local-level diagnosis and planning approaches. It is for this reason that the environmental entitlements approach attempts to provide a clearer and more rigorous conceptual framework for looking at people-environment relations, one that allows for the exploration of diversity, difference and dynamic complexity in resource management situations. This article examines some of the practical methods which can assist the application of the environmental entitlements approach to field-based situations, and which were used during the

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<sup>1</sup> This paper is derived from discussions among the field researchers (Meenakshi Ahluwalia, Thembela Kepe and Seth Afikorah-Danquah), the country supervisors (Ben Cousins, Edwin Gyasi and MS Rathore) and the IDS-based team (Melissa Leach, Robin Mearns and Ian Scoones), and from debates generated by the participants at the Environmental Entitlements workshop held at IDS in April 1997.

# Methods for Environmental Entitlements Analysis

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**Table 1: The Methods Tool Box**

Livelihood analysis	Social mapping; well-being ranking; seasonal calendars; time use and activity charts; livelihood diagrams; biographies and life histories; endowment and entitlement ranking; individual and household surveys/censuses
Environmental analysis	Environmental histories and time lines; site histories; archival information; travellers' records; time series air photographs and satellite imagery; seasonal calendars; resource assessment transects; soil/vegetation surveys and inventories; state-transition modelling
Institutional analysis	Network diagrams; venn diagrams; decision trees and flow charts; actor-network analysis; organisational analysis; biographies of institutions or organisations

research for three of the articles in this Bulletin.

## 2 Methods and Sequences

A number of sequences of methods are suggested by the environmental entitlements approach. These are focused on three areas (see also Table 1):

- i) Livelihood analysis, involving investigating community differentiation and the various endowments, entitlements and capabilities of different social actors.
- ii) Environmental analysis, involving the analysis of ecological difference, the dynamics of environmental transformation and the creation of landscapes through human action.
- iii) Institutional analysis, involving an assessment of the role of formal and informal institutions in creating livelihoods through endowment and entitlement mapping processes.

The following sections offer some examples of sequences of methods used to explore these themes

in the different case studies. Many of these methods draw extensively on the now well-established PRA tradition (Chambers 1994), but also incorporate techniques of resource survey, environmental history, ethnography, and conventional survey approaches. In other words, methodological complementarity (cf. Abbot and Guijt 1997) or hybridity (Batterbury *et al.* 1997) is sought which involves an eclectic use of methods derived from disciplinary traditions as diverse as ecology, economics, history, anthropology, sociology and management studies, among others. It is this interdisciplinary fusion with a critical, yet realist perspective (cf. Sayer 1992; Gandy 1996) which provides important insights when addressing the complex questions raised by an analysis of people-environment interactions. A summary of the range of methods used during the case study research in Ghana, India and South Africa is given in Table 1.

It is beyond the scope of this paper to provide a summary of each of these methods<sup>2</sup>; instead we want to illustrate how they can be combined in

<sup>2</sup> Many good sources exist which offer more detailed discussion of particular methods. For example, see the contributions to Denzin and Lincoln (1994) and for good summaries of issues raised by qualitative methods, Moris and Copestake (1993). The Notes on Participatory Learning and Action (formerly RRA Notes) offer a wide range of experiences of the use of P/RRA methods (IIED 1988–1997). More quantitative survey approaches are covered in a wide range of texts, with useful summaries being offered by Nichols (1991) on survey and sampling techniques and Casely and Lury

(1987) more generally on household survey approaches. Ecological and environmental assessment methods, including remote sensing techniques, are covered in many textbooks although most do not provide pointers to linking these to more anthropological field approaches. Case studies which integrate the use of environmental history (e.g. Cronon 1992; Worster 1984) or historical geography (Williams 1994) approaches are now increasingly common (see, for example, Tiffen *et al.* 1994; Fairhead and Leach 1996; Lindblade 1997; Scoones 1997 among others).

sequence in the pursuit of a particular theme, issue or question. Thus for each case study a selection of methods was combined, with a sequence chosen appropriate to different themes of investigation. No prescription can be given as to the ideal sequence or the most appropriate methods, as a major lesson learned from field testing was that each new circumstance required a different combination of methods to be drawn from the 'tool box'. The following sections offer three examples of how different methods were combined in particular cases in the pursuit of information about a particular theme.

### **Case 1: Understanding community difference in Rajasthan, India (see Ahluwalia, this Bulletin)**

One of the major challenges of the Rajasthan case study was to explore the dimensions of community difference in the area covered by the Nayakheda watershed development project. While many presented an image of community harmony and coherence, it was necessary to investigate in greater depth what divisions and differences existed. In order to pursue this line of investigation, a detailed social map was constructed with each of the houses in the six-seven hamlets covered by the project individually marked. A census exercise followed whereby details of each homestead were derived through discussion with a number of key informants. This information was added to the social map to give a spatial picture of difference. A well-being ranking then followed to explore how local perceptions of different people's capabilities were framed. This was carried out at the household level with the full list being drawn from the social map and census. Well-being or capability was differentiated by a number of key characteristics, including material wealth, but also generosity and ability to give to others. These village-wide analyses revealed a number of different livelihood strategies, including farming, livestock raising and wage labour. These were subsequently pursued in more detail with a small, yet representative sample drawn in relation to the four well-being categories derived from the earlier ranking exercise.

Detailed interviews with sample households allowed for more in-depth analysis, particularly of intra-household issues, including age and gender differences in livelihood strategies. A number of methods were used during these discussions. The

sequence often started with a discussion of a person's life history and the development of a biographical time-line of different occupations and livelihood strategies over the person's life. This was usually followed by the construction of a livelihood diagram, where the current range of sources of livelihood and their connections were mapped out by the informant on a large sheet of paper or on the ground. This allowed for the listing of the full range of endowments and entitlements which the particular person or household had access to. These, in turn, could be ranked in terms of their importance in contributing to individual well-being or capability using a simple matrix ranking exercise. Discussion around such a ranking exercise often revealed important information about the range of interacting institutions which mediated access to endowments and entitlements; a subject which could be pursued with a more detailed institutional analysis (see Case 3).

### **Case 2: Investigating histories of environmental change and land use in South Africa (see Kepe, this Bulletin).**

Understanding the complexities of environmental change in the different parts of the study area was an essential part of the South African case study. In particular, investigating the history of environmental and land use change in the village sites, state farm land and nature reserve allowed for a more detailed understanding of the diverse trajectories of change and the social, economic and political factors mediating it. Much basic information on environmental issues was available in secondary literature on the area or as part of government records. This included some detailed resource surveys, archeological studies, inventories of flora and fauna, climatic data, livestock and wildlife censuses and so on. This was complemented by some interesting insights from archival information, ranging from the diaries of shipwreck survivors from 1554 through travellers' accounts from the eighteenth and nineteenth centuries to colonial and more recent district administrative records. A thorough trawl of available sources therefore provided some essential background to the area.

However, what was needed was to move beyond the static pictures presented by particular surveys or studies towards a more dynamic understanding of the relationships between social and environmental

issues over time. This was achieved through combining ecological and social research techniques in the field. For example, transect walks or resource mapping with local informants were important routes to a more locally nuanced understanding of environmental change. Joint analysis of time series air photos (for the village study area photos were available from 1937 to 1996) served a similar purpose, with considerable insight being derived from discussing with people who had lived in the area over the period.

Transect walks, resource maps and air photos helped in the identification of key sites for more detailed study. Sites chosen included those on different soil types in different parts of the area; those which had previously been settlement areas and now exhibited different ecological features; those that had been subject to major disturbance or dramatic changes in use, such as new agricultural lands or areas which had been protected by the nature reserve; and those which had particular features, such as the presence of rare or endemic plants. Ecological site histories with selected informants who were deeply knowledgeable about the particular site proved immensely helpful in gaining a greater level of specificity about the changes that had occurred and the various causal factors which combined to precipitate such change. For some issues, such as the transitions between different grass species associations, a simple state and transition model was developed with informants to analyse in more depth the key factors (ecological, social, economic and so on) which result in the maintenance of a particular state (ie. the presence of a certain grass species) or resulted in a transition to a new state.

### **Case 3: Exploring institutional arrangements in forest management in Ghana (see Afikorah-Danquah, this Bulletin).**

An institutional analysis is at the core of the environmental entitlements approach. Once an understanding of social and environmental difference and dynamics has been achieved (see Cases 1 and 2), many institutional questions inevitably arise. In the Ghana case study, for instance, it was important to get a better understanding of the institutions which mediated indigenous inhabitants' and immigrants' access to and control over forest and agricultural resources, for it was the combination and

interaction of these institutions which was at the heart of the conflict over visions of appropriate environmental management.

Matrix ranking or scoring exercises with different indigenous and migrant farmers, as part of individual interview or group discussions, allowed the range of endowments and entitlements to be compared in terms of their significance for well-being. For each endowment or entitlement 'mapping' process a range of institutions were identified. These were, in turn, examined both individually and in relation to each other. The analysis of individual institutions (for example, matrilineal inheritance or labour-exchange groups) was pursued through detailed case studies, often developed during focus group discussions (for example with non-timber forest product collectors, hunters or charcoal makers) when the basic parameters of institutional rules and norms could be discerned. Institutional biographies traced the origins and evolution of institutions, highlighting the social embeddedness of local institutions. Some institutions have more of an organisational form (for example, descent groups) and consequently organisational analysis was possible. This included discussions on such issues as membership, leadership, power relations and so on. Very often it is the relational issues which are key to understanding the overlapping – sometimes complementary, sometimes conflictual – nature of formal and informal institutions and organisations. Venn diagrams proved a useful route to understanding perceptions of local organisational linkages and relative importance from different informants' perspectives, while network diagramming with the relationships between different actors involved mapped out was helpful in understanding the underlying social relationships of different institutions.

With a more complete understanding of institutions and organisations, some of the issues surrounding conflicts over resource use can be more easily uncovered. In the Ghana case a range of resource conflicts between immigrants and indigenous people evidently had an institutional origin. For example, while indigenous inhabitants usually gained secure land tenure as members of landholding descent groups, immigrants, excluded from these groups, relied on institutions such as tenancy, encouraging short-term land degrading practices.

### 3 Lessons Arising

The fieldwork carried out in three contrasting settings in Ghana, India and South Africa also highlighted a range of important general lessons for methodological design. These included:

- Perspectives on complexity and diversity are best derived from the use of multiple methods, combined in a flexible fashion through innovative sequencing. This allows the best to be gained from both qualitative and quantitative methods.
- Understanding diversity and complexity, whether of 'community' or of 'environment', requires that careful attention be paid to sampling. This may not entail elaborate statistical procedures, but it is equally relevant to both qualitative and quantitative information. Systematic procedures of iteration and triangulation with multiple methods and informants are key in improving reliability and trustworthiness of data.
- Assessment of the appropriate scale of analysis is essential. In most cases, field analysis started at the local, village level. But through exploring connections, linkages and networks, wider impacts can be detected. The linking of the details of micro-realities at the village level with broader macro-influences of economy and politics through a multi-layered institutional analysis allows locality specific analysis to be set in context.
- The setting in which information is collected has a big impact. For instance, some information may be appropriate to gather in group settings where open discussion is possible and where feedback, discussion and debate assists with analysis. However, in other instances, for example, where information is sensitive, it may be appropriate to collect information from individual informants or simply through participant observation. Whether as individual interactions or in group settings, visualisation, diagramming and joint analysis often proved useful, generating more reflection and discussions than simple question-answer sessions.

These are, of course, not new insights; they reflect the on-going debate about research approach and method among a wide range of interdisciplinary researchers working in a range of fields (e.g. Long and Long 1992; Scoones and Thompson 1994;

Mosse 1994; De Koning and Martin 1996; Cornwall and Fleming 1995; Nelson and Wright 1995 among many others). However, the need to take such lessons seriously is particularly pertinent in the context of analysis of people-environment interactions, where complexity, diversity and difference are always central and a complementary, integrative and hybrid research approach is essential.

### 4 Who Might Use the Environmental Entitlements Approach?

In almost all of the examples of community-based sustainable development initiatives mentioned at the beginning of this article, external facilitators, development workers or extension agents are involved as active – and by virtue of their power and position – influential actors in any analysis and project design process. Our aim has not been to criticise the very real attempts at community-led development by such people, but to highlight some of the pitfalls of taking too simplistic a view of the issues. Our concern, instead, has been to focus on developing a set of conceptual and methodological tools which might be potentially useful for such professionals involved in the complex process of community-based sustainable development; tools which both encourage critical reflection on difficult issues and also suggest practical ways forward.

So who might use an environmental entitlements approach? In what settings might it help improve current practice? Taking the three case studies carried out for this project, some examples can be offered. In South Africa, for instance, researchers and field staff from government ministries associated with land reform or the new Spatial Development Initiative are continuously faced with the difficulties of investigating competing claims to land, resources and development benefits. In India, workers in Seva Mandir or other NGO-led watershed development schemes, as well as government workers in state watershed management programmes must frequently work with deeply divided communities, and face the practical challenges of understanding the implications of this diversity for environmental activities. Similarly in Ghana field workers of the Collaborative Forest Management Unit of the Planning Branch of the Department of Forestry are initiating joint forest management

projects in a number of areas which require a detailed institutional analysis of past and current conditions.

Methods are, of course, not neutral; they are very much informed by the assumptions of the users. The recognition of the presence of such external actors and the need for informed, critical and reflective analytical frameworks is important. In the processes of purposive intervention through the development process, such actors will inevitably remain. If a more participatory process of local planning is to emerge, their role certainly must change from being the planner, designer and implementer to being a facilitator, catalyst and co-analyst (cf. Chambers 1997). But in such a joint role and given their powerful position in the process, external actors must be particularly reflective on the assumptions they bring with them.

Our hope is that the environmental entitlements approach will allow those involved in community-based development initiatives to pose new questions, bringing new insights for practical ways forward. The environmental entitlements approach is little more than a set of tools for bringing new ideas to the fore. It does not provide answers, but simply provides the basis for compiling checklists of issues and questions to be used in field investigations, and, through suggesting some key conceptual themes, offers a framework for analysing the resulting information in a critical, informed and reflective way, and, in so doing, highlighting the challenges and identifying the opportunities for any initiatives in a particular setting. Making use of such a framework may, of course, be a tall order given the constraints faced by most development practitioners. But in bringing together disparate conceptual strands, we do not pretend to offer a new theory, simply new and perhaps interesting combinations of ideas which shed new light on old problems. Such new combinations of ideas, in turn, suggest innovative combinations of methods, as highlighted above. Again, the methods themselves are not new, but the approach suggests appropriate sequences of methods, applied to particular themes or issues.

## **5 Research, Participation and Action**

Experiences during the fieldwork for the

Environmental Entitlements project raised many dilemmas over the difficult relationship between research, participation and action. These experiences have raised the question of how 'participatory' an environmental entitlements analysis can be. The term 'participation' is now very widely used in contemporary debates about development-related research and planning. But often it is used rather loosely. In order to assess the potential linkages between research, participation and action it is important to disaggregate. Four possible, obviously stylised, approaches are highlighted below, each with very different roles for the external analyst (identified as researcher, facilitator, development agent or whoever) and so very different implications for the style of investigation.

- The 'extractive researcher': where the researcher retains objectivity and neutrality. Unbiased participant observation or survey work is made possible because the researcher is fully accepted by local people, has excellent language command and is locally resident, yet remains impartial and is able to extract ethnographic accounts or survey data in an independent, unbiased and critically analytical manner.
- The 'virtual participant' (cf. Drinkwater 1992): where the researcher makes her/his identity, biases and interpretive voice explicit and recognises that such biases are inevitably inherent in concepts used and frameworks of analysis employed. However a critical and reflective stance does not prevent the researcher from reflecting, analysing and interpreting. On occasions, the research and reflection initiated by the researcher may lead to action. This is seen as another opportunity for learning, rather than something which biases results.
- The 'participation populist': where the researcher encourages local analysis by people themselves, as a facilitator and catalyst of people's own research. Concepts, methods and analyses are not imposed and the researcher simply encourages local reflection and analysis.
- The 'activist action researcher' (cf. Fals-Borda and Rahman 1991): where the researcher makes explicit her/his own position and supports a research process towards a specified end, with no pretence of impartiality. Activist research may mean making an

alliance with one particular interest group against another, with critical and thorough research employed to make a particular case on behalf of, or together with, an a certain group.

How did the experience of the field research teams match up with these stylised researcher types? The field research for this project started out as essentially extractive, aimed at testing and adapting the environmental entitlements approach in different settings. In other words, perhaps most in line with the 'extractive researcher' mode, with local language skills combined with long term village residence and a framework developed prior to the research available for testing. But, as each of the field researchers found, extended field engagement has many consequences: the researcher inevitably becomes involved, a participant in the research process itself, entangled in local networks, and subject to and part of local debates. Research 'subjects' become hosts, friends and colleagues, and, with the trust necessary for carrying out such research, mutual obligations inevitably arise. In other words, the 'ideal type' distanced, fully objective, extractive researcher disappears (if, of course, s/he ever existed) and a more realistic description would see the researcher as a 'virtual participant', maintaining a critical, reflective and analytical stance, but also becoming part of on-going action at the local level.

What about the other types of researcher described above? Our experiences would argue for the rejection of the 'participation populist' position on the grounds of it being unrealistic and naive. All convenors of research activities carry with them some baggage, explicitly or implicitly. While there are certainly some important insights to be gained from exploring local analytical frameworks for interpretation, we should not deny the role or potential input of an outside analyst. The environmental entitlements approach, as employed in this project, is patently not a locally derived framework for analysis, but it may offer some useful guidance for an external facilitator of a participatory process. In this case, it might be deployed in a more activist mode. For example, an NGO worker whose explicit aim is to improve the livelihoods or resource management

capacities of a particular group of people might usefully employ the framework in a more directive manner to assist with the institutional design of development interventions.

We would not want to argue that the approach we adopted (essentially extractive research moving towards a 'virtual participant' mode) is necessarily the right approach and others wrong. The methodological stance taken inevitably depends on the use to which the resulting information will be put. It is clear that, depending on circumstance, a variety of researcher modes are possible and, in the future, may be further explored<sup>3</sup>. The concluding article in this Bulletin offers further discussion of the possible applications of the environmental entitlements approach in policy analysis and development planning.

## 6 Conclusions

The environmental entitlements approach was derived from a detailed examination of multiple strands of literature in the social and natural sciences, in order to ground it in a rigorous treatment of different conceptual issues. Its testing in the field has subjected it to adaptation and modification, but the core themes – the focus on community differentiation and multiple social actors; emphasis on endowment and entitlement mapping processes; the highlighting of complex interaction of multiple formal and informal institutions in environment-livelihood interactions; and the historical transformation of environments and landscapes through human action – have been shown to be useful analytical themes. But if such ideas are to become useful to field practitioners, a subsequent process of translation must be undertaken, whereby the core concepts and the associated framework becomes increasingly clear and useable. It is our hope is that, equipped with a more enriched conceptual and methodological toolbox, those involved in community-based sustainable development initiatives may become more effective and reflective practitioners (cf. Schon, 1983).

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<sup>3</sup> Follow-up work in the different case study sites is taking a more 'activist' stance. For example, in South Africa the approach is proving useful in seeking information for negotiations around land claims and

tenure reform in the area in the context of a large regional economic development project (Kepe pers. comm.).

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