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**METHODS OF STUDYING COLLECTIVE ACTION
IN NATURAL RESOURCE MANAGEMENT:
THE CASE OF COMMUNITY FORESTRY IN NEPAL**

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Synopsis

This paper examines some conceptual, methodological and practical issues associated with studying collective action in natural resource management, specifically community forestry in Nepal. Based on institutional memory and long experience of working in community forestry research and intervention together with recently carried out Participatory Action Research (PAR) and Adaptive and Collaborative Management (ACM) research in Nepal offer the basis for the analysis of the case of community forestry in Nepal. In the paper, collective action is conceptualized in terms of not only resource-community relations but also the relationships between partners in collaborative work to perform collective action at micro, meso and macro levels. Some of the conceptual methodological approaches have been reviewed to show that there are weaknesses and the strengths of various approaches of studying collective action that are prevalent in development circle. Attempt is being made to demonstrate that community forestry constitutes both physical and social processes, the study of which therefore requires the application of various research methods that are derived from scientific as well as participatory approaches. More importantly, the experience and lesson learnt from Adaptive and Collaborative Management (ACM) research being carried out in Nepal is highlighted to demonstrate the application of multi-methods in ACM, which are derived from natural science, social science, organizational and business management.

Key words: Community forestry, collective action, Participatory Action Research (PAR), Adaptive and Collaborative Management (ACM)

1. Methodological challenges in studying collective action in community forestry

Community forestry involves both physical and socio-economic systems. Interactions of both systems bring outcomes at both the health of the forest resource and people's livelihood levels. Foresters have long practiced the study methods of the physical processes within forest systems, which are much more straightforward. However, conceptualization of the research approaches, methods, tools and techniques for studying social processes and livelihoods outcomes seek more research work and intellectual debate. In recent years, livelihoods for example are increasingly conceptualized as partly the outcome of negotiations and bargaining between individuals with unequal power, even within households. Measuring the social capital, inter-household network of relationships for livelihoods has therefore become increasingly important in studying collective action in natural resource management sector. There are however considerable conceptual and methodological problems involved in combining the two set of components, bio-physical and social, since these two systems lie in different scientific paradigms. The physical system is typically within the purview of the natural sciences, while the socio-economic system is within the realm of the social sciences.

The study of collective action in community forestry would essentially require a combination of approaches, methods and techniques. Structure and dynamics of community and forest resources, understanding of the positivists and constructivist approach of inquiry, generation and use of quantitative and qualitative information, assessment of the conditions of forest resources and the livelihoods outcomes that community forestry intends to contribute, all aspects have to be understood and captured in the study of collective action in community forestry. Hence the application of research methods derived from both natural and social science is necessary. In addition, the institutional research approaches and perspectives, which are derived from common property literature, also need to be adapted in measuring collective action.

Government policy, regulations, officials' preconceptions and attitude together with the relationships that community have with them and vertical and horizontal linkages and relationships with other organizations affect how community forestry functions and collective action is promoted. The concept and methods of analyzing community structure, social and physical processes, methods of analyzing institutional linkages and development interventions all take an important place in the methodology of studying collective action.

Analysis of development intervention in community forestry cannot be ignored since the positioning of diversified and dynamic actors and their interaction with intervention within their economic and political setting often determine the outcome of collective action. For this, the research methods have to be applied to explore the relationships and interaction between economic and social groups and the processes through which these groups attempt to accomplish their livelihood strategies. In doing so, the study need to apply the methods to gather information and analyse heterogeneity in community among economic and social groups based on class, caste, age and gender. The way community forestry used to be defined and interpreted during 1980s was limited to a focus on 'community-resource' relations. However this interpretation undermines the importance of the scope of community forestry that goes beyond community-resource relations. In the context of Nepal's community forestry, the role of government and non-government organizations, the long presence of donor agencies, and Forest User Groups' interaction with these organizations shape the collective action within community, between them and outside organisations, and among outside organizations. The study of collective action to understand the relationships between people and forest resources in isolation without taking into account the outside organizations, economic and socio-political forces that shape and influence the collective action will therefore be incomplete. The formal as well as informal relationships that community members have among themselves and with outsiders and with broader economic as well as political process and the methods to study their relationships rather than study of organizations only pose a new conceptual challenge in the field of collective action.

2. Research approaches

Below is a brief review of some of the relevant methodological approaches prevalent in natural and social science. It is indicated that there are some conceptual problems in both natural as well as social science research approaches that justifies the need of the combination of various approaches to be applied in studying collective action.

The epistemology⁴ of 20 years ago in both social and natural science for how we experience, understand and interpret the world around us, and tackle 'environmental issues' has diversified and diverged in different directions. Natural scientists still tend to rely on the positivist and *structural* approach. Whereas, social science has diversified into various approaches, namely *post-structuralism*, political economy, *political ecology* and *actor-oriented* approaches, *institutional* approach and so on. Adaptive and Collaborative Management approach (ACM) is a recently emerged approach in the field of participatory forestry. Many elements of which are derived from natural and social science together with organizational and business management discipline.

2.1 The Structural Approach, still dominant in natural science, assumes that there is an objective world. Reality and truth are "out there" and these can be reliably measured by different observers with the same results, since the observer (the researcher) and observed (e.g. the environment) are assumed to be independent, and the cultural and professional means used by the observer do not affect the way in which a single reality is grasped, interpreted and measured. Reality can be understood and empirically verified and explained by models of casual connections, which generate hypotheses deductively which can then be tested, often by quantitative means. In this approach "scientific" interpretations of the environment are seen as only one form of 'truth' and their objectivist understanding are often based on measurement and quantitative modelling. They are seen as 'facts', which are observable, measurable, constant and stable and claims objectivity and judges results on the basis of sound experimental design and accuracy of perception and measurements (Bernard, 1994). This approach lays emphasis on generalisation not on context and it attempts to represent an exterior world affirming "reality as knowledge, as universal, as truth" (Nelson, 1987 cited in Rosenau, 1991:97). Its view is that science produces an objective truth and provides a rational non-political basis for policy making. So scientific 'truth' becomes a matter of 'truth talking to power' (Jasonoff, 1990; Blaikie, 1994; 1995). Much normative policy-making in the environmental field is still predicated upon such precise quantitative measurement. However, this structural approach is now no longer accepted uncritically (Bernard, 1994). In studying collective action in community forestry this approach should not be rejected completely, instead some of the methods to measure the bio-physical elements can be useful by using hard science such as GIS and remote sensing.

2.2 Post-structuralists tend to be positioned at the other extreme. They reject the views of modern science, epistemology, and methodology. Post-structuralist have little faith in hypotheses formulated by structural means of analysis and reject an independent external 'reality' and theory be tested. They deny any view of reality that assumes "the independence of individual mental processes and intersubjective communication" (Rosenau, 1991:110). Post-structuralist argue that " ... all knowledge claims (all facts, truth, and validity) are 'intelligible and debatable' only within their context, paradigm, or 'community'. They are merely the result of agreement among professional communities. They reject modernist theories and recognise a situation where a multitude of theories exists and none can claim superiority over any other. They look to the uniqueness of the parts, rather than to the unity of the theoretical whole. The post-structuralist approach tends to be unsystematic, de-centred, ever changing, and local. It applauds small, community based traditional versions of the truth ("narratives") for example, folk wisdom, myth, popular 'stories', legends, and fragmented creative snippets of wisdom. It argues

⁴ In a most general sense epistemology means the study of how we know things (Bernard, 1994), and therefore how we approach knowledge.

that in the absence of truth one must welcome multiple interpretations. Although it offers great insights into the social science literature, it attracts criticism (see for example, Gore et al, 1995; Blaikie, 1996) since it often fails to examine its own undeclared assumptions, and usually is not concerned to offer practical solutions.

2.3 *Political economy* approaches have been increasingly used in the studies of forest resource use and management. This perspective recognizes the existence of various forms of competing forces operating at various levels to determine the relations of people with the environment and related interventions. Currently, this approach has been used in explaining the role of existing political structure, market and existence of external social agents in shaping institutional outcome (Khan 1998, Taylor and Zabin, 2000). The approach is useful to understand how the competition and struggle among heterogeneous interests tend to shape the impact of ecological intervention to the different actors. Political economy in terms of forest use "considers how resource distribution, political policies, existing economic and political relations and market forces influence the allocation and use of resources" among the people in any resource regulatory systems (Khan, 1998).

2.4 *Political ecological* approaches combine the concerns of 'ecology' and 'political economy' which requires negotiation between the natural and social science (Blaikie and Brookfield, 1987). Political ecology is defined as an elision of a number of established disciplines and approaches. It also identifies the necessary bringing together of natural and social science and therefore has to negotiate different dominant paradigms in natural and social sciences (Blaikie, 1985). In so doing it brings together differing epistemologies related to natural as well as social sciences. He goes on to claim "the natural science is more likely to use an objectivist and positivist approach to study the physical environment and the social science a more social constructivist approach" (ibid:4). This approach suggests that environment can be interpreted differently by various actors because it is socially constructed. What we notice, interpret and give meaning to comes from our direct experience and our cultural repertoire (value systems, traditions, religions, educational content, etc.), and therefore it questions narrowly conceived quantitative modelling but also does not uncritically support contemporary 'popular' neo-populist and post-modernist ideas. It criticises the structural approach by demonstrating that scientific formulas are merely based on shaky data and are operationalised in terms of a manner of professional and bureaucratic value judgements. It says that scientific formulations have been shaped by the culture and institutions of scientific endeavour and are narrowly technical in conception but used (whether they fit or not) in the daily projects of promotion, politics and bureaucratic manoeuvrings by academics and by policy-makers the world over. But also this approach recognises that the structural methods, in spite of their shortcomings, are essential tools to understand the natural world in ways that can be convergent with other actors outside the scientific community (Blaikie, 1994; 1995).

2.5 An *actor-oriented* approach is a recently emerging dynamic approach to the understanding of social change within a development context which has gained acceptance in social science research. Long & Long (1992) suggest that development is socially constructed within the daily life of various actors, and explain the concept of the social construction of knowledge(s) specifically within the development process. They suggest that development activity brings together a cast of actors, each of whom has 'projects' or sets of objectives which they seek to achieve through various strategies. The stage on which the actors perform (i.e. enter into social relations) is termed as the "development interface" (Long, 1989). Hence, local people, government servants, politicians, scientists and development experts, development workers, landlords typically form this cast. They all have their 'projects'. Their power, influence, knowledge and efficacy shape the response and strategies of the different actors (Long and Villareal, 1994). They also seek to persuade by influencing others through appeals to reason, science, democracy and self-interest. They channel specific items such as claims, orders, goods, instruments and information through a variety of strategies such as coercion, evasion, passive resistance or struggle.

An actor-oriented analysis can be criticised for concentrating upon the minutiae of social life at the expense of understanding the nature and impact of large-scale social structures and processes. It can also be criticised for being methodologically individualist in its explanations, thereby reducing the understanding of social phenomena to statements about the dispositions and interests of individuals. This leads to the consideration of what Esman and Uphoff (1984) called intermediate structures such as social networks based upon criteria such as kinship or patron-client ties, groupings of households (user groups), which can be used to generate more general statements about policy as a social process.

2.6 Institutional approach: The International Forestry Resources and Institutions (IFRI) Research Programme, established in the mid-1990s, has carried out studies in 13 countries by using institutional approach, is very familiar among many researchers and has gained acceptance as an established approach in the field of common property institution related research around the world. This approach provides the researchers a clear framework to analyse hypothesized relationships among demographic, economic, institutional, and biological variables. Data collection encompasses biophysical measures of forest conditions, climatic and soil conditions, demographic information, and economic indicators as well as details about institutions affecting use of forest resources. Links between institutions and biophysical indicators of forest health is one of the focuses of this approach. The approach suggests that institutions represent a critical component of forest management, therefore institutional approaches must be incorporated into the study of forests and future policy analysis about forests (see Poteete and Ostrom, 2002 for details). The approach argues that institutions for resource management are the products of collective action. Scientific understandings of change in forest systems, as well as the effectiveness of efforts to promote sustainable forest use, depend upon well-grounded theories about development, evolution, interaction, and consequences of institutions.

Although this approach is widely accepted among many researchers, it can also be criticised for being methodologically complex and extractive with little involvement of local communities and action to address the issues identified by the research itself.

3. Adaptive and Collaborative Management (ACM) approach

Adaptive and Collaborative Management (ACM) approach has evolved recently in the arena of participatory forestry. It captures some of the elements of various approaches derived from natural science, social science, organizational and business management. Although the concept of ACM research is still in the process of development, it is an approach by which a number of research questions related to collaboration and adaptation in the management of the forest resources will be attempted to be answered by using the Participatory Action Research (PAR) methods. The main question include:

What are the conditions and contextual factors⁵ within which various ACM processes⁶ take place to have social and environmental outcomes⁷?

Gilmour et al (2001) defines the ACM as a quality-adding approach whereby the people or groups who use, control or in some other way have 'interests' in a forest, agree through a process of Participatory Action Research (PAR) to act together when they draw up plans for their forests. These plans are then implemented with the awareness that they may not fulfill their stated objectives. In this process, it is important for people to observe and learn from the implementation, together as groups, as improvements in the plans are negotiated and alternatives are sought. ACM is characterized by conscious efforts among such groups to communicate, collaborate, negotiate and seek out opportunities to learn collectively about the

⁵ such as external intervention, forest value, forest and land use policy, property right arrangements, ecosystem type

⁶ such as communication, monitoring, conflict management, social learning and innovation

⁷ such as equitable and sustainable forest management practice, increased livelihoods capital, establishment of equitable society, improved well-being and so on.

impacts of their actions. In this way they can continuously improve the benefits they are receiving from their forests. It is expected that such activities will help to sustain forest resources and enhance the well being of the diverse set of people who depend on forests.

ACM involves improving the shared, institutional learning and consequential adjustment of management strategies that takes place among stakeholders including local people, which are involved in forest management. It emphasizes on the joint creation and sharing of knowledge, its translation into action, continuous and collaborative improvements in management to improve human well-being and natural systems (CIFOR, 2000).

The ACM approach has provided a conceptual framework to undertake study in community forestry in Nepal⁸. Some of the examples presented in this paper are drawn from this research. The conceptual model is prepared in the following logic.

In situation C, if one wants to achieve outcome O, under assumptions a.....n, then take action A.

The objectives of the study mentioned above are to explore, assess and synthesize the knowledge and experiences of adaptiveness and collaboration at the CFUG field level across a range of community forestry sites and contexts in Nepal. The outputs of the study are intended to enable forest stakeholders to more easily draw on the wealth of existing knowledge so that they may make even more informed decisions in designing their forest management process.

4. Research methods

It would be exceedingly presumptuous to claim any research method to be complete by itself to study collective action in community forestry. Various methods of inquiries prevalent in both natural and social science to seek the answers of research questions are therefore necessary and found to be useful.

In the study, we distanced from purely post-structuralist' view, and assumed that there are 'facts' which have wide acceptance and interpretations amongst the actors involved. However, we have had disagreement to the conventional approach of the natural sciences, which assumes one form of 'truth'. We felt that the latter tends to view the natural as well as the social process from the perspective of "experts" in which "knowledge" is an object to be extracted by structured methods of enquiry, which we have found not to be very useful in the research. Instead, we argue that knowledge does not always come from books, neither can only be acquired through extractive methods of enquiry. During the course of joint/collective action, knowledge can be created through direct interaction with the actors involved. These include a wide range of stakeholders from community members, extension agents, NGO activists, politicians, front line as well as top level bureaucrats and academics. "Experts" may have one form of knowledge, whereas villagers might have another form. There may be facts but they are understood by different people in different ways, since there are multiple knowledge holders involved and each has given a different meaning to the physical environment and social processes and development intervention. Hence we argue that serious attention need to be given to interact, act together and understand the views of different people and stakeholders concerned to study collective action in community forestry.

⁸The Center for International Forestry Research (CIFOR) has recently funded a study called "Review and Comparative Field Studies of ACM at the Community Forest User Group (CFUG) level" to the ForestAction, a Nepali NGO. The study is part of CIFOR's wider research on adaptiveness and collaboration in forest management, which is being conducted by CIFOR in collaboration with a number of institutions in 14 countries around world. This part of the study is designed to complement the on-going CIFOR studies in Kaski and Sankhuwasabha districts of Nepal to draw more generic conclusions on adaptiveness and collaboration in forest management in Nepal. The preparation of the final report of the study is underway.

We used various research methods and techniques without knowing their generic name and theoretical root. Linkage method for example, has become useful to explain the influence of external factors to the ecological and social processes at local level. As linkage research combines multilevel (international, national, regional, local) analysis and systematic comparison and longitudinal study (Kottak, 1999), this method enabled us to understand the link between the policies and practices at micro level (especially related to the process of inclusion and exclusion within Forest User Groups (FUGs) created under government and donor funded Community Forestry Programme. We also tried to use this method to look at the linkage between the macro level policies and legislative framework as conditions and its effect at resource and livelihood level as outcomes through a process of social learning and intervention that various agencies and stakeholders jointly design, plan, implement, learn and adapt, we have named these elements as ACM processes.

Comparative case study methods have also been useful in analyzing the patterns of cases on how different set of conditions and interventions affect the outcomes at forest resource and livelihoods levels. These methods have been useful in the establishment of plausible connection between various variables related to conditions, intervention and outcomes (see Table 1 below). However, in so doing a combination of both statistical analysis and qualitative description of case studies have become necessary. The limitation of the current method however is that the scoring and the judgment of the outcomes do not represent the perception of all people involved in the research.

Table 1 ACM conditions, processes and outcomes

ACM Conditions	ACM elements/variables/proceses	ACM outcomes
<ul style="list-style-type: none"> • Clear boundary of forests and user members • Forest land ownership • Leadership • Membership with federation • Community heterogeneity • FUG age • Proximity of FUG from service providers • Forest stocking level • Crop's age and species diversity • Canopy cover • Desirable multipurpose plant species • Threats to forests (grazing, fire, illicit cutting, encroachment) • Soil erodibility • Product demand supply ratio • Resource scarcity or abundance • Market information • Technology 	<ul style="list-style-type: none"> • Collaboration among stakeholders • Communication flow vertically and horizontally • Conflict management • Trial on institutional arrangement and forests • Participation/representation of women and marginalized group of people • Monitoring mechanism • Technical support from outsiders • Deliberate learning • Compliance of group rules • Feedback system to policy 	<ul style="list-style-type: none"> • Income and employment • Social goods and services such as community infra-structure: transport, irrigation, drinking water, health and sanitation, education, alternate energy, community services, community building • Equity in benefit sharing • Group cohesiveness • Inclusion and representation of marginalized groups including women in leadership positions • Practicability of rules • Equal participation of men and women in decision making • Financial transparency • Agro-forestry • Feeling of ownership on forests • Users' investment • Knowledge of resource inventory • Regeneration condition • Silvicultural operations • Calamities prevention

Source: Field survey (2002)

5. Participatory Action Research (PAR)

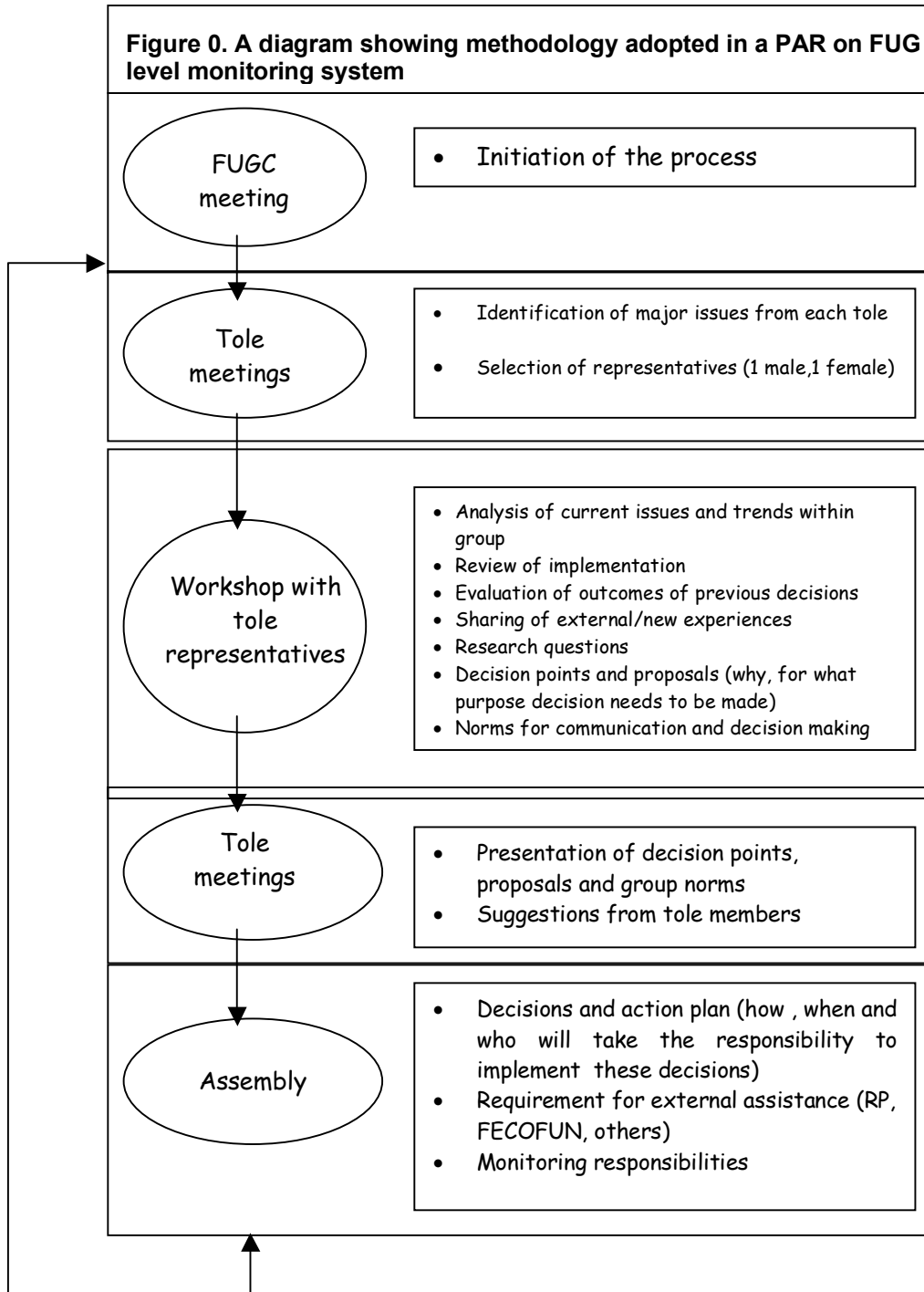
Participatory Action Research (PAR) is an important element in the ACM approach described earlier. There are basically two elements in Action Research, firstly, action to bring about change in some community or organization and secondly, research to increase understanding on the part of the researcher or the client, or both. PAR distinguishes two kinds of change agents: those from within communities and researchers from outside them. PAR involves improving understanding of a situation or problem through a process of putting

ideas into action and analyzing the outcomes so that further improvements can occur. The value added part of the PAR to other types of participatory methods is its focus on the need of an understanding of the element of power relations within which the activity of research is located. PAR strength is also to be able to guide the researchers to work in order to break the power relationships. In this method, people from research location are involved in a process through which they are empowered to take charge of the research process and to organize to implement potential solutions or to take action on concerns. Ideally, through this process transformation or change continues without the physical presence of external agents (Rahman and Fals-Borda, 1991).

Despite its good intention in theory, PAR methods are also not of without problems. Researchers of Action Research projects of relatively short life span are not conceptually clear and well equipped for PAR. Disciplinary conventions, funding conditions, priorities, and bureaucratic requirements of funding agencies, personal and professional interests of the researchers play a key role in determining the research processes. Conducting PAR in an effective way require change in attitude, behavior and more importantly the power relationship between researcher and those who participate in research. For which transformation at personal, professional and political level among researchers and people involved are required. This is a painful job to perform. Initial idea, concept, design, research process, selection of data, analysis and interpretation, ownership of result, access to various knowledge systems, all are unequally controlled by researchers and people in research location. We (researchers) observe and take information selectively. Our conceptual framework determines what we observe and measure that may or may not be relevant to people. Practically, it is also very hard to get all people involved in all research steps and processes. Understanding of a complete picture of human and social systems to all involved in research process is therefore incomplete. In this sense any research or action should be experimental. Researchers and adaptive managers who are involved in action research need to be in between pure practioners and pure researchers.

Both process oriented PAR and comparative study methods have been useful because of their complementarity. The process oriented PAR provided people the opportunity to get involved in as many steps and processes as possible in relatively small number of sample areas (see figure below).

Figure 0. A diagram showing methodology adopted in a PAR on FUG level monitoring system



Simultaneously, using various research techniques including conventional one, which calls for objectivity, have helped to dig out the trends and patterns in diversified conditions and processes that possibly affect different outcomes. We argue that the wholesale rejection of scientific/conventional research methods cannot be sustained on both philosophical and practical grounds. Similarly, rejection of participatory methods will make the creation of knowledge system incomplete. It is not good to portray one form research method as unequivocally good and other as the incarnation of evil. We have experienced that various types of research methods can be combined, integrated and used effectively. Table 2 below represents the characteristics, strengths and weakness of the three research methods, many of the elements in each type are complementary in nature. The last column of the table demonstrates the value added part of the Adaptive and Collaborative research method.

Table 2 Characteristics of the three main research methods showing the added value of Adaptive and Collaborative method

	Scientific/conventional	Participatory	Adaptive and collaborative
What is the research for?	Understanding	Action	Understanding, action, reflection in action and adaptation
Who is the research for?	Personal or professional and institutional interest	Local people	Multiplicity of people, groups professionals who have 'interest'
Whose knowledge counts?	Scientists'	Local people's	Scientists', local people's and other stakeholders
Topic choice influenced by?	Institutional agendas, funding priorities	Local priorities	Institutional agendas and local priorities
Methodology chosen for?	'Objectivity' 'truth' 'facts'	Mutual learning, empowerment	Combination of both positivists and constructivist approaches
Who takes part in the research processes/steps	Researcher in most stages	Local people in most stages	Roles are divided between researchers, local people and collaborators
Problem identification	Researcher	Local people	Jointly by local people and researchers
Data collection	Researcher	Local people	Jointly by local people and researcher
Interpretation	Based on researchers' conceptual framework	Based on local concepts and locally prepared framework	Based on experimentation, innovation and learning
Analysis	Researcher	Local people	Researcher
Presentation of findings	Researcher or funding body	Locally accessible and useful	Jointly by stakeholders and researchers
Action on findings	May or may not happen	Integral to the process	Researcher and local people jointly plan and implement
Who takes action?	External agencies	Local people with or without outside support	Local people
Who owns the results?	The researcher or funding agencies	Shared	Jointly by collaborators
What is emphasized?	Outcomes	Process	Conditions, process and outcomes

Source Cornwall and Jewkes (1995) modified

Within Adaptive and collaborative methods, two types of research techniques have been found useful. These include Participatory Action Research (PAR) and comparative research.

5.1 Levels and units of research

Ideally, measuring collective action requires the study at macro, meso and micro levels and

their linkages. Uphoff (1998) for example identifies actors and stakeholders at ten different levels ranging from international, national, regional, district, sub-district, locality, community/village, groups, to households and individuals. He argues that decision making and action can take place at any or all of these different levels that can influence the collective action and its outcomes. The current study however has been focused less at macro and meso levels but more at micro (FUG)⁹ level.

FUGs, eight in total, have become the units of the study for comparative study and two for PAR. Their characteristics vary in a number of ways. The current study focuses more on the issues related to process of formation of community organizations, their structure and functioning style, groups' rules, experimentation, innovation, social learning, sanctioning mechanism, social processes including gender and equity issues and distributive impact of institutions. Apart from the above, social capital of FUG, which is basically the relationship among various stakeholders and interest groups within and outside community operating both at micro and macro level and the outcomes of their interaction and collaboration are also the areas of study. Within FUG, various layers and research units have been identified and captured. The main include tol (village community within a geographical boundary); interest groups such as women, dalit, minority groups, low income groups; entrepreneur, household member and so on.

5.2 Selection of research sites and cases

Selection of cases are based on the following criteria:

- Represents hill (upland) and Terai (lowland) setting
- Existence of established community forestry projects (of more than 5 years of age, relatively middle size of members and the forest resource, with proximity to road)
- Existence of recognized set of economic and social differences in the communities among the people of different class, caste and gender.
- Existence of recognized set of external and internal social, economic and political forces and some kind of conflict and collaboration exist
- For security reasons, familiar site to the researcher

5.3 Methods of data collection

Review of secondary materials and policy documents have been useful to contextualize the research. At group level, meeting minutes of the FUGs, their Operational Plans and constitution, files and registers have become the major source of information. Some of the major data collection techniques include semi structured and in depth interview with key informants and groups consisting of male and female committee members and forest users. Interviews were focused mainly on FUG formation, the change in group dynamics, forest condition, conflicts, communication mechanism, experimentation, innovation and how various set of institutions evolved within and outside FUG over time. Direct observation by participating in groups' meetings together with informal discussion and interaction were proved to be very useful methods. Given the short time period for the study, some of the PRA tools such as participatory mapping, wealth ranking, matrix, spider diagram, and comparative

⁹ These are community based local institutions established at village level under the government's Community Forestry Programme that has been implemented for more than a decade. Members of these groups are identified on the basis of proximity of the settlement to the forest resources together with the traditional use rights of the forests. FUGs could be homogenous in some variables while heterogeneous in others. The size of the FUG depends on the density of the settlement and the availability of the patch of forest resources nearby. Household (not individual) is considered as member of the FUG. There are set of households sharing some degree of common identity resulting the formation of various interest groups on the basis of caste, gender, ethnicity, class, proximity from and to the forest and so on.

ranking have been useful to generate information quickly. However, we faced some difficulties too in using PRA methods and participatory approach in research (see Box 1).

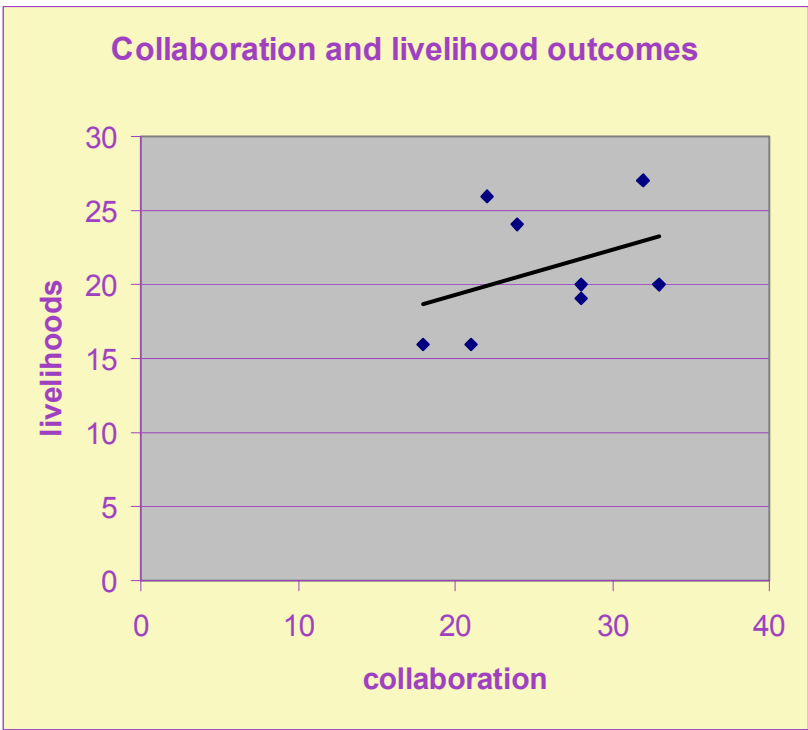
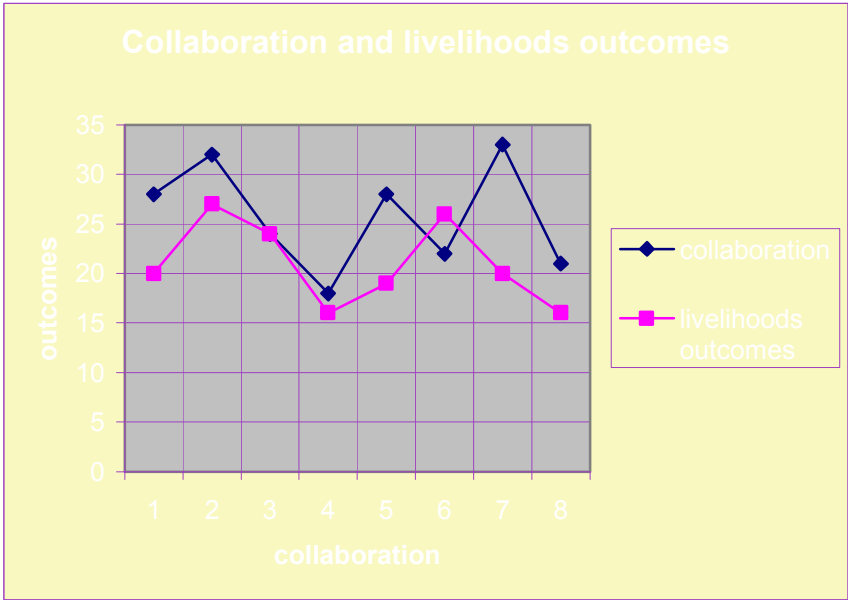
Box 1 Problems faced during participatory group discussion

- User members were found reluctant to draw resource maps where there was land boundary conflict
- Participatory mapping does not capture all the details. The selectivity of the objects in the maps gave wrong impression to many villagers that partiality was made to recognize the hierarchy of importance to different types of natural and social objects
- There was high domination of male and elite members of society during discussion. In many cases their perception has dominated the scene because they were the one who were active in the exercise
- Despite researchers' efforts, exclusion of daughter in law, grazers and porters is a common issue in all sites
- Participatory exercises are seen as small children's game therefore villagers perceive that they were undermined in their capacity
- Consensus on setting criteria for wealth ranking was difficult among user members since social capital is difficult to assess
- Those participated who could afford to participate and had exposed to outsiders before

Local people already know what their village look like, what their socio-economic structure is, what are their needs, what causes poverty and how can they manage forest resources effectively, and so on. However, many are found to be highly skeptical to invest time and energy in participatory exercise because the research offers them so little in terms of direct benefit to those who cannot afford participation. They need fundamental structural features of power in their village changed, which researchers can do very little to challenge the *status quo*. Participatory methods do not give clues to researchers to challenge social and political power that will have sustainable impact to the livelihoods of poor. Neither have these methods been able to uncover the complex natural processes. Participatory methods fit within the existing hierarchy of planning and seldom question it. Users invest days in the discussion, which are taken for granted and for which local people will be paid nothing. Many respondents even complaint that they have been treated like 'guinea pig' for experimentation. Therefore, without 'action' participatory research has little to offer. The relevance of Participatory Action Research has therefore become increasingly important.

5.4 Documentation and data analysis

Information obtained from the field have bee documented in FUG wise case studies. These information were then analysed by using various options and modalities through a process of experiential learning cycle. Mainly documentation has been carried out in three steps. Firstly, contextual, descriptive and the part of research processes have been documented in the form of individual case study. Secondly, comparative analysis has been done by selecting the selective information in key four thematic areas such as institution, forest resources, community infra-structure and income. Lastly, statistical analysis has been done to look at the patterns and trends across FUGs to demonstrate the plausible connection between ACM condition, processes and the outcomes (see the figures below). This method of analysis has been useful to find out the pattern and trend of the relationships between variables, whereas case studies methods have been found useful to explain why the patterns and trend were and were not consistent. The basic procedure that has been used in this study is to test a specific hypothesis about the association between two or more variables. If both variables for example are found to be normally distributed, the regression analysis has been carried out as an indication of the direction of the association that have been tested. To test the significance of the association between variables, qualitative information in the case studies have been used in an iterative way.



Variables used to measure livelihoods outcomes and collaboration

Outcomes: Agroforestry, extent of overall use of forest resource, transport facilities created, irrigation facilities created, drinking water services created, health and sanitation services created, educational services created, temples and religious services created, alternative energy services promoted and subsidized, community buildings, and other community services.

collaboration: Extent of FUG linkage with outside stakeholders, extent of FUG vertical linkage with macro level regulating and enabling institutions including any feedback to macro level, representation of dalit, extent of participation of FUG members in decision-making, internal communication, links with DFO, links with networks and federations, links with other institutions, extent of communication with outside stakeholders.

6. Lesson learnt

The following are the major lessons that are learnt out of the study in terms of methodology to measure collective action.

- Collective action should not be seen in terms of community-resource relations only. Instead community forestry involves a number of various stakeholders at various levels, the collective action among them has also to be recognized. The element of governance at all levels should be the focus of the study because many of the institutional conditions are derived from governance, which do affect the processes and the outcomes of the collective action.
- Both qualitative and quantitative methods are entirely compatible and provide useful methodological complements. This provides the opportunity for multi-disciplinary team to work together. Adaptive collaborative methods have added value to both scientific as well as participatory methods. Hence the former could be a means to combine scientific/conventional and participatory methods of inquiry.
- Conditions, processes and the outcomes are equally important element to be considered in measuring collective action. The tendency of natural scientists to focus more on 'outcomes', and social scientists' over emphasis on the 'process' without paying much attention to the outcomes is problematic. Both types are referred to ideal types in academic circle only. It is wise to neither to defend one nor to vilify other method. The wholesale rejection of positivist research approach and scientific/conventional research method cannot be sustained on both philosophical and practical grounds. Similarly, rejection of participatory methods by natural scientists simply because of disciplinary boundary will make the creation of knowledge system incomplete. It is not good to portray one method as unequivocally good and other as the incarnation of evil. All types of methods have to be integrated and used in action research mode so that both research and action elements can be taken forward together.
- Both Participatory Action Research and comparative method within the ACM approach are the effective methods to study collective action, since it contains the various methodological elements derived from social, natural, management and organizational theories that are essential to study both the bio-physical and social processes that exist in community forestry.

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