Can Learning Based Approaches Take Root in Natural Resource Management?

Reflections from the world of practice

Edited by

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Editors

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Acronyms and Abbreviations

AAE	Agroecosystem Analysis
ACA	Adaptive Collaborative Approaches
ACM	Adaptive Collaborative Management
AGRITEX	Department of Agricultural Research and Extension Services
ANR	Agriculture and Natural Resources
C&I	Criteria and Indicators of sustainable forest management, CIFOR
CAMPFIRE	Communal Area Management Programme for Indigenous Resources, Zimbabwe
CBNRM	Community-Based natural Resource Management
CF	Community Forestry, Nepal
CFUG	Community Forestry User Group, Nepal
CIAP	Cambodia-IRRI-Australia Project
CIFOR	Center for International Forestry Research
CIP	International Potato Center
DA	The District Administrator, Zimbabwe
DFID	Department for International Development, UK
DFO	District Forest Officer, Nepal
DG	Director General
DNR	Department of Natural Resources, Zimbabwe
FAO	Food and Agricultural Organization of the United Nations
FC	Forestry Commission of Zimbabwe
FFS	Farmer Field School
FPU	Forestry Protection Unit, Zimbabwe
IAASTD	International Assessment of Agricultural Knowledge, Science and Technology for Development
INIAP	Instituto National Autonoma de Investigacion Agropecuaria of Ecuador
IPM	Integrated Pest Management
IPM-CRSP	IPM-CRSP: Integrated Pest Management-Collaborative Research Support Program, Ecuador
IRRI	International Rice Research Institute
IUCN	The World Conservation Union

LLS	Livelihoods and Landscape Strategy of IUCN
MAG	Ministry of Agriculture, Ecuador
MDC	Movement for Democratic Change, Zimbabwe
MYDGEC	The Ministry of Youth, Gender and Employment Creation, Zimbabwe
NAFP	Nepal-Australia Forestry Project
NGOs	Non-Governmental Organizations
NRC	National Research Council, US
NRM	Natural Resource Management
PAR	Participatory Action Research
PIC	Project Implementation Committee
RDC	Rural District Council of Zimbabwe
RECOFTC	Regional Community Forestry Training Center, Bangkok
RIU	Research Into Use Programme of DFID
RLR	Rainfed Lowland RIce
RMC	Resource Management Committee, Zimbabwe
RMC	Resource Management Committee, Zimbabwe
RSP	Resource Sharing Project, Zimbabwe
SMAFSP	Smallholders Market Access and Food Supply Project, Papua New Guinea
SWRM	Society for Water Resources Management, Bangladesh
ToT	Training of Trainers
VIDCOs	Village Development Committees, Zimbabwe
WADCOs	Ward Development Committees, Zimbabwe
ZANU-PF	Zimbabwe African National Union Patriotic Front

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Chapter One

Learning based Approaches in Natural Resource Management

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A single conversation with a wise man is better than ten years of study. Chinese Proverb

All of science is nothing more than the refinement of everyday thinking. Einstein

The Continuing Challenges

Despite three decades of participatory reforms in Natural Resource Management (NRM) policies and practices in the developing world, the achievement is limited. Still more than 1.3 billion people who base their livelihoods on fisheries, forest, and agriculture (FAO 2004) are deprived of basic necessities and 'freedoms' (in Amaratya Sen's terms) that they have reason to choose. Moreover, the socio-ecological systems that generate these natural capitals are still fragile and in many cases in process of degradation. The global climate change is further adding stress and vulnerabilities to these socio-ecological systems and the poor residents. As a result, additional challenges have also surfaced: rising food prices, increased livelihoods vulnerabilities, declining fish catches, erosion of agro ecological systems, displacement of the poor from natural resource systems, and the like. As the Millennium Ecosystem Assessment Report (2005) concludes:

> These problems, unless addressed, will substantially diminish the benefits that future generations obtain from ecosystems. The degradation of ecosystem services could grow significantly worse during the first half of this century and is a barrier to achieving the Millennium Development Goals.

It is time to reconsider current policy approaches and development strategies. The Report further concludes that the challenge of "reversing the degradation of ecosystems while meeting increasing demands for their services can be partially met…., but these involve significant changes in policies, institutions, and practices that are not currently under way". Even the team of predominantly bio-physical scientists who did the Assessment came up with the conclusion that major problems lie in policy and institutions. In view of this, we must pause and ask: Despite landmark NRM policy

reforms of the past three decades, with radical shifts involving decentralization and participatory management, why do we continue to face even more critical challenges?

Undoubtedly, NRM policy reforms with their participatory turn have been informed by quite nuanced understanding of the problems and the vision for change. Indeed, the policy change is informed by a series of 'reversals' (Chambers et al. 1993) – from professional to people first, from state –centric management to community based management of resources, from techno-scientific to social and participatory approaches, from centralized planning to bottom up planning, from subsistence-oriented to market-oriented management, and so on and so forth. Recognizing the deepening socio-ecological crisis and growing contestations around resource control and management, more and more policy actors now agree that without involving the poor living in and around natural resource systems, neither poverty reduction nor environmental sustainability can be achieved. From this understanding, numerous attempts have been made worldwide, and as a result quite a few innovations and transformations have taken place in different parts of the world, empowering local communities, and facilitating fairer distribution of benefits (Spielman and Pandya-Lorch 2011).

But these innovations are too small on a global scale to counteract the effects of human beings on ecosystems (which the Millennium Ecosystem Assessment revealed), or are likely to revert back once active support systems are withdrawn (as the experiences of contributors in this volume show). These solutions have overlooked the complex and multi-scale problems of natural resource governance (Cook and Kothari 2001; Mosse 2002; Colfer 2005). Many innovations at the local level have not emerged from the well-nourished breeding ground of a piloting stage (Hall 2007), and have at times extended the subtle instruments of state control rather than genuinely creating political space for local people (Li 1999). Such innovations, though widespread globally and found across diverse NRM contexts, often fail to find nurturing policy and institutional space for continued development and expansion (see Colfer and Sherrwood et al, in this volume) and (Colfer et al. 2011)).

From our own experience of moving through the journey of participatory development and NRM, we strongly believe that we have not reached the 'end of history'[1] of NRM – such that a final policy approach has already been discovered and all that we need to do is to 'implement' it in practice. We

[1] We draw a metaphor from (Fukuyama 1992)

are convinced that the problem lies at a more fundamental aspect of the policy approach - its faulty assumptions and misplaced expectations, where there is a huge potential to improve. While much of the practical methodologies and toolkits can be saved for further use and innovations, we need a whole different way of thinking and acting about change.

We argue that there are three problems with the current approach. First, the dominant actors following these approaches (be they policy makers or donors or conservation agencies) blame the local communities and institutions for the complex and cross-scale problems, as if the larger policy and institutional regimes are working just fine. The solution then becomes providing some incentives to local communities or decentralizing some power to local bodies. Recognizing local people's rights to manage local natural resources is certainly a positive step, but in so doing the national policy actors cannot ignore the need to change their own planning and monitoring systems, strategies for collaboration, and even changes in institutional structures. Indeed, the underlying policy and institutional regime is more fundamental to local problems of resource management.

Second, the current approach to change is still guided by a technocratic approach – that privileges experts and policy makers to make decisions for others, disregarding the agency and capability of the poor and affected local communities. Even the participatory approach has legitimized expert-led, Euro-centric, modernist visions and strategies of change, forcing everyone to think through West-centric lenses (Shiva 1988) – and in effect creating 'participatory exclusions'(Agarwal 2001). These approaches privilege formal over informal, documented over tacit, project-based over evolutionary, time-bound over flexible, evidence over emotion, sectoral over systemic, disciplinary over holistic, uni-scale over multi-scale, pre-defined outputs over process, and so on and so forth. There are advocates of indigenous knowledge and local visions of development at another extreme, but what we really lack here is an approach that engages with multiple worldviews and learning systems operating at multiple scales in this globalized world.

Third, most reforms occur only on paper, not in practice. Governments, donors, international agencies, and even service providers all are strong in getting things right on paper – through new policy documents, strategy papers, proposals, monitoring reports, management frameworks, project logframes, and so on. And they produce all of these for others, not for themselves: governments prepare strategies for donors, donors do the same for recipient governments, and so on and so forth. There is little attention to reviewing how one's own institutions should change. Moreover,

there is an important difference between what is said and what is done[2]. For instance, a government declares publicly that it will provide rights to local people in wildlife management. In practice, it does just the opposite – chasing people away from the protected area. An underlying reason for all of these is that the dominant actors in the system benefit from either the status quo or even ensuring that a participatory policy never gets into practice, but is upheld for the positive image and symbolic power it lends.

In view of these continued failures, recent attempts have begun to look at the process dimensions more seriously – looking at how policy and institutions emerge, function, change and improve to address the challenges (Colfer 2005) (Hall and Clark 1995; Fisher et al. 2007). This book also sides with these attempts to understand the process of change, rather than prescribing a specific program of change. We see policy systems themselves as learning systems, and believe that there is great benefit in policy actors' considering the learning dimension seriously (Hall 1993).

Learning-based Approaches to NRM: Conceptual Foundations

We concur with Serageldin that the entire science community is now challenged to demonstrate solutions that effectively tackle poverty and human well-being (Serageldin 2002), although we do not agree that public problems are fixable by scientists. This compendium seeks to set forth the learning agenda in NRM, rather than prescribe grand solutions.

We recognize that charting out the learning way is not an easy task, especially in the context of deeply held mechanistic conceptions, fractured institutions and political asymmetry among the stakeholders in the context of NRM. Such fissures are further compounded by the ever intensifying nexus between poverty-environment and new challenges (Casillas and Kammen 2010), but also because natural resources are increasingly contested by an increasing number of actors for ever wider varieties of stakes (Leach et al. 1999). As post-structural social sciences have revealed (Rosenau 1991), simple categories of state, market and civil society do not help in understanding how things change (or why they do not change) – we have a much more complex array of actors and interest groups within each of these meta institutions (Rose and Miller 1992; Arts 2006; Dryzek 2006). More than ever before, it has become important to look at relations and interactions more than substance and attributes, as innovation and change rest largely on how and to what extent these actors interact. As the techno-scientific approaches to understanding socio-ecological

2 Critical philosophers like Michel Foucault believe that what is said is strategically framed to hide what needs not to be said.

processes are facing trenchant critique, science is under pressure to help stimulate constructive dialogues (Fischer 1998) or facilitate agreement in conflict, rather than look for some ultimate truth (Rorty 2009).

Parallel to these science-democracy debates, more operationalisable concepts of learning and innovation have emerged around social and organizational learning related fields of knowledge and practices (Argyris 1993; Schon 2010), as well as around works that emphasize integrated analysis of society and natural systems, usually referred to as socio-ecological systems (Lee 1993; Holling 2001). Together these approaches have sought to consider learning and innovation aspects of not just 'resource management' or a particular organization, but the entire socio-ecological system (Berkes and Turner 2006) or the 'community of practice' (Wenger 1996) or 'public policy as social learning systems' (Hall 1993), involving multiple scales of time and space. This research blends ideas from such diverse fields of learning and innovation, and emphasizes the need to pay more attention to the process through which actors can negotiate and learn their way, instead of the prescriptive approach advocated by many techno-scientific groups.

In this research, we define these learning based approaches as adaptive collaborative approaches (ACA), which denote a family of concepts that seek to combine research and various other ways of learning as well as seek out collaborative actions among diverse stakeholders operating at multiple scales of decision-making and action. We see ACA as a suite of strategies, which are employed to learn and muddle through (Lindblom 1959) complex systems to generate and facilitate innovations on various aspects of resource governance and management. This seems unavoidable as environmental science itself is being seen as a politicized activity, and any innovation must pass through negotiation among competing claims of power and truth (Forsyth 2003).

We started with the idea of Adaptive Collaborative Management (ACM) developed within the Center for International Forestry Research (CIFOR) (reported in chapter 2 by Colfer), and built further on in the adaptive collaborative approach, which was coined by McDougall et al (2006) at CIFOR and among its partners. The phrase 'adaptive collaborative approach' combines both normative (what needs to be done) and analytical elements (what needs to be understood) as NRM actors attempt to improve developmental outcomes and sustainability. The approach reflects the convergence of diverse traditions of learning, innovation and social cooperation that emerged in different practical and intellectual contexts. We also build on our own previous work in relation to innovation systems (Hall et al. 2001; Ojha et al. 2010).

By adaptive we mean the human quality to learn in the face of the complexity and dynamism of socio-ecological systems, and given the inherent uncertainty involved in planned management actions. Likewise, the notion of collaboration stems from the fact that a) every resource management situation involves multiple actors, and b) collaboration among the actors has a greater potential to generate better (sometimes win-win) outcomes than without collaboration. This resonates with what is being popularized as 'social capital' in the development literature (Woolcock 1998). This does not however mean that actors are necessarily oriented to collaborate; indeed entrenched forms of conflict are a rule rather than an exception. In any case, resource management innovation is difficult without addressing resource conflicts and harnessing a certain level of cooperation.

Adaptive collaborative approaches can be conceived in both active and somewhat passive senses (Ruitenbeek and Cartier 2001). In the active sense, it is facilitated by some actors external to the immediate system being worked on, and as such these ACA facilitators are oriented to explicitly reflect and organize the process. In the more passive sense, actors internal to the system adopt, to varying degrees, elements and principles of ACA for organizing their actions and learning. They do this with or without conscious reflections of practice, and without necessarily being self-conscious of using this approach. In either case, the issues of learning and collaboration remain critical as NRM systems host a wide range of actors – resource owners, managers, conflicting claimants, extensionists, researchers, policy makers, value chain actors, technology suppliers and the like. The domain of learning and interaction is not narrowly confined to the members of a clearly defined group but encompasses actors with both strong and weak interests, exercising direct and indirect influence, staying immediate or downstream in the value chain.

This means that local level NRM, however sovereign, has had to respond to and hence engage with the policy regime affecting their local resource ownership. And this requires moving from an absolute owner based approach to more collaborative approaches. In such situations, issues related to cross-scale linkages as well as feedback systems from operational systems to policy systems become part of an adaptive collaborative approach to governance and innovation (Colfer 2005; Armitage et al. 2008).

A particular challenge to learning and collaboration in natural resource management is its unusually uneven playing field, with widespread processes of exclusion and marginalization (Blaikie and Brookfield 1987; Agarwal and Narain 1991; Peet and Watts 1996). The history of nation-state building and the expansion of the colonial regime are inextricably linked to this. Despite a history of

exclusion and political asymmetry, we see that there is hardly an alternative than to reflect, review, discuss, negotiate, experiment and then learn from practice and collaborative inquiry if we are to ensure sustainability and fair systems of benefit sharing.

Purpose

This compendium is not about making one more call for participation, learning or collaboration - much cherished ideals over the past few decades in the field of development and natural resource management. Instead it is about how we can move ahead through more effective learning and cooperative actions. Our point of departure is that the solution does not reside in prompting more business-as-usual extensions of participatory, decentralized approaches to natural resource governance and management. It is now time to link back the local with the national (and beyond) through learning and collaborative approaches. It is also time to go beyond circulating ideals and start exploring underlying limits and pitfalls of these popular strategies, so that we can advance our learning about learning and innovation in natural resource systems. While designing this research, we followed the Chinese proverb that it is more important to listen to the people who have wisely chosen the difficult way – at least to experiment or understand – than to invest in fresh research. This is thus a compilation of stories told by practitioners or at least collected by the action-oriented researchers, from pre-existing practices and research, rather than fresh research done solely by us, the editors.

In other words, our attempt has been to give up translating ideals from the world of policy and theory into practice, but to engage in particular real world experiments of learning and innovations to develop theoretical and policy understanding of what it takes to facilitate the learning process. Beyond proving or disproving specific hypotheses or providing specific prescriptions, we aim to present reflective insights of practitioners and researchers who have experimented with, or actively participated in, different ways of learning and innovation, and on various aspects of natural resource management, in different parts of the world, under diverse conditions.

While we (editors and contributors of this volume) have long been associated with one or another aspect of learning and collaborative processes (several years to over two decades), the idea for this research emerged when we were undertaking research at the Central Research Team of Research Into Use Programme (RIU) of the UK Department for International Development. For researchers associated with RIU, there is a huge interest in understanding how learning based and collaborative approaches are being applied in different contexts. The program as such was also trying to explore

new frontiers of putting research into use, beyond the conventional approach of research and extension. We saw a clear opportunity to pool diverse experiences together from a wider 'community of practice' (Wenger 2000) – building on the experience of people and institutions already active in exploring innovative processes of learning, collaboration and change in governance and management of natural resources. This book is an attempt to learn from such innovative practices.

The book advances the frontiers of adaptive learning and collaborative governance on two key fronts. First, it offers in-depth explanation of why adaptive collaborative approaches are slow to emerge and expand, and how different types of constraints and challenges affect the process. As the contributors highlight, major challenges experienced are related to dealing with traditional reductionist science, balancing research and action in the process, dealing with institutional environments, managing sponsorship, and organizing collaborative actions.

Second, it documents and highlights on-the-ground struggles of promoters and facilitators of adaptive collaborative approaches (ACA) and identifies any lessons. Building on some recent in-depth action-oriented research into learning and innovation in natural resource management (Colfer 2005; McDougal et al. 2006), we see Adaptive Collaborative Approaches as those in which there is a conscious and explicit attempt to embed learning while managing, and also an active predisposition to social cooperation across all legitimate claimants of material or symbolic aspects of a socio-ecological system. This takes us to an approach very different from the conventional practice of 'unmonitored experience' (see Lee 1999) or models of world views that are ignorant of the systemic reality of socio-ecological system (Capra 1996).

The book's contributors capture experiences of applying an adaptive collaborative approach in some of the most fragile and unstable situations of Zimbabwe (Chapter 5) and Nepal (chapter 6) in the early years of the new Millennium, while also capturing experiences of rapid agricultural modernization taking place in Ecuador and South-East Asia.

Overview of Chapters

We have six contributions written by practitioners and scholars with long experience in the field of natural resources management. These chapters also cover a broad range of experiences in applying adaptive collaborative approaches in natural resource management. They encompass diverse resource sectors, country contexts (Asia, Africa, Latin America), and capture a diversity of strategies

used to deal with varied concerns and issues of natural resource management and innovation. Almost all chapters share a conclusion that an adaptive and collaborative approach is not only inevitable in the contested world of resource governance, but it can also lead to better outcomes in terms of livelihoods, policy and resource sustainability, if applied appropriately. In particular, the authors reflect upon four categories of challenges to applying ACA – personal/attitudinal, institutional, cultural, and policy and underlying regimes.

What is common to all chapters is that all authors take a reflective approach to writing and analysis: making explicit their own assumptions, surprises, successes, failures and learning while applying the ACA in various situations. Here, we took an inspiration from Einstein that great science is the refinement of thinking in practice. The contributors bring unique strengths of various forms of writing agency and different vantage points to see, experience and reflect – from local practitioners, international programme leaders, academic researchers, action researchers, trainers to policy advisors. The authors also share a concern that moving away from traditional linear models of research and technology transfer to ACA involves even more challenges, in terms of managing complex social relations, framing learning and incorporating learning into action. This means that authors are not just describing cases out there, but also bring their own reflections to applying ACA approaches.

A brief description of each of these chapters is given below.

In chapter **two**, *Carol J. Pierce Colfer*, formerly a programme leader of the Adaptive Collaborative Management programme (ACM) at the Center for International Forestry Research (CIFOR), discusses how the idea of ACM was conceived in an institution with a bio-physical research mandate, demonstrating the various ways in which conflicts and collaboration can occur among social and biophysical scientists. She reflects upon how ACM evolved within CIFOR describing the various struggles her team had to make with the CIFOR management. She outlines what worked and what did not in the course of applying ACM in 11 countries and over 30 sites over a period of about 10 years, and what challenges the ACM team had to face – within the team, in the organization, in the field and with the donors. The paper is particularly strong in capturing the personal reflections of the author on her own engagement with the ACM project, and also in demonstrating how an ACM process emerges and is influenced by the underlying institutional, policy and knowledge systems environment within which ACM is applied.

While Colfer focuses on forested landscapes, *Sherwood et al* in chapter **three** document how the concept of Farmers' Field Schools (FFS) has evolved into a variety of contextually grounded strategies of adaptive learning and innovation in the agricultural landscape of the Andes regions of Ecuador, South America. Unlike the CIFOR ACM case, which was coordinated by a single international organization, the analysis of FFS in Ecuador covers the ways in which it was promoted as a solution to agricultural development problems by several government and development organizations. They demonstrate how a successful innovation in one context (and time) has to go through the process of regeneration or modification when moved to or put into use in contexts different from the original contexts in which the innovation was developed (FFS initially emerged in East Asia and was brought to Ecuador). They also demonstrate how expert-led and people-led knowledge systems compete and converge in agriculture and natural resource management contexts, and how adaptive learning approaches can help reframe diverse knowledge interfaces and hence improve resource management practices. With better participation of the farmers, as Sherwood et al. show, the technology or innovation will undergo significant changes and modifications, beyond the technical conceptualization of the experts. These authors critically examine whether such methodology based interventions have the power to survive repressive institutional regimes, and in the process, to what extent the technology retains its integral character, and to what extent the regime of actors are also willing to embrace the learning focus of the innovation.

In chapter **four**, *Sultana* and *Thompson* explore the processes of networking local resource user groups as a key aspect of ACA. They describe action research processes with over 250 existing community based organizations (CBOs) managing floodplains resources in Bangladesh. These groups have been encouraged to adopt improvements in their practices that take a more system-wide view of the productivity of floodplains, which they call "Integrated Floodplain Management". Using the process of an adaptive learning network, they report how many CBOs have been able to improve their plans and practices, not just based on their own individual group learning, but also through the exchange of lessons and experiences with one another. They describe the process followed and how it evolved, and also provide an assessment of some of the outcomes from this adaptive learning network and lessons for potential wider adoption.

Chapter **five** is devoted to the experiential account of *Tendayi Mutimukuru-Maravanyika* and *Frank Matose,* who provide an assessment of applying ACM in the Zimbabwean forestry sector, based on a CIFOR led project implemented in collaboration with the Forestry Commission of Zimbabwe. The

ACM process reported here focused on enhancing collaboration among stakeholders at a range of scales, starting with local resource user groups, resource management committees, and forest officers and researchers. They were included in processes to develop visions and implement action plans. The project sought to facilitate widespread use of self-improving and equitable forest resource management systems that build on local capacity, 'vertical' and 'horizontal' stakeholder interactions, and respond positively to external pressures. The authors report reflections of the revisit to the project site several years after the completion of the project, and critically reflect upon the initial assumptions and conceptualizations of ACM in light of the follow up study findings. They identify additional challenges to applying ACM related to political complexities and institutional conditions through a synthesis of almost a decade long experience in the region where ACM was applied.

In chapter **six**, *Maniram Banjade* reflects on the experience of having managed multiple ACA oriented initiatives in Nepal's community forestry as part of a search for solutions to enhance the effectiveness of forest management institutions in improving local livelihoods. By drawing on the experience of an action research-focused NGO which over the last decade applied a wide variety of tools to enhance adaptive learning and collaboration, he presents the challenges involved and how these were addressed. His experience covers working with various international institutions as well as local communities and government organizations from the community level to the national level in the context of forestry. Various ACA tools he reports have been instrumental in empowering the marginalized groups, forging multi-stakeholder collaboration to enhance the effectiveness of forest management systems, and to strengthen the links between operational processes and resource management and policy learning cycles. His experience also demonstrates how difficult it is to try a collaborative and learning based approach to natural resource management in the context of the civil war and political instability that characterized Nepal during much of the decade beginning in 2000.

In chapter **seven**, Fisher presents a personal reflection of his over-30 years of experience on a variety of action research and adaptive collaborative management initiatives. These involve some of the pioneering work he did in setting up Nepal's community forestry back in the 1980s. As a keen promoter and engaged practitioner of action research, he reflects on a variety of roles he took as a promoter of this approach – undertaking community level research and extension through working as a trainer in international organizations to supervising action research projects in academic institutions. As an anthropologist with strong interests in human ecology and development, Fisher's

experience has been somewhat unusual in that he has been engaged in action research and adaptive collaborative management both as an academic and as an active development practitioner. This has enabled him to experience the opportunities and challenges of these approaches in both academic and applied contexts, which is rare to find.

Finally we summarize key conclusions coming out of these ruminations in chapter **eight**.

Key Message

At the risk of over-simplification, we now highlight the key messages coming out of this compendium of 'reflective essays' (key conclusions are elaborated more fully in chapter eight). A simple conclusion is that, in rapidly changing socio-environmental contexts and in view of the far too limited successes of the recent NRM policy reforms in the developing world, we need a wholly different way of approaching NRM and poverty questions. The new thinking is not just about how we implement policy, but more centrally about how the underlying policy and institutional regimes can and should be changed. We need changes in all the five key domains of NRM regimes - policy processes, management, administration, technology, and financing. This new approach should take learning and interactions among the NRM actors more seriously than ever before, and should always look for better ways to link learning and decision-making processes across scales. While we admit that these conclusions are not radically new, we certainly offer new insights as to what it takes to root these learning based approaches in practice. Several ideas have emerged:

1. We need to embed research within the processes of learning and innovation, rather than keeping research outside of the innovation process. We need to nurture and support new types of researchers who bridge, broker and facilitate change around specific poverty-NRM issues and at the same time connect the processes across the wider policy and institutional systems. The business-as-usual of developing technical solutions and then using extension systems to put the research into use does not work. We do not deny the role of carefully planned technical and more sophisticated research as integral to the process of innovation (such as a new variety or a new silvicultural technique). Yet our findings clearly suggest that innovation-centric research can still be organized within the context of application and with better communicative control by the beneficiaries so that every research investment is best utilized. We have evidence in this compendium that embedded research strategies have worked in different contexts and are waiting for wider policy uptake.

2. Locally based NRM groups and entities should develop workable frameworks of learning, monitoring, review and reflections more explicitly, in order to find new and innovative ways to address the problems of poverty and NRM. Contributors report varying types of attempts to design and practice learning experiments at project level, institutional level, in collaborative undertakings, and even in university-community partnerships. These are also awaiting more enabling policy and financing environments.
3. Development agencies - both national and international – are still pre-occupied with the strategy of developing technical models, with the belief that they can subsequently be scaled up and out widely. This strategy should be replaced by the one involving multi-scale learning approaches - with simultaneous learning processes employed at different scales. There should also be efforts to facilitate linking these processes vertically and horizontally, through interactive institutional platforms, and two-way communications. Innovation and positive changes in NRM and livelihoods should be seen as outcomes of dynamic learning systems, and not as something resulting from the application or replication of technological packages. Strategies for change solely based on methodology, new tools or technology are unlikely to work unless there is a concurrent process of transforming the underlying institutional regime.
4. Not surprisingly, in most situations, practice has remained more innovative than policy. But surprisingly, at times, the policy environment has repressed such local innovations (and the actors driving such innovations), simply because the innovations did not comply with or at times even challenged the existing policy paradigm. There is a need to have a strategy to review national policy and institutional regimes from the perspectives of emerging local innovations and actors, and then link the findings with the local level innovations. This should be seen as areversal of the current practice of evaluation being solely sponsored and undertaken from the perspective of policy makers and donors.
5. The policy system should itself be seen as a learning system, and should develop ways to organize action-reflection-review in relation to its own domains of planning and decision-making, and also proactively seek out ways to enable multiple cycles of lower scale learning processes, across diverse threads of innovation. The learning emphasis should be reflected in treating policies as experiments – and hence having a strong element of monitoring, review and reflections. The accountability of the policy system to the larger citizenry should include an audit of how the system is improving over time, including the processes of learning. This is essential to ensure that public investment is put to effective use and saved from the current continuous series of failed attempts.

6. Public funding should treat practice-based innovations as new forms of research and provide institutional support to groups of innovators on the ground. Learning platforms of innovation actors, linked to concrete reviews and analysis of practical cases, are much better than consultant recommendations to policy makers.
7. International development donors should not confine themselves to the delivery and scaling out of a standardized service package or generating consultant recommendations for public policy change. They should support a process whereby each project, region or country learns to develop innovative solutions to their problems. Donors have the opportunity to help establish adaptive and collaborative learning systems in policy related agencies – so as to enable policy officials to reach out and talk to people struggling through innovation processes.
8. Accountability of international funding should be seen not in terms of immediate, measurable values of tangible outcomes in the short run, but on the basis of promising plausible connections found between action, learning and possible outcomes, not just in the short run but also in the long run. International aid should be realigned to contribute to the process of longer-term change, to help local actors help themselves. As initially noted, this implies a need for a whole new approach to administration, management and financing in funding agencies. This should also entail developing new and collaborative methods of evaluation, away from donor driven approaches.

In the chapters to follow, you will find how these conclusions emerged from a wide variety of adaptive collaborative initiatives in agriculture and natural resource management under diverse conditions. Our hope is that the rich and experiential accounts reported in the chapters will provide a strong basis to reframe innovation policies and practices for more equitable and sustainable management of natural resources.

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Chapter Two

The Emergence and Conduct of Adaptive Collaborative Management (ACM) at the Center for International Forestry Research (CIFOR)[3]

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Introduction

This paper presents the challenges experienced in developing and applying the concept and methods of adaptive collaborative management (ACM) at the Center for International Forestry Research (CIFOR), with a goal to improve forest governance in a number of countries during 1999-2009. Our Adaptive Collaborative Management effort entailed the hope a) that our research would improve environmental and human conditions, initially where we worked, and b) that ultimately we would be able to contribute some methodological insights that could be applied more widely.

Conceiving the ACM programme within CIFOR

Conceiving ACM in the CIFOR context was not easy. A key contextual struggle pertained to the general acceptance within forestry of the institutional and political status quo. Many scientists continue to see their roles as technical, and decidedly *not* social or political (cf. Ojha 2008, on related doxa in Nepal's forestry bureaucracy).

The Consultative Group on International Agricultural Research (CGIAR) centers (CG centers for short) emerged in the 1980s to cater to the demand for scientific and technological research in agriculture and rural development. CIFOR, headquartered in Bogor, Indonesia, is among the latest, and addresses natural resource management issues (including production, conservation, and human well-being). Although one of CIFOR's 'claims to fame' was its interdisciplinarity, but the CG's and

CIFOR's contexts included a high regard for hypothesis-testing, experimental, biophysical research.[4] There was also a backdrop of recurring debates within CIFOR related to the institution's central mandate. These were phrased as contrasting science and advocacy; quantitative and qualitative approaches; research and development; biophysical and social. ACM was seen as 'pushing the envelope' toward the second, more controversial of these contrasting pairs; we saw ourselves as straddling them.

Two original projects - which were combined to form the ACM programme in 1999 - had been designed and implemented by researchers, though they had both involved collaborating partners. Neither had involved long-term, direct involvement in specific communities and landscapes. Both had focused on the local level (communities, forest management units, plantations), but also addressed multiple scales. Both had also included researchers from various disciplines. Although members of both projects tried to look holistically at their subjects of interest, this was difficult with short visits and multiple sites. There was no mechanism in either project for local level learning, only researcher learning; and no options for action on the ground, except in very peripheral, unsystematic ways. Indeed, such action would have been counter to the more conventional, reductionist conceptual frameworks within which the projects were designed. The fact that these two projects were designed in this way reflected not only research-designer wishes and expectations, but also donor and CIFOR institutional culture---issues that we would have to confront head-on when we began creating the ACM program. The new program's eventual name, "Devolution, Livelihoods and Adaptive Collaborative Management of Forests," reflected some early dissension, or at least malaise, between the two proto-projects (an early plan had been to call it only Adaptive Co-Management).

ACM's conceptual legs

By the time we began---taking into account the complexity and dynamism of local systems, both human and ecological---our conceptual framework had evolved to include three major 'legs.'

1. We were interested in strengthening the *vertical links* between communities and wider scale actors (government, industry, conservation projects). This included the ideas of local level empowerment,

[4] Indeed, we were told that 'all research is hypothesis testing'---an admonition I contested and ignored in practice.

the potential for local people to act as monitors of political actors at broader scales, and for better local access to outside resources (expertise, funds, links to others, support for local initiatives).

2. We also focused on *horizontal links* among communities and other local actors. This was deemed crucial because of the frequent lack of harmony among local management goals; we reasoned that enhanced collaboration would identify win-win situations, complementary desires, and in some cases negotiated solutions to difficult conflicts.
3. Finally we included an *iterative element* to integrate social learning (cf. Wollenberg et al. (2001) and CIFOR's experience with criteria and indicators (cf. CIFOR (1999). We believed that effective adaptation to change requires people to learn more systematically from their own experience.

We planned to use participatory action research, look at local situations holistically and interdisciplinarily, and build on indigenous knowledge, insofar as possible. Our version of PAR---learned most systematically in a 1999 training workshop coordinated by Bob Fisher (Fisher and Jackson 1998)---involved the identification of long term goals through visioning processes (e.g., Wollenberg et al. (2000)) and sustained facilitation of iterative processes of self-analysis, planning, implementation, monitoring, and revision, among small, locally constituted PAR groups.

I believed that the goal of developing one 'technology' that could improve people's relationships to their forests and be applied in multiple locations was a chimera.[5] The technology transfer model is based on this assumption (and has sometimes worked). It had a particularly long and—to some—glorious history within the CG.

Much has been written about the depth and meaning of the term, 'participation' (Arnstein 1969; Cooke and Kothari 2002; Greenwood and Levin 1998) ideally a concept closely related to Habermas' 'deliberation'; and the issue remains crucial. A lot of community work underway around the world represents very minimal kinds of participation---doing a survey, calling a meeting, meeting with the headman once. ACM, as originally conceptualized, is founded on a deep and serious attempt to involve local people in meaningful ways; yet the recognition that one needs special skills to catalyze people's involvement and understand their systems remains under-recognized (cf. Colfer et al. 2011). We have had varying degrees of success at reaching these deeper, more fundamental levels

[5] I led the program from 1998 to 2002, when I went on sabbatical. By my return, our funding had ended, there had been another restructuring and our formal program no longer existed. We were part of the Forests and Governance Program, one of three CIFOR programs.

of understanding, but I believe that the degree to which we have been able to tap into such knowledge has been positively correlated with our successes.

We initially developed a controversial framework, which I had routinely to defend, with two prongs: an action and a research prong. The 1999 research prong eventually involved the selection of 30 communities in 11 countries, with varying values for seven features (devolution status, conflict levels, population pressure, forest type, management goals, diversity, and social capital). The second, 'action prong'---in its ideal form---involved one or more facilitators / researchers entering a forest community with the community's agreement.

Continuing battles with CIFOR management

Board members and many colleagues outside our project agreed that CIFOR research findings were not getting to users that we needed to work at multiple scales and that local people needed to be involved. But it still made them very nervous. How would the scientific forestry community respond to this 'radical' kind of research? What if nothing came of it, when we were allocating millions of dollars to it? Where were the experimental designs, the hypotheses to be tested? What would constitute controls?[6] What if local people just wanted to cut down the forest?

Questions and concerns about hypothesis testing, experimental designs, replicability, controls---would surface every time---some of it stimulated by the CIFOR DG himself, who remained anxious about our efforts.[7] Again, I would explain why we were arguing for a different approach. I stressed the complexity, dynamism and geographical variability of human and environmental systems; the human resources that local people represented; the inequity of current approaches, which tended to deal with local male elites if they involved any local people at all; the lack of sustainability of short term projects that conducted conventional research and left; the need to have some immediate results. I also explained about PAR, its long term collaborative nature, its opportunistic use of relevant research methods, its iterative nature. Each time the DG and the Board would rule in our favor. But many remained worried. The presence of several qualitatively sophisticated Board members was helpful to us in this effort.

[6] See Greenwood and Levin (1998) for a reasoned response to such concerns.
[7] See Campbell and Sayer (2003), especially Hagmann et al. (2003), for evidence of the degree to which our views were eventually accepted.

I drafted 17 versions of a central concept note (Bogor ACM Team 1999) and engaged in multiple explanations, both within CIFOR itself and to the Board of Trustees, before our plan was formally accepted in the spring of 1999. Some of the circulation and resulting revisions came out of our team commitment to involve all members (including administrators), both to improve its quality and to strengthen team buy-in to our eventual action.

We considered the idea of selecting 'experimental' and 'control' communities with which to work; but discarded the idea on careful inspection. Some of our team members felt it was unethical to 'experiment' with communities (cf. McDougall et al. 2007; see also Fennella et al. 2008). My own perspective was that people are experimenting all the time (cf. the Chambers et al. (1993) collection). I argued that honesty and humility could absolve us of much responsibility, particularly if we made it clear that any final decisions rested with the communities.8 But I found even more convincing the argument that people who were similar enough were inevitably geographically close to each other; contamination from experimental to control group seemed highly probable. If the changes were found to be beneficial, then it definitely would be unethical to deny the 'control' community access (even if possible).

Evolution of our Approach

Pragmatically, there has been a difficult balance among 1) professional (institutional, disciplinary and, in some cases, political) pressures for conventional, reductionist and extractive research; 2) donor requirements for immediately demonstrable plans and accountability; and 3) what I (and other ACM advocates) believe to be the potential and creativity resident in forest communities. We also had some, though comparatively few, problems with donors. Although we were convinced that our impacts---in social learning, empowerment, increased equity, political and analytical savvy---were absolutely crucial to improving human well-being and environmental management, we did not have the units, the measurements that donors sought. Additionally, many impacts simply require longer periods of time than projects typically last. These issues (time needed and measurement capabilities) remain problematic.

[8] In a subsequent ACM-type research project on landscape mosaics, several influential team members and leaders resisted allowing communities to dictate the teams' activities. The team leader particularly felt responsible to the donor to focus on biodiversity conservation, a central element in the proposal, and did not trust communities to take sufficient account of this issue (also argued by Sayer et al. (2006)). I thought that the sustainability of effort *depended* on a strong voice by the communities.

Important ACM actors can be distinguished, in 'ideal type' form, as *team members* (those directly hired by CIFOR), p*artners* (researchers and institutions with whom we work), and *community members*, though the boundaries are fuzzy. We used a variety of techniques to build and maintain teamwork. Within our teams (both global and within-country), we tried to replicate some of the approaches we hoped to use with our partners and collaborating communities. Some of our partnerships did not pan out well, which meant ACM did not succeed there. Our flexibility granted the teams important freedom and spawned creativity.

We also had a wide variety of expertise in the different field teams---both in terms of discipline and level of formal qualifications. This too brought dilemmas: An early issue was the appropriate unit of analysis. Throughout the process of developing our conceptual framework, we assumed we understood each other.[9] Only after we began doing the research did we realize that the biophysical scientists were thinking in terms of landscapes as the central unit of analysis, the social scientists villages. There was initial dismay, as we realized our error, and some passionate defense of respective positions. However, ultimately we realized there was benefit to both approaches. Such an agreement would have been much more difficult had we not built coherent and cooperative teams. After considerable discussion, we opted to let each country team determine its own unit of analysis; we would simply make sure we explained the different orientations in our writings---a solution that has worked well.

The variety of conceptual and analytical elements (from ACM and PAR to context studies and cross site analyses of pre-determined features) allowed the various site-based teams considerable flexibility in terms of their own emphases and analyses. We purposely designed the framework to maximize flexibility, seeing the framework as an umbrella within which many different kinds of useful activities, approaches, and emphases could be accommodated. This proved to be true.

Within the ACM team itself, our internal emphasis on empowerment elicited considerable discussion amongst ourselves. How, for instance, could we genuinely work on leveling the playing fields in tropical forests, without sparking resistance within the governments whose permissions we needed (and even whose enthusiasm we sought)? Another issue that affected our work in communities pertained to national level politics – conflicts and violence. But local teams managed to cope with these situations to a considerable extent.

[9] On the later Landscape Mosaics project, only at the very end of the two-year project did the team leader and I understand that we'd been using the phrase, participatory action research, in different ways. This occurred in a context where we had a good relationship, frequent interaction, and extensive interdisciplinary experience and good will.

As we progressed, some of the differences in skills became more obvious. Our philosophy of devolved responsibility and encouragement of open and revolving leadership helped to inspire people to take the lead in a variety of relevant directions. Periodic facilitated meetings reminded us all of the links between among our respective bits. One particularly effective, internal technique was a half-day workshop in which team members created pictorial images of how the ACM components fit together The writing workshop we convened in 2001 in Bogor, was extraordinarily valuable (and something we repeated several times). The core team members selected their partners during the early days of their efforts, depending on the availability of needed expertise, willingness/interest to collaborate, and knowledge about the area in question.

Another key feature that affected success was the availability in each country of ACM team members with strong commitments to and knowledge/skills related to the approach. In several countries the population's experience of outsiders was primarily as a source of funds or material goods; such contributions were welcome, given their minimal incomes. Our teams were seen to come 'bearing gifts.' A big part of both the ACM approach and rationale has to do with the capacity of the people to continue the work after the team leaves[10].

I saw ACM as a means to expose our team members to the wealth, complexity, beauty of existing forest socio-cultural systems, and hopefully to link the teams' knowledge with the knowledge, interests, and motivations of local communities. I saw ACM as a mechanism to resist and reduce the cultural discontinuities that occur when fast-paced and externally induced changes are forced on local forest communities.

Outcomes and assessments

Although a number of people have evaluated what we have done, and only one donor ever expressed dissatisfaction with our results,[11] we remain dissatisfied with our ability to reflect

[10] Mutimukuru-Maravanyika (2010), in her analysis of what she considers ACM's long-term failure in Zimbabwe, attributes some of these longer term problems to the dependence the local team had encouraged, by paying community facilitators, since the team could not spend long periods in the field (cf. Zimbabwe's political chaos)---see Chapter 6.

[11] That evaluation was, we felt, tainted by the political maneuvering of some of CIFOR's administrators who preferred the donor to allocate funds to another program.

adequately either the real impacts we have seen or their importance for improving forest management. We satisfied CIFOR and our donors by producing abundant publications.

To some extent, of course, the process of participating in an ACM process involves ongoing self-evaluation---as part of the iterative cycles mandated by the approach. Since the assessment reported in The Complex Forest (Colfer 2005), a number of sites have managed to move ahead with ACM-like activities and related spinoffs. The work in some countries (such as Indonesia and Nepal) has had a variety of incarnations from the first ACM phase, demonstrating the continuous process of learning and collaboration among the local actors.

Conditions of ACM application

Under what conditions does ACM work? As a team, we continuously monitored our ACM process to identify and characterize the conditions and the critical processes required to move ahead. I identify five conditions essential for ultimate ACM success.

1. A problem must be recognized that is of sufficient gravity to motivate and mobilize participants to act voluntarily. Yet, conditions should not be so chaotic that prediction becomes impossible.
2. Facilitation, building on skills at social analysis, group process, diplomacy, and networking (with consistent, sustained concern for equity), must be regularly available and used.
3. The facilitator must operate within an institutional context that grants him/her significant freedom (including 'freedom to fail' and learn from such failures) and access to actors at various scales.
4. There must be a sufficient, funded time frame to follow up on actions planned, implemented, monitored and revised.
5. Implementing an ACM project requires a high level of flexibility. This can vary from no pre-determined outputs to a number of them; the fewer, the better. The approach stipulates that communities decide what they want and how to get it, within the constraints of their contexts (also subject to change). This resistance to pre-determined outputs is based on the conviction and experience that the ACM process will only continue to function, over time, to the degree that there is PAR group buy-in.

An ACM approach requires certain attitudes from the people who implement it. A facilitator must be sensitive to political realities, including the micro-politics within and among PAR groups and others in their contexts. Facilitators' abilities and understanding of the ACM approach are among the most central elements of a successful ACM process. Facilitators must have the ability to catalyze true participation (in the sense of 'deliberation'). ACM's further expansion and consolidation depends on

how ACM researchers and practitioners handle four critical issues – a) working among scales, b) linking with the political sphere of governance, c) building effectively on the positive elements of local people's cultural systems (which entails overcoming deep bureaucratic inertia that works against ACM, and d) persuading donors and sponsors to invest in ACM-like approaches.

It does seem probable that our 'home' within CIFOR reduced our capacity to act in the overtly political manner called for by Edmunds, Wollenberg, some Wageningen based academic researchers, and most recently Mutimukuru-Maravanyika 2010. We, like all who would implement an ACM-like approach, worked within an institutional context, and were, at some level, dependent on the good will of the governments in the host countries to maintain our effort. An additional constraint on our political activity was the potential implications for the people living in our partner communities. Overt political activity can be dangerous---in our experience, particularly with the Zanu-PF regime in Zimbabwe and the Maoist and governmental conflicts in Nepal; ACM teams were cognizant of these dangers.

The lack of funding to support the needed, long term rural residence/engagement has been identified as a crucial shortcoming of our efforts. ACM advocates need to develop reasonable indicators of our own success. Some have wondered how best to encourage these approaches, seeing its loss at CIFOR as a harbinger of further discouragement. Although the formal ACM program disappeared, elements have continued vibrantly within the institution.

Way Forward

Here I put forth a few notions about future direction (bearing in mind the optimistic idea that the best way forward is to strengthen local people's positions within the larger systems of which they form a part):

- We need to maintain our concern with multiple scales, increasing our efforts to bring actors at these various scales together benignly.
- We need to strive even more intensely to work with the marginalized. We've learned how difficult it is, we've identified some of the barriers (time and energy constraints, lack of shared language, fear of the unknown and unfamiliar, political roadblocks). Now we need to overcome them.
- We need to remain open to continual improvements in our methods and in our understandings of the contexts in which we are operating. Kusumanto 2007 uses the analogy of various understandings being spun off a spinning wheel, to reflect the evolving and widening changes that occur with social learning. A similar process characterizes the evolution of thinking about ACM; this should continue.

- Mutimukuru-Maravanyika has argued that our work was too politically naïve in Zimbabwe, that our approach had not adequately confronted the governmental power structure. Although I am skeptical that this team had any real choice, I agree with her that future ACM efforts should continue to take into account, and more forcefully engage things political. Doing so will require care, sensitivity and some good luck.

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Chapter Three

Erosion of Farmer Field Schools in Ecuador: Politics of Agricultural Science and Development Practice

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Introduction

As a result of its impressive success as a knowledge-based, community-led approach for Integrated Pest Management (IPM) in Southeast Asia and elsewhere, in 1999 Farmer Field School (FFS) methodology was introduced in the Andes, initially to help communities overcome pesticide-health concerns. Eventually, the approach was adapted to other concerns in agriculture and natural resource management, including the sustainable management of small and large animals, local seed systems, soil fertility, and water for food production and climate change adaptation. Beyond helping to solve technical concerns, FFS was intended as a political device for shifting the designs of development practice from technology- to people-centric.

In this paper we examine the arrival and spread of FFS in Ecuador, accompanied by counter activity of a socio-technical regime organized around agricultural modernization. We hope to shed light on the fundamental conflict between present institutional designs and needed re-direction towards more adaptive agricultural science and development practice. The experience of FFS in Ecuador provides rare insight into the politics of institutional continuity and change involved in determining public policy. Our analysis shows that, in the context of an entrenched socio-technical regime, one cannot realistically hope to achieve people-centred adaptive collaborative management of agriculture and natural resources through the mere demonstration, documentation, and promotion of a radical methodological approach such as FFS. We present evidence of how competing actors involved in science and development of FFS organize around prestigious symbols and become active in the processes of translating and transforming the people-centred character of FFS into a technical package. We then draw implications for innovations linking methodologies with wider socio-technical regime.

Needed transition in agricultural science and development

Although agricultural modernization has led to increases in food production and economic growth in many places, the recent International Assessment of Agricultural Knowledge, Science and Technology for Development (IAASTD)[12] as well as an exhaustive study by the US Academy of Sciences (NRC 2010) concur that the benefits often have not been equally distributed and gains have come with severe social and environmental costs that place into question the sustainability of past contributions. As a result, the IAASTD concluded with a call for "… a fundamental shift in science and technology policy and practice that maintains and enhances environmental and cultural services, while increasing sustainable productivity, and safeguarding nutritional quality and the diversity of food and farming systems."

A socio-technical regime, such as that which became organized around a global project of agricultural modernization project during the second half of the 20th Century, can be seen as both a factory and a storehouse of institutional perspectives and arrangements that enable and regulate the use, development and survival of a particular value system, sets of rules and technical processes and products. Many of today's most impenetrable problems – e.g., mass pesticide poisonings, global-scale overweight/obesity and global warming -- are embedded in past 'solutions' of science and development. Thus, there is growing concern over how the institutions of Science and Development can become organized around more pluralistic and sustainable purposes. In order to ground a discussion on this concern, we draw on the experience of Farmer Field Schools (FFS) in Ecuador - a strategic niche-level intervention intended to re-direct public policy towards more promising futures.

FFS by design: from technology to people

During the 1990s, the harmful consequences of agricultural modernization in Ecuador - in particular, severe health problems associated with pesticide exposure, degrading soils, and declines in productivity (Crissman et al. 1998; Sherwood 2009) – made a growing number of people became concerned over industrial era technology, leading to rising waves of protests and questioning of public policy. As a result of impressive success of FFS methodology in Integrated Pest Management (IPM) in Southeast Asia and elsewhere, colleagues at the International Potato Center (CIP) invited

[12] www.agassessment.org

the FAO's Global IPM Facility (GIF) to help introduce Farmer Field Schools in Ecuador (as well as Peru and Bolivia) (Sherwood et al. 2000).

FFS-methodology emerged as an explicit response to the adverse consequences of modern, industrial era rice farming in Asia, especially the health and environmental effects of pesticides (Kenmore et al. 1987 and Kenmore 1991). As a high-order, interactive lay-expert learning approach based on well established principles of adult education (e.g.discovery-based learning), ecological literacy (filling knowledge gaps on the existence of beneficial organisms) and social learning (adaptive, collaborative learning in heterogeneous contexts), FFS aims at enabling individuals and groups of farmers to address their social, human health, and environmental problems (Pontius et al. 2002; Luther et al. 2005). Over time, the approach progressed from farm-level to community-level learning and action.

Instead of seeking to 'feed' participants answers to their problems, the FFS convener operates not as a teacher but a facilitator, involving farmers (i.e., men, women, and children) in group learning and explorations of their priority concerns. Through open-ended experiments, individuals fill knowledge gaps, in particular the 'hidden' ecological phenomena, while learning how to work with others in finding solutions. The learning-action agenda is transdisciplinary in that it responds to the array of matters experienced in agricultural production: the interactive agronomy of soils, plants, and pests, marketing, and social concerns. Rather than blindly promote specific technologies, participants systematically invent and test alternatives in comparative trials in their community. Thus, FFS can be viewed as a strategic departure from the expert system and its modernisation project based on the 'extension' of pre-conceived and -packaged solutions.

Between 1999 and 2004, GIF and CIP implemented a series of Training of Trainers in FFS and they implemented closely monitored pilots as a means of demonstrating the potential of the methodology and building a multi-organizational support network involving private and public sectors (Luther et al. 2005). After three seasons, studies documented very impressive results (Barrera et al. 2001 and 2004; Borja 2004). By 2003, hundreds of farmer groups in the country expressed interest in establishing their own FFS programmes, leading to a phase of rapid growth or scaling-up. Thus, FFS entered the 'social wild' of development practice, where new organizations arrive to learn about and utilize an innovative approach for their own purposes.

FFS in practice: from people to technology

Due to the growing international popularity of FFS in the mid-1990s, people from the International Potato Center (CIP), Instituto Nacional Autónoma de Investigación Agropecuaria (INIAP) the Ministry of Agriculture (MAG), non-governmental organizations (NGOs) and the agrichemical industry showed interests in FFS. Each signed up for training and invested resources in introducing the methodology as part of their own professional agenda.

Initially the adaptation in Ecuador was consistent with the methodology's original proposals in Asia, in terms of the themes of interest, field conditions, and cultural practices (Paredes, 2001; Borja, 2004; Pumisacho and Sherwood, 2009). Nevertheless, as summarised in Table 3.1, over time FFS-in-practice underwent major changes in design, content, and process management, leading Sherwood and Thiele 2003 to argue that the people-centred elements of the methodology were being eroded. In the social wild of spontaneous appropriation of the methodology by new actors, FFS became vulnerable to competing interests, and indeed it underwent re-formulation.

Table 3.1. Divergent expressions of FFS (based on Schut and Sherwood, 2007)

Criterion	FFS by design (in pilots) (Paredes, 2001; Borja, 2004)	FFS in practice (5-7 years later) (Sherwood and Thiele, 2003; Schut, 2006)
Goals and didactics	Challenge conventional practices through open-ended, farmer-led innovations and experiments. Based on discovery-based-learning an learning-by-doing	Transfer of knowledge and technology, diffusion of IPM-packages through learning
Learning process	Open-ended	Project-based
Decision making	Based on analyses and discussion	Based on assumptions, generalisations and routines
Facilitation	Participative, enthusiastic,	Steering, demonstrative and

	working with the farmers	lecturing
Agenda setting/ ownership	Organised around the growth stages of a crop or animal. FFS participants chose crop and determine curriculum and experiments, experience ownership and responsibility over learning processes and activities	Organised within the boundaries of organisational and donor preferences. FFS participants are passively involved, facilitator chooses crop and determines learning processes and activities
Long term objectives	More explicit knowledge, independent problem-solving skills, empowerment	Learn what is being taught, adopt and diffuse expert technologies

After the benefits of FFS became overwhelmingly clear and the methodology became legitimized as 'best practice', many of the very same actors began to claim ownership of it. In the process of taking over, however, these actors systematically changed FFS around new purposes. The facilitation of open-ended discovery learning became specialised top-down lectures. Questions became answers. The content and processes of FFS were simplified to the point where differences between individual FFS were lost. Consistent with the design features of expert systems, FFS underwent degrees of homogenization. Rather than broaden expert production of knowledge using people-centred approaches, we observed that the experts and their organizations commonly sought to transform FFS in line with their competing priorities. Within that process, FFS was pulled from a people- to a technology-centred paradigm.

For example, early on a group of researchers at CIP and its national partners hybridized FFS to "Farmer Field Schools-Farmer Participatory Research" (FFS-FPR) (Mendizabel 2002). This involved shifting technical content around institutional research priorities, such as pesticide-use efficiency (Torrez et al. 1999a and b) or selection of plant disease resistance varieties (Nelson et al. 2001; Ortiz et al. 2004). We found that researchers commonly increased the complexity of single variable demonstrations to the point where FFS began to include dozens of variables and other subtleties, where the outcomes of FFS experiments could only be seen through sophisticated statistical analysis.

Similarly, in the hands of development experts FFS became diversely packaged and sold to donor agencies for diverse, sometimes contradictory purposes: as means to 'organic' or 'clean production' (e.g., by INIAP and EcoPar), 'pesticide-use reductions' (CIP), and 'increases in productivity' (IPM-CRSP). The expected outputs of FFS became part of an individual or institutional marketing strategy. Researchers and development professionals and their organizations reduced FFS from a participant-led, multi-faceted and iterative learning-action methodology to a relatively pre-determined and standardized means of technology transfer.

Scaling-up in name but not in meaning

Over time, FFS methodology was pulled back into the dominant institutional paradigm it was supposed to challenge. Supporting collaboration amongst farmers in local innovations became top-down technology-transfer, and the farmer-led, demand driven character was replaced by externally driven extension and development. Reasons can be found in the hierarchical and formal organization of national research and development institutes such as CIP and INIAP, where disciplines, procedures, protocol, mandates and responsibilities were clearly formulated, respected, and defended. Moreover, funding structures, time-constraints and donor-demands often did not provide sufficient space to adequately respond to the needs and interests of farmers.

FFS by design emphasized new sensibilities around local knowledge and ecology-based production, and it aimed to enable farmers to be able to address the concerns generated by the earlier 'solutions' of expert-based agriculture, particularly the health effects due to chronic exposure to highly toxic pesticides. On the surface, it appeared that expert-organizations, such as CIP, INIAP and MAG, favoured more pluralistic science and development. Nevertheless, in retrospect we found that the institutions of technical experts never seriously entertained FFS as a people-centred approach, and they showed even less interest in being part of a broader farmer-led movement for social change. While FFS scaled in name in Ecuador, its fundamental principles often were lost in translation. Instead of enabling desired institutional change, scaling exposed vulnerabilities that led to fundamental transformations, and the potential of FFS as a symbol for radical institutional change was lost.

Nevertheless, the experience of FFS in the social wild suggests that in practice these actors continued to enforce expert-led knowledge production. In essence, we see that a people-centred

methodology was scaled-up in an environment where institutional pre-conditions were not only absent but also largely resistant to change.

Nevertheless, outcomes were not homogeneous, as actors on the margins of the agricultural modernization project remained open to the possibilities around, and even beyond, FFS. By 2011, the few remaining examples of people-centred FFS continued to operate, in particular those led by community volunteers and organizations, with their identity as a counter-movement to the green revolution, such as the agro-ecology movement. In these cases, strong internal organization, self-financing, and a diversification of activity permitted the continuation and deepening of FFS, suggesting that methodology had gained a social foothold, if seemingly minor. While it did not appear that people-centred FFS would continue to grow into an increasingly coherent body of knowledge capable of defining and enforcing rules of 'good' agricultural science and development practice, seeds of change have been planted. This includes the rise of consumer groups from marginal urban neighbourhoods in six cities, known as the Canastas Comunitarias ("Community Food Baskets") (Kirwan 2008; Garcés and Kirwan 2009). Learning about FFS, the *Canastas* began to meet with groups of FFS graduates to negotiate new consumer-grower arrangements around 'healthy food', a concept preoccupied with not just the end product of commodities but also with the production process itself as well as consumer-producer relationships.

Overall, however, FFS in Ecuador was largely transformed in the hands of researchers, extensionists and farmers and their organizations and projects to the point where the methodology no longer represented a serious threat to established ways of thinking, organizing, and doing in science and development practice. In the process, the original idea of FFS as a means of adaptive collaborative management appeared lost.

Conclusion

In its public demonstrations of new possibilities and desirabilities, the FFS movement in Ecuador threatened established institutional norms and values of agricultural science and development practice. Progress in changing dominant patterns of thinking, organizing and doing hinged on ability of emergent actor networks to open up and defend new pathways of innovation. Following release into the social wild, however, competing interests in the form of the institutions tied to the expert system of agricultural modernization led to the transformation of central meanings and processes of FFS. This means that FFS was retained to serve established institutional purposes, as expressed in

organizational mandates and objectives, operational modalities, funding priorities, and administrative procedures. In the process, FFS scaled in name but not in meaning.

The performance of FFS in the social wild of Ecuador exposes subtle features of institutional politics of change and continuity in relation to the attempts aimed improving resource management and development practices. The FFS experience in Ecuador clearly demonstrates that the calls for scaling-up methodology-based innovations such as FFS are overly simplistic. We saw change at the moment of attempting to scale-up the methodology, when the priorities of the project leaders shifted from FFS implementation to its diffusion. Institutional transition towards people-centred learning and collaborative management practice requires a discontinuity with the established socio-technical regime.

Clearly, in the context of an entrenched socio-technical regime, one cannot realistically hope to achieve people-centred adaptive collaborative management of agriculture and natural resources through the mere demonstration, documentation, and promotion of a radical methodological approach such as FFS. Transition implies transformation of assumptions about the underlying causes of poverty and environmental degradation, the meanings of 'best' and 'good' practices, and how learning and development should be supported and facilitated through policy. While the contradictions of agricultural modernization are increasingly apparent and change appears inevitable, it cannot happen without addressing existing power relationships that define and enforce the rules of science and development practice. While the contributions of FFS in Ecuador appear to be limited, its survival on the margins and linkages with growing networks of actors in the agro-ecology movement organized around the contradictions of modern food suggest that innovations in other forms may continue to influence institutional transition.

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Chapter Four

Enabling an Adaptive Learning Network of Local Communities for Integrated Floodplain Management in Bangladesh: Challenges and Lessons

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Introduction

This paper documents and analyses how over 250 existing community based organisations (CBOs) managing natural resources in Bangladesh have improved their management through an adaptive learning network. We also identify challenges through this process of encouraging CBOs to adopt improvements in their practices that take a more system-wide view of the productivity of floodplains to enhance local livelihoods benefits. The paper is based on an action-research approach over the past 15 years.

The authors have worked in development initiatives to establish CBOs and in research and evaluations in this field since 1996, and specifically since 2007 we have piloted adaptive learning among CBOs. Through this approach, CBOs have improved floodplain management practices, and at the same time we have investigated effectiveness for both participating communities and the flood-plain socio-ecological systems. Our experience is reported and assessed in the context of recent contributions on adaptive collaborative or co- management (Armitage et al. 2008). The main questions that we seek to address are whether and how adaptive learning can be effective between a set of independent and dispersed CBOs, and what are the outcomes from this approach.

Our approach

In management through adaptive learning approach, the existence of uncertainties is not only accepted but made a focus of management efforts through monitoring and generating feedback to management processes (Lee 1993). In such cases, learning and reducing uncertainties about the resource system being managed, becomes a vital and integral part of management itself. Learning then becomes a systematic process of information collection, documenting and sharing, directly linked to resource management processes (Arthur and Garaway 2005).

However, these aspects of adaptive learning have been neglected in Bangladesh floodplain co-management. While CBOs have been formed that built on and enhanced social trust within local communities, the projects that supported this process did not take a dynamic view of learning or a system-wide view of floodplain ecology. The CBOs themselves try to adapt but without support to do this in a systematic way. Floodplains and waterbodies comprise of contested and over-exploited resources, and the initiatives that formed CBOs each focused on part of the natural resource system – fisheries management or water for agriculture.

The adaptive learning approach supported by our team has helped CBOs test and adapt options to address constraints and opportunities in floodplain management. In Bangladesh community based management of floodplain resources has expanded to a considerable extent, but the uniqueness and isolation of each of these locally managed units limits their scope for adaptive management and learning. The solution attempted has been learning among a network of CBOs, on issues identified by those CBOs. We term this learning a “multiplier effect” where the benefits and lessons generated among a network of similar units or CBOs is greater than the scope for learning separately by each individual CBO. It also brings an advantage neglected in the literature – that of peer pressure from CBOs on fellow CBOs to follow practices collectively recognised as good. Our work was designed to test this approach by working with a range of CBOs in Bangladesh that no longer receive support from the projects that initiated them, but which continue to manage floodplain resources. We focused on a horizontal learning process between CBOs that are comparable in status and environment but have diverse experiences. The network of CBOs we have worked with started with about 150 in 2007 and expanded to about 250 from the end of 2008.

While we accept the importance of “bridging organizations” such as those in co-management across a hierarchy of levels or scales of different types of organizations (Berkes et al. 2003), we observed

that this is effective when poorer grass-roots stakeholders already have achieved a sufficient level of "bonding" social capital. We have taken a bounded view, by facilitating adaptive learning among CBOs rather than also targeting government agencies. As a first stage, the adaptive learning network started among CBOs in the expectation that the network can subsequently bring knowledge and views collectively to be heard and respected by government agencies. In Bangladesh this is particularly relevant to the issue of secure access to water bodies for communities, but as will be seen access to and influence over higher levels of government administration remains a challenge for a CBO federation.

Floodplains Management in Bangladesh

About two-thirds of Bangladesh may be classified as wetlands according to the Ramsar Convention definition. About 6-7% of Bangladesh is always under water, and in the monsoon 21% is deeply (>90 cm) flooded and around 35% experiences shallow inundation (FAO, 1988) – these areas form the floodplains of Bangladesh. Within this system are a wide variety of ecosystems including rivers, *haors* (deep depressions in the north-east that coalesce to form a vast inland sea in the monsoon - rainy season), *beels* (permanent freshwater depressions), *baors* (oxbow lakes), estuarine waters, and extensive seasonally inundated floodplains. Floodplain wetlands in Bangladesh provide local people, especially the poor, with food, most notably fish but also other aquatic animals and plants. Some 82% out of about 125,000 households fishing for income in one survey were found to be poor (World Fish Center, 2003).

However, the complex, dynamic nature of floodplain systems is a challenge to managing these areas. Permanent waterbodies and rivers are state property, but the majority of land in the floodplain system is privately owned and cultivated with rice. When it is flooded private land becomes a seasonal commons where people catch fish and use a multitude of natural aquatic resources, all interlinked in an ecosystem connected through water. Bangladesh wetlands have ample water for half of the year, but the limited amount of surface water in the dry season drives productivity. In the dry season surface water is needed for agriculture, for domestic uses, and for the survival of fish. Agricultural development has largely focused on rice production. Although embankments and flood control have played an important part in draining wetlands to expand agriculture and protect crops from floods in the monsoon, rapid growth in agricultural production since the 1980s has been led by abstracting ground and surface water to irrigate high yielding rice in the dry season (Sultana et al. 2008), and embankments have had negative impacts on fisheries (Ali 1997; Halls 1998).

There are already a large number of policy initiatives and strategies that are supportive of sustainable development in Bangladesh. However, their implementation and adoption into practice has been at best piecemeal and often constrained by contradictory policies for land management and revenue. Underlying these problems is an administration that is highly departmentalized, and this calls for a high degree of coordination in tackling complex inter-related problems. Despite changes in national policies that call for an end to drainage of remaining wetlands (MWR 1999), wetlands continue to be encroached for agriculture, industry, brickfields and aquaculture with no sign of abatement, and the views of poor floodplain users have continued to be unheeded in policy formulation.

Government policies regarding inland capture (floodplain) fisheries on paper have consistently favoured poor fishing communities, but practical application and outcomes have been very different. Fishing rights in the majority of public waterbodies (*jalmohals*) are leased under a traditional system to fisher cooperatives for three years. Since fishers are usually poor and leases have to be paid at the start of the year, access for fishers is compromised, as fisher cooperatives tend to be under the patronage of moneylenders and *de facto* lessees who pay for the lease (Ahmed et al. 1997) and maximise their interests. The consequences are over exploitation, declining catches, a lack of conservation measures, and limited benefits for fishers. An attempt to license local fishers in the late 1980s had little impact as it gave no incentive for individual fishers to cooperate to conserve fish, and retained a focus on revenue generation. In 1995 a government decision ended leasing of rivers or “open waters”, with the stated aim of freeing poor fishers from exploitation, and they are now open access. This change was influenced by a group of wealthy boat owners (Huda 2003) and opened rivers and their fishers to exploitation and capture by those who invest in brushpiles and have local power (Thompson et al. 2003). This system has created a significant number of management-related barriers affecting fisheries.

In water management in the 1990s top down approaches were criticized for resulting in infrastructure that failed to understand local needs. This led to a process within the framework of the National Water Policy that formulated Guidelines for Participatory Water Management (MWR 2001). Notably there was a policy decision to transfer ownership of water control infrastructure after construction to local people where the command area is under 1,000 ha. This has been achieved by forming local cooperatives (CBOs) and supporting their plans for infrastructure.

Since the mid-1990s the Government of Bangladesh has, therefore, undertaken several projects to improve local fisheries management and water resources management through community based organizations (CBOs). The various funded projects were all time bound, but had the intention of establishing community management of fisheries, wetlands or water resources structures. However, the task of establishing community management and introducing interventions in resource management dominated those projects, which did not build capacity of CBOs to continually analyze their performance and adapt to changing circumstances and opportunities. Nor did projects make much effort to help CBOs interact to learn from one another; at best they may have sponsored some meetings between CBOs under the same project, but usually to disseminate information. Ultimately there is the question of the sustainability of CBOs when intensive project support ends, but as will be seen many CBOs have continued to function.

Likewise, most research related to floodplain natural resource management has, like development assistance, been divided on sectoral lines. This was also reflected in the activities adopted by the CBOs, which were usually limited to a specific aspect of fisheries management or of water management for rice. However, the CBOs involved in the adaptive learning network did not limit themselves to their original "comfort zone", and this was one of the expectations of the research team.

Adaptive learning Innovations

In Bangladesh by the mid 2000s there were already several hundred floodplain CBOs. These are people's organizations comprising of 50 to 700 or more members, mostly poor, and each covering the several villages that depend on a defined floodplain or waterbody.

In May-June 2007 initial workshops were held with small groups of leaders from the CBOs in various localities, so that sufficient time could be spent by the research team on discussions with each of the CBO leaders. These small group meetings were a starting point, but were not intended to be repeated as they would neither be cost effective nor address the aim of learning across a larger network of CBOs. The CBOs identified several challenges and expressed the need for networking and learning. For instance, those managing *jalmohals* were unhappy with the limited and uncertain lease period and also the per hectare lease cost. They were also concerned over access to rivers as influential people put brushpiles in the best fishing locations, limiting the access of poor fishers. CBOs even raised questions whether brushpiles used as sanctuaries in rivers were contributing to increased siltation. CBOs reported that fisheries officers demand cash and big fish otherwise they

threaten to cancel the access rights of the CBOs. The CBOs proposed to organize in one platform so that they could better resist malpractice. Although fishers and farmers all need water for their livelihoods, they only coordinated their activities in one or two sites. In the floodplain beels with sluice gates, influential farmers closed and opened the gates for their interest without concern for the fishery. Challenges such as these clearly demonstrated a need for collective action between CBOs, when until this time collective action was limited to within individual CBOs, and the CBO leaders also wanted to be involved in policy formulation.

Examples of good practices identified for further testing by CBOs at this stage included: fish sanctuaries and improvements to them, reintroduction of native fish species, and improvements in stocking practices in closed beels. Some of the potential lessons that addressed common issues experienced by the CBOs came from experience of a limited number of CBOs that had worked previously with the research team on integrated floodplain management, such as adoption of alternative dry season crops with lower irrigation water demand, and alternative ways of processing jute to reduce water pollution. To this extent over the subsequent years the research team encouraged integrated floodplain management, but it also arose naturally when CBOs shared their different perspectives and natural resource management approaches.

The CBO leaders then went back to their own communities where they discussed the shared learning in the initial workshops. They called executive body meetings to decide whether they wanted to change their previous management plans or not, and discussed the issues with their general bodies. After obtaining general body responses, the CBOs identified possible changes in their practices and innovations of interest to them. Through an iterative process they have subsequently revised their management plans finding room to change their decisions on the basis of not only their own experiences but also experiences of the other CBOs as shared in the workshops. In the first round of larger regional workshops in November 2007-January 2008 the CBOs presented lessons and their planned improvements in resource management – many as “schemes” for which they sought small grants or other support – to all the other CBOs of that region as well as the research team, and received feedback from other CBOs and researchers. As a result CBOs developed specific plans for testing improvements in their resource management that were informed by the lessons and ideas of the other CBOs in the network and were endorsed by their general membership.

Originally it had been thought that annual workshops among CBOs, complemented by a round of exchange visits between CBOs and a newsletter, would be enough for the adaptive learning process to function. However, the research team decided in the first year that more frequent workshops

(two per year) were needed to enable this process. It was found that there were more similarities than differences in experiences, gaps and lessons between CBOs from different environmental contexts, so holding workshops within a region reduced travel time and costs. But wider sharing was still covered by organizing exchange visits between regions. It was also more effective to ensure that leaders of all CBOs spoke in workshops, this revealed which CBOs had more or less experience and encouraged direct sharing and support between CBOs.

Potential indicators for success and participatory monitoring methods were also discussed. This enabled peer review of plans by the other CBOs, and a coordinated approach to testing resource management improvements. In the networking workshops CBO leaders proposed indicators for the different initiatives. Because workshops were held in different regions there were differences in CBO views on indicators, moreover it was difficult for CBOs to make operational in quantitative terms some of the general indicators they proposed, and in some cases CBOs were optimistic in the amount of data that they proposed themselves collecting compared with the time demands on their members. Consequently the research team helped to consolidate the CBO proposals into a set of common indicators and recording formats for each initiative they wanted to try. This process has allowed the networked CBOs to understand and compare better the impacts of their actions, and to undertake monitoring by themselves.

The project team provided some limited capacity support to CBOs through trainings and visits and piloting to address knowledge gaps, but unlike most projects the emphasis was on the CBOs themselves taking initiatives and gaining and sharing knowledge. Where the piloting proposed by specific CBOs and agreed in the network involved new activities and some risks, modest funds were disbursed for demonstration purposes. The funds were disbursed as support in kind or into the bank accounts of the CBOs in the presence of CBO members. In each CBO a three-member Project Implementation Committee (PIC) was formed with members from outside the executive committee for implementing and supervising the initiative. The main challenges faced related to the timing of cash flows and seasonality of initiatives – for example providing quality seeds in time for the start of the dry season, and the reluctance of a lead organization that was not agriculture oriented to advance funds in time. In addition a few CBO leaders took advantage of the system for personal gain in community initiatives such as fish sanctuaries, but the combination of PIC oversight and reporting back to peers in the adaptive learning workshops limited this.

By late 2008 it was a demand of the CBOs trying the same types of initiatives that they should meet and discuss about impacts and why and how their initiative worked or did not work. The research

team also recognized that the larger regional workshops gave limited scope for CBOs to assess the performance and detailed lessons from the various initiatives, which had become quite diverse. Therefore additional smaller reflective learning sessions were organized where leaders of CBOs that tested the same innovation (such as a particular crop) could make more detailed comparative assessments of performance and identify good practices or changes that they wanted to test further.

Culturally in Bangladesh for the Muslim majority rural women are very rarely involved in economic activities outside the homestead – few cultivate land and very few women catch fish. However, there are some CBOs where women play an active role, particularly in floodplains where women use natural resources. Women from the floodplain beels participated in the workshops along with men, and contributed to the lessons and the proposed adaptive learning activities.

In the first year of the project the CBOs agreed to establish a more formal network based on the three regional committees (north-centre, south-west and north-west). In January 2008 all 13 members of each regional networking committee (39 CBO leaders in total) met and agreed to register a federation of CBOs, this was achieved in April 2008 when it was registered as the Society for Water Resources Management (SWRM), and in March 2010 the federation held a convention of all members, where its most recent bi-annual election of regional committees and office bearers was held. The CBO leaders are all volunteers and several of the more capable and respected leaders who coordinate the federation in its committees are increasingly busy with other demands on their time, but are reluctant to step down as they have status among the CBOs. The modest subscriptions that CBOs can afford to pay for SWRM membership cannot cover the costs of interactions and events needed for adaptive learning, and the member CBOs lack the capacity to write proposals for potential funding agencies. In addition while the CBO leaders have shown they are capable of advising one-another and addressing common problems at local level, they still depend on having advice from the research-facilitation team, especially to organize and coordinate events such as workshops. To move forward from the present arrangement and capacity might for example need support for SWRM to employ an organizer-facilitator-fund raiser. This might enable the network of CBOs to form a lobby for continued access to resources (addressing attempts by local elites to capture waterbodies), and promote collective CBO interaction with government agencies for better access to services.

The adaptive learning and networking process has led to some visible improvements. First, the process has helped CBOs gain confidence to contact local officials and extension workers to access services. Second, research evidence and CBO learning up to mid-2010 found that fishery

conservation (sanctuaries, closed seasons, etc) has restored fish species diversity and catches, even in closed waterbodies (110 CBOs established new (51) and/or improved fish sanctuaries (59). Third, surveys of households in a sample of the participating CBOs indicate that incomes from all sources and for all household types increased more than inflation between 2007 and 2009. There has also been a more general improvement in food security for all categories of household.

Issues and Discussion

The primary pre-condition for an adaptive learning network has been the existence of CBOs holding rights over and actively managing floodplain natural resources. This was also necessary if communities were to take a more integrated or holistic view of the productivity of floodplain natural resources. But once they have some institutional foundation, they can work together to advance the collective interests, such as through networking.

Reflective learning which uses a mix of qualitative and semi-quantitative findings has been found to be more effective for CBO adoption and learning, but does not generate traditional experimental research findings. In addition as our initiative has limited links with traditional research sectors (government research institutes and universities), so far there is no sign of those bodies participating in adaptive collaborative management with a network of CBOs. In this regard the experience differs from and is more bottom-up than many cases of adaptive management in developed countries where there is an emphasis on research institutes designing experiments and piloting with management bodies, with or without substantive participation at the grass roots level.

While there have been obvious advantages and benefits from this approach, CBOs are widely dispersed so to it is hard for them to make the network function and take up issues at higher levels on their own. Participation in workshops has been necessarily limited to one representative from each CBO, and the same applies to exchange visits; there is a risk that a CBOs' chosen representative is less interested than other executive committee members in the potential to learn and improve floodplain management. Close coordination needs frequent interactions for which face-to-face meetings, workshops and visits are more effective. When CBOs are scattered this requires more funds than the CBOs can contribute. With hindsight some of the potential of the network to advocate change at higher levels and to follow up on planned actions and indicators could have been strengthened and given greater emphasis.

It was indeed a real challenge to coordinate adaptive learning across and between many CBOs whose leaders had not previously thought about such interactions or how to assess the effectiveness of innovations and changes in practices. Input from the research team was needed to advise CBOs on the practicality of some proposed indicators and to help CBOs from different regions standardise on the details of measurement and methods.

Another challenge faced by an adaptive learning network is how to empower in learning many independent collective action initiatives, each with a limited scope to learn on its own. The significance of learning among social actors sharing similar management contexts and challenges as well as networking among them has not been appreciated in the existing literature on adaptive management.

Conclusions

Working through communities in Bangladesh floodplains over more than a decade, we have found (especially following the recent work we began in since 2007) that an adaptive learning network among relatively diverse CBOs that share some common aims and concerns is possible, effective and worthwhile. In this case it has contributed to the adoption of a more integrated systems-view of floodplain resource management that brings increases in overall productivity that benefits the poor and better off. Overall adaptive learning among networks of CBOs has been demonstrated to bring benefits from adaptation in integrated floodplain management to the communities served by CBOs. These benefits from collaboration are greater than those achieved by CBOs managing resources in isolation. This approach has potential to be adapted to other types of CBO, and to other countries where common pool resources such as wetlands and forests are managed through collective action particularly when it is formalized through CBOs.

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Chapter Five

Can Adaptive Collaborative Approach Improve Livelihoods? Reflections from the Experience with Nepal's Community Forestry

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Introduction

This paper outlines my experiences primarily with ForestAction Nepal and its collaborators in catalyzing Adaptive Collaborative Approaches (ACAs) in Nepal's forestry sector from 2000 to 201113. During this period, I was part of a series of action and research projects as field researcher as well team leader. Although I worked in multiple projects, they all shared a concern for social learning and collaborative governance. In this paper, I explain how different strategies and tools of inclusion, deliberation and learning were applied to improve collaborative action and learning among forest stakeholders from local community to national levels. By reviewing three phases of ACA-based initiatives, I identify several challenges and issues that we confronted in catalyzing ACA processes, and identify where we succeeded, and where we failed and why.

The approach we adopted resonated with the notions of 'action learning' (Fals-Borda and Rahman (1991), 'deliberative processes' (Chambers (1997), 'deliberative planning' (Forester (1999) and adaptive collaborative management (Fisher et al. 2007), and others, who advocate collaboration and learning in resource management and development processes. We went beyond an emphasis on participation and local control, and actively catalysed interactions among multiple sources of knowledge, and facilitate reflexive learning among actors at different levels of governance. Our approach was animated by the concern for empowering the disadvantaged actors in the management process.

With the benefit of hindsight, what I find critical is that ACA facilitators have to encounter enormous resistance and challenges in multiple institutional domains, and should be prepared to muddle

[13] During 2000-2001, I was directly involved with Center for International Forestry Research (CIFOR) that collaborated with ForestAction in conducting self-monitoring practices of CFUGs outside of the project PAR sites.

through vested interests and power dynamics at different levels and institutional milieus, while also managing frustrations and excitements within the ACA team.

Our Motivation

Nepal's Community forestry (CF) policy is widely recognized as institutionally unique and progressive in the world arenas of community-based natural resource management (Kumar 2002; McDougall et al. 2007). Over the past three decades of its history, CF has made notable contributions to forest conservation and local community development. In the recent years, however, there are increasing concerns over limited contributions to livelihoods, equity and poverty reduction (Malla 2000; Malla 2001; Timsina 2003; Khadka and Schmidt-Vogt 2008; McDougall et al. 2008). In this context, our major learning question was: how and to what extent Adaptive Collaborative Approaches (ACA) can overcome fundamental relations of power that sustain exclusion and inequity in natural resource management.

Our motivation to engage actively in ACA-oriented initiatives was also reinforced by the continuation of techno-bureaucratic control of CF practices alongside successful cases of devolution and community empowerment. Studies have demonstrated that, while CFUGs are legally recognized autonomous institutions representing the interests of local communities, in practice they are forced to retain patron-client relationships with the state officials (Malla 2001). For this reason, local communities are forced to seek prior approval from the government forestry authority on forest decisions for which communities are legally empowered. But there are also some examples whereby CFUGs have successfully challenged such techno-bureaucratic hegemony, especially where suitable facilitative support is available (Ojha et al. 2010). Besides, we also found the possibility for collaboration between different CF actors at district and sub-district levels, which can create conducive environment for more effective interaction between government and civil society in democratic forest governance (Banjade et al. 2007).

Our hope was, and still is, that ACA based support to community forest user groups (CFUGs) could empower them to interact effectively with external stakeholders, as well as help create more deliberative institutional procedures internally within the CFUGs. Such approach, we hoped, could enable the CFUG to fulfil mandatory legal provisions as well as draw much needed resources, knowledge and skills from external organizations. Our approach sought to integrate active reflection and learning in the life world of CF in Nepal – working with diverse groups of forest dependent people within communities as well as other stakeholders in the complex and dynamic social-

ecological system. In the post-1990 Nepal of multi-party democracy and pluralism, forest sector has seen a rise in the number of stakeholders, beyond government and local communities. We saw increased interests in community forestry as an opportunity for more adaptive and collaborative management.

Our Initiatives

We considered CFUGs as the key actor to partner in facilitating adaptive and collaborative approaches. A CFUG is a legal entity to manage a designated area of forest, with legal provisions for institutional autonomy and perpetual succession. Once a CFUG obtains approval from the government, it often becomes a strong and vibrant local institution. It aims to pursue forest sustainability and enhance livelihoods of local people (Pokharel et al. 2007). In practical terms, a CFUG has to face a range of challenges such as effective management of forest resources, equitable distribution of benefits within the CFUG, engaging with market forces, and complying with regulatory standards and government directives. Various other institutions at different levels, such as Federation of Community Forest Users Nepal (a CFUG network), NGOs and donors also support CFUG efforts.

The first phase of our ACA-based initiatives (2000-2002) principally aimed to address the issues of exclusion of marginalized people, especially women and 'low' castes (or dalits) and/or classes. We catalyzed improved internal planning and decision-making processes within CFUGs, focusing on more active and equitable use of forest resources. In this phase, the key assumption was that human well-being and resource conservation could be achieved by facilitating inclusive, deliberative and learning-based processes within the CFUGs.

The second phase (2004-2007) of ACA was built on some of the lessons from the earlier phase. Despite the ACA's success in promoting inclusive governance at CFUG level, with some visible improvements on equity and democratization, we confronted a challenge of scaling up the lessons and the innovation processes. A number of issues were identified which needed further study and innovation, such as developing effective linkages of communities with higher governance levels, developing local capacity, and broadening the geographical coverage (to cover areas from Terai which has different resource and socio-cultural contexts than in the hills of Nepal where our work was concentrated in the first phase).

In the third phase (2008-2011), the aim has been to link local level learning processes with national policy, and also to catalyze entrepreneurial innovations on forest products. For this, we expanded partnership base to facilitate ACA and sought to combine the strengths of various organizations including researchers, advocacy groups, business groups, and the media. A notable project in this phase was the one involving the coalition of five different organizations representing NGOs, CFUG networks; forest based enterprises, the media and academic institutions. The coalition worked with more than 60 CFUGs in three districts of Nepal and with a number of meso-level actors such as NGOs, networks, government agencies (District Forest Office, local governments), entrepreneurs and the media.

I discuss some of these initiatives below.

Years 2000-2002: Action research on facilitating community level planning and self-monitoring processes to promote equity and social learning[14] (Phase 1)

As part of Center for International Forestry Research (CIFOR) Adaptive Collaborative Management (ACM) project, we selected four CFUGs on the basis of local socio-political heterogeneity, resource condition and their willingness to participate. We visited the selected four CFUGs, organized joint meeting with their executive committees and other key individuals, and explained our research objectives and strategies. We explained the purpose of the project and mentioned that local community members, if willing to participate, needed to commit some of their time to the project on a voluntary basis, and that the project does not have any provision for material incentives. In all cases, after hearing from us about the project, the CFUG representatives agreed to be a part of the project.

As a part of the 'traditional' research elements of the project, the project team had to conduct baseline studies covering socio-economic, biophysical and policy aspects and historical trends. While researchers from within the team conducted a socio-economic analysis, a team of consultants undertook a biophysical assessment of forest resources. The essence of this stage was to segregate the 'traditional' component of the research from the 'participatory action research' (PAR) component.

[14] During 2003-2004, I led a piloting of ACA on behalf of ForestAction for a project entitled 'Nepal-Australia Community Resource Management and Livelihoods Project'. It was a replication of the earlier ACA package in a different project with a learning component for the project team. So, I have not included the project insights here.

To conduct PAR for governance innovations, the project team developed a plan with the CFUG executive committees as to how they could promote more democratic and inclusive planning processes within the CFUGs. This led to a series of hamlet level meetings, as well as separate meetings with women, *dalits* and ethnic groups to identify and understand key issues from their perspectives, and to explore their opinions on possible solutions.

Information required for the research was derived from documentation of the processes, including the cycles of planning, implementation, reflection and observation. After oriented to take the reflective notes research team members participated in all the processes. These notes later became the valuable source of information.

The important experiences and insights of applying ACA in this phase are as follows. First, it was necessary to think more politically about forestry. Having trained in forestry, I came to realize that the conventional forestry had implanted a wrong view of local people as 'destroyers' and 'encroachers' of forest resources. Participating in learning and collaborative management initiatives allow me to undo the traditional forestry mindset, and to think about how a forestry professional can help bring different kinds of people together to effectively manage forest resources.

Second**,** although I was broadly appreciative of the learning and collaboration aspects of forest management, I was not entirely sure what exactly we were doing and how this leads to improvement in forest condition and livelihoods. The project provided limited opportunity for me to understand the ACA concepts and how it is linked to the local context, before I actually start undertaking the project works. Whilst academic and practitioner literature in English from a variety of fields including common property resource management, governance, social learning, and collaborative governance were provided to me, it was still difficult for me to understand ACA concepts and to explain them convincingly to others. Nevertheless, continuous sharing and reflections with local people, senior scientists and colleagues as wells as reading of related literature slowly helped me to understand the relevance of learning and collaboration aspects of ACA.

Third challenge I encountered was in dealing with community expectations of the project. For the people in the CFUGs, a 'project' was always a bag of money for infrastructures such as drinking water schemes and roads. They did not think of a 'project' without such schemes. Despite our clear communication at the beginning, local communities continued to expect and even explicitly demanded material support. In the first year, there was ample enthusiasm among local leaders and they participated in most of the meetings. But when they were fully convinced that there would be

no material support from the project, they became less interested in the project. Thereafter, I and other researchers working in the field always faced difficulty in securing participation of local people in the project.

Despite these challenges, as we moved through cycles of visioning, experimentation and reflections, governance processes within the participating CFUGs improved significantly, also enhancing leadership capacity at the local level. Members of disadvantaged groups became aware of institutional procedures and their own rights to participate in and claim benefits from forest management. Institutional arrangements and benefit sharing mechanisms were made more equitable (details of such achievements are discussed in McDougall et al. 2002).

A crucial part of facilitating adaptive collaborative approach was Participatory Action Research (PAR) process, which started within the CFUGs with the conduct of vision-based planning and self-monitoring workshops. The aim of the workshops was to develop long-term and short term plans based on collective vision of representatives from each hamlet (locally called *tole*), and from each social strata (in terms of gender and ethnicity) of the community. Although the plans were developed through an inclusive deliberative process, CFUGs lacked needed local resources and capacity to materialize them. Consequently, the CFUG leaders showed their frustrations several times, and in some cases, members of ACA project gave promises to cultivate some hope within the PAR process – for instance giving information on potential funding and services.

Fourth, we also experienced some tensions within the project team as we had differencing views on balancing roles across two high demand areas, i.e. collecting information and maintaining relationships among different stakeholder groups. This was particularly between CIFOR based researchers who wanted more data, and the field researchers who had to develop close relationships with local stakeholders.

Towards the end of this phase, the researchers became aware that the local capacity to continue ACA beyond the project was not sufficient. This was considered a central issue of ACA intervention afterwards.

Years 2004-2007: Linking across scales of governance to foster inclusion and equity, deliberation and learning (Phase 2)

In the concluding workshop of phase I, which focused on sharing the learning of ACA processes, key forestry stakeholders in Nepal (including the officials of Ministry of Forest) raised a concern that the participating CFUGs were not adequately representative of the overall national context. Although we were confident that our conclusions had important insights for policy, and we were clear that these concerns had indeed arisen from a positivist (hypothesis-testing) research paradigm (see Colfer, Chapter 2 in this volume), we decided to engage with these stakeholders by accommodating their concerns in our subsequent ACA initiatives. This phase of work also drew on our own reflections on the efforts to link CFUGs with other levels of governance, and to build local capacity for facilitating ACA.

We always felt that the ACA concepts provided an accommodative framework to understand and act on the issues that characterized the complex social and ecological systems around CF, but we continued to experience difficulty in making local communities and stakeholders realise the importance of taking a learning-based approach and also taking a more system-wide view of the socio-ecological processes. Legacies of the earlier phase also constrained the new project. We were aware that earlier project had raised several expectations within the participating communities which were left unmet. We had to spend quite some time clarifying the scope of our work and the potential benefits that the communities can get eventually. Ultimately, stakeholders including the CFUGs did realise that the approach was extremely relevant and different from many other development strategies they have experienced.

Participating CFUGs became very popular within their district and beyond, for their empowerment of marginal groups, and also for more democratic governance. However, in some CFUGs, there was a significant resistance to this transition by the existing leadership. In some cases, external researchers had to work as change agents so that the resistance could be addressed by empowering other people to challenge the existing leadership.

We began to link community level issues and learnings with meso and national levels, and the complexity grew as we moved up in the scale. At the meso level, the processes and outcomes were more erratic, for a number of reasons. In the initial stages of the project, the intended processes of feedback and adjustment were not working properly. We were reluctant to review our own way of

learning to effectively respond to the contextual specificities, and tended to stick with previous plans rather than adapting them, which often led to frustrating results. Towards the middle of the second phase we were able to deal separately with meso actors and institutions in the districts by devising different strategies. However, we could not arrive at a common position to define an appropriate mix of actors and institutions for effective ACA at the meso-level, and under what conditions that would work effectively. Nevertheless, the research identified various issues and challenges in working in different contexts. Frequent turnover of trained CAs at community and meso levels also created significant challenge for the ACA process.

Years 2008-2011: Combining deliberative governance and social learning across scales and disciplinary boundaries (Phase 3)

In our third phase of ACA work, we had gained substantive experience from the field, and we were also engaged more deeply (and theoretically) on the issues related to deliberative governance, social learning, and cross-scale governance. We were also enthusiastic to have a strong component of entrepreneurship development benefitting the poor. Coalition at national level with a range of actors such as NGOs, networks, media, business groups and academia was formed during this phase. Training to local facilitators on governance and forest management were provided in all the participating districts. Federation of Community Forestry Users, Nepal (FECOFUN) was one of the coalition partners and led activities related to awareness and capacity building at the CFUG and meso levels. We also conducted issue based networking of CFUGs at the meso sphere. The explicit target of all these was to promote entrepreneurial innovation with vertical and horizontal linkages, fostering interactions and interconnections. Attempts were also made to resolve intra and inter institutional conflicts and tensions. Self- and collaborative-monitoring and reflection formed a major part of the process.

In this phase, we tested whether ACA could be scaled up widely working with 60 CFUGs from three districts representing three agro-ecological zones. Out-scaling strategies included in the project were organizing interactions at various levels with wider range of stakeholders, developing and airing programs through radio and television, and establishment of community based resource centers in each of the participating districts.

There were five key areas of intervention in this phase – i) applying ACA within CFUGs, ii) effective forest management by combining local knowledge and skills with external expert knowledge, iii) enhancing entrepreneurship skills within CFUGs and supporting development of enterprises and

marketing of forest products and services, iv) applying ACA at meso and national levels, and v) developing effective links of CFUGs with multiple actors from multiple-governance levels (from local to national).

A member from each of the 60 CFUGs participating in this project period received ACA training with a focus on forest management and CFUG governance. The training content and resources were developed based on the lessons from the previous phases. After the training, the participants facilitated ACA within their CFUGs and helped develop links of their CFUGs with other CFUGs, and with other actors at meso and national levels. In addition, each facilitator reflected on the processes facilitated by them, and recorded reflective notes including their own facilitation approaches.

We also conducted a baseline study of socio-economic and ecological aspects of forest management in the 60 sites. The analysis informed ACA planning and reflections at all levels from CFUGs to national level (Kattel et al. 2009).

Two of the most important insights from this phase are that managing collaborative relationships with multiple actors is really a formidable task, and so also was satisfying the mechanistic expectations of donors funding ACA initiatives.

Reflections: Continuing Challenges and Innovations

As context-sensitive ACA practitioners, we had to pay an increasing attention to working with marginalized groups, trying to bring changes in planning and learning processes. We gradually moved to facilitate more basic forms of social organizations – such as CFUG constitutions and mechanisms of representation in the executive committees. In all these processes, the role of external actors and facilitators, and their influence in CF governance, are a crucial element in deliberative and adaptive learning processes (Banjade and Ojha 2005), firstly to make the local people aware of the complexities, and then to catalyse adaptive and collaborative planning and management.

A number of governance innovations occurred after we applied ACA in community forestry arena in Nepal. Very significant achievements have been made on equitable representation in the decision-making bodies, improving communication within the CFUG and with external actors, and making meso-level actors more responsive to local interests and concerns. New institutional arrangements, such as hamlet committees would provide all members a legitimate space to raise their concerns during the decision making process.

When CFUGs who applied ACA became aware of their rights, they challenged the existing government authorities who used extra legal authority in controlling community forests. This is an important issue for transforming existing patron-client relationships between communities and the government forestry service (Malla 2001).

Similarly, at the national level, our approach to learning and collaboration could 'break the ice' in the troubled relationship between key CF actors by providing a new avenue of communication and deliberation.

There are, however, still several fundamental questions that need to be addressed. These include: how individual CFUGs who have successfully applied ACA and have generated substantial changes, could transmit their experiences to the policy process to those at other levels. Likewise, how stakeholders supporting CF from outside could, in turn, learn more effectively from the CFUG level processes.

In such situation, the role of facilitators in breaking the structural and cultural barriers of deliberation is important. Likewise, partnership and collaboration were found to be more complex than initially assumed in the project, especially because different partner organizations differ in capacities, working modalities, levels and forms of staff motivation, organizational hierarchies and their approaches to development and innovation.

Viewing all the innovations and innovation systems from the lens of classical economists (as the donors and public officials tend to see) is misleading and undermine the overall change process. Success should not be judged by the adoption of a technology or some form of immediate economic improvement, but rather on the basis of institutionalizing processes towards more adaptive and collaborative management of resources.

Given the highly unequal playing field of development and governance in Nepal, ACA is likely to be captured by elites as a new form of control unless careful attention is paid. Finding the right mix of 'action' and 'research' is an issue in projects with an action research component. The personal attributes of ACA facilitators also had a large bearing on quality of the processes with which they were engaged.

But it is not yet possible to ascertain the impacts on forest ecosystems. Yet, we anticipate that increased awareness about sustainable harvesting of forest products and enhanced investments in forest development by CFUGs will create positive impacts on forest sustainability.

Facilitating ACA in the context of CF in Nepal raised several major challenges: a) Elite domination in local decision making processes is yet to be fully understood and resolved, b) We need more action research on creating enabling environment for the participation of marginalized groups, and c) we also need to understand how larger institutional regimes (including donors and national public policy systems) become supportive to the local level learning processes and innovations.

Conclusion

This chapter has provided a retrospective analysis and reflection on ten years' experience of applying various ACA related initiatives in Nepal's community forestry. We have been promoting ACA in the context of the long history of community forestry and natural resource management in Nepal to address the issues of inclusion, democratization, livelihoods improvement and resource conservation. Our focus has been primarily to uncover the challenges of applying ACA in the context of multi-scale resource governance involving multiple stakeholders, and describing our strategies and interventions in addressing these challenges.

ACA has the potential to uncover deeply hidden interests and concerns, engage actors in deliberation and reflection, and provide new ways of learning and innovation. Moreover, we could establish plausible connections between ACA and broader livelihoods and conservation outcomes.

Integrating learning into everyday practices has been the most difficult part of applying ACA. This reminds us of the classic challenges faced by those attempting to embed research within an agenda of change. Similarly, deliberation within a governance process is usually subject to existing power asymmetries caused by the differential possession of economic, cultural and symbolic resources. Skilled facilitation and coordination functions are central to the success of this process, and demand additional resources and institutional commitment. Similarly, developing capacity to integrate research into the practice of change, and to effectively communicate research, are other areas of practice which need attention if ACA is to be scaled up within the forest sector, and also into other sectors.

Our experience of applying ACA shows that it is really challenging to catalyse and sustain learning and deliberative processes at national levels. Nonetheless, we were continuously motivated to empower local communities and support their networks to create a demand for learning and collaborative orientations on the policy side. Though recognition of multi-stakeholder processes and policy feedback from local practices are gradually appreciated by the policy-makers, these local and

sub-national innovations are yet to be supported by the policy and institutional regimes. It implies a need for structural change in governance frameworks alongside ACA processes.

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Chapter Six

Can Adaptive Collaborative Management be Applied in Contested Forest Landscapes? Experiences from Zimbabwe

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Introduction

This paper reviews the experience of the Adaptive Collaborative Management (ACM) approach and strategies as they were applied in practice in Mafungautsi State Forest in Zimbabwe. In doing this, we draw key lessons on what worked or did not work, why, and how ACM could be applied in a contested resource governance situation. The ACM approach was initiated by the Center for International Forestry Research (CIFOR) in 1999 (as outlined by Colfer, this volume) with the aim of improving human well-being and forest conditions (also see Colfer 2005). The idea was to take a value-adding approach in terms of enhancing collaboration among stakeholders and learning, rather than looking for a replacement of participatory and Community Based Natural Resource Management (CBNRM) approaches. Mafungautsi State forest in Zimbabwe was one of the 30 sites spread across 11 countries in which ACM was implemented under CIFOR program. Because of the complex nature of natural resource management, the ACM approach aims to facilitate collaboration among stakeholders in consciously learning together about the impacts of their management actions and adapting their practices accordingly.

The ACM approach has its roots in ideas relating to complex system behaviour, adaptive management, social learning theory, and also ideas by sociologists (and others) about the roots of human cooperation and competition. Unlike earlier participatory approaches, the ACM approach recognises the complexity and unpredictability of natural resource management systems and recommends resource management activities to be experimental and based on learning (Diaw et al 2009). The approach embodies two main orientations: (a) collaborative management, as applied in various fields of natural resource management. and (b) adaptive management, seen as a way to address the complexity and uncertainty inherent in natural resource situations.

In the research, we play the role of retelling the ACM project story as we were part of the implementing team in Zimbabwe. The first author (Mutimukuru-Maravanayika), in addition to being one of the field researchers responsible for implementing the ACM approach in the field, also conducted post-project fieldwork in Mafungautsi as part of her PhD studies – her final field work was done in 2007 when she was no longer working for CIFOR (see Mutimukuru-Maravanayika 2010). The second author (Matose), who was on secondment from the Forestry Commission (FC), CIFOR's key partner, was the team leader responsible for directing the whole research process. He worked for the project from 2000 – 2003 and was responsible for directing the project and taking lead on the project conceptual issues and the policy aspects of the research.

Forest Governance Systems and Practices: The pre-ACM Situation

People living on the edges of Mafungautsi forest have a history of struggles over land. When Mafungautsi State Forest was converted into a protected state forest in 1954, the FC was, due to the Forestry Act of 1948 was given authority to manage state forests in the country. Local communities in Mafungautsi State Forest were therefore not allowed to manage and utilise forest resources. To ensure that the set rules were followed, members from the FC Forest Protection Unit (FPU), the policing arm of the FC, patrolled the forest area arresting poachers. For instance, if one was found with a dog in the forest, it would be shot. However, because the FPU members were few and ineffective, community members continued to access resources from the forest illegally. This resulted in many conflicts between the local communities and the FC and the forest continued to be degraded. Upon this realisation, the FC decided to try out new methods of managing the forest.

The FC decided to initiate a pilot Resource Sharing Project (RSP) in Mafungautsi in 1994. In the RSP, local people were invited to participate in the management of the forest and also benefit from non-timber forest products. Products such as timber were however excluded from the RSP and these continued to be sources of conflict between the FC and local communities who continued to access them illegally. Under the RSP, communities around the forest were divided into 14 Resource Management Committee (RMC) areas with each area given a certain portion of the forest to manage. RMCs were later put in place to manage and control resource use. Their main roles involved administering permits for resource users to harvest forest products, monitoring the harvesting process, opening and keeping a community bank account where the moneys raised through the

permit system where to be kept and advising the community on how the funds could be spent. The way the RMCs were formed, however led to many problems.

Up to 1999, there was little progress in terms of collaboration between the FC and communities living around the forest. Although on paper they were jointly managing the forest, in practice, the FC continued with the use of force to stop the poaching of timber. Despite the fact that this was a pilot project for the FC, no deliberate learning processes were facilitated to generate important lessons to influence the forest policy in Zimbabwe – the 1948 forest policy is still valid up to this present day and local communities are still not allowed to manage state forests.

Implementing ACM in Practice

To implement ACM in Mafungautsi, the ACM team followed a number of steps. First, the team introduced the project and developed a relation of trust with local communities in Mafungautsi. Introductory meetings were organized with communities in the study sites and researchers presented the aims and objectives of the project and the implementation approach. Because of several conflicts between the community members and the FC, community members were suspicious of the project at first. An explanation of the project by the CIFOR researchers generated more questions and suspicions among community members. The suspicion was mainly towards FC officials, power issues at the community level, and previous experiences with other projects. Second, after introducing the project, the ACM team carried out contexts studies to understand key aspects of the local level situation. These studies helped the team to plan better. Report-back sessions were later organized with community members to present and validate the research findings. The studies revealed many challenges that hindered adaptive and collaborative approach to forest management – conflicts, divergent interests, power inequality and passive communities. The ACM team came up with several interventions to deal with the identified challenges so as to set the stage for the crucial ACM fourth step - Participatory action research (PAR). Such interventions included empowerment training (Training for Transformation) for local communities drawing on Paulo Freire's (1970) 'Pedagogy of the Oppressed', conflict resolution (including identification of past conflicts and analyzing how these were dealt and how effective they were), trainings focused on building leadership competencies and formation of resource user groups. These interventions constituted the third step.

PAR was the fourth ACM step and gave opportunity for all stakeholders to actively participate in dealing with their problems and learning from the outcomes. This step involved asking stakeholders at a range of scales (including resource user groups, RMCs and FC officers and researchers) to develop visions [earlier top-down management approaches and unfulfilled promises in the RSP had disillusioned local community members who lost hope of getting anything positive from the project. This is why the ACM team decided to use scenarios and visioning that stimulate creative ways of thinking and help stakeholders break out of established patterns of assessing situations. Visioning proved to be a powerful tool in giving local communities hope for positive change], develop and implement action plans to move towards their visions, monitor and evaluate the outcomes and reflect and learn together about the impact of their actions.

A particular issue selected for in-depth PAR was the management and marketing of broom grass. The team organized several meetings with the broom grass resource user group members to assist them to develop their vision, assess the current situation for their resource and come up with action plans to move from the current to the desired future situation. During these meetings, broom grass resource users identified several factors that had contributed to the sudden change in harvesting methods. One of these factors was the continued market demand for 'dug brooms', i.e. brooms made from dug grass. In most places where people were selling their brooms, the customers wanted 'dug brooms' and these were selling faster than 'cut brooms'. It was found that customers wanted dug brooms as these lasted longer than cut brooms – the roots of the grass was said to make the grass stick to each other. This resulted in many of the resource harvesters returning to the practice of digging the grass even though they knew the adverse effects of such practices. When reflecting upon this process now, we now realize that we should have brought in other important issues also in the discussion – for instance, the issue of not just dealing with the supply side of the broom grass but also the demand side. Our work only focused on the suppliers of the grass and convinced them that digging was an unsustainable harvesting method. However, no effort was made to also educate the buyers to buy cut brooms. ACM facilitators must therefore be tactful so as to bring in crucial issues left out in discussions probably because the stakeholders do not have knowledge on them.

As part of overall ACM process, we also emphasized collaborative monitoring of the work. The ACM team, like other researchers (Frost and Mandondo 1999), believed that adaptive management required a functioning monitoring and resource information system to enable resource managers to

assess the condition of their environment, the status of key resources and the effect of their management processes.

Linking the Mafungautsi outcomes with national policies

In the context of earlier resource management projects failing to link local processes with national level policy, we considered cross scale linkages as crucial and important. The second author of this paper was tasked to take lead in ensuring that the results from the field would influence forest policy. To do this, the ACM team implemented a number of interventions including writing and presenting policy briefs to policy makers, organizing look and learn tours for policy makers to the ACM research sites, and facilitating policy makers to attend international conferences to enhance their learning on which policies work. The ACM researchers organized policy round table discussions for policy makers on emerging findings from the field, and invited them to participate in ACM training workshops.

Developments after the ACM project

Joint learning processes at the resource user group level stopped after the ACM project ended in all sites, partly because the community partners, who used to receive an allowance from CIFOR, stopped facilitating them. Because of continued economic decline and increasing hunger and poverty in the country some community partners left for neighboring countries in search of a living. The FC officer had limited resources and chose to focus on the learning processes at a much higher level. The officer however felt guilty of not being able to visit villages as promised.

A follow up study that was conducted by the first author of this paper four years after the project had ended to check on the learning and collaboration processes revealed that: a) following the developments in the country concerning the land issue, several people had moved into the forest and the number had continued to increase. The new settlers had cleared forest areas both for settlement and for agricultural fields. Resource management activities by RMCs operating in the areas where the new settlers were located had stopped. The new settlers privatised resources in areas where they settled by staking-out and fencing-off their plots and members from communities outside of the forest area could no longer access forest resources freely. The new settlers set fees for extraction of resources like broom grass from the staked-out fields. In the forest area that the

ACM research sites were managing, there was increased cutting down of live trees and poaching of wild game; b) The remaining joint learning processes at the RMC level that the FC officer continued to facilitate after the ACM project ended had stopped when the FC officer passed away. The person who took over as the RSP coordinator had a new focus and only received a brief training on the ACM approach even though he had not been exposed to similar approaches before; c) the functioning of RMCs which had improved over time had deteriorated partly due to lack of input from the FC officer. Several conflicts among the stakeholders broke out, and these were left unaddressed when the resource management activities and joint learning processes stopped.

Reflection and Discussion

The Mafungautsi ACM experience as well as the subsequent study reveal a number of issues linked to the future and prospect of adaptive collaborative approaches to natural resource management:

First, the importance of building trust and confidence for stakeholders to work together, especially when there is a long history of conflict. For us, effective participation of stakeholders in resource management was extremely crucial for the success of the joint management initiative. In addition, there was a need to build capacity of the FC officers to change their perceptions on their own role and that of community members in participatory management of the forest. Although the officer who worked with us appreciated the learning based and collaborative approach, his sudden demise left institutional vacuum. This raises questions on the type of arrangements that need to be in place to ensure that institutionary memory is not lost when those trained in new approaches are transferred or die.

Second, the struggle to address the issue of power and politics that underlie resource management practices. Although we became aware of the complexities of issues of power and politics associated with Mafungautsi during the early stages of the project, we did little to respond to this understanding, apart from engaging in some empowerment training with marginalised groups. At the beginning of the project we were quite aware of the highly unequal distribution of power between the local communities and the FC, for instance but we failed to think through the implications of this inequality. Although local communities were allowed to participate in resource management under the RSP, they had no legal authority to manage the forest reserve. Although some effort was put in trying to influence the forest policy, it was frustrating for us that the project ended when little was done in this area.

We had a strong belief that through implementing the Participatory Action Research (PAR) process, local stakeholders in Mafungautsi would eventually gain the confidence to tackle the bigger land issue in the area on their own. This, from our own view now, was putting too much faith in participatory and joint learning processes. The belief in the power of participation to resolve the land issue seems in retrospect only wishful thinking. Several researchers (Logan and Moseley, 2002; Chauveau and Richards 2008; Kaimowitz and Shell, 2007) have suggested that resource management initiatives will not succeed even in their most limited conservation aims if they shy away from analysis and resolution of fundamental societal conflicts.

Reflecting on our experiences now, it is clear that initiating the process for reform of the Forest Act to give communities legal authority to participate in the management of state forest ought perhaps to have been a pre-condition for the implementation of the project. Failure to engage with issues of power and politics has been one of the strongest criticisms of participatory approaches (Cooke and Kothari, 2001) and successful participatory development initiatives have been found to be those that explicitly aimed to focus on issues of power and politics and challenge existing power relations, rather than simply work around them for service delivery (Hickey and Mohan, 2005).

Third, working with donor and public institutions which are not appreciative of the extra efforts involved in learning based and collaborative approaches. The ACM project in Zimbabwe had a project time frame of three years. Within this period, we were expected to learn about implementing the new approach in practice, refine the ACM concept, and bring positive impact to both human wellbeing and the status of the forest.

With the benefit of hindsight, we now realise that this was an over-estimation of what could be achieved within such a short project period. A huge amount of time was spent in setting the stage for PAR to take place. The project however came to an end when resource users were just beginning to implement their action plans, before a solid foundation was put in place on the benefits of joint learning in resource management. When the project ended, the road ahead was still unclear, especially for the resource users. Without being convinced on the benefits of joint learning in resource management, it is not surprising that stakeholders stopped facilitating joint learning processes when the FC officer passed away.

Fourth, ensuring that ACM initiatives bring significant contribution to local community's livelihood. When we look back now, we realise that like the RSP, the ACM project also did not make significant contribution towards local community's livelihood. The project continued to focus on low value resources like broom and thatch grasses. Even with value added, grass resources still sold at low prices and did not generate significant income for the resource users. It would have been more useful if for instance we had focused on improving resource users' thatching skills to encourage them not only to sell grass but to work as skilled thatchers. A similar approach might have been taken with the beekeepers – e.g. training them to add value to beekeeping products. Other skills, like marketing, might have been equally important. Lobbing for high value timber to be included to the resource sharing agreement should have been a priority action for the project. Because of the short project time frame, we did not get opportunity to even think about these options that could have helped resource users to deal with their challenges.

Fifth, the need for huge initial financial and human resource investments, especially during the initial stages of the ACM process. From our own experiences, the initial stages of the ACM project required huge human and financial investments. As time went by, after capacity building for the FC officer and the community partners we gradually handed over the facilitation of the ACM processes to them.

Despite our own knowledge of the huge human and financial investments required especially during the early stages, we now realise that leaving the future ACM work in the hands of the FC was indeed an overestimation of what the officer could possibly achieve on his own meagre resources once the project ended. We failed to properly assess how an under-staffed and under-funded organization with personnel earning meagre salaries, hardly sufficient for survival, would manage alone.

Finally, the nightmare of organizing learning and deliberative processes in unstable socio-economic and political climate. Our project was implemented in a rapidly changing socio-economic and political climate in the country. The collapse of the Zimbabwean economy resulted in the out migration of most economically active persons from the ACM sites (and from the country at large) to neighbouring countries to earn a living. Some of those who migrated were the key in the joint learning processes. This greatly slowed down learning processes.

Concluding Remarks

Implementing the ACM approach in Mafungautsi was easier said than done. In addition to conducting research on the ACM approach and its outcomes, we had a daunting task of convincing our local stakeholders to embark on this learning by doing journey, whose outcomes we were not sure of.

We draw a number of lessons our ACM experiences. First, though difficult to implement due to its numerous embedded concepts, ACM is doable in practice and has potential to produce positive changes both to the status of resources and the wellbeing of resource based communities. Sustainability of these outcomes is however dependent on how the ACM facilitators deal with challenges (especially those related to more fundamental and underlying causes of natural resource management problems encountered) in implementation. This includes radically challenging unequal distribution of power and empowering the marginalised.

Second, we also learnt that project time frame is a crucial factor in the success and failure of learning and collaboration based approaches. Such projects need to be given longer time frames, (probably from five to ten years), than other projects so that stakeholders have adequate time to implement their actions, monitor them and learn from their impacts.

Third, as the ACM approach embodies several key concepts, there is risk that some crucial elements (like dealing with issues of power and politics and setting up effective resource management institutions and their means of enforcement) are forgotten as facilitators focus on other issues that seem important to them. There is therefore need for building the capacity of ACM facilitators in the different ACM concepts so that they are aware and able to engage them in the process. Having a multi-disciplinary ACM implementing team is therefore a plus in ensuring that various concepts are considered in the process.

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Chapter Seven

Learning Through Action: Reflections on Action Research in Natural Resource Management

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Introduction

The aim of this paper is to present a personal reflection on a variety of experiences involving action research and adaptive collaborative management dating back to the 1980s and to highlight some of the challenges involved in practicing action research. Although the experiences were sometimes labelled action research or participatory action research (PAR) and other times adaptive collaborative management (or variations on these), the common link was a concern with learning for action and learning from action. The collaborative or participatory element was much more variable, ranging from fairly elaborate arrangements to enable participation by a wide range of stakeholders to more limited participation by a small group in the actual research activity. I argue that there are a variety of different ways that stakeholders can be engaged in participatory or collaborative activities and that there is a variety of ways of structuring participation.

Action Research Experiences in Diverse Settings

The experiences covered include an early period working in a community forestry project in Nepal, participation as supervisor of several action research-oriented PhD studies, and training and mentoring action research teams in a number of field-based projects concerned broadly with natural resource management and development.

Action Research in the Context of a "Development" Project: Community Forestry in Nepal

I first became aware of "action research" when I worked as project anthropologist with the Nepal-Australia Forestry Project in the period 1987-198915. By the time I joined the project in early 1987, the term "action research" was used in the project. Griffin (1988) in a book that reflected on the experiences of the project, wrote explicitly about action research as an inspiration. He describes the way that the work of the project seemed to be "undertaken in the existence of scant facts" (p 70), yet it was not carrying out traditional scientific or applied research (defined as research that precedes implementation). The discovery of literature on action research helped him, as he describes it, "to view the Project in a new light and to place it within a far more satisfying conceptual framework" (p.71). For him the essence of "participatory action research" involved making "an irreducible minimum of initial assumptions" and working with communities to define and clarify issues. He saw that this approach made a "grand design approach" impossible.

At the country level, the project operated on a flexible learning based approach, with a strong culture of review and reflection as a basis for planning activities. Project staff, including the counterpart District Forest Officers, routinely met to discuss ongoing activities and to plan new activities. It is important to stress that, while there was a culture of review and reflection, and while there was a broad notion of action research as framework for action, the application of action research was not based on any very detailed grounding in action research literature and methodology. The key elements were a strong culture of reflection and a recognition that the project was operating within a context of considerable uncertainty. For me, the most striking lesson about action research from the NAFP experience is the importance of a culture of "review and reflection". Another important observation that arises out of the NAFP experience is that action research was an overall project modus operandi which allowed progressive identification of issues and areas of focus.

[15] The Nepal-Australia Forestry Project (under different names) was a bilateral project of His Majesty's Government of Nepal and the Australian Development Assistance Bureau (subsequently AIDAB and then AusAID). Australia involvement in forestry began with occasional input from Australian foresters in the early 1960s and became formalized as a bilateral project as the Nepal-Australia Forestry Project in the mid-1970s. At the time of my involvement it was managed by ANUTECH Pty Ltd (the Australian National University's business arm) and was implemented technically by the Department of Forestry at ANU.

Practicing and Mentoring Action Research in an Academic setting: University of Western Sydney

A year or so after I left NAFP, I was appointed as a lecturer in the Faculty of Agriculture and Rural Development (subsequently renamed several times under a series of restructures) at the University of Western Sydney – Hawkesbury where I taught from 1991 to 1996. This was an immensely exciting period as the Faculty (but not the University as a whole) was experimenting with a radically reorganized curriculum based on what was called "systems agriculture". The educational approach was heavily based on "experiential learning" and action research was a crucial element16, especially for masters and PhD students whose thesis work was, in most cases, action research based.

One of the research studies we did at Hawkesbury was concerned with improving rural livelihoods in Goilala District of Papua New Guinea (Sriskandarajah and Fisher 1992). In 1991 and 1992 a colleague from Hawkesbury and I became involved in this action research17, carried out in collaboration with extension staff in Goilala District in the context of the Smallholders Market Access and Food Supply Project (SMAFSP).

At the action level the project aimed to assist "staff to learn how to use PAR [as a learning approach] as a routine approach to their normal activities". In terms of research the project was "concerned with evaluating the utility of participatory action research as a methodology applicable to rural development projects in general" (Sriskandarajah and Fisher 1992: 1). In other words the project was concerned with social action/change and was also explicitly a social research project.

The rationale for using PAR in Goilala was that:

- Involvement by actors in institutional change gives them a sense of ownership. This occurs when they identify goals, constraints and opportunities and plan and negotiate for the future.
- By enabling individuals to take responsibility for small achievable tasks, PAR helps people to develop confidence.
- By encouraging flexibility and continuing evaluation, PAR enables actors to prioritise activities, to focus on realistic action and to abandon or alter inappropriate or counterproductive activities.

[16] See Bawden (1991) on action research at UWS-H. The extent of the intellectual revolution that had taken place in the Faculty, under the leadership of Richard Bawden and others, was such that undergraduate students in agriculture were exposed to philosophical concepts such as epistemology and ontology.
[17] The project was funded by the Australian International Development Assistance Bureau as it was then called, under a Development Research Grants Scheme.

The overall approach involved three visits by the "Core Action Research Team" (the two Hawkesbury researchers and the Rural Development Officer from Goilala District). Each visit involved reviewing the situation and identifying tasks in the form of action plans specifying individual responsibilities. The action plans were, in my view, the key to the process. The process was structured with a number of teams or groups operating at different locations.

Likewise, several action research studies were undertaken leading to Masters and PhD thesis. These included, among others, a research project to improve rainfed lowland rice production in Cambodia (Solieng Mak) and a research project to understand the relationships between pastoralists, government and natural resources in Iran (M.H. Emadi).

Solieng Mak was an agriculture extension specialist working with the Cambodia-IRRI-Australia Project (CIAP). Her PhD research (Mak 1998) explored ways to improve rainfed lowland rice (RLR) production, especially through a technique called "green-manuring" in a context where there was limited potential for change in agricultural practices. The second action research project involved construction of a rainwater storage pond through cooperation and shared labour. This project emerged from the first action research project which identified shortage of water as the priority problem to be addressed for the village as a whole. The project is a fine example of the way that social and organisational processes and technical research can be combined. Strikingly the PAR around green-manuring was itself a form of technical action research.

Mohammad Emadi's work on pastoral nomads in Iran (Emadi 1995, 2005; Emadi et al. 1992) was another example of a multi-phased research project. It combined an "ethnographic" first phase with an action-oriented phase and a final phase of organisational change. The thematic concern behind Emadi's work was that development efforts among Iranian nomads had been largely unsuccessful and relationships between nomads and government agencies had been poor. The project had practical outcomes such as improved relationships between nomads and some government staff and improved understanding of nomadic perspectives by government staff. The project also had important research outcomes. It made a significant contribution to knowledge about nomadism in contemporary Iran that has been widely recognized.

The emphasis on action research at Hawkesbury was, I think, very unusual in a University setting. In the fields of natural resource management and agriculture some excellent work was done with good

practical (action) outcomes leading to change as well as valuable research outcomes.18 Apart from research ("knowledge") outcomes related to specific subjects (such as nomadism, RLR farming systems, and high altitude forest management), there were also research outcomes in terms of the development and validation of methodologies for organizational development and change. While there may seem to be an element of "navel gazing" in this (in the idea of action research researching about action research), I believe that it is quite understandable at early stages in the utilization of a new form of research, that methodological concerns are given considerable attention.

Methodologically, the experiences with action research were very valuable for me in establishing the importance of structured action research, rather than just a broad concept of "learning by doing". The idea of a structured approach does not mean that all action research should follow a standard pattern. On the contrary, I see great value in an eclectic notion of action research, with many different organizational features and approaches, often in combination. What a structured approach means is, instead, that clear ideas about process and the modes and structure of participation can assist in making action research rigorous. These processes and structures can be revised, but a conscious and deliberate, if provisional, plan is essential.

Conducting Training Workshops in Action Research for Field Practitioners

Between 1997 and 2001 I worked as Head of Programme Development/Deputy Director at the Regional Community Forestry Center for Asia and the Pacific (RECOFTC) in Bangkok. While at RECOFTC I facilitated or jointly facilitated a number of training workshops on action research for a number of organizations in Asia. (Since leaving RECOFTC I have been involved in several similar workshops.) This provided an opportunity to organize my ideas on action research more systematically.19 The structure of these workshops was to introduce the concept of action research, provide examples of action research projects and assist the participants to plan future work involving action research. In each case the action research cycle was introduced and, as far as possible, the workshop was organized as an action research cycle, including reflection on the context in which the organization worked and planning for future action. Again as far as possible, an action cycle was carried out in the field, although this often tended to be artificial as participants

[18] There were also some excellent masters and PhD works done in community development contexts, but these are outside the scope of this chapter.

[19] A paper written for a workshop on protected areas (Fisher and Jackson 1999) presents some of the basic ideas of action research in a simple form applicable to protected area management.

were frequently operating outside their normal field location and in groups that functioned only for the duration of the workshop.

I do not intend to discuss any of these workshops in detail here, but here are a number of key points I would like to make:

- The best way to introduce action research is to structure the introduction around an action research or action learning cycle, following a process of reflection/analysis, planning, action and reflection. Ideally this should be linked to the work context of the participants. They should leave the workshop with some sort of action plan for future implementation, either as groups (if participants normally work together) or as individuals if they don't.

- Despite an understandable tendency of some workshop participants to be wary of such an unscientific approach (by the standards of their discipline), many professionals working in a field context, whether as development workers or researchers, are open to the new approach, especially if they can see how it applies in practice. The much more difficult problem is being able to apply action research in practice after the workshop, as they may need organisational support and often need to work to relatively inflexible workplans.

- Repeat workshops are desirable if possible. This means that people leave the first workshop with action plans and report back on these at a follow up workshop, thus reinforcing the idea if repeated cycles and routine reflection.

IUCN's Livelihoods and Landscape Strategy

Still another type of action research experience was within the Livelihoods and Landscapes (LLS) Strategy of IUCN's Global Forest Conservation Programme. LLS is a major program that operates in 27 landscapes in 23 countries in Africa, Asia and Latin America. In March-April 2008 I facilitated an action learning workshop held in Tanzania to introduce action learning/research to members of the LLS team working in various countries in Africa. The workshop followed the workshop approach discussed above. Workshop participants left the project with commitments to implement action learning in their landscapes. As an advisor to LLS I have mentored action leaning in several of the African landscapes.

One of the issues around the application of action learning in LLS has been a certain squeamishness about using the term "action research" on the grounds that field practitioners are alienated by the term research, which is thought to be "academic" and something carried out by outsiders. While I recognise this concern, I have argued that part of what we are trying to do in LLS is precisely to

generate knowledge about landscape management and landscape approaches for a wider audience – in other words research. Nevertheless, at a practical level, this learning can occur whatever terminology is used and I would have to say that the use of terminology has been inconsistent within LLS.

The adoption of action research within LLS Africa has been partial. Staff from a number of landscapes report that they have adopted action learning, at least informally. In at least two landscapes it has been applied in a more systematic way.

Challenges and Innovations

It is clear that action research can contribute to better implementation in natural resource management and agriculture projects. Natural resource management generally occurs in complex situations, where social and biophysical issues interact in complex ways. In such cases even clear identification of problems can be difficult and tends to be difficult to know where to start. Action research is a useful way to work when full knowledge doesn't exist and when the context is changing. By working in small incremental steps it enables action instead of paralysis. It is also particularly useful when stakeholders do not even agree with the framing of an issue. They can at last start with what they agree on.

Action research projects may sometimes have a primary concern with implementation (using learning to implement an activity better), but they can also have an important research role. In this sense research is defined as learning which is intended to inform a wider audience beyond the immediate project context, including providing insights that will assist more effective action in other activities and projects. It is sometimes important to differentiate between action learning and action research because field practitioners and administrators are sometimes alienated by the term research (as being "just academic"). Nevertheless, it is important to stress the importance of learning being important beyond the immediate context.

A degree of structure in terms of the way participants are involved can be very useful. Nevertheless there is no single model and the organisation structure of participation may vary to fit the action research context.

The discipline of regular reflection and revised planning is the essential basis for adaptive management and action learning/research. Following a structured process (such as one based on the action research cycle) is often useful, but a culture of learning is essential.

Meaningful participatory adaptive learning can be a major motivating force in projects. For example, the PNG project contributed to disempowered and demotivated extension staff becoming actively engaged with rural communities and project activities. On the other hand, ultimately bureaucratic decisions ultimately undermined the project, demonstrating the importance of long term commitments by donors and governments.

In the research/academic setting one challenge arises from the generally limited timeframe within which action research takes place. There is no simple strategy for dealing with this problem when it occurs. There seem to me to be two main approaches. One is to make sure that the projects are not too ambitious, although that can be difficult as action research projects, by definition, evolve as they are implemented. The second approach is to encourage research students, as far as possible, to select projects that relate to their professional work outside their PhD studies. Another challenge to action research in an academic context or in the context of a research organisation is the fact that action research is sometimes seen as lacking credibility as a rigorous research methodology.

The practice of action research and adaptive collaborative management inside research organisations such as CIFOR also raises problems of academic or scientific credibility. At least in the early days of CIFOR's ACM project the ACM researchers felt very much under pressure to convince sceptics in CIFOR of the scientific utility of their research. In many ways I think the problem was the credibility of critical social research rather than ACM as such. For scientists and even social scientists applying quantitative methodology, any form of qualitative research presents a challenge. In my view, there is no easy answer to this, but I think that arguing on a philosophical basis about differing epistemology and paradigm differences tends to achieve nothing. The best approach is to write up research in such a way that connections between actions and change are told in the form of "robust narratives" that emphasise "plausible causal connections". Interestingly, some "traditional" scientists find the idea of action research liberating. This was the case with "traditional" rangelands specialists in a training workshop held with ICIMOD in Nepal.

The challenges confronting action research in development contexts are, I think, more substantial. The first important challenge arises from usually short project time frames. This not only limits the time to carry out iterative and exploratory research, but it also tends to lead to a loss of momentum when a project ends. The long time frame of the Nepal-Australia Forestry Project was one of the key reasons why action research was meaningful in that project, but such long time frames are unusual in development projects.

The alternative is to attempt to develop a learning approach in a larger program rather than within individual projects. The difficulty here is that government programs naturally tend towards standardised administrative practices and generally work against flexible action. In my experience action research (and learning approaches generally) tend to be most suited to project level activity. In this type of situation projects may act as "policy experiments". Frankly I cannot recall ever seeing action research operating at "program" level.

But action research within projects raises the usual problem with projects: how do you "scale up" from project level? A related issue is that action research projects operating within a larger program are subject to decisions made beyond the project scope. For example the Goilala project, while supported by various levels of the district, provincial and national bureaucracy, ultimately fell victim to the loss of funding due to a previously poor reputation for performance.

There are also problems in applying action research arising from donor policies and procedures. Although it is almost *de rigeur* for development agencies to talk about "learning" and "adaptive" approaches, in practice projects are designed around tight timeframes and scheduled inputs and outputs associated with logframes. The rigidity of logframes is totally inconsistent with genuine flexible and adaptive learning. This is the major challenge facing action research in development.

There are two strategies which can go some way to creating space for action research, at least at a project level. These suggestions are hardly novel, but they are, I think, useful:

- Identify champions within government and donor bureaucracies who will allow action research oriented activities to take place at least on some sort of pilot basis. This will involve systematic attempts to keep the champions informed and engaged. They need to have ownership of the approach and of the project. Involvement of officials in training that introduces the approach and incorporating them in action plans arising from action research can help in encouraging support.

- Make sure there is a critical mass of people within a project and among its collaborators who understand action research and who are committed to practicing it. This requires strong leadership within the project.

Along with a number of other bilateral projects and government forest officers, NAFP[20] contributed to the policy dialogue around community forestry in Nepal and provided case material that showed that community forestry could work. This influenced the eventual shape for the community forestry program. In Iran, the action research project exposed actors in key government departments to

[20] I want to stress here that there were many actors who contributed to the change. I focus on NAFP only because I had direct experience with the practice of action research within the project.

alternative ways of understanding nomadic perspectives and training activities went some way towards wider promotion of this understanding and of participatory methodologies. This was a conscious attempt to "scale up". The long term result was a change in the policy dialogue about nomadism. Both of these cases illustrate the importance of leadership and of cultivating champions.

Conclusion

In this paper I have discussed experiences in the implementation of action research in a variety of different contexts. The types of contexts and the related challenges can essentially be divided into two broad fields – action research in settings which were primarily research oriented and settings which were primarily development oriented. Although there is an overlap, the types of challenges arising in each of these broad settings are somewhat distinct and I will deal with them separately below. It is, however, to some extent an artificial distinction, as many of the research oriented projects took place in a development context and were substantially focused on change.

One of my strongest impressions from work in a variety of contexts is that many people, researchers and development practitioners, find action learning empowering. As Kurt Lewin is credited[21] with saying: "Nothing is so practical as a good theory".

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[21] Lewin is credited with this remark but it does not appear in his writings (Greenwood and Levin 1998).

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Chapter Eight

Challenges and Prospects of Learning Based Approaches in Natural Resource Management

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Perfection of means and confusion of ends seem to characterize our age. ~ Elbert Einstein

Overview

Despite policy reversals towards participatory, collaborative and decentralised management of natural resources over the past two decades, impact on poverty reduction and enhancing sustainability of socio-ecological systems are still far from satisfactory (Mansuri and Rao 2004; Blaikie 2006; Dressler et al. 2010). In the context of added challenges resulting from climate change on the one hand, and the expanding number of stakeholders (with interests in particular resource systems for a variety of ecosystem services) on the other hand, it has become even more critical to search for effective ways to achieve goals of enhancing local livelihoods and ecological sustainability. And more importantly, the search for effective ways should not be left to 'ivory tower' academic exercise, but should emerge through specialist and non-specialist ways of learning and acting (Pimbert 2006) (Sayer and Campbell 2003), with full insight and feel of the 'context of application' (Nowotny et al. 2001).

Although significant progress has been made in recognizing the rights of local communities and empowerment of local government units through programs as diverse as community forestry and collaborative wildlife management, past legacies of centralised and techno-scientific approaches still dominate resource management and planning practices (Backstrand 2004; Ojha 2006) as part of the deep institutional culture. As result, scientists tend to focus on predictive and universal solutions rather than contribute to context specific innovations (Ostrom 2007). The technocratic attitude has also been reinforced by the wider relationships around funding, managerial approach of

international agencies and the unaccountable political systems which tend to reduce community-based and participatory innovations to strategic instruments, if not an extension of state power (Blaikie 2006; Li 2002). Moreover, critical reflections have also surfaced over the limits of localised approach to resource management both in terms of political empowerment (Hickey and Mohan 2005) and ecological sustainability (Berkes 2004). Looking at all these, a key challenge has been to reimagining the contours of participatory approach, not just within the local domains but also in relation to wider institutional regime and political systems surrounding small-scale participatory actions. In other words, we need a strategy of reform that utilises learning based approach for improving the underlying policy and institutional regime along with processes of participation and decentralisation. Such innovations are overdue given the consistent failure to facilitate institutional links across scales in complex socio-ecological systems.

Over the past two decades, the answer to why participatory NRM policies and practices have generated only limited positive impact has been sought in more complex, systems-oriented, beyond-the-expert ways of thinking and acting (Leeuwis and Pyburn 2002; Colfer 2005; Hall et al. 2006; Muro and Jeffrey 2008; Ojha et al. 2010). A plethora of research literature around adaptive learning and collaboration has emerged from the Northern context still awaiting practical scrutiny in the global south, and at the hands of those who are in the 'context of application' (Nowotny et al. 2001). The 'context of application' needs particular attention as the editors and contributors of this volume believe that a whole new contours of learning and change unfolds when research is undertaken with a goal to change the local practice than when done with a goal to generate global knowledge. This does not however deny the prospect of generating knowledge to be used outside of the immediate context of application (Fisher, Chapter seven).

This research posited that one way, and possibly better than the business-as-usual, is to refocus our attention to understand what makes diverse actors in a natural resource management system a) act together and b) take a learning-oriented approach in managing complex socio-environmental issues (Lee 1993). Given the sheer diversity of stakeholders, and the range of conflicting values and perspectives they bring in any socio-ecological systems, the processes of learning and collaboration are easier said than done. As particular groups of actors are likely to dominate the scene, the potential of learning together to change and innovate is even more compromised (Edmunds and Wollenberg 2002; Colfer 2005).

Recognizing the recent conceptual developments and normative frameworks of adaptive management and collaborative governance, this research started with a need to more closely

explore how and under what conditions stakeholders of NRM can forge effective collaboration both horizontally and vertically and develop adaptive response to unfolding challenges and opportunities. The contributors of this book have taken issue with these gaps and explored both challenges and possibilities with regard to how NRM actors can become more adaptive in managing complex resource systems and also become more collaborative with each other for fairer, negotiated outcomes. In a nutshell, all contributors are in agreement that current practices of participatory NRM have field to consider some of the basic elements of ACA – such as taking complexity and uncertainty seriously, organizing interventions for results as well as learning, and fostering effective links among actors through conflict management and collaboration.

Several contributors concur that the pre-ACA situation of their respective case studies lacked these ACA elements (see specially chapters 4 and 6). But the good news is that a diversity of innovations – in applying or coping with the challenges of applying ACAs - are being generated in indifferent contexts, creating new understanding about innovation pathways to effective natural resource management. Yet, there is no specifiable map for this journey - what forms of ACA emerge depend very much on the local socio-ecological contexts, and also the nature of wider political economy. Besides, what kinds of approach will emerge is itself contingent upon the motivations and understanding of the actors taking the lead – this is evident in the diverse motivations and background understanding of the contributors and their collaborators on the ground, concerning the analysis reported here.

In this compendium, we brought together cases that narrate stories from the world of practice from authors who are also engaged with various strands of wider theoretical debate about social learning, action research, environmental governance, and institutional chance and innovation. The contributions in this volume report that, although there is no single adaptive collaborative approach that fits everywhere, generic and fundamental bottlenecks remain on the road to flexible, learning based and collaborative approaches to NRM. Challenges exist in relation to applying all key forms of adaptive collaborative approaches in different resource sectors and political contexts. The experience reported here span a wide variety of socio-ecological and management situations. The types of experiment also range widely - 10 years' experience of CIFOR in facilitating ACM in 11 countries (Colfer) reflection of a long term practitioner over many parts of Asia (Fisher), reflections of working with several ACA related projects with multiple international partners (Banjade), working in and doing an independent revisit of ACM project experience in Zimbabwe during between 2000-2008; working for over 15 years in floodplain management in Bangladesh (Thompson and Sultana)

and researching and promoting the Farmer Field School (FFS) in Ecuador over 15 years (Sherwood et al.).

The authors examine community participation and decentralization experience in the light of complex systems and cross-scale dynamics as being highlighted in the recent literature (Berkes 2006; Armitage 2007), with a potential to move through innovation pathways (Hall et al. 2003) and more basic processes of social learning (Schon 2010). Authors also agree on the need to recognize more explicitly than in the participatory paradigm the issues of power and conflicts as essential part of natural resource policy development and management process (Hickey and Mohan 2005).

A key conclusion coming out of this collection is that only when policy regime and facilitative processes recognize these complexities and are prepared to muddle through the process (instead of using 'experts' to 'fix' the problems), will there be a new possibility of transforming institutions and fostering innovations. In several instances reported here, there was tendency to define quick fixes and to undermine and dis-incentivize efforts that were more engaged in the process of learning and bringing out more fundamental dimensions of change. The Farmers' Field School (FFS) in Ecuador, as reported by Sherwood et al in this volume, demonstrates that the innovation was brought back from its people-centered strategy to technology focus. Likewise, while Adaptive Collaborative Management team at CIFOR was embedding learning-based strategies strongly in the field, they faced pressure from CIFOR management to comply with bio-physical research paradigm (Colfer, Chapter 2).

Although it is clear that underlying institutional and policy regimes find it difficult to take a learning based approach, there is a tendency to promote a policy of participation and decentralisation. The cases reported here show that without concurrent changes in these institutions and their learning styles, simply developing a policy to decentralize and then hiring a service provider to implement it are not going to work. More importantly, new evidence from more nuanced studies demonstrate that many policy systems claim to move through participatory and decentralization journey are not actually prepared to decentralize in practice (Ribot et al. 2006), thus underscoring the importance of bringing adaptive and collaborative approaches in muddling through these stumbling blocks and uncertain environment. And there are cases of small scale learning initiatives feeding back the larger policy processes – as in the case of Nepal's community forestry policy evolving from small scale action research initiatives (as Fisher reports in chapter 3).

This study also challenges the two actor-model of resource governance dominant in the current policy paradigm – state sharing power with local communities. Recognizing that this model will continue to sustain the patron-client relations (Malla 2001) or techno-bureaucratic hegemony (Ojha 2006), the contributors of this volume have demonstrated from the real world experience the need to conceive multiple forms of collaboration at different scales as essential components of innovation pathways. While local citizens and elected officials should be seen as more authentic political actors, we cannot arrive at a more comprehensive theory and strategy of change without recognizing multiple actors and the diversity of functions and knowledge they bring in the system of innovation. For instance, engaging with the market based players is becoming increasingly critical, as the value and benefits from a resource system depends on the effective linking of resource management with the downstream value chain actors. Likewise, the role of information and technical service providers is also critical to the process of innovation. Indeed, the spectrum of collaborative action involves emergent groups of actors, often with new and hybrid roles and functions, as well as innovative forms of collaboration and interaction, all acting beyond the traditional institutional categories of research, extension, administration, and advocacy.

Continuing Challenges to Learning Based Approaches

Below we summarise how different ACA actors muddled through and dealt with various domains of adaptive learning and collaboration. These include engagements with a) the institutional homes conceiving and applying ACA, b) wider communities of positivist science researchers who tend to remain sceptical about the use and promotion of ACA oriented research, c) beneficiaries and local communities who tend to see external assistance as material development assistance rather than a catalytic input in the local learning and innovation systems, d) national policy regime and authority structure that regulates the practice and application of ACA processes and results, e) internal ACA team dynamics and quality of collaboration and learning among ACA actors, and f) Promoters and users of ACA tools and methodologies such as NGOs and a development agency. Box 8.1 summarises key challenges reported by various chapters.

Box 8.1 Key challenges experienced in applying the adaptive collaborative approaches in practice

1) Tackling with institutional environment within which ACA practice has to be organized: cultivating ACA within an international institution with bio-physical bias (Chapters 2, 3), undertaking ACA from NGO platform (Chapters 4, 5), undertaking ACA through a local unit of international organization (Chapters 4,5, 6), frequent change of trained ACA facilitators within the local partner institutions (Chapter 5)
2) Dealing with the reductionist scientific attitude and practice: at international domain (Chapters 2, 7), at local domains (chapters 5,6)
3) Working with beneficiaries and local communities
4) Balancing research and action processes: getting academic researchers to action research (chapter 7), collecting data and facilitating interventions in the field (chapters 2,5, 6),
5) Working within and through national policy regime and authority structure: acting politically towards change in turbulent politically difficult situations (chapters 5,6),
6) Forging partnership and collaboration with service providers: with government organizations (Chapters 5, 6), with private service providers (Chapter 3), and with conflict stakeholders in resource management (Chapter 6)
7) Facilitating cross-scale linkages: from local through meso and national levels (chapters 2, 4, 5, 6), horizontal linkages among local communities (Chapters 4, 5)
8) Managing sponsorship and funding: raising funds for a multi-country program (chapters 2), for specific ACA methodology (Chapter 3), for continuing small-scale ACA work in national contexts (Chapters 5, 6), for covering the transcation cost of local communities to act collectively to influence policy (Chapter 4), dealing with donor bias on positivist evaluation of ACA initiatives (Chapters 2, 3, 5, 6)
9) Sustaining results and ensuring innovation pathways: community networking (Chapter 4), knowledge production for influencing wider discourses (Chapter 2), political mobilization of local people and communities (Chapters 3, 4, 6), helping local communities institutionalize learning oriented processes (Chapters 4, 5).

As the previous chapters confirmed, despite prolific experimentations of adaptive and collaborative approaches at the local level agriculture and NRM, these approaches have not yet been widely mainstreamed in NRM policy and institutional regimes. And worse, there are cases of recent degeneration in the very institutional homes where they were developed (e.g. in CIFOR as reported Colfer, and various agencies that promoted FFS in Ecuador in this volume). In other situations,

despite a high enthusiasm at the commencement, they have not sustained (as in the case of Zimbabwean forest landscape reported here by Mutimuluru-Maravanayika and Matose, chapter 6). The main reason behind this situation is that institutional management and culture did not change in support of ACA initiatives, which were largely a result of some ACA oriented research groups within the organizations.

The institutional mandate and legacies are thus critical to the emergence and application of ACA. The experience of developing ACM program within CIFOR indicates that institutions with research goal pose added complexity, through their preference for traditional, extractive research (see Chapter 2 and 3, this volume). Managers of research institutions are often driven by the interests to produce large scale hard scientific evidence (Chapter 2) or large scale mechanistic results (Chapter 3), which is not consistent with ACA's emphasis on learning in particular and a concern for helping local actors to bring about needed change. The institutional challenge continues all the way to local beneficiaries. As Sultana and Thompson (Chapter 4) reports, the leaders / members of local community based organizations found it difficult to apply some of the new ideas they got through participating in the ACA process facilitated by researchers. The individuals who went out for learning with others developed different visions that were not easily appreciated in the local institutional regime. All this demonstrates that while there is a possibility of some actors going radical about learning and change, and also undertaking some experimental actions, but there is still little insight as to how such small scale innovations are absorbed by the wider political and institutional systems. While there are successful cases in which management were also supportive and actively engaged in the learning based approach (Fisher, Chapter 7), we need more nuanced understanding of what it takes to mainstreaming ACA in larger institutional regimes.

Given the long history of traditional *reductionist and extractive scientific approach* in the field of natural resource management, deeply rooted in the institutions of the state itself, the move towards adaptiveness and collaboration has not been easy. In the wider field of science, ACA oriented researchers continue to face challenges to demonstrate their value added in contrast to existing dominant model of 'research and development'. This at times tends to push ACA practice towards more reductionist approach – as is evident in the reluctant incorporation of methods and design by ACA actors to generate information and evidence that could help prove the efficacy of their approach (see 'context studies' and comparative analyses reported by Colfer, this volume) in more traditional scientific worldviews.

Sherwood et al's (Chapter 3) analysis of Farmer Field School shows that the participatory, people oriented character of FFS was taken over by the 'Mode I Science' (dominated by expert-centric learning) in the course of scaling out in Ecuador, when large scale organizations wanted to scale up the process widely, and when the national policy system also encouraged the private sector to deliver agricultural extension services. This means that the farmer-centred small scale innovation was taken to scale without changing the underlying institutional regime, and the very innovative character was lost. This raises a fundamental challenge about how we can go to scale from small-scale intensive innovation, implying a need for looking at adaptive and collaborative approaches at larger scales.

Most of NRM policy and practical innovations occur within the community-based or collaborative management contexts, heavily supported by international aid. Apparently, all of the work reported in the research was done within the context of international *development*, this posed particular challenges for ACA actors, who have to confront the existing assumptions of not only linear conception of planning and action but also expectations of quick fixes and immediate material benefits. For instance, developing relationship of trust with local actors was not always easy for ACA oriented project, mainly because the local stakeholders did not clearly see what benefits could emerge out of it (Chapters 5 and 6). A particularly critical challenge reported by Banjade is the one while working with the leaders of local communities at different scales. Besides, much of ACA work has been framed by *development* sponsors (all works reported by authors of this volume). Heavy sponsorship means there is still little endogenous thinking and innovation around different ways and possibilities of adaptiveness and innovations. But the good news is that sponsors often do not have full control of the innovation pathways, and if situation are favourable, more locally grounded processes of innovation and learning can occur (Chapters 2 and 5).

The other challenge related to development industry is about the politics of evaluation. While donors continue to look for tangible results, ACA actors do not seem to compromise quality of the process and sustainability of the results. Contributors report several instances of struggles with the donor and manager-commissioned evaluations (see specially Chapters 2, 3 and 5).

In any case, the experiences reported in this book reconfirm the relevance of adaptive collaborative approach after the works of (e.g. Colfer 2005), but expose a number of limitations as applied in practice, going beyond the initial hopes and enthusiasm with which they were initiated (See Chapter 6 for the findings of revisit of ACA work after some years in Zimbabwe).

Working internally within an ACA team is also challenging. Within the team different roles have to be organized: conceptualization, abstract thinking, acting, engaging, documenting, interpreting, marketing, getting funds, networking. Questions to be dealt with include – authorship, representation, forging team spirit, enhancing skills, ensuring inclusion and gaining credibility of the work. At times, the ACA researchers themselves find it difficult to internalize and communicate the idea of ACA clearly to the local communities and other collaborators, as it required innovative techniques of communication and critical and fruitful engagement across disciplinary beliefs and assumptions (see Chapters 2, 5, 6).

How ideas and knowledge are created within the team matters, and the more democracy of knowledge, the better, of course subject to any constraints (such as urgency and transaction cost). To share ownership of the ACA ideas and strategies among the team members, Colfer drafted 17 versions of the project and circulated to the whole team (Chapter 2). On the contrary, limited decentralization of learning and decision making power would hamper the process. Banjade provides examples of how he faced difficulty in balancing field work with the expectations of international research collaborators (Chapter 5). In order to create an organic team for ACA, Fisher reports that joint review and reflection in action research projects should become part of organizational culture, and this has been possible in his experience (Chapter 3).

ACA actors conceive results as work in progress in the pathway of innovation, moving beyond the input-output model of change. Some see as cycles of learning and innovation, not just the personally focused approach of Kolb (Kolb 1984), but more socially engaged and also linked to multiple scales. And they also see outcomes at multiple stages of the process of change – much beyond the linearly conceived output-outcome-impact framework. Fisher reports experience of having used action-oriented research as the modus operandi of various projects (Chapter 3).

While cross-scale linking or vertical coordination is widely recognised, the contributors report that this aspect of ACA is particularly challenging. Indeed, the ambition to combine research and action, and the attempt to link processes across scale has remained a quite arduous task. The linking process has at least four axes and are not structured institutions as some find it (Berkes 2002 and Adger et al. 2006), but are 'transactional flows' in terms of a) information flow, b) legitimating processes, c) value chain linkages, d) exercise of power and counter-power. All these processes are linked to whether or not the management of natural resources take system-wide view. ACA actors still have the mentality of 'invent and diffuse across scales', rather than innovate (in Shumpetarian sense), which requires taking learning based approach at all stages. Meso sphere, between local and

macro, has been found an important layer in the linking process, and 'forums', not merely the well-formed institutions (Banjade this volume). The first phase of CIFOR ACM work in Nepal started at community level, and then ended up with greater realization of the need to work on Meso level and then link to the national level. CIFOR multi-country program allowed different national teams to start working on any level considered suitable and then to proceed for vertically linking (Chapter 2).

A fear exists regarding the domination of collaborative processes by the powerful actors. The experience of Bangladesh floodplains is a case of horizontal scaling out and linking of community organizations into network, to secure community access to resources (Chapter 4). The assumption of first empowering the local communities and then linking them with state agencies appear to work.

In the context of natural resource management in the developing world, the aid priorities are still governed by the colonial legacies of state-centric management. This approach also strictly separates various institutions and innovation functions into boxes and chambers hampering collaboration and shared learning. Under such institutional architecture, what goes missing is a broad view of innovations in which research can be closely embedded in the process of innovation itself.

Contributors of this volume report a common challenge that adaptive collaborative initiatives were short of public funding support. Sultana and Thompson (this volume) reports that in Bangladesh, it was necessary to provide some modest funding and active facilitation support to enable the community based resource user groups to come together in adaptive learning networks. Sherwood et al highlights the danger associated with large scale buying the idea of FFS by government, donors and even the private service providers. All wanted to replicate but without the costly process aspects of FFS. There is usually a mismatch between funding cycle and temporal pathways of innovation. The contributors of this volume report that the types of results, and the way results themselves are conceived, are starkly different from the mainstream technocratic paradigms of development.

Applying Learning based Approaches: Coping with the Challenges

Contributors have documented several specific strategies adopted by ACA actors to address these challenges in varying extents. ACA actors are required to undertake active struggle over both systems of meanings or 'symbolic structure' as well as everyday practices. They looked for innovative ways to present their research. They engaged in constant contestations and dialogues between ACA researchers and the institutional managers (Banjade, Colfer, this volume). ACA

researchers consistently made the case, in everyday discourses and in the wider scientific community of practice that they wanted to bring research to make change happen, unlike traditional research focused development.

Box 8.1 Moving Forward through ACA approaches

- Influence established regime of mainstream institutions and actors (Chapter 3), such as through creating national coalition with advocacy groups and media (Chapter 5)
- Empowering local people to monitor political actors (chapter 2) through empowerment training (Chapter 6), training and visit (Chapter 4) and ongoing assistance in reflections and deliberation (Chapter 5)
- Recognize gender differences in learning and participation in the adaptive learning processes (Chapter 4)
- Create network of local communities and facilitate horizontal learning among them and then enable the network to effectively interact with the policy regime (Chapter 4)
- Adopt iterative strategy (chapter 2)
- Create supportive senior management for field level processes (chapter 5), and ignore anti-ACA instructions of management (Chapter 2)
- Two pronged strategy of research and action (chapter 2, 7), including opportunistic use of research methods (Chapter 2), snap-shot studies before and after PAR (Chapters 2, 5, 6)
- Balancing multiple and conflicting expectations of actors (chapter 2)
- Establish and communicate plausible connections between ACA processes and outcomes (Chapter 7)
- Strengthen capacity to integrate research into practice and communicate across the innovation pathways (Chapters 2-7)
- Strengthen processes of self-evaluation (Chapter 2)
- Be more political (Chapters 5, 6)
- Commitment for longer term action, learning and change (Chapters 2-7)
- Provide some financial subsidies for adaptive learning and experimentation (Chapter 4)
- Discuss and clarify any suspicions and past legacies of development projects to prepare ground for a genuinely learning based approach (Chapter 5 and 6)
- Identify specific management issues and constitute specific task groups for conducting participatory action research to understand and resolve the problems and realise new possibilities (Chapters 5 and 6)
- Once lessons and evidence are generated at the local level, bring those to higher levels of policy making (Chapters 2,4, 5, 6, 7)

- Link learning processes (usually involving cycles of visioning, planning, implementing, monitoring, review and reflections) with specific economic opportunities (Chapter 6) or commonly perceived issues of governance such as exclusion (chapter 5)

A major headway to move beyond biophysical reductionism resides on the reflexivity potential of the biophysical scientists themselves. Colfer (Chapter 2) recounts that some of the early attempt to bring social science (with qualitative and constructionist orientations) was actually by young foresters, which was not strong enough to challenge the counter attack from senior biophysical scientists. Sherwood and colleagues also report emergence of FFS activists through formal FFS training and practice. Fisher reports successful mainstreaming of action research methodologies in academic research.

ACA related processes can continue to have strong action-orientation if they are anchored at some local institutions with commitment for local level change through research, an example of this coming from the case of multiple ACA related initiatives undertaken one after another by an NGO in Nepal (Banjade, this volume). Continuous engagement over extended period of time and having strong local collaborators to facilitate the ACA process has been instrumental in bringing about integrated floodplains management in Bangladesh (Sultana and Thompson, this volume).

As Fisher argues (chapter 7), developing a culture of review and reflections within the organizations comprising both biophysical and social scientists can enable two way communications, and especially to bring the unreflected core of beliefs and prejudices in the discursive domain to pave way for more ACA oriented research and action (this volume).

The question of how to go about dealing with power still remains pertinent, and requires further intervention through social learning and innovation processes. Locally engaged ACA actors with significant legal-political right to act can make some difference (compared to the staff based at international agency). But pre-existing identity of local actors is also likely to come into effect, complicating the process. Since the process of learning and innovation becomes political right from the moment of the entry of an ACA actor, it changes the configuration of power, and there is always a room to manoeuvre the power equation through right mix of people in the ACA team.

While natural resource management systems are organized at multiple scales – from local communities to bio-regional scales, it is important that local communities have clear and strong tenure rights over natural resources. Adaptive and collaborative approaches to governance at higher

scales can only build on strong local community institutions (Chapter 4 and 5). But there is still an issue of how multiple communities can negotiate rights and benefits and develop sustainable institutions to handle more systemic and large –scale problems of socio-ecological systems, such those as reported by Mutimukuru-Maravanayika and Matose (Chapter 6).

Exploring New Contours of Learning Based Approach in Natural Resource Management

In the developing world, NRM processes are being framed and supported within the wider context of international development. And over the past three decades, development strategy is dominated by the discourse of participation. In participatory resource management parlance, it is increasingly common to find people talk about 'learning and innovation' but never walking the talk in true sense. The diverse forms of challenges faced by actors who took learning oriented process and collaborative approach with others having stakes in resource management demonstrate that there is a need for fundamental rethinking on how effective innovation is possible. A number challenges reported here while taking the adaptive collaborative route to innovation, as well as specific innovations in the learning processes, suggest that we need to explore how ACA can better grounded in the institutional learning processes. Table 8.1 identifies diverse structural facets of ACA – which are essential if we want to root them in practice.

Table 8.1. Dimensions of Adaptive Collaborative Approach

Dimension	Implications for Adaptive Collaborative Approach
Cultural dimension	- Develop a culture of review, reflections, sharing among groups, within organizations, and wider communities of practice.
Management dimension	- Reframe management from controlling to facilitator of learning systems and collaborative processes
Technological dimension	- Embed research and technology development within the larger social learning and deliberative systems
Political dimension	- Recognize political inequality, and explicitly align the ACA process towards changing the political status quo
Economic dimension	- Value and reward the intrinsic processes of learning, social interactions, and the more sustainable and enduring forms of change

The experience reported here implicates the need for revisiting a number of assumptions that guide current resource management policy and practices. First, we need to consider reframing research more seriously, not just in relation to the needs and concerns of the beneficiaries, but more importantly as a catalytic and reflective learning activity among a wide range of actors participating in the regimes of resource governance and pathways of innovations. While we recognize the value of more basic research and philosophical reflections at one end of the social learning, we need to better think of how research can be part of innovation and social change processes, in the more pragmatic conception of science popularised by Dewey (Bohman 2002). We do not deny the role of carefully planned technical and more sophisticated research as integral process of innovation (such as a new variety and a new silvicultural technique). The business-as-usual of developing technical solutions and then using extension systems to put the research into use does not work. Public funding should treat practice-based innovations as new forms of research and provide institutional support to groups of innovators on the ground.

Second, participatory discourse has concealed a technocratic regime in practice. There is still an unanswered question on how the disadvantaged people can really claim their stakes in decisions, innovations, policies, management and practices. There is certainly a 'learning paradox' (Armitage et al. 2008) in relation to who learns and how, but the experience reported here clearly demonstrates that there are visible 'power-learning nexus' – as the powerful groups and established institutional regimes are not open to learning processes, as this essentially involve challenging the established order (See Chapter 2 and 3). This means that ACA researchers and facilitators should more directly engage with the power-learning nexus rather than just cherish the ideals of learning and collaboration (see Chapter 6).

Becoming more political in the process of research and catalysing ACA brings even more challenges. In many political regimes of the developing world, it is too sensitive to link research with empowerment of the disadvantaged groups. Yet, it is clear from the experience reported here that there is no politically neutral research and facilitation or even service delivery; and neutrality itself a political position. For change, we need to start taking sides in research and innovation process. A good news is that it is possible to go beyond the ideological impasse (such as between modernist development versus indigenous and local management), through action oriented and innovation-focused research.

Third, we need to see cross-scale process not as an institution or adaptive system but as a chaotic situation, involving the transaction and interchange of information, economic resources and also the

processes of symbolic legitimation. Though the issue of cross-scale linkages has resurfaced again (Berkes and Turner), we need to better ground a learning based approach to understand and facilitate the linkages on all the three key dimensions – information, resource flows and symbolic legitimation. Creating cross-scale links can also address the concern that the direct participatory processes may not be able to acknowledge the deeper and distant functions of the ecosystem.

Fourth, learning should not be confined to operational or local systems; all decisions makers can have an additional plan to test assumptions through some form of monitoring system. Transferring rights and empowering the disadvantaged is the key, but this is not enough, unless there are deliberative links across scales, and transactional flows across value chains, all contributing to innovation in material, institutional and symbolic domains of social life. Indeed, public policy systems could be redesigned as learning systems, along with the scope for traditional scientific analysis and public debate. As Einstein says (see quote at the beginning), we are oriented to make the method perfect, but sustain confusion or least avoid asking questions on the goals of which policy and institutions are the key part.

Fifth, the paradigm of 'invention and scaling up' should be rejected, and conception of dynamic learning, innovation, sharing, reflections should be promoted. The problems and challenges faced while scaling up an innovation are qualitatively different and more complex than those faced at the time of developing the new innovation, which is done at relatively small scale under more intensive care. We need to conceptualize a universe of action and learning through which people can connect, speak to, and engage with each other in the process of learning and collaboration.

Finally, we need to go beyond traditional categorization of actors as researchers, trainers, activists, policy makers. Indeed, all have to be learners, collaborators, innovators and political actors. How much of these depend on the personal trajectories and institutional setting. There is a need to think of hybrid actors taking different combinations of various functional roles.

Way forward

At the risk of falling into the trap of being too prescriptive, the above conclusions do allow us to draw up some broad 'ways forward' that are relevant to all key actor groups involved in natural resource management in the developing world. We first summarize key directions for these actor groups (Table 8.2) and then draw generic and cross-cutting strategies for improving NRM for sustainability and better human well-being.

Table 8.2. NRM Actors and suggested ACA oriented changes

Actors	ACA oriented changes
National policy actors	- Remain sensitive to emerging innovations and provide enabling environment for them to flourish - Periodically review the institutional structure of policy making and implementation in the light of beneficiary expectations - Provide space and incentives for learning-oriented initiatives and experiments and absorb any costs associated with failures - Along with the strategies of decentralization and community based resource management, develop collaborative and learning oriented strategies for the management of large scale natural resource reserves such as protected areas, large blocks of forests, river basins and fisheries.
Research groups	- Focus research to understand and facilitate innovation pathways - Politically align research agendas with the rights of disadvantaged people - Focus on understanding cross-scale linkages and the dynamics of change through ACA
Extension and capacity development service providers	- Collaborate with other service providers, researchers, and stakeholders to facilitate system-wide processes - Facilitate networking among community groups in NRM for knowledge and empowerment
Transnational knowledge networks	- Work with local partners and collaborators and build their capacity - Provide added political and knowledge back at national and international policy processes
Local community groups and their associations	- Recognize experimental activities that go beyond their established system (such as innovating new community institutions for watershed management) - Address issues of internal accountability, representation and governance
Donors	- Appreciate and recognize the learning oriented processes for change at local and national levels and align funding to support those processes, rather than new institutions and processes - Use the principle of shared accountability to both recipient societies and donor country tax payers, rather than unilateral accountability to tax payers - Reframe planning, monitoring and evaluation approaches to go beyond

	measuring and quantifying variables to develop shared understanding of the innovation processes and develop feedback to channel back to the actors involved (not just the donor program managers).

Five important directions to move forward are also identified:

1. **Promote multi-scale learning approach - with simultaneous learning processes employed at different scales**. There should be efforts to facilitate linking learning processes at all levels of NRM, as well as link them vertically and horizontally, through interactive institutional platforms, and two-way communication mechanisms. Innovation and positive changes in NRM and livelihoods should be seen as outcomes of dynamic learning systems, and not as something resulting from the application or replication of technological packages.

2. **Support locally based NRM groups and entities to develop, strengthen and improve workable frameworks of learning, monitoring, review and reflections.** Local level resource management plans and practices should more explicitly have an element of learning, and based on that, local resource managers should be able to generate evidence and insights not only to improve their own management practice but also to provide feedback to higher scale institutions (vertical linkages) and to other similar actors (horizontal linkages).

3. **Reframe policy as adaptive and collaborative learning systems.** Policy system should itself be seen as a learning system, and it should develop ways to organize action-reflection-review in relation to its own domains of planning and decision-making, and also proactively seek out ways to enable cycles of lower scale learning processes, across diverse threads of innovation. Learning emphasis should be reflected in treating policies as experiments – and hence having a strong element of monitoring, review and reflections. Two specific directions of reframing public policy are critical:

    a. *Develop a system of policy evaluation from the perspectives of emerging local innovations and actors*. This should be seen as the reversal in the current practice of evaluation being solely sponsored and undertaken from the perspective of policy makers and donors. Public policy and wider institutions should be oriented to enable and

support local innovations, and citizens acting locally should be empowered to review policies and exercise their agency to influence policy for the kind change local people need.

b. *Develop agreed frameworks of accountability of the public institutions in enabling local innovations in practice.* Accountability of policy system to larger citizenry should include an audit of how the system is improving over time, including the processes of learning. This is essential to ensure that public investment is put into effective use and saved from the continuous series of failed attempts.

4. **Reframe international aid strategies to become more responsive to local innovations rather than predefined outputs.** Two aspects are important.

a. *International development donors should not just confine themselves to the delivery and scaling out of a standardized service package or generating consultant recommendations to public policy change*. They should support how each project, region and country learn to develop innovative solutions to their problems.

a. *Reframe evaluation approach of international development funding in the light of 'shared accountability'.* The effectiveness of development funding should be judged /assessed jointly by donors and the institutions of the recipient country on the basis of 'shared accountability'. Moreover, performance of development project should be seen not in terms of immediate, measurable values of tangible outcomes in the short run, but on the basis of promising plausible connections found between action, learning and possible outcomes, in the long run. Collaborative learning and reflection should be key element of programme evaluation.

5. **Embed research within the processes of innovation**. We need to nurture and support new types of researchers who bridge, broker and facilitate change around specific poverty-NRM issues and at the same time connect the processes across the wider policy and institutional systems.

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