

The background of the cover is a photograph of a person wearing a wide-brimmed hat and a light-colored shirt, standing in a field of tall, golden-brown grass. The person is holding a long, thin pole or staff. The overall color palette is warm and monochromatic, dominated by shades of yellow and gold.

Managing
**NATURAL
RESOURCES** for
**SUSTAINABLE
LIVELIHOODS**

Uniting **Science**
and **Participation**

Edited by Barry Pound, Sieglinde Snapp,
Cynthia McDougall and Ann Braun

Managing Natural Resources for Sustainable Livelihoods

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For a full list of publications please contact:

Earthscan Publications Ltd
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Tel: +44 (0)20 7278 0433
Fax: +44 (0)20 7278 1142
Email: earthinfo@earthscan.co.uk
Web: www.earthscan.co.uk

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Contents

<i>List of Tables, Figures and Boxes</i>	<i>vii</i>
<i>List of Contributors</i>	<i>ix</i>
<i>List of Acronyms and Abbreviations</i>	<i>xiii</i>
Foreword by Joachim Voss, Director General, International Center for Tropical Agriculture (CIAT)	<i>xvi</i>
<i>Preface</i>	<i>xviii</i>
<i>Acknowledgements</i>	<i>xx</i>
1 Introduction: Uniting Science and Participation in the Process of Innovation – Research for Development	1
<i>Jacqui Ashby</i>	
Introduction	1
The challenge for research	4
Definitions of participatory research	8
Adding value to resource management with participatory research	14
Common principles of participatory research	15
2 Navigating Complexity, Diversity and Dynamism: Reflections on Research for Natural Resource Management	20
<i>Cynthia McDougall and Ann Braun</i>	
Introduction	20
The challenge: complexity, diversity and dynamism in human and natural landscapes	21
Traditional and participatory research: key dimensions of difference	23
Diversity analysis in NRM research	28
Putting it together: reflections on navigating the research spectrum	33
Conclusions	44
3 Whose Research, Whose Agenda?	48
<i>Adrienne Martin and Alistair Sutherland</i>	
Introduction	48
Ownership at the macro level	49
Building ownership at the meso level: ownership and governance of communal resources	50
Ownership over the research process at the community level	52
Sustaining ownership throughout the research process	55
Ownership and sharing knowledge	56

	Gender and stakeholder involvement	56
	Motivation and ownership of technical innovation	58
	Managing a complex process	58
	Conclusions	60
4	Scaling Up and Out	67
	<i>Sieglinde Snapp and K L Heong</i>	
	Introduction	67
	Situating natural resource management	69
	The challenge of synthesizing NRM knowledge	71
	Steps to scaling up: enhancing relevance and accountability	73
	Is participation possible on a large scale?	74
	Steps to scaling up: building quality partnerships	75
	Scaling up participatory NRM to the watershed level	77
	Beyond the watershed: the continuum of scaling up and out	78
	Ways forward	81
	Summary	83
5	Transforming Institutions to Achieve Innovation in Research and Development	88
	<i>Ann Stroud</i>	
	Introduction	88
	Key elements and conditions to consider when fostering institutional change	93
	Progress and future challenges	107
6	Principles for Good Practice in Participatory Research: Reflecting on Lessons from the Field	113
	<i>Ronnie Vernooy and Cynthia McDougall</i>	
	Reflecting on practice	113
	Understanding the research context	114
	Towards good practice: shared learning from experience	117
	Good practice in action: five case studies	119
	Conclusions: a framework for reflection and change	135
	Appendix 1: Principles and indicators of good practice in PR on NRM	136
	Appendix 2: List of indicators of good practice generated at the Chatham meeting	137
7	Participatory Research, Natural Resource Management and Rural Transformation: More Lessons from the Field	142
	<i>Linden Vincent</i>	
	Introduction: why learn lessons on participatory research?	142
	Changing contexts of participatory research	145
	PNRMR: why put agriculture into a resource perspective?	153
	Building new interfaces for NRM	158
	Conclusions	164

8	Participation in Context: What's Past, What's Present, and What's Next	169
	<i>Dianne E Rocheleau</i>	
	Introduction	169
	Ethics, standards and professional peers	170
	From participatory technology transfer to collaborative science	173
	Context: sedentary science in place or a science situated in time and space	177
	Beyond scaling up: crossing scales and envisioning futures	179
	Conclusion	181
	Annexe 1: Summaries of Case Studies	184
1	Participatory agroecosystem management – an approach used by benchmark location research teams in the African Highlands Initiative Eco-regional Programme <i>Ann Stroud</i>	186
2	Participatory action research on adaptive collaborative management of community forests: A multi-country model <i>Cynthia McDougall with Ravi Prabhu and Yanti Kusumanto</i>	189
3	The farmer-driven Landcare Movement: An institutional innovation with implications for extension and research <i>Dennis Garrity</i>	192
4	The Farmer Research Group (CIAL) as a community-based natural resource management organization <i>Ann Braun</i>	194
5	Long-term natural resource management research in intensive production systems: ICARDA's experience in Egypt <i>Richard Tutwiler</i>	197
6	Management of Plant Genetic Resources in agroecosystems: <i>in situ</i> conservation on-farm <i>Devra Jarvis and Heather Klemick</i>	199
7	Eastern Himalayan initiative on gender, ethnicity and agrobiodiversity management <i>Barun Gurung</i>	202
8	Participatory selection and strategic use of multipurpose forages in hillsides of Central America <i>Michael Peters</i>	205
9	Focus on integrating methods and approaches to increase gender/stakeholder involvement, collaborative management of natural resource management, and decision-making support <i>Peter Brinn</i>	208
10	Farmer participatory experiments in pest management <i>KL Heong and MM Escalada</i>	210
11	Farmers' ability to manage a devastating plant disease – potato late blight <i>Rebecca Nelson</i>	212
12	Developing and implementing an innovative community approach to the control of bacterial wilt (<i>Pseudomonas solanacearum</i>) of potatoes (<i>Solanum tuberosum</i>) <i>Barry Pound</i>	215
13	Participatory management of Kapuwai's wetland (Pallisa District, Uganda): A clear need and some steps towards fulfilling it <i>Grazia Borrini-Feyerabend</i>	217
14	Participatory research at the landscape level: The Kumbhan water trough case <i>Czech Conroy and D V Rangnekar</i>	221

15	Participatory research at landscape level: Flood-prone ecosystems in Bangladesh and Vietnam <i>Madan M Dey and Mark Prein</i>	223
16	Water management, agricultural development and poverty eradication in the former Homelands of South Africa <i>Barbara van Koppen</i>	226
17	Innovation in irrigation – working in a ‘participation complex’ <i>Linden Vincent and Puspa Khanal</i>	228
18	Methods used to address resource issues in integrated watershed management in Nepalese watersheds <i>Hans Schreier, Sandra Brown and P B Shah</i>	231
19	A comparison of farmer participatory research methods <i>Sieglinde Snapp</i>	234
20	Soil and water conservation – historical and geographical perspectives on participation <i>Alistair Sutherland</i>	237
21	Improving farmers’ risk management strategies for resource-poor and drought-prone farming systems in southern Africa <i>Kit Vaughan and Zondai Shamudzarira</i>	240
22	Participatory mapping, analysis and monitoring of the natural resource base in small watersheds: Insights from Nicaragua <i>Ronnie Vernooy and Noemi Espinoza</i>	243
23	Observations on the use of information tools in participatory contexts: Access to information and empowerment <i>Jim Williams</i>	245
	<i>Index</i>	248

List of Tables, Figures and Boxes

Tables

2.1	Comparison of traditional and participatory research on several key dimensions	26
2.2	Types and significance of diversity approaches from case studies	31
2.3	Strengths, weaknesses and risks of participatory natural resource management research approaches (relative to traditional approaches)	38
5.1	Comparing characteristics of learning and bureaucratic organizations	90
5.2	Organizational analysis framework	108
6.1	Chatham case studies that illustrate the five principles	119
A.1	The ecosystem and natural resource focus of the case studies	184
A.2	Dimensions of participatory natural resource management highlighted in the case studies	185

Figures

2.1	Key characteristics of natural systems	22
2.2	Four 'prototypical' approaches to innovation development	28
4.1	A comparison of participatory learning and research approaches in terms of scale of operation, and degree of farmer versus researcher involvement	69
4.2	Alternative pathways for enhancing knowledge distillation, testing and dissemination in genetic improvement and natural resource management research	72
6.1	Stages of a CIAL process	133

Boxes

1.1	Adaptive, participatory natural resource management involves ecological literacy	6
1.2	Cross-scale effects in adaptive management	7
1.3	Common organizational problems in participatory research	13
1.4	Principles of participatory research	17
2.1	The Biggs typology of participation	24
2.2	Human diversity and sustainable livelihoods	29
2.3	A typology of diversity analysis	30

2.4	Science quality in participatory research	41
3.1	Forging new institutional arrangements for common property resource management – a case study from southern Zimbabwe	51
3.2	Kumbhan water trough case study, Gujarat, India	53
3.3	Participatory management of Kapuwai's wetlands in Uganda	54
3.4	Community approaches to control of bacterial wilt, Nepal	57
3.5	Soil and water research in Malawi	59
4.1	Farmers testing rules of thumb in integrated pest management	80
4.2	Farmers and researchers partnering in Malawi through mother–baby trials	82
5.1	Added value and dimensions of participatory approaches to INRM research	89
5.2	Organizational learning stages	95
5.3	Five stages of competence development	100
6.1	Case study: Landcare in the Philippines	121
6.2	Case study: participatory mapping, analysis and monitoring in the Calico River watershed, Matagalpa Province, Nicaragua (CIAT 'Hillsides' project)	123
6.3	Case study: improving farmers' risk management strategies, for resource-poor and drought-prone farming systems in southern Africa (CIMMYT Southern Africa Risk Management Project)	126
6.4	Case study: participatory action research on adaptive and collaborative management of community forests – a multi-country model (CIFOR)	129
6.5	Case study: the Farmer Research Committee (CIAL) as a community-based NRM organization	132
7.1	The Chatham workshop and its coverage	144
7.2	Changing concerns and changing pressures	146
7.3	The struggle to share knowledge and focus on farmers' ideas	149
7.4	Communicating with resource users; communication between resource users	150
7.5	Participatory research to improve inclusion in debates and access to resources	152
7.6	Landscapes need exploring as social as well as biophysical mosaics	154
7.7	The struggle for participatory approaches in irrigation system management reform	158
7.8	Stakeholders: interfaces and organizations	161
7.9	Rethinking research design: new knowledge partnerships, new methods	162
8.1	Participatory research approaches are social technologies	171
8.2	Working across the spectrum	174
8.3	Collaboration between indigenous and formal agricultural experimentation	176
8.4	Scenarios, beyond prediction, for negotiation	181

Chapter 5

Transforming Institutions to Achieve Innovation in Research and Development

Ann Stroud

*'In times of change, learners inherit the earth, while the learned find themselves
beautifully equipped to deal with a world that no longer exists.'*
Edward Hoffer¹

Introduction

Researchers around the globe are taking on complex, multi-faceted environmental and livelihood challenges. In doing so, they are searching for, testing and proposing a number of methods and approaches that depart from those normally used in traditional agricultural research. There are several driving forces behind this evolution: a growing dissatisfaction of governments and donors in the limited impact from the substantial investment that has been made in agricultural research; a heightened pressure to deliver and to show that farmers are using the technologies that have been 'on the shelf'; and an awareness that technologies and other research products need supportive conditions, coupled with local innovation and incentives, to enhance adoption. There is also a growing realization by researchers and natural resource management (NRM) practitioners that technologies in themselves are not a panacea to address NRM issues, but need to go hand-in-hand with supportive social, institutional, economic and policy arrangements. It is the major hypothesis of this book that the participatory research and gender analysis (PRGA) approaches promoted by the Consultative Group on International Agricultural Research (CGIAR) will help to address these sorts of concern.

As researchers are being pressured to be more client, impact and results-oriented, research managers are also being pressured to change their organization's

orientation. The changes sought in research practice to more directly address local capacity needs and support sustainable, self-led change require supportive changes in institutional operations, arrangements and values. This path of change should lead to a more 'learning type' research system – one that internalizes the necessary changes in attitudes, structures and research practices so as to increase responsiveness to local community development needs, consideration of economic, institutional and social aspects, and the ability to positively influence policy. Public research organizations are, in fact, currently being challenged to embrace a twofold change: to move towards the use of PRGA approaches in research practice (see Box 5.1); and, to become 'learning organizations' so that they can continue to effectively innovate in the future (see Table 5.1).

To date, the promotion of PRGA methods has been primarily addressed through projects and one-off training programmes. Very few of these projects or programmes are conceived to, or have strategies that, influence the core attitudes or working practices of the institutions, so that many of the experiences remain isolated, and as a result there is still a dearth of public institutional support for these new approaches. However, some researchers are promoting an integrated natural resource management research and development (INRM R&D) approach, which also embraces participatory approaches (CGIAR INRM Task Force, 2001; CGIAR INRM, 2000; Stroud, 2000, 2001; AHI, 2000). There are now some examples of changes in attitudes,

BOX 5.1 ADDED VALUE AND DIMENSIONS OF PARTICIPATORY APPROACHES TO INRM RESEARCH

Using participatory methods allows for:

- Developing a shared vision of how natural resources should be managed.
- Building confidence and capacity for collective action, advocacy and innovation.
- Using a learning-based-in-action process of enquiry and reflection.
- Acknowledging, enhancing and incorporating local knowledge, beliefs and values.
- Learning from and coping with the perceptions of a broader set of stakeholders.
- Diving deeper into understanding and managing social and biophysical complexity, diversity and dynamics.
- Reaching and including less powerful stakeholders, such as women and disadvantaged groups, focusing on resource access and social equity.
- Fostering interdisciplinary communication and facilitation as a means to dealing with conflict, finding new management arrangements and promoting learning processes.
- Monitoring the results that come from actions derived from the learning-reflection processes.
- Understanding and influencing micro-political processes.
- Operating at different technical, organizational, geographical and temporal scales or levels.
- Managing change in local institutions that favour improved livelihoods and environmental management.

Source: Various chapters in this volume

Table 5.1 *Comparing characteristics of learning and bureaucratic organizations*

<i>Characteristics</i>	<i>Learning organizations</i>	<i>Bureaucratic 'non-learning' organizations</i>
<i>Strategic thinking and decision-making</i>	<ul style="list-style-type: none"> • Leadership is committed to innovation and leads a qualitative vision or guiding strategy that goes beyond numbers • There are strong ties to clients and partners so that strategic alliances are supported • Interactive learning is supported, drawing on multiple external sources of information and ideas • There is adoption of an experimental, enquiry-oriented approach to decision-making – that is, adapting decisions and strategies to emerging realities in the field • Actions should be considered as tests of current understandings, models and hypotheses 	<ul style="list-style-type: none"> • Leaders communicate their resistance to new ideas coming from below or from outside and may have defensive reactions to suggestions • Leaders ignore requests for clarification of policy in relation to supporting learning or discourage creative thinking • Leaders may be defensive and protect their mandates even if it fosters confusion and duplication • Risk averse environment; leaders seek uniformity and use directives, meetings and peer pressure to get conformity. • Decisions are according to rules and hierarchies and are generally inflexible
<i>Resource allocation</i>	<ul style="list-style-type: none"> • New ideas and approaches are supported, some of which might be competing • Long-term actions are supported with resources across sections/divisions 	<ul style="list-style-type: none"> • Resources are allocated to those who follow existing protocols and maintain the status quo • Performance is according to category with little cross-sectional interaction
<i>Human resource management</i>	<ul style="list-style-type: none"> • Attract highly skilled and creative people and provide them with opportunities for professional growth • Innovators and implementers of innovations receive training, technical support, financial incentives and other rewards • There is an acceptance of error • Relationships should be high on trust and low on defensiveness • There is tolerance of ambiguity and uncertainty, and a critical attitude where questions and analysis are tolerated 	<ul style="list-style-type: none"> • Sort people and events into a limited number of agreed-upon categories to reduce complexity • Managers may hoard information on performance • Cultural norms and assumptions block learning • Managers emphasize control over subordinates and action • There are no rewards for innovative thinking and taking risks in this direction • There is limited exposure to new ideas and procedures

- Recruitment of diverse personnel and development of procedures for exposing members to diverse viewpoints
- Rewards and incentives for addressing and solving recurring problems and challenges

Structure

- Use small teams that are semi-independent, interdisciplinary and that are free of administrative constraints
 - Use integrating mechanisms such as projects, task forces, horizontal links between teams and informal networks that bridge boundaries between functional groups
 - Strategic alliances provide access to necessary techniques, skills and facilitate risk sharing
 - Authority is granted on basis of experience and expertise rather than on seniority or formal position
 - Supportive monitoring and evaluation (M&E) systems to ensure accountability and quality performance
- People are in sections/divisions under one supervisor and there is little cross-sectional work that is sanctioned
 - Few integrating mechanisms are employed and interactions are mainly within sections and similar functional groups
 - Strategic alliances and partnerships are difficult to forge without the consent of supervisors
 - Authority is granted on the basis of degree and seniority, and secondly on experience and expertise

Sources: Harrison and Shiron, 1998; Catacutan and Duque, 2000; Thompson, 1995.

practice and institutional arrangements that have promoted and fostered the incorporation of participatory approaches into research.

There is also some recent, increasing interest by public research organizations in the processes of organizational change and learning as a means for improving the impact of research and of participatory INRM approaches (Gurung, personal communication, 2001; Hagemann et al, 1998a; Hagemann et al, 1999; Jonfa et al, 2001; Hagemann and Stroud 2002). Beyond cultural transformations, changes in managerial and structural terms could include an array of new modes of operating, for example: new forms of leadership, new ways of linking with external agencies and partners, new ways of managing and promoting personnel, new incentive structures, new planning, reviewing, resource allocation and monitoring and evaluation modalities. Two challenges are that there are few organizational change experts working for the public research sector and that change experts tend to draw upon experience derived from private sector organizations in developed countries (Senge et al, 1999; Baum, 2000; Kotter, 1996). However, private organizations have different driving forces to encourage change – for example, profit motivation and market orientation – when compared to public ones (Janssen and Braunschweig, 2002). Many public organizations are led by ‘researcher-managers’ who are not expert in organizational assessment, and their institutional culture may not include innovation or the creative exploration of new ideas. These institutions are often part of larger, more bureaucratic government structures that do not encourage innovation. Some of these difficulties, as experienced by public institutions in the ‘farming systems’ research era of the 1970s to early 1990s are documented by Collinson and FAO (2000) and Merrill-Sands et al (1989).

Much of this book has described progress in the use, or development of, participatory methods and practices that encompass gender and diversity concerns. This chapter focuses on aspects and challenges related to changing research organizations so that there is better support for, and use of, participatory methods. The hypothesis put forward in the chapter is *that by employing strategies and processes to create a shared vision of effective research and a learning organizational culture, the development and use of new methodologies, such as PRGA, will be encouraged*. The chapter describes key elements, conditions and processes required for institutional change in research organizations. The chapter focuses on the three main stages of change: ‘initiating change’, ‘sustaining momentum’, and ‘redesigning and rethinking’. It provides examples to illustrate application in practice, drawing heavily upon the African Highlands Initiative (AHI) experience,² and highlights issues and challenges inherent in public institutional change. These ideas are proposed with the understanding that much more than institutionalization needs to take place to enable a PRGA approach to work. Other critical elements include an organized, relatively sophisticated expression of farmer demand, adequate resources for research, good quality services to support farmer demand, and a supportive policy structure. We suggest that the lessons learned and proposed here could be applied not only to public sector R&D organizations, but also to community groups and community-based organizations, as well as non-governmental organizations.

Key elements and conditions to consider when fostering institutional change

Structural and process approaches

Specialists in the field of organizational change have described several useful frameworks and change processes that indicate key conditions, elements and challenges (Kotter, 1996; Gurung, 2001; Hagemann et al, 1997, 1998b; Hagemann et al, 1999; Senge et al, 1999). The two approaches to organizational change discussed here – a ‘structural approach’ and a ‘process approach’ – have slightly different emphases, but are not mutually exclusive (Kotter, 1996; Baum, 2000; Gurung, 2001; Hagemann et al, 1999). Kotter (1996) lists three major components of his ‘structural’ approach to organizational change: structure, systems and culture. *Structure* includes the nature of rules and decision-making hierarchies within the organization, numbers of levels, type of leadership, and the number and complexity of policies and procedures that hinder or serve the organization. *Systems* refers to performance evaluations, information systems, training and other support systems (incentives and rewards) for a wide range of employees. *Culture* refers to the organization’s norms of behaviour (common ways of behaving) and values that are shared and are visible within the organization and that tend to shape behaviour (Baum, 2000).

Taking a ‘process’ approach, Gurung (2001) points out that unless most of these elements are working together towards changed modalities, a mere policy change – for example, offering incentives to change – will not result in organizational change. Likewise, if one only makes structural changes without other functional changes, little behavioural change will occur. This implies the need for a *process* to deal with the whole system and its elements in a logical, but iterative way. Culture is one of the most important but difficult aspects to change as it is nearly invisible, is largely unconscious, is difficult to discuss and to challenge, and has a large influence on human behaviour. The Stroud case study on the African Highlands Initiative, for example, illustrated the repeated need to reinforce and mentor the use of participatory methods as researchers kept reverting back to their original behaviour. The new (PR) approaches involved required the researchers to change their behaviour from: closed to open modes of questioning farmers; working with individuals to working with groups; collecting to sharing information; verbal communication to using more visual means; qualitative to using comparisons; and from ‘research to village’ information transfer to ‘village to village’ transfer. The difficulties for researchers to rapidly change their attitudes and practice, given their research organizations’ culture, prevented them from making quick progress in applying participatory research methods.

In the *Dance of Change* (1999) Senge et al highlight that ‘sustaining any profound change process requires a fundamental shift in thinking’.³ They make the following points in terms of means and process for change: there needs to be a potential for change; that change is a process that needs to be managed and reinforced; and that one has to be cognizant and understand the constraints or

challenges that can limit growth processes and to attend to these constraints. The latter point is key and requires workable strategies for dealing with these challenges. Several cases discussed change the management of local organizations as a process (Vincent, van Koppen, Pound and CIFOR, among others).

Senge et al (1999) divide the change process into three stages. *Initiating change* occurs as soon as a 'pilot' group(s) begins to conduct its work in unfamiliar ways. In the case of PRGA, many of the participatory INRM practitioners might identify themselves as the 'pilot' group (or 'change team'). The second stage is *sustaining momentum* within the change team and between the team and the larger organization. This concerns confronting 'sceptics' and trying to keep the spirit and practice of change alive within the change team. Thirdly, *redesigning and rethinking* at the organizational level refers to the stage when change initiatives gain broader credibility and confront the established internal infrastructure and practices of the organization. It is at this stage that one actually gets into organizational assessment of strategies, systems and structures (refer to Kotter, 1996 above) and where the organization takes steps in making adjustments in order to change, support a new culture and new ways of doing things. If the organization can adjust itself to become a 'learning organization', it can go through periodic stages of reviewing and renewal.

Organizational change requires various supporting conditions. There must be a *shared commitment*, among leaders, managers and workers. This commitment only develops with collective capability to build *a clear vision and shared values* such as participation, accountability, openness, transparency, ownership and inclusiveness. There should be people who have the *skills to facilitate reflection and enquiry or to use a 'reflective-learning' process*, as this enables those involved to converse about complex, conflictive issues without invoking defensiveness. Other new skills are needed that support the change process, such as *systems thinking, reflective learning, and facilitation*, as well as the skills to carry out any new tasks that might be envisioned. Good *mentoring* or facilitation is required to enable team members to rise to the challenges (ie, helping others to 'complete' themselves) (Senge et al, 1999; Hagmann pers comm). An underlying 'process' thread that feeds the various stages is a *'learning' cycle that promotes a culture of enquiry*. This cycle includes: sparking change, searching for new ways to operate, planning and strengthening capacity, experimenting while implementing, sharing experiences and reflecting on lessons learned, and re-planning (Hagmann et al, 1998c). Senge et al (1999) consider these as basic learning capabilities, which if they are missing will limit sustainable change. Various PRGA cases referred to using the learning process (eg, Nelson, Braun, Stroud).

From the above points, it can be seen that organizational change combines 'inner' shifts in people's values, aspirations and behaviours with 'outer' shifts in processes, strategies, practices and systems. Clearly, the organization must *build capacity* for doing things in new ways; it just doesn't 'do' something new. *Changed thinking is the foundation* so that new strategies, systems and structures can be implemented. In summary, *change is a process*, and the various stages need to be iteratively understood and managed. (Refer to a scheme in Box 5.2 as an example.)

BOX 5.2 ORGANIZATIONAL LEARNING STAGES

Single loop learning: Find ways to improve practices, as judged by current norms and standards – this can produce a dramatic improvement but does not generate the ability to make fundamental improvements in the system. (Initiating change)

Double loop learning: Members review and challenge standards, policies and procedures in light of external changes and their own underlying values. Members learn to learn. Participants consciously alter their frameworks. (Sustaining change)

Triple loop learning: The most far reaching. Breaks current frames and yields fundamental changes in the organization's guiding vision, approach and assumptions about work and ways of organizing. This is where the participants become aware of their own interpretation and frames (mental maps) and prepare to change these as needed. (Rethinking and redesigning)

Source: Harrison and Shiron, 1998

The first stage of institutional change: initiating change

'Whatever you can do, or dream you can, begin it. Boldness has genius, power and magic in it.' Goethe

Four key aspects of initiating change are introduced here, then explored in further detail in the following sub-sections. Various *driving forces* usually initiate change: people feel the need for change; they might be led through an analysis that indicates the need for change; or circumstances and clients may demand change. Change is most successful when the effort is driven by commitment, and where the initiative is driven by the interest in learning. Other driving forces however, usually attend this commitment. Once it is realized by a few that change is needed, a *change process can be designed, catalysed, facilitated and iteratively reviewed*. The change process needs to be linked to the desired outcomes within a conceptual framework, and competence development and iterative reflective learning and action must be linked conceptually and in action to the framework (Hagmann and Stroud, unpublished). As part of the process, one has to think about who is involved, how they are linked to the rest of the organization, what strategies are required, and who is leading and facilitating the process. Visioning and concept development are necessary to enable the change group and others in the organization to visualize alternative ways of working and organizing the work that currently may be beyond their experience. *Visioning and concept development* need to be returned to and deepened over time in a common interest or 'change group'. *Competence development* is an integral part of change and includes management of the reflective learning and action process as well as the development of other new skills that are needed to handle the new dimensions envisioned. The process of change becomes *grounded in the elements of 'experiential learning'* through conceptual development, testing new ways of working through action research, documentation of processes and learning, sharing, reflecting to bring out the lessons and experiences, then re-

planning and redirecting actions as required. There should be many self-discoveries on the way.

Driving forces

Driving forces of change can be, and are often, external (for example, 'donor-driven'), but are best accompanied by the internal drive or felt need to change. According to Senge et al (1999), an internal drive for change usually starts small, and often with people who are open-minded pragmatists, and who may look at their organizational culture from a different perspective or have curiosity in a particular set of ideas. These groups, sometimes referred to as 'change teams', often serve as the 'seeds' for change – developing and applying a shared vision, similar mental models and a willingness to experiment with new ways of doing things. This felt need to change is usually not shared by all factions within the organization, and hence come some of the challenges faced in subsequent stages of change. (Based on the AHI's experience, for example, while the 'change team' trying out new modalities may have deep, extensive experiential learning, if they are not also linked to and supported from the onset by management, they risk delays or even external 'sabotage'.)

The increased use of participatory research methods has been broadly driven by the fact that most research organizations see the need to improve adoption rates and impact. These institutions perceive that the traditional approaches are not achieving this, particularly in the areas of: applying more complex NRM technologies (integrated pest management and integrated soil fertility management); resolving communal resource management issues (irrigation schemes, hillside management); handling varied and multiple stakeholders' needs who operate in varied circumstances with varied agendas (importance of social and institutional processes); and dealing with multiple dimensions and levels (policies, economic conditions at local, regional and national levels) that are hindering change. In addition, an increased application of PRGA is often driven by an enhanced sense of mission – to give more attention to women and the poor. All case studies make reference to these areas. Here we offer four examples, taken from the case studies, that illustrate drivers of change towards using new PRGA approaches in order to have a better impact.

- 1 External interests are drivers of change in cases where advisory project personnel from externally funded projects or donors see the need for new research approaches that create impact. A shared agenda is sought by the external project in consultation with local R&D organizations and often the external entity tries to influence or assist the local organization in the change process (Jonfa et al, 2001) (cases from Klemick and Jarvis, Vernooy, Nelson, Borrini-Feyerabend, Pound, van Koppen and Gurung).
- 2 Local interests drive change in cases where a local movement results in empowered farmers and sufficient funds so that locals can make demands on research and other service providers (cases from Garrity, Braun, Dey and Prein).

- 3 Two-way interactions between research staff and partners from other organizations involved in development can provide an impetus for change. This is where teams (multidisciplinary) and partnerships (multi-institutional) foster change through exposure to other ways of doing things. Partnerships can require intensive sharing of methods and approaches through action and/or the negotiation process. Adjustments in process may be made to enable the relationship to function (Opondo et al, 2001; cases from Snapp, Stroud, Vernooy and McDougall et al, this volume).
- 4 Internal realizations by the research teams for the need to change can drive the change process; catalysed especially by field research pursuing improved NRM and livelihoods and working directly with local farmers and other stakeholders. This is witnessed in the testimonies from the cases found in this book as well as from others (Opondo et al, 2001; most cases in this volume).

Designing the process

To be successful, efforts towards organizational change require a conscious process and strategy, as well as leadership and facilitation, and should ultimately be supported by institutional structures and procedures. Changed thinking is a key factor underpinning these because it leads to changed attitudes and practice. The change process, for example, needs to explicitly foster the individual desire for learning and to provide personal satisfaction. It requires social dynamics where individuals interact and work together over time, and where they are able to derive satisfaction from teamwork. The AHI experience illuminated the fact that creating a process that focuses on the ‘outcomes’ of the change process – in other words, what needs to be accomplished, thinking through how to get there and translating this into action – is critical. The outcome provides the compelling vision; the strategy and action translate this into personal and group experiences in the field. The field experiences ground changes in personal experience and support changes in attitude and behaviour. Reflection sessions review these experiences and rethink the strategies and practice (Opondo et al, 2001).

The change process must be led by a *strategy* for expanding lessons beyond the change team, and into the future; this may involve multiple steps and various parts of the organization. For example, while change groups may be useful in planting ‘seeds of change’ within an organization, these will not take root unless managers adopt and share the new models of practice as examples. Alternatively, if many of the organization members see a need for change, there might be a process put into place that is jointly designed – with a series of task forces, iterative discussion and strategizing and coming to some conclusion (Hagmann and Stroud, unpublished.). Experience has shown that there are several common weaknesses relating to strategies for designing change. There are often structural changes made without a clearly articulated goal and desired outcome. This usually results in a dysfunctional system that does not foster the required behavioural change and learning that are needed for real change. Often the small change teams (based in projects) stay as isolated experiences because they are

not linked to organizational learning. There is usually a weak strategy in place for assisting the ‘change team’ and for harvesting lessons from these cases. For example, reviews and planning sessions may not be organized for reflection – thus limiting opportunities to make adjustments if things are faltering. These weak modalities provide limited support to changing behaviours and practice, and are most likely why PRGA has not been widely adopted, incorporated and internalized in research organizations.

Leadership and membership in a ‘change group’ is very important to its success. The literature (Senge et al, 1999; Adamo, 2001; Stroud’s case study, this volume) highlights several key groups of actors that might be included in the change team:

- Social networks and existing groups that are characterized by a high level of trust and provide a social framework for coordination, cooperation and mutual assistance.
- Effective internal networkers that can diffuse innovative ideas and practices – these often belong to informal social networks.
- Leaders that are accountable, imaginative, committed and have sufficient authority to undertake change at their local level.
- Those that have a propensity for mentoring, are committed to the learning process and can become mentors and coaches.

Top leadership must be involved in the process in order to create the right organizational environment for the change group(s) to operate and pursue its objectives (in this case to provide a good example of the application of the PRGA approach to INRM). If change is externally driven, the process should be optimally negotiated and designed together with management. This is one of the pitfalls in much of the PRGA work when it takes place in a ‘project’ mode. If management is not included, one can expect many challenges to arise in the sustaining stages (Hagmann et al; Stroud case). Jonfa et al (2001) discuss the importance of raising awareness of the PR approach at various levels, and used a wide range of strategies, involving a number of actors, in their change process: publicity campaigns, involving a number of key organizations in planning and implementation, using cross-institutional training, creating forums for discussion, organizing monitoring tours and impact studies, and formulating a set of flexible guidelines.

Conceptual and competence development

The start-up phase of a change process should include ‘visioning’ and ‘conceptual development’ for the research change team to support the new ways of approaching research. Exploring and broadening concepts (or research paradigms) using ‘live’ examples can open the eyes of researchers to new ways of working, while reinforcing the validity of the new methods and enhancing understanding of the rationale for change (Hagmann et al, 1996; Hagmann et al, 1998a; Hagmann et al, 1999; Hagmann and Chuma, 2000; Hagmann and Stroud, unpublished). As part of the conceptual development, a skillfully facilitated

visioning process can contribute to broadened perspectives of researchers, help to establish team consensus on directions and rationale for change, and provide a foundation for a cohesive change group, and a plan for joint action. Visioning is particularly useful for starting the change processes in institutions where outsiders may drive change (for example, in public research institutions which may be heavily influenced by donors) because the vision and specification of the desired outcome is created, owned and internalized by those involved. While the intensive work on conceptual development and visioning might start with a change team, eventually this has to be linked to the organization so that all actors are sensitized. The conceptual scaling up should be considered as part of the change design.

In the design and initial stages of institutional change, conceptual and competence development and reflective learning need to be woven together in an iterative way. The change process should generate (as well as draw on examples of) relevant first-hand experience so that those involved can internalize the need for change. The inclusion of 'real life' experiences is critical (see the Stroud, Vincent, Pound, Borrini-Feyerabend cases in this volume; Senge et al, 1999; Opondo et al, 2001). Hagmann (1999) describes such a process that he facilitated in Zimbabwe for improving extension delivery systems and farmer innovation. Developing capacity in participatory research approaches, including mainstreaming gender concerns, goes faster when research teams are interacting and testing methods in the field. This 'real life' experience reinforces and internalizes the concepts and associated practices. Furthermore, by working together as a team, members can draw upon each other's perceptions and skills. Systematic reviews of the work, led by a facilitator in a supportive, innovative atmosphere, can help to build the competences in an iterative way (Hagmann et al, 2000).

Furthermore, the case studies in this book have shown that building competence in PRGA approaches does not come by adding skills via 'one-off' training events but requires consistent mentoring, exchange visits, monitoring processes, and commitment to applying the skills, tools and methods in an action research modality (see the Stroud, Nelson, CIFOR, Pound, Gurung cases in this volume; Jonfa et al, 2001). Change teams and managers of their institutions need to develop strategies to build competence in facilitation and other new skills needed to implement and develop participatory methods (Catacutan and Duque, 2000). Senge et al (1999) refer to five stages of competence development (Box 5.3) but cautions that these 'types' are not 'set in stone'. Organizations that become learning-based can support a competence-building process by investing in mentoring and by creating internal coaching capability, where both lead to a self-reinforcing growth process.

Use of reflective and action learning to propel change

To effectively support institutional change, the 'reflective and action learning' approach should be coupled with mentoring and good facilitation. This process will enable the teams involved to analyse and synthesize lessons and experiences, associate the 'real' work with their goals, and simultaneously build capacity

BOX 5.3 FIVE STAGES OF COMPETENCE DEVELOPMENT

- **New learners** get an awareness of the subject area and gain intellectual understanding of concepts and ideas but cannot easily apply these unless they follow the rules or steps.
- **Advanced beginners** can apply their skills, are more aware of the depth and breadth of the subject and acknowledge their knowledge gaps; they are able to follow the steps as long as it does not deviate from what they have studied.
- **Competent learners** have accomplished the 'know what' and can move beyond the simple rules and procedures; they can adapt to new circumstances but they still lack the 'know how'.
- **Proficient learners** can reliably meet any situation and solve issues with the full grasp of the whole problem; however, actions are still at a conscious level.
- **Experts** can break the rules and surpass the goals as they have totally internalized their practice. Experts continue learning through their interaction with other experts in mentoring relationships.

Source: Senge et al, 1999

(Moyo and Hagmann, 2000). Hagmann and Chuma (2000) stress the need to 'create' conditions for learning, and state that non-directive facilitation can assist groups in self-organization, governance and sharing knowledge – including joint problem and solution analysis – as a way to foster social learning and collective action. During continued facilitation, the group strengthens its capacity for internal negotiation and conflict management, and innovation through interactive construction of knowledge.

In many of the participatory research experiences from the cases in this volume, we see that support for internal coaching and learning has been intentionally included, but often has been pieced together as the process unfolded, and dependent on the commitment of the group members. Jonfa et al (2001) and the Pound, van Koppen and Vincent cases in this volume used a multi-faceted combination of theoretical training and practical hands-on sessions plus research studies, participatory on-farm trials, and cross-institution learning for this purpose. They included practitioners and senior managers in training events, which helped to make the necessary links between practitioners and supporters and helped to build understanding throughout the organization.

Action research and the application of PRGA approaches reinforce growth and change within the research team. As practitioners engage in catalysing community-level change issues in their work, their efforts often result in changes in their own perspectives and approaches. This interchange, mentioned in a number of the cases in this volume, offers an excellent 'push' for the change process in the R&D group and is reinforced by reflection sessions (Hagmann et al 1996, 1998c; Snapp, Stroud, Pound, Vernooy and other case studies in this volume).

Challenges to initiating institutional change

Challenges associated with initiating institutional change begin as soon as the change group starts to conduct its work in unfamiliar ways. These challenges need to be addressed as they appear; this is easier to undertake if the team is aware of their potential emergence before they occur. Teams can anticipate, for example, that staff turnover can slow down the change process and contribute to unequal learning and relationships in community-based work. Many key challenges relate to the time that it may take to create a successful model. For example, facilitation, capacity building, reflective learning, visioning and developing concepts and new mental models will take resources, time and planning energy. Institutional change can require a critical mass of funds, human resources and clear leadership to undertake the work, as well as the ability to articulate a clear focus and need for institutional change. Furthermore, there are often difficulties in changing public organizational procedures where new positions are needed. For example, it took AHI two years to negotiate the position of an INRM coordinator who could integrate research inputs and engage in partnerships. In sum, the change team and other stakeholders must recognize and plan for the fact that change is a process and that sufficient time is needed to initiate and implement it (Jonfa et al, 2001; Stroud, 2001). In Zimbabwe, Hagmann and his team set out to change the extension system; it took about five years. In hindsight, and in a second case of change work going on in South Africa, the process has been speeded up given previous experience (Hagmann, pers comm). This allowed time is critical, especially in the early stages, so that the change team can become proficient and confident in its new role and capacities, and to convince others of the value of change, without alienating them.

The second stage of institutional change: sustaining momentum

'The problem with learning from experience is that we get the test before the lesson.' Alfred E Neuman (*Mad* magazine)

As well as the potential challenges of the 'start-up' phase of change, Senge et al (1999) and others highlight a number of challenges that change teams are likely to face once some level of success has already been achieved. The team may be inexperienced in using new participatory methods, so there may be a 'results gap' between starting to use good practices and impact. The team may face difficulties in communicating their experiences, especially in terms of efficiency and cost-effectiveness, to those who expect 'fast results'. This is compounded by the risks they face by 'experimenting'. The team will likely face internal challenges while they gain skills and confidence in their new ways of working. They will inevitably face criticism, or even sabotage by 'non-believers'. At this point in the change process, there usually is some competence, but perhaps not yet enough to confidently face these challenges (Senge et al, 1999). It is important therefore, to give forethought to strategies to address these so that

the momentum, and potential to further institutionalize the change, can be sustained.

The team challenge

One key challenge is for research team members – who previously worked as individuals – to develop trust and overcome their feeling of vulnerability when working in a team mode. This includes addressing barriers based in institutional (or personal) values relating to independence, competition and the allocation of credit. It is only when these challenges are met that the individuals can function as a team and effectively explore the use of participatory research methods (Opondo et al, 2001). This was true in the AHI experience where the members had to develop team and leadership skills – including the leader’s confidence to lead – and the ability to maintain an open and trusting team culture. If these values are not forthcoming, the effort to change working modalities will probably fail because of their pivotal role in long-term learning. Some efforts that enabled the AHI teams to meet these challenges included: holding periodic meetings to air potentially problematic issues and to take stock of progress, tackling small, simple conflicts as they arise, fostering trust and mutual support in daily interactions, the leaders setting examples of desired team values, such as openness, appreciating diversity as an asset (for example, illustrating the contributions of social scientists), continuing skills development, and reasserting the team vision throughout the process. The AHI teams also invested in periodic meetings at pilot sites and across countries, and scheduled explicit sessions to build team capacity and strength, and set up explicit monitoring of teamwork modalities.

It is important for the change team to prove that their new methods work – including where, with whom and for what circumstances. The team has to plan how to balance the time spent in developing (and mentoring for) new ways of working and competences with their implementation, and analysis. The critical reflection needs to be balanced with recognition of gains throughout the process, because this reinforces the new positive patterns and renews the team’s energy for the change process.

Fitting in with the status quo while taking new leaps

A second major challenge to teams that are trying to innovate – including implementation of PRGA approaches – is the ubiquitous pressure in research institutions to maintain the methodological status quo. ‘New’ approaches are often met with scepticism, defensiveness, stubbornness and even sabotage. Key words such as ‘participatory’ can trigger negative reactions from peers, and these reactions may become more extreme as the team’s success and enthusiasm increase. Any perceptions of ‘exclusiveness’ or ‘arrogance’ on the part of the change team can alienate others, which can then lead to the change team feeling misunderstood and unappreciated. As innovators are often relatively junior in institutions, they may find it difficult to communicate their goals and findings to their senior counterparts (Opondo et al, 2001). Thus the change momentum may be threatened even though the assessed R&D value of the innovation may be very positive.

Maintaining the change momentum requires change teams to recognize the concerns and criticisms of participatory research made by the 'status quo'. These are many, and of quite varying validity. They include that: many biophysical researchers feel that PRGA approaches are for social scientists only;⁴ participatory research is not considered to lead to scientific enquiry and refereed publications; PR is seen as site-specific and costly in time and logistics; agendas arising from farmer-led fora are not considered valid or are too site- or interest-specific for public institutions with broad mandates; ways to judge or ensure quality are not well known or practised; and, these approaches are sometimes considered just the latest 'fad'. The question of scientific validity is a concern. The change team can use this concern in discussion and joint assessment of the new approaches as one strategy to bridge the communication gap between the change team and others representing the status quo. Participatory approaches may require different assessment methods rather than the traditional assessment tools. PRGA approaches, for example, may not yield quantitative data, and therefore might not appear to be 'scientific' to very traditional researchers or clients (eg, credit organizations). Yet discussions of a PRGA methodology and its 'checks' (see Chapter 6 this volume) might illustrate to those outside the team why a set of qualitative methods and 'soft' assessments from farmers and local organizations would be considered more valid than statistical tests. In these cases, farmer impact diagrams might take the place of impact studies (Adamo, 2001). The desire to measure the impact and ensure the quality of participatory research has led to innovative monitoring and assessment methods (Opondo et al, 2001; Sanginga and Opondo, unpublished.). The change team's recognition and commitment to addressing quality and impact can build confidence in their institution in the PRGA innovations.

There are other strategies that can also help to proactively bridge the gaps between the institutional innovators and the traditionalists. One is for the 'change' team to become 'bi-cultural' – that is, to live in, and appreciate, both the dominant and the innovative minority worlds. This was done in the 'mother-baby trials' in Zambia (Snapp's case study in this volume) and in the AHI experiences (in this volume). In the latter, for example, the INRM work was justified using similar protocol formats and review sessions used for more traditional work. As a part of this strategy, innovators should be aware of their choice of language – including avoiding the abundant PRGA jargon – to avoid alienating others. Finally, planning for the change team to present research cases to their peers that have applied the new approaches, including using field visits, is essential in communicating the potential of the innovations (Stroud, 2001; Senge et al, 1999; Pound and van Koppen cases in this volume).

Bringing the organization along with the change team

If one wants to promote organizational change through innovation and learning, one must balance innovation with keeping the organization intact (Harrison and Shiron, 1998). This is very true in PRGA approaches, where new paradigms and practices are often being incorporated with the existing traditional ones. It is also important for change agents to aspire to improve the

effectiveness of their organization while negotiating new systems and practices. The AHI is currently testing a systemic approach where the change team and representatives from the organization identify factors or cornerstones that must work in synchrony for effective research. These factors and associated indicators are linked to the participatory research approach and other strategies needed to accomplish the envisioned impact. These impact indicators can be used to judge the quality of the work and performance level, can assist in making comparisons to characterize the contributions of conventional and participatory research methods (Snapp and Vernooy cases in this volume), and can be used to identify best practices leading to positive impact. If the whole organization can be brought along to use a similar framework, then the change team has an easier time justifying itself and the use of new practices (Hagmann and Stroud, unpublished).

Another challenge within the organizational context is that of dealing with the 'results gap' – in other words, the gap between the results expected based on a status quo approach and the actual results. The results gap in a PRGA approach can be particularly problematic if the project is being assessed by individuals who do not understand the time and resource implications of initiating and arriving at quality results, including the time needed for the reflective learning and experimentation process, competence development, and for the innovation process to take root. These are often not factored in, so the pressure to perform as per the status quo time frame is high, and can create stress for the leadership and in the change team (Brinn, Pound and other cases in this volume). One strategy to deal with this is to build an assessment coalition between the change team and those outside the change team, including the leadership (Hagmann and Stroud, unpublished). This strategy will be tested in AHI's new phase of work. Investment in building capacity for using and appreciating new assessment tools is a second strategy. A third strategy is to set explicit and agreed interim goals. This has proved effective, particularly where participatory methods have been used to set these (Opondo et al, 2001; Senge et al, 1999; AHI, 2000; Sanginga and Opondo, unpublished). Reaching interim goals provides a feeling of achievement for the change team and for those who are watching.

New behaviours, new practices and improved results can appear as threatening to the traditional organizational culture. When combined with a lack of clear communication between the change team and others, these may result in comments such as: 'I have no idea of what those people are doing', or 'Those people are going overboard and have lost their focus' (Stroud, 2000). If paradigm shifts and change are not done strategically, then innovation can actually become an irritant to the organization's staff outside the change team. From experience, the change strategy needs to include ways of informing policy-makers, managers, practitioners involved in the organization – in other words sceptics and non-sceptics alike. Interactions and communication with these different actors and stakeholders often requires skilled facilitation. Many participatory research and INRM ventures have faced this scepticism and have not dealt with it in a strategic way. This has resulted in many 'islands' of good practice that remain disconnected and have no ultimate institutional impact.

The third stage of institutional change: redesigning and rethinking at the organizational level

'True leaders are hardly known to their followers. Next after them are the leaders the people know and admire; after them, are those they fear; after them, those they despise. To give no trust is to get no trust. When the work's done right, with no fussing or boasting, ordinary people say, "Oh, we did it".'
Lao-tzu

As many change initiatives are supported by projects, a major challenge is to move from a project change mode to a sustainable organization-led change. This stage involves larger-scale changes in the organization and calls for modalities to redesign and rethink all aspects of the organization – the toughest part of which is changing culture. Communication and attitude barriers, for example, often pose difficulties to the transfer of knowledge within the organization and across organizational boundaries. Prevailing government bureaucracies and hierarchies can make this a formidable challenge and one that has to be addressed strategically, openly, and with shared ownership of the change process.

Given the challenges faced in undertaking grassroots development, change might mean changing the whole system, not only the research organization

There are considerable capacity gaps in the wide range of R&D organizations globally; at the same time, there are also difficulties in setting up supportive service structures outside of the normal research domain. Furthermore, institutions face difficulties in addressing facilitation and coordination needs at various levels (policy, technical, operational) and in dealing with multiple institutions and levels (farmers up to policy-makers) (Jonfa et al, 2001; Catacutan and Duque, 2000; Stroud, 2001). The Ugandan government, as one positive example, has realized the need for systemic change, and has created a guiding policy and framework: 'Plan for Modernization of Agriculture' that provides guidance and a 'beacon' for all parts of the system. This is the first step, but most challenging is the implementation.

Let us assume that the 'change teams' have done well, have created good models of practice in the field, and that the interactions within the organization have been orchestrated in a way that the change teams have expanded their reach, and have achieved legitimacy within the organization. The next challenge is how the organization as a whole can undergo a more profound change. In this chapter, we are focusing on a twofold change: incorporating lessons from the change team experiences in PRGA approaches; and, becoming a learning organization so that it can provide the necessary support to sustain further change and renew itself in future. This ultimately requires a process at organizational level that is conscious, strategic and working towards emerging new systems, structure and culture.

Organizational structure is more frequently and easily adjusted than the systems or cultural components of institutions. Structural change is often driven by outside forces such as donor interests and governmental bureaucracies that are disenchanted with the impact of research. This type of change alone, however, does not result in institutionalization of lessons and practices generated by the change team, nor in a learning organization. These types of outcomes require change at this level to be managed as a process (as indicated for change in the change team level). A first step in this direction would be to empower managers to manage change directly by revealing the details of organization components and ways to flexibly and iteratively manage all aspects for impact. Organizational management requires systems thinking because of the various dimensions, complex interactions and consequences of actions/decisions on other parts of the system. These skills may need to be acquired. The attributes noted in the first section of this chapter are still relevant at this scale: a shared commitment of leaders, managers and workers; clear and collectively shared vision and values; the skills to facilitate reflection and enquiry or to use a 'reflective-learning' process that promotes a culture of inquiry; and new skills that can manage and support the change process.

Managing organizational change as a systemic process

Senge et al (1999) and Harrison and Shiron (1998) suggest some useful steps concerning cultural, structural and supporting systems for participatory and process-oriented approaches that enhance institutional innovation and change. Organizational learning and strategic re-orientations require a revision of existing patterns and adoption of new 'mental maps' as the basis for a paradigm shift, or in other words, for a change in the basic attitudes that have been developed through interactions and experience over the years (Senge et al, 1999). Facilitators can assist in this self-examination and identification of values and assumptions to uncover the organizational rationale, and sources of meaning and contradiction. Dealing with the cultural dimension⁵ and underlying perceptions and beliefs of the organization and its individuals is one of the most important but challenging aspects in institutional change. The cultural dimension involves the 'language' of the organization – in other words, the shared definitions and assumptions of how things work that shape the way people deal with problems and handle critical organizational processes. It also involves the ways to improve or remedy processes at individual, group and organizational levels including lessons from the past and guides for the future, and shared assumptions about why events occur (such as the way people naturally behave), the ability of people to influence their environment, and capacities for change (after Harrison and Shiron, 1998). Cultural change is a slow process, and one in which it is normal to find internal resistance.

If the size of the organization allows it, cultural change is often best done through a facilitated visioning exercise. Recent experience has illustrated the power of defining the desired or 'impact' state to help identify what the organization needs to do to be effective. During this process, values and principles can also be examined (Hagmann and Stroud, unpublished). This

facilitated process can trigger shared insights, a logical re-creation of new frameworks, institutional arrangements, and general implications for the organizational culture, skills and management processes.

Organizational assessment tools have been developed to assist organizations in examining themselves, as part of the change process (USAID, 2001; Gurung, 2001). For example, an assessment framework can help managers to see their organization as a system with certain characteristics (mission/mandate, structure, human resources) and dimensions (technical, socio-political, cultural) (see Table 5.2). Once their impact areas are clearly defined, organizational managers and staff can use such a framework to review the current state against the desired state and the associated implications. In addition to the internal workings of the organization, they should also consider external forces affecting the organization's policies and their working arrangements with others. It then will take leadership, strategy and an inclusive process to define and implement the desired changes. Hagmann et al (1998) discussed a case in Zimbabwe that illustrates this type of process. In this case, various projects pursuing participatory development acted as a lobby group to bring the participatory development approach into mainstream thinking in a national extension programme. This led to a reform that required substantial changes in the organizational culture, roles, relationships and attitudes. These changes were addressed in an organizational development programme that included a learning process to facilitate behavioural and attitudinal changes.

Gurung (2001) puts forward an explicit strategy for incorporating participatory research as an innovation at the organizational level: establish concrete objectives for change; extend organizational change skills to members, and define indicators to monitor and evaluate the process and output of change. He stresses the importance of developing alternative strategies based on potentials rather than focusing on barriers, being flexible, anticipating possible consequences of certain strategies for the various stakeholders; and listening to the 'silent voices'.

Progress and future challenges

'It is not only for what we do that we are held responsible, but also for what we do not do.' Moliere

Let us return to the original hypothesis put forward in the introduction to this chapter: 'By employing strategies and processes to create a shared vision of effective research and a learning organizational culture, the development and use of new methodologies, such as PRGA, will be encouraged.' Learning organizations, as defined by Senge (1990), are:

organizations where people continually expand their capacity to create the results they desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning together.

Table 5.2 *Organizational analysis framework*

<i>Organizational dimensions</i>	<i>Organizational characteristics</i>		
	<i>Mission/mandate</i>	<i>Structure</i>	<i>Human resources</i>
TECHNICAL DIMENSION The essential parts	POLICIES AND ACTIONS The <i>guiding policy</i> and its operationalization in action plans, strategies/approaches, and monitoring and evaluation systems	TASKS AND RESPONSIBILITIES The way people are positioned and the way tasks and responsibilities are allocated and related to each other through <i>procedures, information and coordinating systems</i>	EXPERTISE The number of staff and the requirements and conditions to allow them to work, such as <i>job description, appraisal, facilities, training, etc</i>
SOCIO-POLITICAL DIMENSION The process or power play	POLICY INFLUENCE The way and extent <i>management, people from within the organization and people from outside the organization influence policy</i> and the running of the organization	DECISION-MAKING The <i>patterns of formal and informal decision-making processes</i> . The way diversity and conflicts are dealt with	ROOM FOR MANOEUVRE The space and <i>incentives provided</i> to staff to give shape to their work, such as rewards, career possibilities, variety in working styles
CULTURAL DIMENSION The personality	ORGANIZATIONAL CULTURE The symbols, rituals and traditions. The <i>norms and values</i> underlying the running of the organization and the behaviour of the staff. The social and economic <i>standards set</i>	COOPERATION The way the <i>work relations between staff and with outsiders</i> are organized, such as working in teams, networking. The norms and values underlying these arrangements	ATTITUDE The way staff <i>feel and think about their work</i> , the working environment and about other (categories of) employees. The extent to which staff stereotype other staff. The extent to which staff identify themselves with the culture of the organization

Source: Gurung, 2001

The learning organization concept has a number of underlying values that are very similar to those that participatory methodology is aspiring to meet: empowerment of its members, rewards and structures fostering initiative, to learn from uncertainties and take leaps in experimentation; use local knowledge originating from those in the 'front lines', learning through action, and promotion

of trust, accountability, equity, and quality. The idea of a learning organization rose out of the need to survive in private sector competition where change is constant, rapid and complex. NRM challenges also pose similar challenges but in a different context. Asian experience has shown success in using the learning organization model for community development (Korten, 1980).

Most of the cases referred to in this volume are 'pilots' and as such have operated as 'isolated islands in the sea of NRM research'. There are few examples in the literature where public organizations have focused at a high level on change so as to incorporate PRGA and other innovative approaches. The CGIAR System-wide PRGA programme conducted a recent survey that indicates an upswing in the number of projects in the CGIAR system using elements of participatory research, but these remain isolated with limited learning links. One of the future challenges is to connect these 'islands' to inform practice and to influence institutions in a more profound way. In Africa, we see a few rising examples of this in the recent work by Hagmann and colleagues with extension services in two African countries, Jonfa et al (2001) with research and development organizations in Ethiopia, and AHI's work in Ethiopia and Tanzania.

These examples are starting to bring to life the real world NRM research challenges, and to augment the more theoretical studies and guiding principles provided by the literature (Thompson, 1995; Korten, 1980). These, and other examples, are still relatively young and have not yet been taken to completion. However, as the number of projects promoting PRGA approaches and the pressure of the driving forces increase (eg, reduced resources levels for research and the need to improve impact orientation), there is bound to be more work on institutional change in the near future.

We therefore predict that there will be more attention given to organizational change in the near future in NRM research institutions. Self-evaluation of organizations will be more common – including reviewing the leadership style, reward and incentive systems, the M&E system, policies, decision-making mechanisms and other components. Organizations will be viewed as systems with cultures that can be consciously adjusted to achieve more effective outputs. There will be change processes in place based on shared visions of impact, and linked to change strategies. We envision that the early momentum for change in organizations will be sustained by the necessary support and appreciation for the role of change in enhancing effectiveness and efficiency. Some of the key areas that will emerge given the new institutional behaviour, norms and rules are expected to be:

- Enhanced participation of farmers and local communities in research – including combined use of local and 'scientific knowledge', local priorities, and local analysis – and in direct application of results.
- Increased non-traditional skill areas of researchers, including incorporation of social (gender, wealth, etc) differences, community mobilization and facilitation, public awareness, socio-cultural non-market incentives, policies, social organization, conflict resolution and appreciation of interdependencies.

- Improved ability of research systems to deal with dynamic, complex systems and social diversity: different scales, hierarchies, and ranges of options and management principles for different stakeholders.
- Enhanced local and research capacity, and some local institutional change, local empowerment and evidence of faster uptake of appropriate technology.
- Enhanced research capacity throughout the research system, through the use of partnerships and networking within and across scales.

In an optimistic future, the islands of PRGA practice would no longer be isolated experiences but would be linked and used within viable 'learning' research organizations. These in turn would be providing services to communities so as to enhance local initiatives in improving their environment and management of their livelihoods.

Notes

- 1 The displayed quotes in this chapter are taken from Baum (2000) *Lightening in a Bottle: Proven Lessons for Leading Change*.
- 2 This chapter's author is the coordinator of the African Highlands Initiative (AHI).
- 3 This chapter draws heavily on the framework that Senge et al (1999) put forward.
- 4 This occurs in organizations largely (or entirely) populated by biophysical specialists.
- 5 Cultural dimensions include: basic assumptions (unconscious, taken-for-granted beliefs, perceptions and thoughts), values and norms (strategies, goals and philosophies) and behaviour patterns and artefacts (visible organizational structures and processes) (Senge et al, 1999; Harrison and Shiron, 1998).

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