SHARING POWER

Learning-by-Doing in Co-Management
of Natural Resources throughout the World

The International Institute for Environment and Development (IIED)

The International Institute for Environment and Development (www.iied.org) is an independent, non-profit organisation working in the field of sustainable development. IIED aims to provide expertise and leadership in researching and achieving sustainable development at local, national, regional and global levels. The Institute works with international and Southern partners, primarily in Africa, Asia and Latin America, to transform decision-making at all levels. This is done primarily through research, communication, engagement with actors and their networks, capacity development and advocacy. In alliance with others, IIED seeks to shape a future that ends global poverty and delivers sustainable and equitable management of the world?s natural resources.

The World Conservation Union (IUCN)

Founded in 1948, the World Conservation Union (www.iucn.org) brings together states, government agencies and a diverse range of non-governmental organisations in a unique world partnership: over 1000 members spread across some 140 countries. Its mission is to influence, encourage and assist societies throughout the world to conserve the integrity and diversity of nature and to ensure that any use of natural resources is equitable and ecologically sustainable. Through its six Commissions, IUCN draws together over 10,000 expert volunteers from virtually all countries of the world. The Commissions are networks entrusted by the World Conservation Congress to develop and advance the knowledge and experience of IUCN. The Commissions provide guidance and advice on conservation knowledge and policy and work in partnership with IUCN members and the Secretariat to implement an integrated Programme. The vision of IUCN is: "A just world that values and conserves nature".

The IUCN Commission on Environmental, Economic and Social Policy (CEESP)

CEESP (www.iucn.org/themes/ceesp) is one of the six Commissions of the World Conservation Union. Comprising an inter-disciplinary network of professionals from all over the world, its mission is to act as a source of advice to the Union on the environmental, economic, social and cultural factors that affect natural resources and biological diversity and to provide the Union with guidance and support towards effective policies and practices in environmental conservation and sustainable development. One of CEESP?s key objectives is improved governance of natural resources— achieving more effective and efficient conservation, ensuring equity for individuals and communities, and respecting human rights.

The CEESP Collaborative Management Working Group (CMWG)

The Co-management Working Group (www.iucn.org/themes/ceesp/Wkg_grp/CMWG) is the oldest and largest working group within CEESP and comprises about 400 conservation and development professionals with concern and expertise focusing on participatory, multi-stakeholder management of natural resources. The CMWG members are active in applied research and analysis, technical advice to field-based initiatives, policy development, training, and documentation of field experiences. The group supports and strengthens the work of its members through information-sharing and occasions for mutual technical advice, joint activities at the national and regional level, and international policy advocacy.

Centre for Sustainable Development (CENESTA)

CENESTA (www.cenesta.org) is an Iranian NGO dedicated to the conservation of biological and cultural diversity and to community-oriented practices and policies for sustainable livelihoods. Among CENESTA?s major interests are agroecology, food sovereignty, co-management of natural resources, community conserved areas and the safeguards and enhancement of mobile indigenous livelihoods, both in Iran and internationally. Cenesta is the host for IUCN/ CEESP and for the Secretariat of the World Alliance of Mobile Indigenous Peoples (WAMIP).

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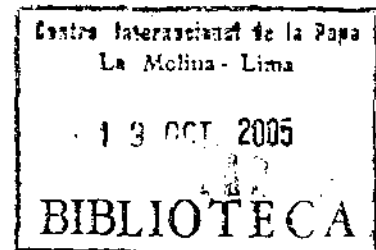
SHARING POWER

LEARNING-BY-DOING IN CO-MANAGEMENT OF NATURAL RESOURCES THROUGHOUT THE WORLD

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Vicki Pattemore, Ricardo Ramírez and Patrizio Warren

iied   IUCN   CEESP   CMWG   Cenesta   Sida   gtz

This book is dedicated to the memory of the many thousands of people, most of them unknown by us and the world at large, who offered their feelings and intelligence, their time, resources, their health and too often their life, in solidarity with their communities and in the struggle to conserve the wonders of life.

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ABBREVIATIONS

BATNA	Best alternative to a negotiated agreement
BR	Biosphere reserve
CAMPFIRE	Communal Areas Management Programme for Indigenous Resources
CANARI	Caribbean Natural Resources Institute
CARE	Cooperative for Assistance and Relief Everywhere
CBD	Convention on Biological Diversity
CBO	Community-based organisation
CCA	Community conserved area
CEESP	Commission on Environmental, Economic and Social Policy
CENESTA	Iranian Centre for Sustainable Development
CIPM	Community integrated pest management
CM	Co-management
CMNR	Co-management of natural resources
CMPA	Co-managed protected area
CMWG	Collaborative Management Working Group
COP	Conference of Parties
DANIDA	Danish International Development Agency
DGIS	Dutch Development Cooperation Agency
DIP	Deliberative and inclusionary processes
EPA	Environmental Protection Agency
EU	European Union
FAO	Food and Agriculture Organisation of the United Nations
FD	Forestry department
FPC	Forest protection committee
GEF	Global Environment Facility
GIS	Geographic information system
GM	Genetically modified
GMO	Genetically modified organism
GPS	Global positioning system
GTZ	German Development Cooperation Agency
ICCPR	International Covenant on Civil and Political Rights
ICDP	Integrated conservation and development project
IDS	Institute of Development Studies
IFAD	International Fund for Agricultural Development
IFOAM	International Forum for Organic Agriculture
ICESCR	International Covenant on Economic, Social, and Cultural Rights
IIED	International Institute for Environment and Development
ILO	International Labour Organisation
IPA	Indigenous protected area
IPM	Integrated pest management
IPR	Intellectual property right
IRRI	International Rice Research Institute
IUCN	The World Conservation Union
JFM	Joint forest management
JPAM	Joint protected area management

MAB	Man and the Biosphere
NBSAP	National biodiversity strategy and action plan
NEAP	National environmental action plan
NGO	Non-governmental organisation
NR	Natural resource
NRM	Natural resource management
OECD	Organisation for Economic Cooperation and Development
PA	Protected area
PAR	Participatory action research
PDR	People's Democratic Republic
PIC	Prior informed consent
PLA	Participatory learning and action
PMA	Park management authority
PNR	*Parc naturel régional*
PO	Producer organisation
PRA	Participatory rural appraisal
PRSP	Poverty reduction strategy paper
R&D	Research and development
RRA	Rapid rural appraisal
SAM	Special area management
SIDA	Swedish International Development Agency
SWOL	Strengths, weaknesses, opportunities and limitations
SWOT	Strengths, weaknesses, opportunities and threats
TNC	Trans national corporation
TRIP	Trade related intellectual property right
UDHR	Universal Declaration of Human Rights
UK	United Kingdom
UN	United Nations
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organisation
UNHCR	United Nations High Commission for Refugees
UNICEF	United Nations Children's Fund
US	United States
USA	United States of America
USD	United States dollar
WAMIP	World Alliance of Mobile Indigenous Peoples
WCS	Wildlife Conservation Society
WHA	World heritage area
WHO	World Health Organisation
WSSD	World Summit on Sustainable Development
WTO	World Trade Organisation
WWF	World Wide Fund for Nature

FOREWORD by Juan Mayr Maldonado

"Sharing Power" should be required reading for all of us who, in one way or another, are involved at the local, national or international level in the governance and management of natural resources. But this volume should also be read by those who gain economic benefits from natural resources at a distance thanks to the sophisticated technology of communications and marketing systems. Most of these people are deeply indebted to the labour and creativity of rural communities, whose livelihoods are inextricably related to the natural resources and ecosystems in the different regions of the planet. Above all this volume is a tribute and recognition to the traditional knowledge, rights, skills and institutions of indigenous peoples and local communities and to their daily struggles for a balance between their immediate needs and long term well-being, founded on the sound and sustainable management of our planet's natural wealth.

From a recollection of the political and socio-cultural history of human relationships with nature, the volume moves into a more conceptual analysis of actors, entitlements, equity and co-management itself. Through a series of illuminating examples characterised by cultural and regional diversity, the authors show us the impacts, tensions, inequalities and opportunities that inhabit the field of natural resource management and bear such important consequences for the livelihoods and quality of life of rural communities. Co-management as a process is then unpacked and explored in detail, from its roots in local systems of solidarity to the unlikely and very powerful "syncretic" merging of traditional practices and modern conservation expertise. As a matter of fact, when we are lucky enough to approach sound contemporary natural resource management, this looks more and more like a jigsaw puzzle of new and old knowledge, indigenous and modern elements, practices and values of different "cultural" origin. As in all processes of cultural change, we find in it contradictions and chaotic situations and, exactly because of this, the concept and practice of adaptive management become crucial. This should be appreciated in terms of both conceptual and practical relevance, as top-down inflexible and supposedly a-political decisions have indeed past their time.

For practitioners in search of an open and flexible guide to co-management practice on the basis of lessons learned in a variety of socio-ecological settings, this volume simply has no equal. The "phases" of the process— organising, negotiating, implementing agreements and learning by doing— as well as the agreements and organisations they usually end up developing, are described and appreciated through a wealth of examples, tools and sound advice. The authors have obvious-

ly in mind the real world, where nothing is univocal and fixed and where complications abound as well as unexpected opportunities. The product is a creative tension between realities and visions, what is and what could be, especially in response to external forces and the continual demographic, social, economic and cultural changes that affect both local communities and other actors, and natural resources. If anything, one could fault the authors for being too positive, for compelling us to believe that, even in the worst possible situation, change is possible. But this may be more a consequence of the invigorating feeling that the reader carries away from the reading than of the content of the volume in itself. Examples of problems and failures, in fact, abound, and they are candidly recounted....

It is on the basis of a world perceived in a state of evolution and creative tension that the political proposal for co-management illustrated in this volume— because this is what it is— becomes most compelling. Co-management can involve the gradual harmonising, balancing and adjustment of the interests, aspirations and capacities of a variety of actors both within rural communities and in the world at large. The lamp-posts are intelligence, care and equity— the exact opposite of situations in which the stronger forces impose their will on the weaker ones without regard to understandings, results or even meaning, let alone sustainability. The practices that are here described to make a difference are a careful assessment of issues, dialogue, negotiation, the active mediation of conflicts and the nurturing of joint learning. But we would be wrong if we would think that this applies only to specific contexts where local actors are concerned, let us say, with a specific forest, a pastoral landscape, a rare species of wildlife or a rich coastal fishery. "Sharing power" makes a compelling case that continuous engagement of actors and learning must extend to the policy arena, beyond the command and control operations of policy specialists and non-participatory elected leaders.

"Sharing Power" is an important contribution to environmental thinking and reflection, at a time of great political and economic challenges throughout the world. It invites us to, and equips us for, a dialogue among different cultures, being those of neighbours or of distant actors, in a respectful and equitable search for new forms of natural resource management. I do not advise you to read this volume cover-to-cover— although you may want to!— but I definitely advise you to go through it, be inspired to understand what it contains, and keep it on your desktop. You will find yourself consulting it over and over again when you need inspiration and practical help about more cooperative ways of managing natural resources.

Juan Mayr Maldonado

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PREFACE & ACKNOWLEDGEMENTS

This volume had a long gestation. It was conceived in the first half of the 1990s, at a time when the social innovations introduced by the 1992 Earth Summit of Rio were timidly percolating amidst the conservation community. A large part of such community, actually, was still openly weary of participatory processes, let alone co-management settings. Discussing issues of equity and power-sharing in conservation was an uphill job, and social advocacy was barely tolerated. The heart of conservation institutions and resources remained solidly in the hands of conservation businessmen, agency bureaucrats and biological scientists.

It was in this context that Grazia and Michel, at the time staff of the World Conservation Union (IUCN) and the World Wide Fund for Nature (WWF International),[1] decided to gather experiences in collaborative management (CM) of natural resources and derive from those some concrete lessons for action. They felt that unspecific advocacy about "community participation" was not sufficient and potentially even damaging. At the same time, the promises as well as the limitations of integrated conservation and development programmes (ICDPs) were becoming apparent, as was the need to utilise more specific methods and tools to engage a variety of social actors in conservation. Crucial issues were not only "participation" (how can people be effectively engaged in conservation?) but also the meeting of local needs in the areas to be conserved, and how to do so in a way that is sustainable in the long term.[2] Interestingly, community empowerment, social justice and human rights, which were the origin and essence of those concerns, could barely be mentioned in an open way. Such terms were not well received in conservation organisations and speaking them was a sure way to raise a backlash.

...unspecific advocacy about "community participation" was not sufficient and potentially even damaging.

The first step towards this volume was a questionnaire which was sent, in three languages, to hundreds of field practitioners of both organisations. The inquiry was about the kind of information and tools sought by IUCN and WWF field practitioners. What would practically help them in their tasks, when dealing with social concerns in conservation? It was also about the experiences and lessons they wished to pass on and share with others. In the meantime, the IUCN was heading towards its first World Conservation Congress, in Montreal in 1996. In the preparatory process, about fifty IUCN members joined efforts to draft and table a Resolution on Collaborative Management for Conservation, which was then approved by the Congress.[3] As part of this, ideas, case examples and reflections on CM were gathered, some of which in the form of papers to be presented

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[1] Grazia was then Head of the IUCN Social Policy Programme, and Michel was Head of the Biodiversity, Protected Areas and Species Conservation Policy Programme at WWF International.

[2] These are dealt with at length in Pimbert and Pretty,1995; Borrini-Feyerabend, 1997; Ghimire and Pimbert, 1997.

[3] IUCN Resolution 1.42 on Collaborative Management for Conservation, 1st World Conservation Congress, Montreal, 1996.

[Concepts of] community empowerment, social justice and human rights... were not well received in conservation organisations....

at the Congress in a dedicated workshop that attracted hundreds of participants. A Panel of IUCN Commission members interested in collaborative management was also created at the Congress, with Fikret Berkes and Yves serving as its first Co-chairs. Ashish was also importantly involved in the Congress workshop and in the CM Panel. The replies to the questionnaire, the papers, the relevant correspondence and the results of literature searches carried out also with the help of members of the IUCN Commission on Environmental, Economic and Social Policy (CEESP) working as consultants, volunteers and interns were consolidated in a small CM resource centre at the IUCN Headquarters.

Very many people played an important role in gathering and consolidating information and encouraging work in the early stages described above. Among them we would like to thank in particular Fikret Berkes, Christian Erni, Don Gilmour, Pascal Girot, Magnus Ngoile, Hanna Jaireth, Vicky Pattemore and Patrizio Warren. Their early encouragement and the specific experience and insights they shared with us were extremely precious. Many others were also variously involved and we are most grateful for the important ideas and advice they provided. They include Anil Agarwal, Janis Alcorn, Ivannia Ayales, Demba Baldé, Siddarta Bajracharya, Tom Barton, Michael Beresford, Anupam Bhatia, Seema Bhatt, Jessica Brown, Michael Brown, Dianne Buchan, Claudio Carrera Maretti, Monica Castelo, Michael Cernea, Carol Colfer, Gloria Davis, Alex de Sherbinin, Charles Doumenge, Gay Duke, Eduardo Fernandez, Bob Fisher, Krishna Ghimire, Lyle Glowka, Meghan Golay, Hugh Govan, Biksham Gujja, Roy Hagen, Narpat Jhoda, Kirsten Hegener, Peter Hislaire, Michael Horowitz, Chris Horrill, P. Horsey, Ruud Jansen, Sally Jeanrenaud, Andrew Inglis, Aban Kabraji, Graeme Kelleher, Elisabeth Kemf, Omar Asghar Khan, Larry Kholer, John Krijnen, Michel Kouda, Patricia Larson, Connie Lewis, Ken MacDonald, Jeff McNeely, Patricia Madrigal, Juan Mayr Maldonado, Rowan Martin, Robert Monro, Arthur Mugisha, Marshall Murphree, James Murombedzi, Jackson Mutebi, Gayl Ness, Samuel-Alain Nguiffo, Krishna Oli, Elinor Ostrom, Gonzalo Oviedo, Adrian Phillips, Mark Poffenberger, Tom Price, Ricardo Ramírez, Per Ryden, Bob Pomeroy, Darrell Posey, Mohammad Rafiq, Gabriella Richardson, Guillermo Rodríguez-Navarro, Rodney Salm, Richard Sandbrook, Madhu Sarin, Lea Scherl, Steve Selin, Andrea Simoncini, Vivienne Solis, Andrej Sovinc, Achim Steiner, Chip Temm, Petr Tengler, Anada Tiega, John Thompson, Jim Thorsell, Edgardo Tongson, Jan Teun Vissher, Joyce Wafula, Lini Wollenberg, Jacques Weber, Liz Wily, Nick Winer, Sejal Worah, Barbara Wyckoff-Baird and Marija Zupancic Vicar.

On the basis of the collected materials, Grazia, Michel and Ashish produced a draft of this volume at the end of 1997. The document was widely circulated in 1998 and the comments received were poignant and useful for the versions to come. Among those, we have the great pleasure of acknowledging the reviews by Carmen Aalbers, Anil Agarwal, Ed Barrow, Marcus Cochester, Christo Fabricious, Andrea Finger, Ian Scoones, Neena Singh, Vital Rajan and Peter Schachenmann. Grazia, Michel and Ashish set to revise the work on the basis of the received comments but the task proved more difficult than expected. Both Grazia and Michel— some say precisely because of the key interests and concerns they brought into their jobs— were no longer employed by IUCN and WWF, which rendered the book a full labour of volunteer love. More importantly, a staggering amount of relevant experiences and lessons was accumulating in the field. Co-management was literally growing under our eyes, and taking on

new connotations at every turn. The human rights dimensions of conservation, environmental entitlements, social communication, conflict management, public participation in policy development and many other subjects were being explored in detail by specific constituencies. The subject of our book was dangerously (but excitingly) enlarging....

It was then that the second phase of our work began. On the eve of the second World Conservation Congress (Amman, 2000), which reconfirmed the importance of co-management approaches for conservation,[4] Grazia, Michel, Yves and Taghi— newly elected Chair of CEESP— had a meeting in Switzerland to review the fate of the earlier work on co-management. Over a decade earlier, Taghi had been one of IUCN's earliest and strongest advocates of communities as key actors in natural resource management and conservation. With him as Chair of CEESP, they all felt more hopeful that community concerns could be incorporated in the work of the Union, and were encouraged to proceed with the book. They agreed to gather and synthesise as much new relevant material as they could, privileging field-based lessons for action over theoretical analyses. From the institutional point of view they were going to be supported by the International Institute for Environment and Development (IIED), for which Michel was then working and, as all were long-time members of CEESP, they could also take on writing as volunteers or semi-volunteers for the Commission. Eleven chapters were thus "re-conceived", and the book took its final form.

The subject of our book was dangerously (but excitingly) enlarging.

Grazia took responsibility for Chapters 1 to 6 and weaved in the contributions by Marshall Murphree, Patrizio Warren, Ricardo Ramírez and Taghi. Michel took responsibility for Chapters 7 to 9, in contact with Hanna Jaireth and Vicky Pattemore. Yves and Michel took responsibility for Chapters 10 and 11, in which they also incorporated the work originally prepared by Ashish and some more recent comments from him. Taghi and Yves, and then Grazia, revised and harmonised the whole. The work for the book proceeded slowly— not least because all the authors were engaged in much CM-related work, in policy and in practice. It was punctuated by a handful of meetings, but most communication proceeded via e-mail. All throughout, invaluable stirring and inspiration were provided by many colleagues through the "sounding board" of the Collaborative Management Working Group (CMWG) of CEESP— a body now encompassing nearly 400 people from over 40 countries dedicated to learning, mutual support and action on co-management.[5]

Among the CMWG members and other colleagues we have consulted and worked with in these last years, we would like to acknowledge with gratitude Cherif Abdellatif, Yéyé Abdoulaye, Mady Abdhoulanzis, Peter Abrams, Abdul Rahman Al Eryani, Janis Alcorn, Inayat Ali, Will Allen, Miguel Altieri, Thora Amend, Bruce Amos, Alejandro Argumedo, Karin Augustat, Didier Babin, Ian Baird, Richard Baker, Tariq Banuri, Chip Barber, Solon Barraclough, Ed Barrow, Christian Barthod, Marco Bassi, Seema Bhatt, Eléonore Béchaux, M'hamed Bendanoon, Judithe Bizot, Tom Blomley, Luigi Boitani, Gianfranco Bologna, Juan Bottasso, Mohamed Nagy Ould Bouceif, Steve Brechin, Dan Brockington, Pete Brosius, Jessica Brown, Michael Brown, Nicole Brown, Martin Bush, Ralph Buss, David Butz, Pierre Campredon, Christian Castellanet, Claudio Carrera Maretti, Michael Cernea, Moreno Chiovoloni, Christian Chatelain, Dawn Chatty, Purna Chhetri, Brian Child, Maurilio Cipparone, Marcus Colchester, Steve Collins,

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[4] IUCN Resolution 2.15 on Collaborative Management for Conservation Programme, 2nd World Conservation Congress, Amman, October 2000.

[5] See http://www.iucn.org/themes/ceesp/Wkg_grp/CMWG/CMWG.htm

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Taghi Farvar,
Ashish Kothari,
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INTRODUCTION

The natural and social calamities pass away. Whole populations are periodically reduced to misery and starvation: the very springs of life are crushed out of millions of men, reduced to city paupers; the understanding and the feelings of the millions are vitiated by the teachings worked out in the interest of the few. All this is certainly part of our existence. But the nucleus of mutual support institutions, habits and customs remains alive with the millions; it keeps them together.... In the practice of mutual aid, which we can retrace to the earliest beginning of evolution, we see the origins of our ethical conceptions; and in the progress of man, mutual support— not mutual struggle— has had the leading part. In its wide extension, even at the present time, we find the best guarantee of a still loftier evolution of our race.

— Petr Kropotkin, 1902

Nothing truly valuable can be achieved except by the unselfish cooperation of many individuals.

— Albert Einstein, 1940

The history of mutual aid and collective action in social and ecological affairs is as ancient as human life. For many thousands of years, human communities established their livelihoods by gathering, hunting and fishing in a collective fashion. Human collaboration within small groups was essential to recognise edible and medicinal plants as well as to overpower animals, build shelter or find and carry water. Through time, "communities" gained their livelihoods by dealing together with the natural threats and opportunities in their surroundings, by developing productive technologies and practices and by producing knowledge and culture in the same process. A feature of most traditional human societies throughout the world is to retain under common property— thus common care and "management"— pasture, forests, fisheries, wildlife and wetlands, including lakes and rivers. Such communal resources are subjected to a variety of rules and regulations devised by the communities themselves, usually embedded in institutions that prove their worth through centuries of trial and errors. For the distant past much of this is inferred from indirect data, but in time closer to us historical evidence abounds of human associations for various livelihood enterprises. In *Mutual Aid*, first published in 1902, Petr Kropotkin draws from the history of guilds and unions in Europe, from travel and colonial accounts

...the more difficult the natural environment, the more necessary is cooperation among the members of a species to be able to survive and prosper.

outside Europe, from the experience of village communities everywhere and even from the biological realm at large, to show how collaboration and mutual support are at the heart of whatever makes our species successful. As a biologist, he stressed that, the more difficult the natural environment, the more necessary is cooperation among the members of a species to be able to survive and prosper.

Negotiated agreements on the roles, rights and responsibilities of different actors in a common enterprise are at the heart of the forms of collaboration described by Kropotkin and celebrated by some of the most imaginative and engaged members of the human race. We have been moved and inspired by the immense richness of the human experience that stirred these insights, and brought to explore contemporary forms of group collaboration and lessons learned along the way. This volume is the result of our efforts in bringing together accounts and reflections on a variety of partnerships for the management of natural resources in different social and ecological contexts, based on both our own experiences and the very rich experience of others. The volume has inevitable limitations and we are aware that we have just touched upon the wealth of existing relevant experiences and insights. We still hope, however, to have provided a stepping stone towards a better understanding of co-management (CM) of natural resources (NR) for conservation, livelihoods, and development purposes.

Social organisation for the management of natural resources is a fundamental attribute of human communities. Not all social responses to resource management challenges, however, achieve appropriate or effective results. Violent conflicts, extreme inequities in access to natural resources, instances of people scrambling for resources in open access situations or major development schemes delivering environmental and human tragedies too often do occur, ushering in human and environmental tragedies. What do we know about the root causes of such tragedies? What distinguishes social progress from destructive change?

...problems often arise when change is imposed by force or is hurried through, without the benefit of slow advances and testing through time. Many such changes are part of a socio-political shift of historical proportion currently well advanced throughout the world.

The analysis of the experiences collected in this volume seems to suggest that problems often arise when change is imposed by force or is hurried through, without the benefit of slow advances and testing through time. Many such changes are part of a socio-political shift of historical proportion currently well advanced throughout the world. From the early agrarian and industrial revolutions to the current dominance of the global agro-industrial-market system, peasants have been progressively reduced in relative numbers, involved in cash crop production and grown dependent on mechanised implements, oil, pesticides, fertilisers and abundant water. Nomadic pastoralists have been forced to settle and become dependent on imported feed for their animals. Hunter-gatherers have also been constrained to settle, become farmers (or "poachers") and link to market economies. The loss of power of local communities has corresponded to a rise in power of national states and private individuals and corporations. New state bureaucracies and economic enterprises, associated with monolithic views of progress and rational order, have expropriated from indigenous and local communities many of the decisions and privileges that used to be their own.[1] From the "scramble for Africa" to the top-down declaration of state jurisdiction on forests, rangelands, waters and coastal resources in Asia, from the state collectivisation of farms and natural resources in the Soviet Union to the imposition of huge-agribusiness ventures upon the common lands of Latin America, from

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[1] See the very pertinent analysis of Scott, 1998.

the forced resettlement of nomadic populations in Iran, Turkey, Central Asia and East Africa to the destruction of ancient villages to make room for obscenely anonymous apartment complexes in Rumania— rural communities[2] have been dis-empowered and, in the words of Banuri and Amalric,[3] "de-responsibilised" of taking care of much of their own environment and livelihoods. The phenomenon can be seen as part of the "great transformation" described by Karl Polanyi,[4] by which an idealised economic rationality has been slowly but steadily negating and crushing a whole range of other human and social values and areas of autonomy. Other authors emphasised the scope of this historical process of sweeping and authoritarian domestication of people and nature, highlighting how it influenced biological and cultural diversity, local (community) knowledge and skills, human well being, "common sense" and even the nature of scientific inquiry.[5]

The "great transformation" brought about a variety of consequences throughout the world, among which the fact that many customary and community-based natural resource management (NRM) systems have been overlooked, negated or simply crushed in the name of modernisation and development. Nature has become a collection of "natural resources", to be "managed" through "dismembering" and extreme biological and social simplification in the interest of producing commodities.[6] Many rural communities are no longer in charge of managing their natural resources, and, importantly, they are not "trusted" by state bureaucracies to be able to do so.[7] Their inventiveness and autonomy are brushed aside in the name of state rationality, economic development and conservation. Their viable, relatively simple to operate, modest and time-tested solutions to natural resource management problems, embedded in unique local knowledge and skills, are substituted by powerful and locally-untested solutions, based on a-local ("scientific") understanding of how nature should be managed and "conserved". While the character of rural environments changes under these forces, urban environments are also created or enormously expanded, resulting in new demands and challenges for people. Increasingly, in both rural and urban systems, success is defined in economic terms and the collateral damages in terms of human and cultural losses[8] are perceived as inevitable side effects.

Many rural communities are no longer "in charge" of managing their natural resources, and... not "trusted" by state bureaucracies to be able to do so.

Is the phenomenon unstoppable and irreversible? Should we all resign ourselves to it? But also: is the phenomenon entirely negative and destructive? Or are there also positive changes brought about by the rise of national states, private enterprises, new technologies and globalisation? As always in human phenomena, matters are not sharply defined and history presents us with a never-ending coex-

[2] We understand as "community" a human group sharing a territory and involved in different but related aspects of livelihoods— such as managing natural resources, producing knowledge and culture and developing productive technologies and practices. Communities are by no means homogenous, and harbour complex socio-political relations, with diverging and sometimes conflicting views, needs and expectations. Yet, they have major common concerns which, in healthy situations, lead towards various forms of collaboration and cohesion. Examples may be found in Ralston *et al.*, 1983; Reader, 1990; Ghai and Vivian, 1992; Pye Smith *et al.*, 1994; Western and Wright, 1994; Borrini-Feyerabend *et al.*, 2004, (in press); and in this volume.

[3] Banuri and Amalric, 1992.

[4] Polanyi, 1944.

[5] Gramsci, 1947; Goodman and Goodman, 1947; Farvar and Milton, 1972; Georgescu-Roegen, 1971; Mumford, 1971; Illich, 1973; Schumacher, 1973; Berger, 1976; Dupuy and Robert, 1976; Foucault,1977; Hyden, 1980; Merchant, 1980; Franke and Chasin, 1980; Bookchin, 1982; Bodley, 1982; Ralston *et al.*, 1983; Watts, 1983b; Jackson *et al.*, 1984; Richards, 1985; Escobar, 1985; Crosby, 1988; Lindblom, 1988; Gould, 1989; Harvey, 1989; Hacking, 1990; Appfel Marglin and Marglin, 1990; Rosaldo, 1993; Netting, 1993; Altieri, 1995; Scott, 1998; Feyerabend, 1999; Colchester, 2003.

[6] Merchant, 1980; Bookchin, 1982; Scott, 1998.

[7] This is one of the important insights masterly illustrated by Scott (1998). As a result of this active disempowering, which in some places has been going on for a long time, human communities may have become all but capable of managing their environments and/ or sharing management rights and responsibilities with others.

[8] See the lucid description by Berger (1976).

istence of tragedies and miracles of ingenuity and personal and collective strength. In this volume we refrain from interpreting or judging phenomena of historical proportions. We rather wish to point at specific examples of "values in action", instances in which people and nature found remarkable ways of organising their co-existence. Indeed, despite adverse forces of great proportions, local communities are still able to discern and adjust, they can merge their unique heritage with innovations and new structural conditions, they can "re-organise" themselves, re-conquer memories, skills, information, rights. These communities adapt themselves, develop new capacities and weave political and economic alliances with new actors, including state governments, international organisations, individual and corporate businesses. New and at times experimental partnerships are central to these phenomena, involving extensive dialogue and action-research and the recognition, understanding and reconciliation of a multiplicity of capacities and comparative advantages. Traditional knowledge and skills, in particular, are set to work within changed environmental, political and social contexts, including "science-based" innovations. Instead of witnessing the death of local communities in natural resource management we witness at times the birth of many forms of social "syncretism" and synergy— the wise merging of features from different origins. This is at the heart of what we understand as "co-management" in this volume— a process of collective understanding and action by which human communities and other social actors manage natural resources and ecosystems *together*, drawing from everyone's unique strengths, vantage points and capacities.

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This said, we should also stress that our understanding of co-management is not restricted to state-community partnerships. Co-management approaches can be and are applied among and within communities as well. For indigenous peoples in particular, co-management processes, albeit rarely described with this name, are part of traditional ways of relating with common property natural resources and with community conserved areas.[9] In such indigenous versions of co-management, the national state is often not present as a partner because it is perceived as non-legitimate or irrelevant or antithetical to indigenous peoples' self-determination. In this volume, therefore, we do not necessarily refer to co-management as a state-led or even a state-involving process. While we include such cases, we also bring in many instances of cooperative decision-making concerning natural resources held in common property regimes among two or more communities, or between communities and private, NGO, or international actors, or including only interest groups within a local community.

We believe our "open" understanding of the co-management concept is helpful to situate it in a historical context and to avoid using it in a restrictive sense, which is a real possibility as the term, along with the term "partnership", is becoming accepted jargon and even a buzzword. In this sense, we wish to contribute to an empowering adoption of the approach by national decision-makers and, most of all, by indigenous and local communities and civil society at large. We wish this volume to contribute to disseminating valuable experiences, enhancing reflection and capacities, and promoting inter-cultural and international comparison and cross-fertilisation. As "explicit" partnerships to manage natural resources are a growing phenomenon throughout the world[10] and as critical environmental and social situations clamour for action, we believe that our attempt to systematise the co-management concept and practice has a chance to be useful.

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[9] Posey, 1999; Kothari, 2004; Borrini-Feyerabend *et al.*, 2004 (in press).
[10] But they are not a new phenomenon, as described in Chapter 1.

An idea whose time has come

Several reasons help to explain the current interest in the co-management of natural resources for both conservation and livelihood purposes. Among those:

1. **Extensive conflicts in the development and conservation arena.** Top down, imposed development and conservation schemes all too often entail huge social and ecological costs, especially in areas where people are directly dependent on natural resources for their livelihoods. For instance, a growing body of evidence indicates that many state-based development and conservation projects have brought serious adverse effects on the food security and livelihoods of people living in and around major infrastructures or protected areas and wildlife management schemes.[11] Local communities have faced loss of land and restrictions in their use of common property resources for food gathering, harvest of medicinal plants, grazing, fishing, hunting, collection of wood and other wild products from forests, wetlands and pastoral lands. Development enterprises, infrastructures or national parks have denied local resource rights, turning local people overnight from hunters, pastoralists, sea nomads and cultivators into "poachers", "invaders" and "squatters".[12] Resettlement schemes for indigenous peoples removed from areas earmarked for development or conservation have had devastating consequences.[13] No wonder, there are serious conflicts between indigenous and local communities and development managers or park authorities. Such conflicts are burning in many contexts, too often side by side precious natural resources, biodiversity and ecosystem services that should be carefully used and conserved. Co-management processes often provide answers to these conflicts or at least a forum where different views can be vented and confronted, and where conciliation can be attempted.

2. **Increased complexity and uncertainty of ecosystem and natural resource management questions.** Policy processes and resource management regimes involve making decisions under conditions of uncertainty, being largely unable to predict the effects of different courses of action. Indeed, many past and current conflicts in development and conservation have come from the failure of management agencies to accept and embrace this complexity and this uncertainty even in "simple" systems. The science of parts (reductionism), as opposed to knowledge and ways of knowing that integrate the parts, has largely failed to come to terms with dynamic complexity[14] and variation within and among ecosystems. Global environmental change and human-made risks, such as climate change or interactions among genetically modified organisms (GMOs) and the environment at large, exacerbate these variations and uncertainties.[15] In addition, the perceptions of both problems and solutions are value laden and differ enormously within society,[16] and "experts" seem no longer better equipped than any other groups to decide on questions of values and interests. All of the above emphasises the need for flexible responses and adaptive management of natural resources, which can best be

At the heart of what we understand as "co-management" ...[is] a process of collective understanding and action by which human communities and other social actors manage natural resources and ecosystems together, drawing from everyone's unique strengths, vantage points and capacities.

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[11] Cernea, 1985; Kothari *et al.*, 1989; West and Brechin, 1991; Wells and Brandon, 1992; IIED, 1995; Pimbert and Pretty, 1995; Ghimire and Pimbert, 1997.

[12] McIvor, 1997; Koch, 1997; Colchester, 2003.

[13] Cernea and Schmidt-Soltau, 2003.

[14] Variation in response to the same change is enormous in both organisms and biological systems, with daily, seasonal and longer term modifications apparent from the broad landscape to the small cultivated plot. See Gunderson *et al.*, 1995; Holling *et al.*, 1998.

[15] The conventional approaches of risk management and cost benefit analysis become more apparently inadequate when "we don't know what we don't know" and where "we don't know the probabilities of possible outcomes".

[16] Pimbert and Wakeford, 2001a.

grounded on customary practices and participatory learning and action.[17] In facing these challenges, co-management processes and flexible institutional agreements are increasingly sought to assure new forms of dialogue and participatory decision-making, responsive to the particular contexts.[18]

3. **Globalisation and decentralisation phenomena.** Local resource users and their communities are increasingly caught in the contradictions of global governance systems. Whilst some trends towards devolution and decentralisation foster local awareness and empowerment processes, the global rules of the World Trade Organisation (WTO), the agreements of the Trade Related Intellectual Property Rights (TRIPs) such as for patents on seeds and medicinal plants, the concentration of economic power in the hands of trans-national corporations (TNCs) and finance markets, and the current widespread privatisation trends related to land, water, forests and public services add to the undermining of community control over natural resources, knowledge and institutions.[19] In the conservation arena, while protected areas demand high management investments by governments and sacrifices by local communities, the majority of benefits accrue to national and international businesses active in tourism, hunting, pharmaceuticals or water-hungry agriculture and industrial production. National states are challenged from both "above", by trans-national corporations and elements of state power acting on their behalf, and below, by local communities. Co-management attempts provide a promising, if uncertain, balancing act among contrasting needs, for instance by setting up "contracts", "agreements" and "partnerships" with various social actors, including local communities, corporations and non governmental organisations (NGOs). Such attempts "legitimate" and guarantee the new roles assumed by the new actors and increasingly blur the conventional divide between the local and global.

4. **Emerging interest in good governance principles and processes.** Governance in general and governance of natural resources in particular are gaining attention in the national and international debates on conservation. Experiences in the governance of natural resources have even proven to be good vehicles for the promotion of local governance in other spheres of social and economic development. On the one hand, governments seek to implement their policies and programmes in so-called cost-effective ways and look for social actors with whom they can share their burdens of responsibility. On the other, civil society demands more influence on decisions affecting their lives and, as appropriate, the redressing of past injustices. Indigenous peoples and local community organisations, non-governmental organisations with environment and development goals, trans-national corporations, bodies of international and national law, scientific and local expert groups and professional associations— all clamour for attention and are actively engaged in influencing policies. Among their results are the increased recognition of the legal basis for the rights of indigenous peoples and the demand for effective access to information and the representation of civil society interests in policy and decision-making. In this dynamic situation, conventional governance structures and roles, based on a centralised and hierarchical authority, appear increasingly inadequate. More flexible institutional arrangements, characterised by interdependence among the actors and shared authority, are being tested both within

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[17] Gunderson and Holling, 2002; Berkes et al., 2003.
[18] Richards, 1985; West and Brechin, 1991; Netting, 1993; Borrini-Feyerabend, 1996; Leach and Mearns, 1996; Pimbert and Pretty, 1999; Posey, 1999; Gunderson and Holling, 2002; Berkes et al., 2003.
[19] Korten, 1995; Passet, 2000; Bertrand and Kalafatides, 2002.

national governments and between governments and society.[20] These include various forms of collaboration among local communities, government, business and other actors ("public interest partnerships") with increasing reference to the respect of human rights and the United Nations (UN) principles of good governance ("participation and voice", "accountability", "equity", "direction" and "performance")[21] as reference benchmark. In this sense, co-management can be seen as empowering for some of the social downtrodden, as it helps them find a place at the decision-making forum. Whether that is enough to overcome their problems is a very open question.

A variety of concepts and terms are used to describe partnerships for the management of natural resources. As mentioned, we will use in this volume a comprehensive rather than narrow understanding of what co-management is about, emphasising the following in particular:

1. **Collaboration as a form of self-defense.** Many indigenous peoples and local communities in a changing world need more than ever strong internal and external forms of cooperation to be able to withstand the dangers of environmental degradation and socio-cultural impoverishment.

2. **Collaboration as a response to complexity.** As a result of complex historical developments, the management of natural ecosystems and the natural resource base of livelihoods generally cut across a variety of political, administrative, cultural and social boundaries: a multiplicity of concerned social actors exists for most ecosystems and natural resource units.

3. **Collaboration for effectiveness and efficiency.** Different social actors possess complementary capacities and comparative advantages in management, which, while respecting customary and existing rights, can be profitably harnessed together.

4. **Collaboration for respect and equity.** A fair sharing of the costs and benefits of managing natural resources and ecosystems is essential for initiatives aiming at human development and conservation with equity.

5. **Collaboration through negotiation.** Most institutional arrangements among relevant actors have at their core formal and/ or informal co-management plans, agreements and organisations. Such arrangements need to be negotiated through a fair process and subsequently adjusted in a learning-by-doing mode.

6. **Collaboration as social institution.** The harnessing of complementary capacities and the fair share of the costs and benefits of managing natural resources are the natural roots of many institutional arrangements.

The aim of this volume

This book is designed to support professionals and others attempting to understand collaborative management regimes and interested in supporting them in policy and developing them in practice. The relevant understanding and lessons learned are evolving, and this book is only a stepping stone. Whilst we draw from a large variety of examples of co-management partnerships throughout the

...we wrote this volume to promote action....

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[20] Calame, 2003; Fung and Wright, 2003.
[21] UNDP, 2002; Graham et al., 2003; Hickey and Mohan, 2004 (in press).

world, there is no claim or hope to be exhaustive. We only attempt to overview relevant experiences and concerns and, from those, synthesise some key CM features, important steps in developing those and lessons learned regarding management institutions and the evolution of a favourable policy context. There is no "recipe" to develop a co-management partnership capable of fitting the variety of existing contexts and requirements. While recognising this, we wrote this volume to promote action, and thus offer a practical menu of examples, considerations to learn from, tools and reminder checklists. We hope these can be useful and inspiring. The specific co-management path, unique for every context, can only be made by the ones who will decide to walk it.

A guide to this volume

The overall structure of this volume is designed to both draw from and help support co-management practitioners in "learning by doing" in a variety of field contexts.

Towards a contextual framework

In Part I of this volume we explore natural resource management at the historical interface between traditional and "modern" societies and illustrate some complex combinations of the old and the new devised by local communities as a response to current challenges. Five case examples offer a glimpse of the complexities that abound in specific contexts, while pointing at a general pattern of generating syncretic solutions. We then discuss issues of actors, entitlements and equity in natural resource management, setting a conceptual foundation to our analysis. Various types of actors are described, with attention to the unique entitlements of indigenous peoples and local communities and why they are more akin to rightholders than stakeholders. Entitlements are social constructs that find meaning only within the society that created them. In this sense, we explore a number of arguments that have been used to claim entitlements to manage natural resources as well as their interplay with various forms of power. Pathways to move from potential to empowered and responsible actor, and to do so with specific attention to equity, are sketched and illustrated. Ways by which the actors can represent themselves in negotiation or be represented by others are discussed, as well as the development of co-management concepts through the last decades.

Part I closes with a panorama of contemporary forms of co-management in different places and cultures. Examples deal with pastoral societies, forest resources, fisheries and coastal resources, mountain environments, management of wildlife and protected areas, agriculture, agricultural research, and water management. Various common successful characteristics are highlighted but we also include cases in which co-management did not succeed in taking off. The rest of the book analyses in some more detail the constituent elements (components) of co-management: the co-management process, the co-management institution and the social context that makes them possible.

Towards effective processes

A co-management process is the series of events by which a management partnership develops and unfolds. Its key aim is to develop a consensus among the relevant partners on "what to do" about the ecosystem and natural resources at

stake. The term "consensus" is often misunderstood as to convey a sense of total satisfaction achieved by everyone involved. This is not what it represents. A consensus may just imply that a compromise has been achieved by which each party renounced some of its desires but satisfies others. The term consensus means that the phase of negotiation achieved an agreement that everyone "can live with". In Part II of this volume, we begin by describing a number of points of departure and occasions for the co-management process to start. We then explore several preparatory requirements to the negotiation phase and lessons learned during negotiation. We offer a variety of methods and tools, including several checklists. By comparing contexts and examples, we emphasise the need to bend and adjust the process steps in the light of particular situations and conditions. Broadly, such process steps accompany a variety of social actors in organising, expressing and defending their interests and concerns, negotiating the agreement, setting up one or more pluralist management organisations, and learning by doing while implementing their agreement.

These steps are mostly valid for modern and formal contexts and possibly less so for other contexts, where co-management can be practiced in a variety of culture-specific ways (for instance, without developing a written agreement). In the latter cases the process we outline may not be entirely applicable or some of the steps may merge together. In all, no general procedure is applicable to all cases, but we can still examine a number of important experience-based recommendations. Regardless of context, a co-management process is rarely entirely smooth, often complex and lengthy, and sometimes arduous. It may involve changes of plans, surprises, contradictory information and the need to retrace one's own path and re-iterate a number of steps.

Towards effective institutions
The co-management agreement and organisations negotiated among the parties spell out the consensus reached through the co-management process and are, basically, as good as the process that generated them. In general, the co-management agreement includes a management plan but also accords or initiatives that do not immediately and directly relate to natural resources but complement the plan by creating the conditions that make sound management possible. It may consist of oral understandings or written documents, including project contracts, letters of intent, local by-laws, etc. The co-management plan, whether written or non-written, usually defines the essential management elements for the relevant area and natural resources, including objectives, priorities, expected results, the recognised relevant actors, their functions, responsibilities, entitlement, etc. The agreement often foresees the setting up of one or more co-management organisations,[22] i.e., multi-party bodies with defined functions in the management setting (e.g., an advisory council, a management board, an executive secretariat) usually including the key relevant actors at stake.

The co-management agreement and organisations... are, basically, as good as the process that generated them.

Together, the co-management plan and complementary accords represent the overall efforts of the parties to fairly share the relevant management functions, entitlements and responsibilities, and thereby create a co-management institution. And yet, a real institution is more than the sum of its parts. An institution includes expectations and routine reflexes (in particular the sense of shared responsibility in managing natural resources), social norms (such as the habit of discussing decisions with various relevant actors, and accepting that all points of

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[22] We understand as organisations "groups of individuals or customary social groups bound by a common purpose to achieve objectives". See also North (1990).

view are valuable) and the use of specific terms and concepts in everyday life (such as co-management, but also entitlements, equity, linking of benefits and responsibilities, seeking good governance in resource management). Agreeing on a co-management plan and setting up a pluralist management board are crucial but not sufficient steps towards institutionalising a co-management regime. This will be achieved only when, besides and beyond rules and organisations, behaviours and ideas become spontaneously pluralist and respectful of a variety of entitlements and concerns in society. For this to be achieved, one of the crucial ingredients of a social institution is time. Only a day-by-day experience through time can give people the sense of normality and the confidence associated with a spontaneous, acquired behaviour and the associated social values. Other essential ingredients are the stability and resilience of the rules and organisations, which need to merge into normal life.

The forms and functioning of co-management agreements and organisations are examined in Part III of this volume, along with the dynamics of institutionalising co-management. We offer several examples of co-management agreements and organisations and discuss what makes them effective and sustainable. We then explore the experience of social actors engaged in "learning by doing" as part of co-management institutions.

Towards enabling policies

A social context favourable to co-management allows the co-management process to take place and fosters the development of co-management institutions. In some cases, key features are specific legislation and policy, while in others political and economic conditions are determining elements. No social pre-condition is always and absolutely necessary for effective co-management regimes, which are largely the products of the wider environment of which they are parts, but can also contribute to shaping and reforming that environment. In other words, practice can be ahead of policy, and co-management processes can have significant impacts on policy environments. In some countries, context-specific changes in natural resource governance towards increased participation and empowerment have even inspired and informed broader processes of decentralisation and democratisation.

Part IV of this volume is concerned with the policy contents and instruments helpful to make co-management work. We focus on the types and content of enabling policies and institutions and seek to address the real problems encountered by policy-makers, managers and social actors. We discuss how a supportive and coherent policy environment can comprise elements at various levels, from the specific deeds of local level bureaucrats and leaders to the founding principles of national constitutions and the carefully crafted wordings of global conventions. International and national policies that enable collaborative approaches to natural resource management and sustainable development are described, and the diversity of possible pathways is emphasized. Far from delivering standardised recommendations, we stress that policies and institutions need to adapt to local and national contexts, although possibly on the basis of an in-depth analysis of what has worked or failed elsewhere. We affirm the importance of local history in co-management processes, and stay away from standardised prescriptions and a "one-size-fits-all" approach.

In the final chapter of Part IV we discuss the policy-making process and specific

ways to change and improve it with an emphasis on participatory democracy, civil society deliberation and mechanisms for social inclusion. In any given society it is important to ask whose perspectives, knowledge and aspirations are embedded in policies, and whose are excluded. Recognising that policies usually reflect and reinforce the interests of the powerful, we describe some of the methods and approaches that foster greater inclusion and democratic pluralism in policy making. After highlighting ways of strengthening civil society, we reflect on key challenges for deepening participatory governance of both natural resources and the broader conditions of social life.

Finally, in the Concluding Remarks, we draw from our own field experience to offer the reader our personal observations and heartfelt commentary.

Part I.   TOWARDS A CONTEXTUAL FRAMEWORK

Chapter1. MANAGING NATURAL RESOURCES: A STRUGGLE BETWEEN POLITICS AND CULTURE

1.1 From local livelihood strategies to global agro-industrial markets

Filder is at work in the family's *shamba*. She is harvesting cassava today, and worrying about the disease that seems to have attacked so many of the new plants. Wondering what she could do to prevent further spreading, she resolves to discuss the problems with some of her village friends later in the day. In her mother's *shamba* on the outskirts of Kampala, cassava still grows well. Perhaps she could walk there, one of these days, and get some of her mother's cuttings to try in her own fields.

The new portable machine has been set under a shack on the side of the grazing fields and Tobias is gathering the cows for milking. The machine could easily service many more cows than he has, but his quota for the year is already filled. Fortunately, the farmers' political lobby in Switzerland is very strong. Tobias and colleagues just celebrated their most recent victory against a motion to lower agricultural subsidies in the country. With subsidies at the current level, twenty cows are enough to gain an excellent income.

Erika has just survived one of the two annual meetings of the Consultative Council of the Protected Areas Authority of which she is in charge. She is exhausted but satisfied. The discussion was lively and the people had so much to say. The new local administrators seemed not entirely at ease, but the representative of the cattle owners and the one of the environmentalists were extremely vocal and everyone now clearly knows where *they* stand. She goes back in her mind to the pictures of the degraded areas she showed in the afternoon, against the backdrop of the whitest peaks and one of the most untouched old-growth forests in Romania. These were impressive images and she is sure they will be discussed by the working group in charge of developing a draft management plan in their forthcoming meeting, just a week from now.

The *minga*, a weekly day of communal work, has just ended. Colourful people scatter back home on the chequered green and brown landscape of the Andean hills. Rosario and twenty other people representing all the village households gathered in the morning to plant lentils and oats in the plot of hard soil they are all recuperating together. For some months they moved the earth and fertilised it with animal manure, and are now halfway into the process. Once the oat and lentils are harvested, they will mix the remains into the soil, and add some more manure. In the next growing season they will be able to plant maize and potatoes. They will finally have managed to add some productive land to the meagre resources of their community.

This is one of the most important deals of Mark's stockbroker career in New York. He puts down the phone having reached an agreement that will change the price of cocoa for some time, and his client will profit from it. The new price will eventually encourage more people to produce and process cocoa, and the supply may rise too much in a not-so-distant future. This is not his immediate concern. He just needs to call his client and announce the good news of the deal.

For some [natural resource managers], the interaction with natural resources and the environment is a direct and intimate affair.... For others, it is an acquired and rather distant power....

Fatima had just gathered the yews and she-goats within the stone enclosure. As she milks the animals, she thinks about the quality of grass in the pasture. The nomadic pastoral elders are about to meet and decide the date, length, itinerary and size of the migrating herd for the entire Qashqai sub-tribe, one of the largest tribes in Iran. Some months ago she and several other women collected a good quantity of quality grass seeds. Tomorrow they will place them in perforated goatskins, and append those to the neck of the lead goat. As the animals roam, the seeds will come out gradually and will be ploughed under and fertilised by the marching flocks. The rangeland will improve after the next rains and better quality pasture will be available on their return from the summering grounds.

What do Erika and Filder, Fatima and Tobias, Mark and Rosario have in common? Not much, seemingly. Yet, the daily work and decisions of all of them impact upon the natural environment. They are all "natural resource managers".

For some of them, the interaction with natural resources and the environment is a direct and intimate affair. Learned in the household and the community, it is an integral part of what makes life normal, convivial and safe, what makes them a member of a group and a culture. For others it is an acquired and rather distant power, mediated by technology, sophisticated information systems and big money.[1] Still for others, in rapidly growing numbers in the urban sprawls of the

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[1] We do not wish to express judgments here on the relative merits of one or the other type of interaction, but some cultural critics and environmentalists do, at times very powerfully. See, for instance, Wes *et al.*, 1983; and Berry, 1990.

world, that interaction is both distant and relatively uninformed. Many of us eat food we have not grown, consume electricity unaware that it comes from burning fossil fuels or from nuclear power plants, use and pollute water without considering that we are subtracting it from environmental functions with no known alternative.

For the vast majority of time in which our species roamed the planet, the interaction between humans and the environment has been of the first kind. Early groups of *Homo sapiens* may have impacted upon the environment in a substantial manner (mostly through the use of fire)[2], but were also in the front-line to see and feel the results of their own action. More recently, modern technology and the globalisation of the economy allowed for some on the planet to have an interaction with natural resources that is at the same time very powerful and very remote. This is a unique characteristic of modern times, built up in recent millennia through social diversification, the diffusion of travelling and exchanges, the intensification of agricultural and industrial production and the progressively imposed domination of the market economy.[3] Below we will discuss, on the basis of field examples, how such intimate and remote interactions with the environment co-exist today, and how they clash or integrate with one another. To arrive at that, however, we will start from some general considerations.

[Many cultural differences can be interpreted in the light of specific] environmental factors, such as landscape, climate, water availability, type of soil, and the existing flora [and] fauna....

A human culture is a set of institutions, practices, behaviours, technologies, skills, knowledge, beliefs and values proper to a human community. As such, a human culture is usually received, lived, refined, and reproduced at any given moment in history. In traditional societies, many of the features proper to a culture can be interpreted primarily as a response to the specific natural environment where they need to gain their livelihood. Much of what differentiates Ugandan peasants from Mongolian herders, French wine makers, or Japanese fisher-folks can be traced back to environmental factors such as landscape, climate, water availability, type of soil and the existing flora, fauna and mineral wealth. By no means are these the only determinants of the cultures that developed in their midst, but they provided the crucial set of external conditions around which different cultures developed their characterising features. Among those features are the organisations, rules, practices, means, knowledge and values allowing communities to exploit and conserve their natural resources. We will refer to these as "natural resource management (NRM) systems". Another term used to represent the set of conditions that regulate the reproduction and use of natural resources is "NRM institutions". In this work we will use the term "institutions" with reference to NRM systems strongly characterised by social rules and organisations.

An NRM system regulates the interplay between human activities and the natural environment. Its major outputs include:
- human survival and the satisfaction of economic needs through productive activities, such as hunting, fishing, gathering, agriculture, animal raising, timber production and mining;
- the transformation of portions of the natural environment into a domesticated environment, more suited to being exploited (*e.g.*, clearing of agricultural land, irrigation, management of grazing land and forests);
- the control of natural environmental hazards (*e.g.*, preventing floods, fighting vectors of disease, distancing dangerous animals from human communities);
- the control of degradation and hazards caused by human pressure on the envi-

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[2] Simmons, 1989.
[3] See the far-looking analysis of Polanyi, 1944. See also Esteva, 1992; and Farvar and Milton, 1972.

ronment, through more or less intentional forms of conservation of biodiversity and sustainable use of natural resources.

The technological and social capabilities to exploit natural resources (in particular food resources) are a major factor in shaping the size and density of human populations.

A feature closely related to NRM systems is the social regulation of population dynamics. The technological and social capabilities to exploit natural resources (in particular food resources) are a major factor in shaping the size and density of human populations. For instance, communities featuring an NRM system based on agriculture and animal husbandry are usually larger in size and more concentrated than hunting-gathering communities. In general, an increase in human productive capability may result in an increased community size. Yet, that same increase is one of the main problems NRM systems need to face. If a population grows beyond a certain limit, the existing territory may become unable to support it. Some common solutions involve the migration of a sector of a community towards uninhabited areas and the intensification of local production by adoption or invention of newer or more effective technologies and practices.[4] Dominant neo-Malthusian theories maintain that these solutions are far from being available to all communities, and many NRM systems are today stressing their environment, at times beyond the point of recovery. More balanced analysis would show, however, that in nearly all such cases, some social, economic and political factors outside of local control are playing a dominant role. Too often, unequal terms of trade, land grabs and natural resource alienation by governments and private actors impinge on the community NRM systems and drive them to stress their resources much beyond the traditional sustainable practices.

...control over land and natural resources— in particular closure and limitation of access and use— has also been a pervasive area of social struggle.

All NRM systems include elements explicitly addressing the conservation (including wise use) of natural resources, such as knowledge of the local environment, technology and know-how. Examples of these elements are hunters' knowledge of animal behaviour and self-restraint in time of mating and growing of the offspring, regulation of grazing and fishing rights in indigenous communities, modern farmer capacity to use fertilisers, and community— or state-promoted watershed management schemes.

Many conservation features embedded in NRM systems, however, are not explicitly meant for the purpose. Rather, they are embedded in other components of a culture (social organisation, magic and religious beliefs, prevailing values) but have a significant impact on the interaction between a human community and the environment. For instance, a religious taboo preventing hunting during the breeding season, on the surface not inspired by a preoccupation for the conservation of game, may still be an effective means to avoid over-hunting and over-fishing. A rule establishing distribution of the camel herd among the children of a Bedouin head of household may be meant to ensure a fair share of wealth among the community, but could also be useful to avoid unsustainable grazing in given locations. The belief that land is a "gift from God" is a religious sentiment, but it may also motivate farmers to practice sound land husbandry. A sweeping land reform may be a political move to pacify the rural and urban poor, but may also have important consequences on the type and intensity of agricultural practices.

...a religious taboo preventing hunting during the breeding period, on the surface not inspired by a preoccupation for the conservation of game, may still be an effective means of avoiding over-hunting.

In fact, the distinction between "natural resource management" and the rest of human life may make more or less sense according to the socio-cultural point of view. Most traditional societies formed relatively closed systems in which natural resources were managed though complex interplays of reciprocities and solidarities. These systems were fully embedded into local cultures and accommodated

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[4]   Boserup, 1981.

for differences of power and roles, including decision-making, within *holistic systems* of reality and meaning. A telling example is described in Box 3.3, in Chapter 3 of this volume. In all cultures, on the other hand, one can also find some explicit social institutions directly related to the management of natural resources. These generally include:

- *inclusion/ exclusion rules* limiting *access* to natural resources to communities and individuals belonging to special groups based on kinship, residence, citizenship, economic capacity (ownership of land), personal skills or other criteria;

- *customary regulations or written laws* aimed at making individual use of resources compatible with collective interests (*e.g.*, reciprocity and solidarity customs, taxation system, "polluter pays" principles);

- *social organisations* in-charge of establishing and enforcing rules, through persuasion, negotiation, coercion, etc.

Often, such elements coalesce around specific use regimes (Box 1.1)

Box 1.1   **Natural resources, property and access regimes**
            (Adapted from Murphree, 1997a)

Natural resources are those components of nature that are being used or are estimated to have a use for people and communities. In this sense, what is a "resource" is culturally and technologically determined. Cultures shape demand: until they create a use for it, a resource remains latent. Similarly, the development of technology can promote new uses and thus discover new resources (*e.g.*, oil and natural gas). Demand and scarcity– perceived or actual, present or future– are the complementary and primary incentives to regulate resource use, and they are usually present side by side with the management and use regulations that characterise a society.

Property, or ownership, is the faculty of disposing of certain resources. Contrary to common interpretations of the term, however, ownership is never absolute. It is, rather, a set of entitlements to use a territory or set of natural resources with some limitations— different in different social settings— regarding the entitlements of others. Entitlements of longer duration ("tenure") and subject to fewer conditions are obviously stronger than others. The legitimacy and conditions of resource entitlements arise from a variety of social factors, including formal legislation, cultural norms, kinship, and socio-economic interaction. These multiple sources explain the frequent discrepancy between the *de jure* and *de facto* entitlements of resource users, *i.e.*, between what is prescribed by norms and laws and what actually happens in real life. Types of property regime include:

Communal property
A common property regime under the jurisdiction of a community of users. The term "community" can be defined spatially, socially, culturally or economically. Often— although not always— it is used to refer to a residential group small enough for the sanction and pressure of peers to be significant in self-regulation. To be sustainable, communal property regimes must have a defined membership, with rules for inclusion and exclusion, and rules to regulate internal competition. In other words, they must have the institutional means to ensure that the collective good is not eroded by particular interests.
Communal land property in peasant and pastoral nomadic societies and the kinship-based property of a well among dry land herders are examples in point. Common property has been the predominant form of land tenure in traditional societies.

The right of using, modifying and/ or selling the concerned land and resources according to the will and interests of the private (individual or corporate) owner. Other social actors are usually unable to have a say on the management and use of privately owned resources. Only in particular and rather extreme circumstances the neighbours or public bodies have negative rights, *i.e.*, can forbid a private owner of a piece of land to use the resources in a certain way. For instance, they may forbid a landowner to build a skyscraper, raise dangerous animals or drain a unique wetland. Private property is the prevailing form of land tenure that regulates "modern" capitalist production systems (agriculture and industry).

State property

A common property regime under the jurisdiction of the state. In contemporary societies, this type of regime pertains to a great proportion of a country's forests, rivers, wildlife and mining resources. State property is also the legal foundation of most conservation laws. The may rent, sell or assign part of its natural resource wealth to other social actors. Forestry and mining concessions are typical examples of this kind of arrangement. In many socialist or other "statist" countries common or private property has been expropriated by the.

Open-access

Open-access resources are available to any one and effectively the property of no one. This condition arises when there is no demand for, or perceived scarcity of the resource concerned, and thus no collective attempt to control its use. Frequently, open access situations are the result of ineffective property regimes, which claim authority over a resource but lack the means to fulfil the responsibilities involved. This can apply to individual, communal or state property regimes, although a *de facto* open access situation is most frequent for state-owned resources that a state has not the capacity to manage.

...a basic feature of NRM systems is their continuous striving to adapt in response to demographic, economic, social and cultural changes affecting environments and human communities.

The inclusion/ exclusion rules are a fundamental feature of NRM systems but also an important source of problems. First, rules may work only to a limited extent. There is a need to survey that they are respected, and to enforce them if necessary. Second, rules may not ensure equity and fairness in access to resources. Sooner or later, such rules will be challenged by the excluded and disadvantaged, with both overt and hidden means. Third, new social and political subjects may enter the picture... and the rules may be challenged by them! In fact, NRM systems are a political arena *par excellence*, intertwined with social clashes fuelled by economic interests, ethnic and cultural differences, ideological and religious values. How do these clashes get solved?

In many traditional societies, social values such as caste, predestination, religious authority or historical continuity have determined NRM decisions and their relative sharing of costs and benefits among individuals and groups. In others, dialogue and discussion of field-based experience (what some, today, refer to as "co-management") were widely and effectively practiced. In most cases, culture-based relationships of solidarity and reciprocity, the prevalence of communal property regimes and the collective building of local knowledge and skills through extended experience in managing the resources, succeeded in producing cohesive and sustainable systems. But control over land and natural resources— in particular closure and limitation of access and use— has also been a pervasive area of social struggle.

Throughout history, wars and violent conflicts have produced innumerable changes and substitutions of one group by another in the control of natural

resources. This has been mostly true between outsiders and insiders to a community, but at times also within a community, which could weaken and even split— sometimes also as a direct consequence of population expansion or accumulation of wealth. External actors, however, were the ones to intrude most often in a violent and uncompromising way. The expansion of the Roman Empire to control grain production in Northern Africa, cattle raiding among pastoralist groups in Madagascar, the recent wars in Kuwait and Iraq over oil fields, Israel's occupation of a joint Jordanian-Syrian dam site during the six-day war or the imposition of colonial rule or national government rule over community resources in countless countries are just some poignant examples. Outright violence, however, has not been the only way of gaining control over natural resources, nor has always succeeded. In many instances, the "weapons of the weak" included powerful non-overt means of resistance, such as hiding, deceiving, cheating, stealing, or spreading false rumours and ridicule.[5] These means allowed them to maintain access over at least part of the natural resources they needed. While this situation of conflict may be perceived as typical, there are, nonetheless, striking examples of societies based on relations of solidarity, hospitality, magnanimity and mutual aid. See Box 1.2 for one such example in south-western Sudan.

Box 1.2   **The Beni Halba Tribe**— accommodating "foreigners" in resource management
(field observations by M. Taghi Farvar, 1988-90)

Beni Halba is one of the Baggara (cattle pastoralist) tribes of South Darfur in Sudan. The tribe consists of 12 clans, one of which is composed of "foreigners"— immigrants, refugees and others who, throughout the ages, came to be welcomed and accepted locally. Rather than fighting them or depriving them of access to natural resources, the Beni Halba recognise the status of foreigners who come as refugees or through other events, and consider them as legitimate and equal partners with their original 11 clans. The chiefs of the 12 clans participate in the tribal Council and have common access to the rangelands and territories of the tribe that extend into neighbouring Chad.

The majority of NRM systems strive to be relatively efficient (*i.e.*, capable of generating good results with acceptable effort) and sustainable (*i.e.*, capable of maintaining a flow of benefits through time). Many, indeed, beautifully succeed. For instance, communal grazing has supported human livelihoods in very inhospitable natural environments generation after generation, and water-sharing systems have sustained for centuries abundant agricultural productions in dry lands. Yet, even successful natural resource management systems are not free from contradictions, inefficiencies, wastes and errors. Such imperfections make any management system much more of an experimental, trial and error process than a stable state of affairs. In fact, a basic feature of NRM systems is their continuous *striving to adapt* in response to the demographic, economic, social and cultural changes affecting all environments and human communities. For example, population growth may lead hunter-gatherers to engage in agriculture. The market economy may urge peasant communities to abandon a traditional labour sharing system. Overgrazing may lead cattle ranchers to adopt agro-forestry techniques. Concern for the preservation of biodiversity and the recreational value of wilderness, may lead a government to establish a National Park. In general, the necessary adjustments of NRM systems are done via progressive fine-tuning of interests, concerns, influences and decisions within any given community and/ or between community insiders and outsiders. This process needs to take advantage of con-

In an absolute sense, it is impossible to assess whether a management system has a positive or negative effect on the environment.

[5]   Scott, 1985.

sultation, negotiation and conflict prevention and resolution mechanisms, which in the ideal case are embedded in the relevant NRM institutions

In an absolute sense, it is impossible to assess whether a management system has a positive or negative effect on the environment. This is true because there is no "optimal" state in which a given environment could or should be. What does this mean? An ecosystem can be described by many properties, such as: capacity to sustain a certain *quantity of biodiversity* (many different species) or *quality of biodiversity* (presence of highly sensitive, endemic species), *wildness* (for instance as defined by low dependence on human interaction and extensive presence of endemic species), *productivity for given species* (including species capable of sustaining the life of human inhabitants), *resilience* after stress, *structural variety, maturity* (average *age and size of some important species*), matrix distribution of *habitats, aesthetic values,* and so on. Many of these properties can be optimised only one at a time, or even one at the expense of the other, but not all together. Thus, if we wish to maximise the total quantity of biodiversity we may do so at the cost of the quality of biodiversity, for instance the disappearance of a few species, endemic and fragile. If we opt to maximise productivity we may pay the price in terms of resilience or wildness. And so on.

The problem is compounded by the fact that each property of an ecosystem may favour some interests and actors in society, but displease others. For instance, the presence of important biodiversity in a given patch of forest may please some university researchers, herbal healers, and scouts of medicinal plants for pharmaceutical companies, but the local youth may be more interested in gaining revenue from an environment managed for the maximum production of coffee or cocoa. For some tourists it may be interesting to spend time in an unspoiled and wild tropical watershed, but for the urban planners it may be crucial to transform it into a water reservoir for energy production. Who should decide?

The question is particularly problematic as peasants and pharmaceutical companies, tourists and urban planners indeed belong to *different "communities" and cultures.* Within a self-contained society, existing institutions and cultural norms generally provide their unique answers to their internal conflicts of interests and concerns. When different cultures clash, however, matters are thorny and eminently political: management decisions end up reflecting the priorities of the most powerful parties in the controversy. Thus one option is the oligarchic or dictatorial control by the few (be they the "scientific experts", the ones with the guns, the rich, the conservationists, or the dominant elite). Another option is the pluralist/ dialogue/ democratic way. This is based on the acceptance of various entitlements in society, the gathering of the best available information on the consequences of various possible decisions and a negotiation process among the parties possessing entitlements, interests and concerns. This, at least in theory, is what collaborative management— the subject of this volume— is all about.

Livelihood systems

For most of its existence on the planet, humankind got its subsistence from hunting, fishing and gathering. Some contemporary indigenous societies (such as the Kung bushmen of the Kalahari Desert, the Eskimos, fishing communities in remote islands in the Pacific and some Aboriginal communities in Australia) still rely on this livelihood system to a significant extent.

A hunting/ fishing and gathering economy is based on the exploitation of wild natural resources in a wide territory or sea area. The people do not control the reproduction of resources but they take advantage of everything nature can offer. Low population density, diversification of the diet (according to seasons and sites), and nomadism are common characteristics of hunter-gatherer societies. They are facilitated by a flexible social organisation, which allows human groups to change size according to food availability.

Hunters-gatherers possess an impressive knowledge of animals, plants, and local ecology, and some of their practices aim at preventing overexploitation of resources and facilitating the reproduction of significant species. This expertise— together with a highly co-operative attitude within human groups— is essential for their survival. As hunting and gathering activities do not always procure enough food, food security depends on the generous sharing of whatever has been gathered and hunted among the households in the same group.

In these egalitarian societies, access and use of natural resources are not regulated by any economically significant exclusion rule. Every member of a human community has the same right to exploit the hunting and gathering territory, and the same duty to contribute through his/ her activities to the common livelihood. A wide demographic dispersion diminishes competition over natural resources. As a consequence, relationships among hunter-gatherer groups are usually peaceful. Contact with more aggressive human groups is avoided. At times, this may even involve abandoning a well-known territory and moving into a new one.

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Throughout millennia, most of the world's hunting-gathering societies have transformed themselves into societies based on agriculture and animal husbandry. This has been a complex process, which proceeded at different paces in different environments. Indigenous tropical forest societies in the Amazon, Central Africa, Asia and Papua-New Guinea represent some contemporary examples of a "transitional" situation in which hunting and gathering still play a key role.

The subsistence of tropical forest societies is based on a mix of shifting horticulture (tuber-focused), which provides the caloric basis of nutrition, and of hunting, fishing and gathering activities, which supply proteins, other qualitative elements of the diet, fuel and raw materials. This livelihood strategy is usually associated with a relatively sedentary settlement pattern. Communities live in long houses or clusters of long houses, hosting about 150-200 people each, scattered over a wide area. Each human settlement includes the dwellings, the surrounding fields, and a hunting territory.

The NRM systems of tropical forest hunters-horticulturists usually include strict territorial control through feuding and warfare (often ideologically promoted by complex, highly elaborate rituals such as headhunting or witchcraft). Such strong exclusion mechanisms limit human pressure on the forest. Often the buffer territory between one community and another becomes a *de facto* "no man's land" where game and other forest resources reproduce without human disturbance. These undisturbed territories and their own sophisti-

cated knowledge of soils, species and ecotypes allow tropical forest hunters-horticulturists to make sustainable use of the fragile tropical forest ecosystem and resources.

About eight thousand years ago, many human communities started to concentrate their productive effort on cereal and leguminous cultivation (often coupled with small-scale animal raising). This peasant way of life is practised today by innumerable rural communities, in both developing and industrial countries. In comparison with hunter-gatherers, tropical forest hunter-horticulturists, and nomadic pastoralists, peasants feature a more intensive way of exploiting the natural environment. Their technology and know-how allow them to get all they need for survival from a small but efficiently exploited territory. Furthermore, in the absence of special catastrophic events such as droughts, floods, famines or major wars, peasant societies are also able to accumulate surpluses relatively rapidly. This may provide livelihood opportunities for larger and more concentrated human communities.

Most nomadic pastoral societies ...rely on complex pasture and water tenure regulations, which usually include rangeland conservation measures. The enforcement of these measures is entrusted to tribal elders and authorities, called to act as mediators in conflicts that may arise among local groups.

Traditional peasant NRM systems focus on arable land. The arable land surrounding a settlement is usually under some form of communal property regime. Plots are periodically assigned for cultivation by village authorities such as the Councils of Elders, according to kinship and other customary rules. Often, these authorities are also in charge of conserving and enhancing productivity of common land. To this end, for instance, communities mobilise to implement erosion control and flood prevention or management works (the agricultural areas of Hadramaut in Yemen are an excellent example of this). Land husbandry regulations (such as respect of fallow time, crop rotation or terracing) are promoted and, when necessary, enforced. Similar practices are sometimes extended to the near-by forests and grazing areas, which are kept in a state of semi-cultivation similar to that advocated by modern agro-forestry practices. There the peasants collect fuel wood, fodder and other wild natural resources. Peasant cultures deliberately seek to transform the natural environment into a human-made environment. At times, this includes attempts to control unpredictable factors (such as weather and climate) through magic and religious means.

Most peasant NRM systems are not stable. For instance, under the pressure of climatic change between 9000 and 3000 years ago, groups of Central Asian farmers were forced onto horseback to experiment nomadic pastoralism, a livelihood strategy which was subsequently adopted in many arid areas of the world. Nomadic pastoral societies (such as those existing in Southwest Asia, Central Asia and North, sub-Saharan and East Africa) base their economy on the exploitation of domesticated animals, such as cattle, horses, camels or sheep and goats. Their NRM system is geared towards providing the herds with a constant supply of fodder and water and thus they adopt a mobile life-style, which allows them to track rangelands and water resources throughout the year. Seasonal displacements are often combined with cyclical migrations taking place over longer periods, which

distribute grazing pressure over a large territory. Overgrazing is prevented also by the periodic sub-division of human communities into smaller sub-units, a phenomenon that facilitates the de-stocking of the animal herd. Needless to say, the sedentarisation policies of many national governments severely disrupt this livelihood system, with resulting extreme social and environmental stress.

Nomadic pastoral communities usually possess impressive capabilities in managing the constraints and hazards of the semi-arid environment, as well as the health of their animals. Their NRM systems, however, can function only if strong social control is ensured over rangeland and water resource use. Most nomadic pastoral societies, in fact, rely on complex pasture and water tenure regulations, which usually include rangeland conservation measures. The enforcement of these measures is entrusted to tribal elders and authorities, called to act as mediators in conflicts that may arise among local groups. If negotiations are not successful, open struggles for the control of water and pasture may ensue.

Peasants who do not adopt pastoral nomadism are usually forced by population growth to expand and intensify the exploitation of arable land. This exposes them to environmental hazards and conflicts with neighbouring villages. To overcome the above limitations, some peasant communities join in confederations of rural villages ruled by a common authority, which can regulate land tenure conflicts and ensure a region-wide control over land husbandry practices. In the ancient world, this process took an especially rapid pace on the shores of the Nile, the Tigris, the Euphrates, the Indus, the Ganges and the Yellow River.

In these areas, the quality of soil was high (benefiting from river water and sediments), a fact that prompted peasants to solve land disputes locally rather than disperse (a common response in areas were natural resources are distributed over large territories). In addition, the advantages of a central authority are rather evident among the inhabitants of large river watersheds, where public works are necessary to control the floods and to make water available outside the natural edges of the alluvial plain.

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Starting from 4,000 BC, the village confederations of the south-west Asian rivers developed fairly stable "hydraulic states", which acquired their legitimacy from their capability of implementing flood-control and irrigation works. A variant of this watershed management-based form of state is the one developed by some Andean civilisations such as the Inca. Due to the specific ecological conditions of their territories, the water management activities promoted by the Inca focused on erosion control, rather than on water-stream control. A huge amount of peasant labour was mobilised to establish impressive terracing works— the still observable and functioning *andenes*— which made suitable for agriculture the steep hills of the Andes, highly prone to erosion. The hydraulic states also entailed the development of complex sets of rules for access to land and resources (especially water), legislation for water management (often encoded in religion)[6] and the rise of a centralised bureaucracy and military force in charge of enforcement and defence. In this process, individual, community, and state property were differentiated and many NRM systems were institutionalised, *i.e.*, codified in specific rules and organisations under central control. This notwithstanding, local knowledge, skills and institutions continued to be central to the water and irrigation systems, at least in the oriental world (see Box 1.3).

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[6]   See Box 3.3 Chapter 3.

> **Box 1.3   Community tapping and management of ground water**
> **(Adapted from CENESTA, 2004)**
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> The land of west and central Asia is dotted with an ingenious community-managed technology for the tapping of ground water. Known as *Karez* (Afghanistan, Iran and Chinese Turkistan), *Qanat* (Iran), *Fouggara* (North Africa), *Surangam* (India) and *Falaj* (Arabian Peninsula), this ancient technique has supplied water for irrigation and social life for millennia. Tapping into the renewable hydrological reserves of the hills and mountain, the *karez* provides abundant water for local uses under the control of local community councils and often in defiance of the central authority.
>
> Even the water of the centrally-organised irrigation systems of the great rivers (the so-called hydraulic states), once flowing in secondary and tertiary irrigation canals, has been treated the same way as the water from the ground. The *karez* system, initially transferred by the Arabs to the Spaniards, can be found today in places as far apart as the Philippines (the *sanjeras* system), Mexico and Peru.

In other areas, possibly less characterised by very important river basins, the focus of state development and expansion was more urban than rural. Confederations of peasant villages developed into states that progressively expanded their area of influence through warfare and built vast political units. This was the case for the Roman Empire (and for the development of most states in continental Europe), which made some effort to plan agricultural exploitation in selected rural areas of Italy, Southern France, Spain and Tunisia, but always perceived its expansion as a process of colonisation, based on road building, military control, collection of tributes, trade, and pillage of local resources. The Empire was in need of progressively larger agricultural harvests to sustain its densely populated towns. This was achieved through the introduction and extension of technological innovations (*e.g.*, diffusion of crops from one place to another, small-scale irrigation schemes, and progressive improvement of tools) rather than via major public works and state-controlled policies. This approach was consistent with the overwhelming importance attributed to private property in Roman laws.

An early momentous role... was played by the appropriation and partition of common lands by private individuals and, later, by the state...[this] goes under the name of "enclosure of the commons".

In more recent times, the emphasis on technological innovation and private (or corporate) land property has become an overwhelming characteristic of natural resource management in the Western world. A case in point is the transformation of most European rural inhabitants into urban proletarians or overseas settlers that took place in the last couple of centuries and was closely intertwined with the development of capitalist agriculture. Technological innovations— originally coming to Europe from the East— became very important, including the practice of crop rotation, improved crop varieties and breeds and safer storage systems. Later on, new methods such as mechanical cultivation and harvesting, more sophisticated irrigation techniques and new crops (*e.g.*, potato, tomato and maize) tended to minimise losses, decrease the need for labour and increase the overall output of the productive process for a given unit of land.

An early momentous role in this process of transformation was played by the appropriation and partition of common lands by private individuals and, later, by the state. The phenomenon, which goes under the name of "enclosure of the commons", was a by-product of the monetisation of feudal life. It started in England as early as the 13th century and reached its climax in the late 18th and early 19th centuries, when *half* of the arable land of England, previously held as

feudal commons and used by peasants to grow food crops or graze their flock, was "enclosed" and reserved for cash-oriented production (initially mostly for sheep rearing and, later, also for tillage) for the benefit of the landowner aristocracy.[7] Trees were cleared, marshes were drained, efforts were made to improve the fertility of the soil and large portions of land were offered for lease at competitive rents. Among the consequences of the enclosures was an increase in economic productivity of the land, coupled with benefits for the landlords and the ones who could afford to buy or lease land. In parallel, however, the human cost for the small peasants reached tragic proportions. In some estates nine-tenths of the peasant population were forced to leave the land and went to feed a mass of wandering poor— the labour pool for the industrial revolution to come and for the migrations to the "New World". This wrenching human dislocation proceeded at different pace throughout the European continent and did not go without rebellions. Thousands of peasants were slaughtered in the process, which was at times slowed down by the intercession of kings and the Church and even by specific legislation, but basically never stopped. As aptly described by Polanyi[8]:

"Enclosures have appropriately been called a revolution of the rich against the poor. The lords and nobles were upsetting the social order, breaking down ancient laws and customs, sometimes by means of violence, often by pressure and intimidation. They were literally robbing the poor of their share in the common, tearing down the houses which, by the hitherto unbreakable forces of custom, the poor had long regarded as theirs and their heirs'."

The "enclosure" model, centred on private property, a monetary economy and efforts to increase land productivity has not remained confined to the lands of noble aristocracy. Policies of deforestation and "enclosure" by order of the state have been the rule in European countries throughout recent centuries. In northern Italy, for instance, the new national state did not spare efforts at alienating, splitting up and privatizing the collective property of the village communities (woods, pastures, etc.), a process still in the making as late as 1927.[9] This was sooner or later accepted for the land most suited to the profit-oriented agriculture in the plains (with consequent creation of important landowning possessions), but encountered fierce resistance for the more mountainous and marginal lands of the upland communities, to the point that some special legislation was carved to allow some of them to maintain a collective, solidarity-oriented— and, incidentally, very successful— form of control over those resources.[10]

The "enclosure" model has not remained confined to Europe either. It was well applied in the colonies, with individual land conquest and appropriation as a pathway (*e.g.*, for the *haciendas* of South America[11]), but also with land appropriation by the colonial powers as an explicit effort to "scientifically manage" the so-called wastelands of India.[12] In Africa, the colonial triad of taxation, export cropping and monetisation took care of tearing apart local peasants from their kin and community affiliations and obligations in the commons, creating

The new post-colonial independent states are also extremely comfortable with the practice of "enclosures"....

...changes in natural resource management... lead towards the expansion of cultivated land at the expense of forests and wildlife habitats, the replacement of use values by market/ monetary values and the substitution of experience-based, culture-embedded and often highly productive production systems by the "science-based" decisions of merchants, bureaucrats and experts.

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[7] Heilbroner, 1968.

[8] Polanyi, 1944.

[9] On this date the Italian government passed Act No. 1766 aimed at liquidating collective property: the woods and pastures had to be handed over to the communes and the agricultural land to the farmers.

[10] Merlo *et al.*, 1989. Many of these collective property systems continue to this day (see Box 11.10 in Chapter 11).

[11] Burbach and Flynn, 1980.

[12] In 1865 the Indian government passed such legislation with the Indian Forest Act, which expropriated the individual and collective rights of local communities.

...a progressively smaller percentage of the population of a country remained employed and/ or in control of agricultural production.

the social and environmental crises at the roots of many modern famines.[13] The new post-colonial independent states are also extremely comfortable with the practice of "enclosures", which they have set to work without much re-thinking or change. In Kenya, for instance, the Registered Land Act makes the individual title deeds to prevail over all sorts of customary collective rights[14] considered contrary to modernisation. In West Africa, where cultural resistance to land privatisation is strong, the state policies have favoured state ownership or individual ownership of agricultural land also with the support of foreign aid projects.[15] State control, however, too often revealed itself a euphemism for unregulated, "open access" regimes through which both the state and others appropriate resources with no concern for sustainability. In Nepal, for instance, unqualified state control of village forests prompted a break down of traditional management practices that damaged both the resources and the people.[16] Likewise, in Iran, Syria, Jordan and other countries, the "nationalisation" of rangelands have caused their alienation from the nomadic pastoralists and the further degradation of these productive, albeit marginal, natural resources.

The last centuries have thus seen progressive changes in natural resource management all over the world. Prompted by technological innovations and the enclosure of the commons, these changes lead towards the expansion of cultivated land at the expense of forests and wildlife habitats, the replacement of use values by market/ monetary values and the substitution of experience-based, culture-embedded and often highly productive production systems by the "science-based" decisions of merchants, bureaucrats and experts. In parallel, a progressively smaller percentage of the population of a country remained employed and/ or in control of agricultural production. This "taming of nature" obtained spectacular results but also left behind degraded soil and water, polluted air, depleted resources because of excessive extraction (first among all from the sea and forests) and a sustained loss in biological diversity (habitats, species, and genetic variety).

Far from being a mere economic or environmental phenomenon, this is principally a political one. It happened first as a consequence of the expansion of the power of landed aristocracy, then through colonisation and colonial enterprises and later as a consequence of the globalisation of the world economy and the coming to dominance of one, or a few, superpowers. In this, subsistence peasants have been progressively involved in cash crop production, nomadic pastoralists have been forced to settle and hunters-gatherers have been constrained to become farmers. In other words, many existing customary and community-based rights and traditional NRM systems have been overlooked, negated or simply crushed in the name of the "higher" goals of modernisation and development.

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Today, the agro-industrial-market system is the dominant, "modern" NRM system at the global level. Every day, the international trade and market system moves huge financial resources (real and virtual) that have all too real effects on land and resource uses and practices. This process is effectively dominated by a few countries, a few international corporations and a few banking giants. Many countries are seriously dependent on foreign imports of food and other natural resources (raw or processed) and virtually exist under the patronage of the few who dominate their markets. Crucial resources, such as oil, are internationally and nationally controlled, by virtue or vice. In fact, specialisation of local production and

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[13] Watts, 1983a and 1983b.
[14] In fact, a registered land owner in Kenya is immune to challenge, no matter how the property was obtained, a fact discussed by Alden Wily and Mbaya, 2001.
[15] Franke and Chasin, 1980.
[16] See the story of a specific village masterly narrated in Kuchli, 1997.

local dependence on inputs from outside increasingly appear as the two faces of the same coin. These phenomena sprout in part voluntarily and in part imposed by a variety of socio-economic constraints. They have in part healthy results, such as increased communication and friendly relationships among people belonging to different backgrounds and histories, and in part pernicious results, such as loss of autonomy, diversity and sense of people's identity and culture.

The "collateral ecological damage" intrinsic to the taming of nature is possibly the most ominous consequence of the agro-industrial market system. Only recently, as environmental damage began to affect private and collective interests throughout the world, environmental concerns have come to the fore. Principles such as "polluter-pays" start clamouring for attention, as societies become conscious of the costs of un-regulated exploitation of natural resources. Some state-enforced conservation and sustainable use policies are slowly becoming part of the modern agro-industrial NRM system. Societies are not even close, however, to the extent and depth of change they should make in order to reverse and repair existing negative trends. In addition, too often even the positive measures remain as far from the interests and concerns of local communities as the economic motivations that force them to plant one crop as opposed to another or spray all of them with pesticides. Decisions taken in capital cities or even distant continents have a dominant influence on the interaction people have with their local environment.

To a significant extent, the history of contemporary rural development efforts can be seen as the history of the encounter— or clash— between the indigenous NRM system and the modern, agro-industrial market system.

1.2 The interface between indigenous/ local NRM systems and the modern/ a-local agro-industrial market system: five field examples

To a significant extent, the history of contemporary rural development efforts can be seen as the history of the encounter— or clash— between the indigenous NRM system and the modern, agro-industrial-market system. Such a clash originates in the profound differences existing between the two in terms of goals, values and means (see Table 1.1). It also originates in the power struggles that accompany the process, cutting across both the centre and the periphery of the world order.

Table 1.1 Agro-industrial market system and indigenous NRM systems compared

Agro-industrial market system	Indigenous NRM systems
Supra-national/ international; global, large-scale, similar everywhere	Local, relatively small-scale, many context-depending features
Focus on the generation of private, corporate or state wealth	Focus on community livelihoods
Innovative, often recently tested only outside the area in different social and environmental settings	Traditional, tested at the local level, in the relevant area, for a long time
All market-oriented	Mostly subsistence-oriented
Based on the control of energy sources (e.g., oil), mineral sources and water.	Based on the control of land, biological resources and water.
Requires sophisticated technological inputs and major capital investments, including for transportation	Based on soft technology and small capital investment, including for transportation
Tenure and use of natural resources focus on private and state property regimes, regulated by written law	Tenure and use of natural resources focus on communal property regimes, regulated by customary laws
Promoted by the state and private businesses and backed by military power	Supported by the social organisation of communities and by forms of reciprocities with other communities
Managers are economically-tied individuals, corporate or state decision-makers, dispersed and acting on a global scale	Managers are tightly knit social organisations, closely interacting with society and acting in the local sphere
Separation between exploitation and conservation	Integration of exploitation and conservation (conservation-by-use approach)
Politically and economically powerful on the large scale	Politically and economically weak on the large scale
Mostly explicit, *i.e.*, based on intentional strategies	Mostly implicit, *i.e.*, working on the basis of feedback from other cultural elements
Aims at relatively short-term, precisely measurable results	Aims at long-term sustainable livelihood (defined in a rather general sense)
Based on "objective science" aiming at the reduction of subjective decisions and uncertainties	Based on local knowledge and skills, the recognition of indeterminacies, risk-aversion behaviour and an emphasis on experimentation and adaptation
Conservation mostly understood as preservation of biodiversity and maintenance of ecosystems for aesthetic, recreational and scientific purposes	Conservation mostly understood as sustainable production to sustain livelihoods
Little religious or symbolic value attached to nature	Important religious and symbolic value attached to nature

Nothing is more illustrative of the interaction, or clash, between modern and indigenous NRM systems, than some actual field examples. Five such examples are given below.

Field example 1.1 The Shuar and the colonisation frontier[17]

The Shuar are a 40,000 people Amerindian group settled along the rugged valleys of the Upano, Morona, Santiago, Zamora and Pastaza rivers, in the Ecuadorian Amazon. Since the beginning of the last century, they have been known as *Jívaros*, a term that in Ecuadorian Spanish denotes fierce, rebel and savage people. This reputation relates to head-hunting, raiding, witchcraft feuding, and indomitable hostility against outsiders, which— after a brief period of Spanish rule between 1549 and 1599— made the Indian territory off-limits to Ecuadorians and travellers for about three hundred years.

By the beginning of the nineteenth century, the Shuar were living according to their tropical forest hunting-horticulturist pattern. They were settled in clusters of 5 – 10 long houses, scattered over an immense and de-populated region and separated by rather large "buffer" areas. Each long house corresponded to an extended family and each cluster to a local group of about 150 persons. Each group was named after a Big Man acting as a military and ritual leader in headhunting (against non-Shuar Indians) and feuding (against other Shuar settlements). They practised a subsistence economy based on manioc and plantain horticulture, pork breeding and hunting. Most technology was indigenous, with the exception of iron tools, introduced during the sixteenth century, which were bought from *mestizo* traders settled on the Western border of Indian Territory. Pigs, handicraft (*e.g.*, baskets, blowguns), forest products (*e.g.*, dart-poison), and small agricultural surplus were bartered with implements such as machetes, knifes, axes, and, after 1920, muzzle-load shotguns and powder.

In the early 1930s, gold was discovered in Western Shuar territory. Gold miners coming from the Azuay highlands used gifts, alcohol, fraud and violence to make their presence accepted. Once the gold fever was over, several miners settled in the area, established cattle ranches and started to employ Shuar labour. The Ecuadorian Army came to protect colonists' property and life, and missions were opened to pacify the *Jívaros*.

In 1950, the Ecuadorian Government, with the aim of responding to highland peasants' claim for land— without affecting landowners' interests— started to actively promote the colonisation of the area. This process reached its climax in the sixties, when a special institution— the CREA (*Centro de Reconversión Económica del Azuay, Cañar y Morona-Santiago*)—was created to build the infrastructure needed for a massive colonisation of the Shuar territory.

To resist this mounting pressure on the Western valleys, many Shuar migrated towards the inaccessible region located east of the Kutukú Mountains, where it was still possible to practice their indigenous way of life. Others, however, adapted to the new situation, seeking protection from the missionaries against colonists' abuses. They converted to Catholicism, allowed some of their sons and daughters to learn Spanish and be "civilised" in boarding schools, and started to combine indigenous slash-and-burn agriculture with cattle breeding on behalf of the church fathers. Some of them became traders and supplied the "wild Shuar" of Transkutukú with an increasing quantity and variety of western goods. This, of course, increased Eastern Shuar dependence on trading relationships with the frontier. Thus, in one way or another, all the Shuar became increasingly involved in the national market and society.

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[17] This case example has been provided by Patrizio Warren. See also Warren, 1992; and Warren, 1996.

By the mid-sixties, some "educated" Shuar started to realise that little chance was left to their people to escape this process. Based on this awareness, an ethnic organisation called the Shuar Federation was founded. Its objectives were defending indigenous land rights, ensuring that benefits of development would be made available to Shuar communities, and preserving indigenous cultural and ethnic
identity.

With these goals in mind, the Shuar Federation (supported by missionaries and international non governmental organisations – NGOs) started to promote the modernisation of indigenous society through the following strategy: registration of Shuar settlements as legally acknowledged co-operatives (called *Centros*); procurement of agricultural land titles; provision of credit and technical assistance for extensive cattle breeding; provision of bilingual education, health and transport services.

During the following twenty years, the Federation was successful in achieving its development objectives. However, by the early 1990s, it became clear that the modernisation process was spoiling the indigenous NRM system, and, eventually, was having a negative impact on the physical and human ecology of most Indian communities. Why was this happening?

Since its establishment, the Shuar Federation had decided to work *with* the existing laws and procedures. Unfortunately, these were colonisation rules, based on the assumption that there was no "Indian land" in the Amazons but only state property, which could be distributed to individuals or legally recognised groups (*i.e.*, colonisation co-operatives) in accordance with their exploitation capability. Among colonists, this policy had already made clearing the forest and opening pastures an especially popular (and inexpensive) way to get into the position to claim huge extensions of land.

By adopting the same tactics, the Shuar Federation was able to secure significant land titles to many Shuar *Centros*. This slowed down the occupation of indigenous land. Furthermore, cattle rearing helped people to create some savings, which could then be used to purchase commodities and basic services. Nonetheless, the substitution of forest cover with grassland had a major impact on bio-diversity and soil, and thus on indigenous subsistence practices. Game, forest materials (such as vines, thatching and poles), and good arable land were becoming scarce. An increasing amount of labour had to be invested in cattle raising and pasture management. Even in the eastern plains, where colonists were still few and large untouched forest areas persisted, men started lacking the time for hunting, fishing or looking for forest materials. As a result, tin roofs became less expensive than thatched roofs and nylon rope cheaper than jungle vines.

At the same time, the improvement in the standards of living, modern services and commodities were performing well in decreasing under-five mortality, which fell from 267 per thousand in 1976, to 99 per thousand in 1992. Related to this trend, the total population grew at a rate of about 4% a year. By the early 1990s, the population density was already 5.2 persons per square km of entitled land (*i.e.*, four to five times higher than before contact with the frontier), and it was expected to reach 10.6 persons per square km in 2006. Nobody in the Federation really knew whether the land would be sufficient to sustain the livelihood of all these people. For sure, however, the poor quality of most Shuar soils and the increasing land tenure conflicts occurring among families and settlements suggested that hard times might be coming.

In the late 1990s, based on the above elements and under the influence of several co-operation agencies, the Shuar Federation included environmental sustainability as a major objective in its fight for development and cultural survival. Moreover, new Ecuadorian conservation laws allowed the

Shuar Federation to negotiate their entitlements in two major national parks, in which they would be free to practice hunting, fishing and gathering in exchange for conservation works and surveillance. Currently, agro-forestry is also being promoted at the farm level and new income-generating activities based on indigenous know-how, and diversification of production are being tested. Family planning services are also being introduced, despite their poor cultural acceptability and missionary resistance.

All together, the above initiatives may be useful in improving the human ecology of the Shuar, and in preventing an environmental catastrophe. None of them will however be able to restore the demographic and ecological conditions on which the indigenous NRM system was originally based. After three centuries of strenuous resistance, the increased pressure of the national society and economy on their land brought the Shuar to adopt the particular variant of the "modern" NRM system promoted by the national government. This allowed them to survive as an ethnic group, to increase their wealth, and to get basic services, but did not prevent them from eventually clashing with the problems of demographic growth and unsustainable development.

The impact of the national economy and market on indigenous NRM strategies is not always as dramatic as in the Shuar case. Less comprehensive and abrupt changes take place when indigenous strategies are less culturally distant and can coexist with "modern" strategy with minor adjustments. Significantly enough, however, these adjustments often result in less sustainable use of natural resources. The following case, concerning a Mediterranean peasant community, provides a good example of how modernisation may spoil indigenous practices, without being able to replace them with feasible "modern" NRM solutions.

Field example 1.2 **Erosion control, indigenous know-how and economic change in Oued Sbahiya watershed**[18]

Oued Sbahiya watershed is located in Zaghouan Governorate, Northern Tunisia. It is a small catchment of 62,000 ha, featuring highly deteriorated forest and rangeland areas in the upper part, and over-exploited agricultural land in the lowlands. It hosts a population of about 1,300 Arabic-speaking peasants who originally migrated from the fertile Zaghouan plain towards this less favourable area under the pressure of early twentieth century French colonisers.

Sbahiya inhabitants practice typical subsistence Mediterranean farming: they grow cereals (wheat, oats and barley) and leguminous crops (broad beans and green peas), cultivate olive and some fruit trees. They also breed sheep and goats, and tend small kitchen gardens. Dwellings are nucleated in small hamlets, according to lineage segments known as *douars*. *Douars* own collectively the arable land surrounding the settlement. Several small parcels (as small as 0.25 ha) are however assigned for exploitation to households.

Erosion is a major problem in the ecology of Oued Sbahiya, originated by both natural factors (such as slope, climate, and soil texture) and human-made factors (including population growth, over-

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[18] This case-example has been provided by Patrizio Warren.

exploitation of agricultural land, grazing, and firewood pressure on the forests). To tackle the problem, the *Centre Régional de Développement Agricole* (CRDA) of Zaghouan started in the early 1990s to promote soil management works in the area. Bulldozers were made available to the farmers for erosion control works on their land. This intervention, however, rapidly made soil conservation authorities unpopular with the peasants. Bulldozers were simply too big to operate efficiently in the patchwork of micro-parcels owned by Sbahiya peasants. Inter-property borders could not be respected and tracks scrapped away amounts of soil which (given the parcel size) farmers perceived as significant. Passive resistance mounted against the programme, which eventually led CRDA technicians to think that Sbahiya peasants were not aware of the consequences of erosion on their farming system, nor willing to take any measure to counteract it, unless forced by authorities.

In 1996, researchers from a participatory watershed management project supported by the Food and Agriculture Organisation of the United Nations (FAO) tried to face the issue from a different prospective. In the framework of a participatory appraisal exercise, the project team visited a highly eroded area together with a group of peasants and asked them what they knew about erosion. People defined erosion as "fertile soil going away, leaving bad land behind". This was related in part to the will of *Allah*, who created the *djebels* (mountains) and the steep slope; and, in part, to the behaviour of *abdallah* (literally, "*Allah's* servant", *i.e.*, the peasant), who does not take appropriate care of his land.

The peasants were then asked to describe what could be done to avoid soil loss. They said that in the past they used to stabilise soil by constructing check-dams with stones and planting prickly pear cactuses on the gullies. They also used to build embankments made of tree branches and earth, consolidated through the plantation of fig trees, for collecting and deviating running water.

Technicians realised and agreed that these measures were sound and asked why they were abandoned. People explained that this depended on changes in their lifestyle. New needs (including agricultural inputs, household commodities, and expenses related to education and health) have made their households increasingly dependent on cash. Yet the price paid for their agricultural products is far less than the salaries that can be earned by masonry workers in the tourist areas of the coast, by wage labourers in big agricultural estates, or by migrants overseas. Moreover, city lights are attractive for youngsters. That's why most men (and some unmarried girls) migrate elsewhere in search of better chances, leaving the burden of agriculture on the shoulders of old people, women and children. In these conditions of local labour scarcity, the household economy can not anymore afford conservation works. The fields are worked as fast as possible, trying to squeeze out of them maximum yields with little concern for loss of fertility.

These considerations had a very practical immediate implication. The erosion control authorities were urged to consider the opportunity to reinvest part of the money allocated to mechanical erosion control works, to pay cash incentives to farmers willing to implement manual works in accordance with local know-how. It was also stressed that such an option would bring two additional benefits: contributing to lessening seasonal migration, and revitalising some elements of the indigenous farming system that are essential for sustainability.

The case, however, tells us more than that. It shows that current attitudes and behaviours of Sbahiya peasants towards land husbandry could not be considered independently from some embedding economic and political factors, such as land tenure policies, structure of the local market, and social marginalisation. The shrinking of arable land per household (related to population growth), the poor prices paid locally to local production, the increased social needs, and the presence of off-farm income generation opportunities, have all resulted in decreased availability of labour for indigenous

soil conservation works. At the same time, the modern alternative (mechanical works) is not appropriate to the prevailing land tenure pattern. In other words, as far as land husbandry is concerned, Sbahiya peasants are stuck between the old and the new— between the indigenous and "modern" NRM systems— without being able to find a satisfactory solution to their soil conservation problem.

Modern influences on indigenous NRM systems do not always result in destruction (as in the Shuar case) or a loss (as in the Sbahiya peasants' case). The following example from Iran demonstrates the strength and resilience of some traditional NRM systems in the face of powerful agents of change.

Field example 1.3 The Qashqai: nomadic pastoral livelihoods against all odds...[19]

A hundred years ago, the Confederation of Qashqai Tribes was one of the largest nomadic pastoralist groups of Iran. At that time, most of the population of the country (probably over one-half) was composed of nomadic pastoralists. The most significant ethnic groups were the Qashqai, Shahsavan, Baluch, Turkmen, Bakhtiari and other Luri peoples. Besides them there were seven hundred large and small tribes and independent clans of pastoralists. Since time immemorial, the pastoralist tribes constituted the backbone of the political structures governing the region. Typically, a number of such tribes would form a coalition and take hold of political power in the land. The chief of the dominant tribe in the coalition would be named King of Kings and start a new dynasty. If people became unhappy with the ruling dynasty, a new coalition of tribes would take over and form a new dynasty. This is the essence of the political history of Iran over the past twenty five centuries. Some fourteen centuries ago, Arab tribes took over the land as part of the Islamic expansion. Having defeated the Sasanid dynasty, they took over the country and ruled it for four centuries until about 1,000 years ago, when some Turkish-speaking tribes liberated Iran from Arab colonial rule. Various Turkic tribes then ruled the country nearly all the time until about 1920 when the Pahlavi dynasty took over the Kingdom. This was the first non-tribal, non-pastoral dynasty to rule the country since the domination by Arab regimes had been overthrown.

The Qashqai tribes have likely been living in southern Iran for over a thousand years. For all practical purposes they are "indigenous" to several provinces in the south, including Fars, Bushire and Hormozgan. These pastoralists, like most of the others in Iran, have depended on grazing rangelands in an extensive manner, migrating from wintering grounds to summering grounds and back. The wintering grounds are usually lower planes and hillsides, while the summering grounds are higher up the mountains. The distance between these two ranges is usually several hundred kilometres. Most of the tribes have an agreed migration route through which they pass twice a year: in the spring and in the autumn.

The landscape over which these tribes migrate is held and managed under a typical common property regime. The allocation of land follows the customary laws and each unit of the tribe knows the territory over which it has the right of grazing. They take great care to insure that the rangelands are healthy. Men take care of larger animals that can move over large distances without water, while women take female and lactating animals grazing closer by. Women are also in charge of milking the animals twice a day and processing the milk into butter, yoghurt, and many other products. Children, too, are a productive part of the system, as they usually take the young animals to pasture. Managing the common property resources is the responsibility of the Councils of Elders, usually through a sophisticated and complex process. Barring unusual events and disasters, the system assured the sus-

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[19] This case example has been provided by M. Taghi Farvar.

tainable use of pasture *for centuries,* maintaining the ecosystem in a state of dynamic equilibrium.

In the 1920s and 1930s, however, the rule of Reza Shah brought drastic and disastrous changes. Reza Shah was not of nomadic origin. He actually held the nomads in contempt and thought that they were a huge impediment to his imitation of the style of development of Europe. In his mad rush to dominate and "modernise" the country (by modernisation he simply understood Europeanisation) he mimicked Ataturk, who was busy dismantling the traditional social structures of Anatolia at the same time. Reza Shah used military force against the nomadic pastoralists to smash any resistance to his designs, and did not hesitate to use treachery where he could not succeed by the use of force. The landscape of the Qashqai nomads is scattered with the reminders of this very unfortunate epoch. Most of these take the form of ruins of mud housing projects that the King ordered built in the middle of nowhere. Finding themselves confined at gunpoint to a very limited area for grazing, many pastoralist groups perished together with their livestock. The powerful rural police of Reza Shah managed to keep them effectively under the siege of forced sedentarisation.

With the abdication of the King in the middle of World War II, his son Mohammad Reza Shah took over. During the 1940s the nomadic pastoralists felt a relative lessening of the iron rule over them, which unfortunately was soon to be re-established. The Qashqai took full advantage of the temporary situation, as the government in Tehran was weak and ineffective: they simply took to their migration routes again! They collected the surviving sheep, goats, donkeys, horses and camels and started again to take care of their rangelands and flocks of livestock. They managed rather well until 1953, when a well known USA-UK-backed coup d'état ousted the nationalist and popular Prime Minister Dr. Mohammed Mosaddeq and brought the self-exiled Shah back to power. Throughout their history, the Qashqai have shown to be defenders of the land, particularly against British colonialism. In support of the popular deposed prime minister they actually took up arms and fought for the next ten years a hard war against the government of the Shah. In the end the Qashqai were defeated and their tribal chiefs expelled from the country.

Already in the 1950s, a new law for foreign aid had passed in the Parliament of the United States of America and an agreement of cooperation had been signed with the government of the Shah. A young man from the Qashqai tribe was recruited by the Point Four (foreign aid) Administration and taken to the United States of America. This young man, by the name of Bahman-Beygi, was shown the school system in the American Indian reservations, designed to assimilate the Indians into the American lifestyle and alienate them from their land and traditions. It was assumed that the nomadic pastoralists of Iran were equivalent to the "Indians" of the United States. Bahman-Beygi was instructed about how to brainwash the minds of the young students in order to alienate them from their tribes and implant in them an insatiable thirst for the modern, urban life far removed from the realities of nomadic pastoralism. He came back to Iran and convinced the Shah to let him organise an innovative tribal school system, based on mobile schools held in tents. The tents were white against the backdrop of the black tents of the nomads. The white tents were to symbolise, in the very words of Bahman-Beygi "purity and enlightenment against the darkness and ignorance of the evil black tents!"[20] The methods of learning were harsh and rote, reminiscent of a fascist system of education, and were inculcated into selected tribal teachers, recruited from the very tribes. Each teacher was given a white tent and was armed with tools for conditioning the innocent children. When hearing criticisms of his rote methods of learning, for instance that they were not conducive to encouraging thinking, Bahman-Beygi would retort: "these children are not supposed to think; they are simply supposed to carry out the programme I have implanted in them."[21] Mohammed Reza Shah had effectively replaced the bullets of his father with American-inspired chalks. Both were instruments for sedentarisation and the second was even more pernicious than the first in undoing the very basis of nomadism in Iran.

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[20] Expressed publicly to M. T. Farvar by Bahman-Beygi in the 1977 National Seminar on Nomadism, Kermanshah, western Iran.

[21] Bahman-Beygi expressed these words to M. T. Farvar in 1977 in the same Seminar.

Two more events took place in these years and were extremely harmful to the life styles and livelihoods of the Qashqai nomads. The first was the exile of their chiefs, who took refuge in Germany until after the Islamic revolution of 1979. This amounted to the virtual beheading of the tribes. In their place the Shah's security apparatus appointed colonels from the dreaded SAVAK, the secret police, who controlled every movement of the tribe and commanded their migrations. The other was the much heralded land reform laws, which included among other things the nationalisation of all natural resources in Iran. According to these laws, forced through the handpicked parliament, all rangelands, which amounted to ninety percent of all usable land in the country and which had been treated and managed under a common property regime throughout history, became henceforth state property. Instead of dealing with rangelands as a collective responsibility and privilege, individuals had to apply for short term licenses for grazing and all customary rights and laws were ignored. This action was tantamount to removing the base of survival for the nomadic tribes of Iran.

As a matter of fact, even other national policies were designed without any consideration for the needs and capacities of pastoral societies, and had a powerful weakening effect on them. Animal products such as meat, skin, dairy products and even live sheep were imported from abroad for the benefit of national merchants, undercutting the production systems of the pastoralists who had been able to supply the needs of the country with much surplus for export to boot. With their chiefs exiled, the economic base seriously weakened and the minds of the young changed fundamentally, the once powerful tribes of Iran were firmly headed towards annihilation. One of the immediate consequences was that the integrity of the rangeland ecosystems, which they had so carefully maintained through time, began to erode. On a positive note, a number of groups, often based in universities, succeeded in early 1970s in designing and testing a different kind of mobile services for pastoral nomads. These included veterinary services (veterinary assistants recruited from the tribes and trained, returned to them to provide mobile epizootic and vaccination services) and mobile health services (health assistants, also called "barefoot doctors", recruited from the tribes and trained, returned to them to provide primary health care and a referral service to clinics and hospitals).

The 1979 Iranian revolution presented another chance for the nomadic tribes of Iran to exercise once again their freedom of movement. The Qashqai tribes took once again to migrate in their greatest glory. One should imagine the joy and sense of liberation of these people who were regaining their simple right to livelihoods. The Qashqai exiled chiefs had returned from Germany and were attempting to get back their functions in their tribes. Having lived for nearly two decades in the west, they had adopted new ideas, and included democratic governance into their world view. They talked about human development, and environmental integrity of the rangelands. They were also concerned about the social responsibility of tribal chiefs. One of them— the late Khosrow Qashqai— was eager to introduce the concept of ecodevelopment into the Qashqai tribes. This same chief was elected Member of Parliament. To his dismay, when he attempted to take his seat in Parliament, some extremist elements prevented him from doing so. Shortly afterwards he was kidnapped, submitted to summary justice and executed without the benefit of an appeal to the supreme leader, who would surely have protected him.

Under the new Islamic regime, the cultural intrusion continued via the same tribal schools mentioned above, now run by the national Ministry of Education. This meant even less autonomy for the tribal educational system. At this time, issues of natural resources, especially rangelands, were dealt with by the Forest and Rangeland Organisation (FARO) of the Ministry of Agriculture, which continued the alienation of the nomadic tribes through the endorsement of the practice of rangeland ownership by the state.[22] At that time, verses from the Holy Koran— originally dealing with the spoils of war (infal)— were interpreted by none other than the very progressive Grand Ayatollah Taleqani as applying to all natural resources, making them state property. No one understood at the time this was

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[22] This happened despite the fact that the late Imam Khomeini, in 1963, had led the rebellion against the land reform laws of the Shah, including the nationalisation of rangelands and other natural resources.

spelling out a sure breakdown in rangeland management and the further alienation of the nomadic pastoralists from their rightful heritage. The government finally realized something to this effect in the 1990s, but even then decided to privatise rangeland management rather than return it to its original rightful owners. Rangelands were and still are given away by FARO for everything— from military bases and oil refineries to urban development and speculative operators. One of the Governors-General of the province of Fars boasted in a public statement in 1991 that he had *purposely* caused the blocking and destruction of tribal migration routes in order to uproot nomadic pastoralism, which he considered a backward way of life. The same Governor admitted to playing a key role in the trapping and summary execution of Khosrow Qashqai, the popular tribal chief mentioned earlier.

While the technical capacity of government institutions, including FARO, was progressively weakened as a result of attrition and ideological purges of highly qualified personnel, when the Iranian Government finally realized the value of technical expertise, it was expertise of the wrong kind that was available. In the case of rangeland ecology and management, the old school promoted in Iran by the Utah State University— to whom the management of natural resources had been entrusted by the Shah— became the dominant ideology despite its repeated failures to respond to the needs of the Iranian ecology. The non-equilibrium ecosystem conditions that characterise most of Asian arid regions had not yet been understood by the relevant establishment of the country. Alien concepts of carrying capacity were applied, including for a major government project called "Livestock and Rangeland Equilibrium," imposed all over the country. The main purpose of this project was to reduce livestock on rangelands, and to eliminate many of the pastoral producers, obliging the nomads to settle permanently. The sedentarisation of nomads, in fact, became the main focus of the Organisation for Pastoralists Affairs (OPA), which had originally been created in the office of the Prime Minister to support nomadic pastoralism. Another post-revolutionary institution, called "Rural and Pastoral Service Centres", was later reduced to *rural* service centres only, and its job degenerated mainly into writing extravagant prescriptions for pesticides.

At the time of this writing the Iranian legislation is still not suited to meet the need of the pastoral communities. The important provision for Local Councils has not been enacted for pastoral communities, and a law in Parliament, which would allow for the creation of Tribal Councils, did not take into consideration the specificity of tribal nomadic societies and their traditional organisations. In the end, even this law was vetoed by the powerful Council of the Guardians that is charged with supervising the Parliament. Hopefully, the Fourth National Development Plan has a chance to remedy this ill and to respond in a positive vein to the needs of the nomads, who still number some 1.5 million souls and who can still play an invaluable role as the guardians of the semi-arid ecosystems that cover most of the country.

Despite the most discouraging experience of the past century, there are new seeds of hope among pastoralists. For instance, a recent agreement between the Iranian Government and the Centre for Sustainable Development, a national NGO, has made it possible for pastoral communities to start participatory planning sessions for sustainable livelihoods and rangeland conservation. This work brings together supporting agencies at the national and international levels and holds some hope for reversing some past negative trends. It is also encouraging that a group of national legislators are now interested in supporting pastoral communities in their quest for cultural survival and sustainable livelihoods. New models for the sustainable development of pastoral regions and communities are obviously needed and the Iranian NGO is promoting rangeland management based on concepts and practices of non-equilibrium ecosystem and community-based sustainable livelihoods tailored to the country's specific characteristics. As part of the mentioned project, one Qashqai sub-tribe has organised its own tribal council in March 2003 and hopes to register as a community-based organisation (CBO) endowed with a community investment fund. With the help of wealth generating activities a

surplus is expected to be created, which will be used to help other sub-tribes jumpstart their own process of endogenous development. A nomadic pastoralist model for a community conserved area at the heart of their migratory route has also being elaborated by the sub-tribe currently leading the way and presented at the 2003 World Parks Congress in Durban (South Africa). All this does not mean that traditional nomadic pastoralism is continuing unchanged. Commercially acquired fodder is now part of the subsistence system of the herds and several habits of sedentary people have become widespread among the pastoralists. And yet, the diversification in the production system and the newly acquired habits do not seem to have altered the main character of the tribes' livelihood— herding as primary production, social solidarity, communal care for the pasture— nor their proven strength, resilience and pride.

In some instances, indigenous and rural cultures have been able to place mar- ket-oriented production at the heart of their traditional NRM system. The sustain- able use of wildlife resources in Southern Africa provides a powerfully telling example.

Field example 1.4 Managing the sustainable use of wildlife[23]

Chapoto Ward is an administrative sub-unit of the Guruve district in Zimbabwe. It spans an area of 300 square kilometres and is sandwiched in between national parks estate land on the south and west, the Mozambique border on the east and the Zambezi River, which forms a boundary with Zambia, on the north. A meeting took place there, in February of 1998, between the Chapoto Ward Wildlife Committee and a few international visitors. The Wildlife Committee arises from the ward's inclusion in Zimbabwe's Communal Areas Management Programme for Indigenous Resources (CAMPFIRE) programme, a national programme that encourages rural development and sustainable natural resource use through the devolution of management responsibility and access rights to "pro- ducer communities".[24] To date, the expansion of the programme has rested largely on the exploita- tion of high-value species through sport hunting, with concessions leased to commercial safari opera- tors. Although formally introduced in 1989, the programme did not achieve implementation momen- tum in Chapoto until 1992. By 1996 wildlife had become the largest collective economic enterprise of the ward with revenues at household levels equalling those of cash cropping. A party of two trustees and regional representatives of an international donor foundation constituted the visitors.

The chair of the Wildlife Committee opened the meeting by outlining the background and history of the Programme in Chapoto. Being an astute politician he put the programme forward in its best light. For decades of colonialism the people of Chapoto had suffered government neglect, without the roads, schools and clinics, which the communities closer to the capital had received. Living in an agriculturally marginal environment they had had to eke out an existence by cultivation of riverine alluvium, supplementing their diet with foraging and hunting. Even hunting was however difficult, since government claimed the wildlife which raided their fields and gardens as its own. Local hunters were subject to harassment and arrest by National Parks staff. Wildlife had become an unmitigated liability for all, except for the few poachers who were adept enough to evade detection.

With the coming of the CAMPFIRE programme things had changed. Wildlife became a collective asset, to be communally managed. Poaching dropped and wildlife populations increased, since individual off-takes became a theft of communal property and the community made use of its own knowledge and peer pressure mechanisms to suppress deviance. Revenues from the sale of wildlife

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[23] This case-example has been provided by Marshall Murphree. See also Murphree, 1997b.

[24] See Metcalfe, 1994.

escalated annually and the community built a school, a clinic and a grinding mill from the proceeds. One of the foundation's trustees opened the question time. "We are pleased," she said, "to learn that you are getting large sums from your wildlife which has contributed dramatically to your development. But what is the impact of this exploitation on the biodiversity of your area? How do you count your animals to ensure that you are not driving certain species to extinction?"

After the interpreter attempted to translate the word "biodiversity" into the local language with some complex phrases, the chair rose to reply. With a smile he commented, "We know that you people from overseas want to count animals by aeroplane, and have many papers with figures before animals can be used. But I must be honest and tell you that we do not count each of our animals. Even if we had an aeroplane, we could not count animals in the thick bush here. But we know that wildlife populations have increased because we see more of them and they are raiding our fields more intensively than before." "But," he continued, "you should know that a general increase in wildlife is not our main concern. Yes, we like to see more kudu and bushbuck around, but they are not central for our management objectives. What we are really concerned with are two species: elephant and buffalo. They are our focus, because it is these two species that produce high safari revenues. Since they are so important we monitor them closely." "The way we monitor them," he said, "is by watching trends. And to examine trends we look at trophy quality. Each trophy taken is carefully measured; for elephant it is tusk weight, for buffalo the horns are sized by Rowland Ward measurements. These measurements are taken in each instance by the safari operator, the National Parks staff and our own game scouts. Since 1992 we have kept these records and over time can determine trends in trophy quality. If you want to see a paper with lots of figures," he added with a twinkle in his eye, "we can show it to you."

By this time the chair was full stride. "Now," he said, "if we see that trophy quality is improving we increase the quota slightly for the following year. But if we see that it is dropping, we decrease the quota since quality is a greater determinant of our safari revenues than quantity. We want to continue to receive high wildlife revenues indefinitely, and limiting quotas is our investment in the future. In our last assessment," he went on, "we saw that buffalo trophies were continuing to improve and so we increased the quota. However, we saw that tusk size of elephant trophies was declining and so we have cut the quota."

"What about generating income from your wildlife through photographic tourism?" was the next question from the visitors. "By all means," replied another committee member, "but it is difficult to show the tourists elephant and buffalo in our thick bush. However, we can show them rare birds, and visitors are interested in the beauty and the fishing opportunities that they find on the Zambezi. We have already leased land on the river to two tourist operators and we are maintaining the riverine habitat and restricting settlement patterns." A number of other questions were posed on issues like problem animal control, strategies in times of drought, compensation for crop depredation, control of fishing and wood-cutting, the ivory trade and locally managed tourism. To each the community had a reply that showed insight and previous discussion.

"What are your other problems?" was the final question. "There are three main ones," was the reply. "Firstly, this business of managing wildlife takes time and transport. We have to constantly meet with the safari operator, the National Park staff and the District Council. Secondly, it is difficult to manage our money. We are not trained in book-keeping and there is no bank here." For the community, in fact, the biggest problem was uncertainty about the future. "We don't really know how long government will allow us to keep these animals and the revenues they generate. We don't know how long government will allow us to lease sites on the Zambezi and keep the proceeds. Government knows, as we have learned, that these things are extremely valuable and government may take them back. If that were to happen we would abandon our quotas and self-imposed restrictions and take what we can without being caught." With this the meeting closed.

The conversation did not cover all aspects of Chapoto's sustainable use programme. The Wildlife Committee's presentation did not reveal the internal divisions that exist within the community or the ongoing disputes it has with the District Council, since these are not matters to be discussed with visitors. However, the dialogue clearly illustrates some elements of cultural dissonance between the local people and their visitors, including at least five main areas.

The first of such areas is about *values*. The people of Chapoto were concerned with sustainable productivity. For rural farmers and pastoralists as they are, conservation is an investment (in direct or opportunity costs) for present and future value, the goal being the maintenance or enhancement of their livelihoods. The visitors were instead concerned with species preservation, "biodiversity" and "ecosystem maintenance" for aesthetic, recreational or scientific purposes. As a matter of fact, there is nothing inherently incompatible in the two sets of values. Dissonance arises, however, when one stance is accorded privileged status, as it is at present for international valuations. This does not work. Aside from their inherent merits, local perspectives have a powerful veto dimension. Unless they are accommodated, international values and goals will be subverted by local responses ranging from defiance to covert non-compliance. From an international perspective, conservation, sustainable use and equity are distinct and separate issues, with distinct associated activities while local perspectives roll these three into one interactive bundle. Programmatic interventions are unlikely to work if they are not responsive to this synthesis.

The second area is *proprietorship*. The devolution of a direct authority over the use and benefit of land and resources has been the catalyst to mobilise action in Chapoto. It stimulated a sense of responsibility and launched the community into a new mode of management requiring skills in handling the exchange values of their natural resources. The conferment of proprietorship had, however, been one of programme and not legal entitlement. It was therefore incomplete, lacking tenure or long-term security of access. This insecurity led the people of Chapoto into gloomy prognostications of the future. Without proprietorship their incentives for conservation would falter and fail. Unfortunately, this clashes with the bureaucratic mind, disposed to the centralisation of authority,

against the technocratic mind, disposed to see devolution as the surrender of professional management to the vagaries of cost/ benefit decisions by unsophisticated peasants, and with the interests of the central political elite and their private sector allies. The answer lies neither in community autarky nor state autocracy. It lies instead in a redefinition and acceptance of complementary and mutually supportive roles. Local organisation can assume the authority and responsibility necessary to carry through local incentives. The state can take on a supra-local coordinative role with its arbitrative, regulatory and extension functions.

The third area of dissonance is *science*— what is it and how should it be used. International conservationism relies on high-tech quantitative modelling to monitor and predict ecological status. In the process, biological scientists gain a powerful clientele, while governments and agencies "seek to find a scientific algorithm to reduce subjective decision-taking and uncertainties". Rural farmers such as those in Chapoto have a similar goal. Dealing with uncertainty is a continuing factor in their lives and risk-aversion a pervasive feature of their farming strategies. When given the opportunity, they use a methodology of the highest scientific credentials: *experimentation*. Chapoto's monitoring of trophy trend is elegant in its simplicity, robust in its empiricism and striking in its tight application to management decisions. It is also pregnant with potential for the development of locally based environmental science, which moves beyond issues of species off-take. Such science, flexible in its foci and dynamic in its analysis, is far more important than the static domain of "indigenous technical knowledge," the box to which we condescendingly assign local insight and experience. People like those at Chapoto have problems with the scientific environmental "technicism". It involves for them a significant loss of control and can be applied to stop use, which their own science indicates is viable. And they have a healthy scepticism of its ability to produce the predictive certainties that are expected of it. (In this they have major allies amongst scientists concerned with evolutionary biology, system approaches and adaptive management.) Most environmental regulations demand certainty and when scientists are pressured to supply this non-existent commodity there is frustration, poor communication and mixed messages in the media. One can also add that this pressure is a perverse incentive for the integrity of science itself, since it carries with it the temptation to assert as definitive that which is tentative. Fortunately, both conservation biology and local science tend now to converge to acknowledge indeterminacy and emphasise experimentation and adaptation in NRM.

Potential "lack-of-fit" between *social and ecological topography* is another area of dissonance. The institutional requirements of a local natural resource management regime such as Chapoto include social cohesion, locally sanctioned authority and co-operation, and compliance reliant primarily on peer pressure. This implies a tightly knit interactive social unit spatially located to permit this. However, while social topography suggests "small-scale" regimes, ecological considerations tend to mandate "large-scale" regimes. This may arise from ecosystem needs or when key resources are widely dispersed or mobile, as in the case of Chapoto's elephant and buffalo. Economic considerations may also dictate "large-scale" regimes where market factors require that several owners of resource units manage and tender their resources collectively. There is no inherent reason why social and ecological topographies cannot be harmonised, although this requires context-specific institutional engineering through negotiation. Often this will involve nested systems of collective enterprise by owners of resource units. The units of management will have a built-in incentive to spread. Dissonance arises when larger ecosystem regimes are imposed rather than endogenous. Such impositions, often in the form of ecologically determined projects, concentrate on ecological sustainability at the cost of ignoring the institutional sustainability on which it depends.

Projects and programmes are the principal, though not exclusive, contexts bringing together interna-

tional and local incentives for sustainable use. These contexts juxtapose two cultures of planning and implementation. The one is reductionist, bureaucratic, directive and contractual, operating through the rigid time and budget frames of a "project cycle." The other is incrementalist, personalised, suasive and consensual, operating through experiment and adaptation set in indeterminate time-frames. For various reasons governments and donor agencies typically operate in project cycles far more condensed in time than that required for the institutional learning which must take place before local regimes can harmonise their modes of implementation with those of external partners. Such institutional learning goes far beyond the impartation of knowledge and skills by external agents. More fundamentally it is about experiential adaptation of roles and norms in new circumstances within local social units themselves. Knowledge and skills required by individuals do not suffice on their own; institutional learning is a collective process of adaptive interaction responsive to external and internal change. It takes time. At whatever point in the learning curve we place Chapoto, we should bear in mind that their perspectives were the product of a nine year evolution in status and experience.

The demand for safari experiences— a phenomenon originating in countries and cultures very far from Chapoto, seems thus to have successfully integrated the local livelihood system of rural communities in Southern Africa. Technical innovations have also been integrated with relative success by indigenous and rural cultures in their traditional NRM system. This is especially true for rural cultures born from an encounter between native people and foreign colonists, which is a widespread phenomenon in Latin America and the Caribbean. The *Ribereño* farmers of the Peruvian Amazons are an excellent example.

Field example 1.5 Don Emiliano's farm[25]

The ethnic roots of the *Ribereño* people are heterogeneous in the extreme. Some of them are the heirs of the sixteenth and seventeenth century Spaniards and Indian river-people. Others originated from inland Indians, Peruvian Creoles, and European adventurers, who were involved in exploitation of different types of natural rubber in the period 1880-1950. Others are a mix of recently acculturated Indians, colonists coming from the upper course of the river, soldiers from other areas of Peru who married local women, indigenous protestant missionaries, and town-dwellers escaping from the law.

The Ribereño culture is a real melting pot of indigenous and exotic elements. The local language, for instance, is strongly influenced by *Quechua* (the Andean language spread in the Upper Amazon by Jesuits in the seventeenth and eighteenth centuries). The social structure includes both Indian features (such as cousins' marriage) and Spanish-Peruvian elements (such as ritual *compadrazgo*). Symbolic culture combines folk-Catholicism (or sometimes revivalist Protestantism), Amazonian shamanism, and elements of sixteenth and seventeenth century European magic, with a major interest in global media culture (all *Ribereño* households own a radio, and some own a colour TV).

This trend of mixing and melting different cultural influences is especially evident in the *Ribereño* farming systems, which are based on a combination of subsistence and market-oriented agriculture, hunting and fishing, cattle raising, and agro-forestry activities. An example of how the complex ecology of the Amazonian riverbanks is managed through such a diversified NRM strategy is provided by the farm owned by Don Emiliano (in Barranco, Marañon River).[26]

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[25] This case study has been provided by Patrizio Warren.

[26] These observations were made by Patrizio Warren between 1982 and 1986.

As for any *Ribereño* household, the basis of Emiliano's household subsistence is the cultivation of plantains, manioc, and other tubers on never-flooded *restinga* lands. This activity is carried out with traditional slash and burn techniques of Indian origin, and according to the indigenous division of labour by gender lines (with men in charge of clearing the fields and women responsible for their cultivation). The fields (*chacras*) are cultivated for two or three years and, when weeding becomes too hard, are left to lie fallow during 5 to 10 years (depending on *restinga*'s soil quality). These patches of secondary forest (*purma*) have always had a significant value for a household: they are a place where wild fruits, special materials, medicinal plants and narcotics can be collected.

Following the indigenous livelihood strategy, Don Emiliano's household complements its starch-rich tuber and plantain diet with river proteins. In times of shallow waters, Don Emiliano and his sons go fishing in the river and surrounding lakes, using a technology in part of indigenous origin (canoe, paddle, spear), in part introduced by the Spaniards (hook, *tarafa* net) and in part modern (nylon line, outboard motor). According to a practice of Spanish origin, part of the catch is salted to secure *pango* (the *Ribereño* fish and plantain soup) for the time of the flood, when fishing becomes difficult and dangerous. Unlike some of his neighbours, however, Emiliano has been resistant to engaging in commercial fishing and is against dynamite fishing because of its negative environmental impact. Rather, inspired by an ancient Indian practice he learned from a folk-tale, he experiments with river turtle breeding in a pond near his house.

Hunting is a marginal practice in Emiliano's subsistence strategy, because of the scarcity of game in the surroundings of the farm. This is due to the overexploitation of edible mammals (such as wild pork, tapir and deer) in the last 50 years by soldiers from the neighbouring military camp. However, during the flooding season, at night, Emiliano's sons hunt the big rodents, which haunt *chacras* to eat tubers. To this end, the *Ribereño* gun-and-lamp hunting technique (based on instinct of rodents to stop cold when sharp lights are focussed on them in the dark) is used, as well as pit-and-stakes traps, which Emiliano has learned to build from the Indians.

As in any other *Ribereño* household, Emiliano's family is engaged in income generating activities. The main business is supplying the military camp (and other customers) with beef and pork. To breed *zebu* cattle, the hill on the back of the house has been cleared from the forest and sown with *gramalote* fodder grass, a species recommended in the area for its soil retention capability, despite its low nutritional content. Applying extension information heard on the radio, Emiliano decided to leave a patch of primary forest on top of the hill. To prevent erosion, provide shading to the cattle, and fulfil household timber and fruit needs, he also planted valuable cedar specimens and fruit trees on the slope. Made aware by the same source of the low nutritional value of his pasture, Emiliano is striving to prevent his herd from increasing, by timely selling of calves.

In contrast with such a modern approach to cattle breeding, pig breeding is managed according to the indigenous pattern. In order to prevent pigs from spoiling crops, animals are kept on a small *restinga* (island in the middle of the river) where they can run free in search of food. A child brings household garbage to the pigs every day. According to Don Emiliano, daily feeding by humans is essential to prevent the animals from becoming wild and unmanageable at the time when it becomes necessary to catch them.

Finally, Emiliano and his family engage in cash cropping. To this end, as many other *Ribereño* households of the area, at every shallow water season they receive credit from the Agriculture Bank and sow rice on the fertile soil of river mud banks. This is a risky enterprise, because young rice is highly exposed to parrots and insects, and, what is worse, nobody in the Amazons can really foresee when the floods will come. However, with good luck, significant gains can be made through this activity.

Emiliano believes that this is a "crazy business, which is spoiling so many farmers." However, he allows his sons to engage in it, because, as he says, "the trunk of our farm is solid enough to afford the loss of some branches."

Don Emiliano's story illustrates the complexity and sophistication of the *Ribereños'* NRM system. It shows their diverse and specific uses of the Amazonian wetlands— the never flooded *restingas*, the rivers, the lake, the hills, the mud-banks— in accordance with seasons, subsistence needs, and market opportunities. It also shows how such diversification is promoted by the *Ribereño* cultural capacity to combine in a new synthesis elements originating in a variety of cultural environments and historical experiences. Emiliano's farming system is indeed a mix of reminiscences of pre-Colombian Amazonian wetland society, old Spanish and European legacies, contemporary Indian influences, twentieth century technology and modern agricultural extension advice. Its success witnesses the capability of contemporary Amazonian people to build an alternative to the development model which national colonisation agencies and the global market are striving to impose on them in the name of progress.

1.3 Contemporary indigenous NRM systems and co-management

From the field examples illustrated above, a few lessons can be derived concerning the structure of NRM systems currently practised by indigenous and local communities and their relevance for sustainable development and conservation initiatives.

The lesson here is that most NRM systems of contemporary indigenous and local communities are puzzles of old and new knowledge, practices, tools and values of different cultural origin. Building upon the characteristics of diverse political and economic contexts, the combination of indigenous and modern elements in these NRM systems varies and leads to different outcomes. The indigenous system may be almost completely replaced by a variant of the agro-industrial market system promoted by the state (as in the Shuar case). Change in the indigenous system could be only partial, but powerful enough to affect the community's capability to manage the local resources in a sustainable way (as in the Sbahiya peasants' case) or apparently overpowering but unable to destroy the heart of the livelihood system, as in Iran. Eventually, an innovative and more complex NRM system can develop by combining indigenous and modern elements (as for Chapoto's community and in Don Emiliano's farm and, to a certain extent also in Iran).

...most NRM systems of contemporary indigenous and local communities are puzzles of old and new knowledge and practices, tools and values of different historical and cultural origin.

Process and outcome variations on this theme are indeed as diverse as human cultures and communities on earth. But— local differences notwithstanding— practically no NRM system observable in the field at the beginning of the 21st

Century can be claimed to be purely "indigenous." On the contrary, NRM systems featured by contemporary ethnic and rural communities are *syncretic constructions*, *i.e.,* more or less consolidated syntheses of knowledge and practices of different historical and cultural origins, which previously might have even been considered incompatible.[27] As such, they represent attempts made by local people to adapt indigenous NRM systems to cope with new environmental conditions, market economy requirements, and tenure regulations imposed by the national society and the state.

The merging of features from different cultural origins is not a unidirectional process. Elements of modern NRM systems are integrated into an indigenous background and, at the same time, the indigenous background contributes to shape the particular variant of the modern system that is actually implemented in the area. For instance, the shifting horticultural knowledge and practices of the Shuar (the only component of the indigenous NRM system still alive in the area) has substantially influenced the colonists' subsistence agriculture. Zaghouan soil and water management authorities are considering the opportunity of providing incentives to Sbahiya farmers to implement conservation works on the basis of indigenous know-how. Diversified exploitation of multiple ecosystems and ecotypes, as experimented in Don Emiliano's farm, is increasingly promoted among tropical forest farmers by rural development agencies and experts. The pragmatic approach to sustainable use of the Chapoto community has now been studied and advocated by the World Conservation Union's (IUCN) Sustainable Use Initiative and the pastoral practices of nomadic communities are being re-discovered as a most effective and careful way of managing rangelands in non-equilibrium ecosystems.[28]

...syncretic constructions [are] more or less consolidated syntheses of knowledge and practices of different historical and cultural origins, which previously might have even been considered incompatible.

As in any process of cultural change, the development of this syncretism is somehow chaotic and unsystematic. It mostly takes place through a trial and error process, whereby new elements are adopted, old elements dismissed, and system structures re-arranged. At times, and especially when trial and error is transformed into a more or less conscious form of "adaptive management"[29] this succeeds in identifying creative and effective solutions. Unfortunately, most contemporary indigenous NRM systems are not as well integrated, efficient or sustainable as the traditional ones. This is because most of them are in a phase of transition in which much testing takes place, often unsuccessfully. Furthermore, the rapid evolution of the relationship between local communities and the national society, new development and conservation policies, innovative technologies and the omnipresence of the global market, make the building of combined NRM systems a tricky endeavour under ever-changing rules. In some ways, the development of NRM systems that uniquely combine elements from different origins is a worldwide laboratory in which communities experiment with options for sustainable development. Everyone concerned

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[27] The term "syncretic" is used in religious and philosophical contexts to signify the merging of rather opposite positions, at times bordering on heresy.

[28] See Behnke and Scoones, 1993; Niamir-Fuller, 1999; Farvar, 2003; Sullivan and Homewood, 2004.

[29] Lee, 1993.

with sound environmental management— on matters of both policy and practice— may learn from these experiences while, hopefully, positively contributing to them.

...NRM systems that uniquely combine elements from different origins [are] a worldwide laboratory in which communities experiment with options for sustainable development.

Understanding and supporting the efforts made by communities to experiment and combine old and new elements as part of their NRM systems is essential for programmes or projects willing to improve the use of natural resources in a participatory way. Such combined (syncretic) NRM systems share with participatory natural resource management both the basic objective (*i.e.*, improving the management of local natural resources according to people's needs, expectations and values) and methods (community driven processes, in which local actors play a major role in making decisions and taking action).

A second key lesson to consider regards indigenous knowledge and know-how. Many "modern" natural resource managers and sustainable development practitioners are now well aware of their importance. Unfortunately, however, several of them focus their attention and appreciation on the traditional wisdom of indigenous and peasant communities but neglect the new economic, political and environmental conditions in which indigenous knowledge and know-how exist today. As a result, the dynamics of change in indigenous NRM systems are overlooked in pursuit of an unrealistic and anachronistic purity of values, understanding and practices.

In fact, insistence on research on indigenous knowledge may lead far from the needs of the people. Shuar elders' knowledge of forest trees and plants is fascinating, but it is rather useless in a situation in which there is no more primary forest in the surroundings of the settlements, and no forest exploitation.[30] For sure, however, resources and time could be effectively spent in appraising what the last two generations of Shuar (and colonists) have learned on range management, agro-forestry and diversification of agricultural production. Furthermore, the "traditional wisdom" approach can lead to missing the structural conditions needed to turn indigenous knowledge into actual NRM practice. For instance, Sbahiya peasants' indigenous land husbandry cannot survive the shortage of agricultural labour affecting the household economy– tackling this problem is essential to adapting indigenous know-how to the new conditions and to making the syncretism viable. On the other hand, if the traditional livelihood system is resilient enough, it will withstand all sorts of blows, incorporate change and maintain its unique essence and sense of identity, as in the case of the Qashqai of Iran.

...the dynamics of change in indigenous NRM systems [should not be] overlooked in pursuit of an unrealistic and anachronistic purity of values, understanding and practices.

The third key lesson, linked and in fact derived from the above two, is the present opportunity to engage a multiplicity of social actors in a dialogue and joint action-research about natural resource management. Through it, a multiplicity of capacities and comparative advantages can be recognised, understood and hopefully harmonised and reconciled. Traditional knowledge and skills, in particular, can be set to work within changed environmental, political and social contexts, including the presence of the new social actors which historically emerged in the NRM scene. The safest route begins with a thorough understanding of the indigenous and traditional NRM systems, and only integrating modern practices into them in a careful and reversible way, if absolutely necessary. Some science-based innovations do not stand the test of time, and long-

[30] This said, local knowledge should also be preserved for an unknown future, as the conditions of its usefulness may present themselves again. Losing such knowledge may be equivalent to losing entire livelihood alternatives.

term studies end up just confirming the wisdom of the traditional systems.[31] When the dialogue and action research are conducted with equity and integrity, however, they can produce concerted agreements and institutions capable of meeting the challenges of modernisation through the wise merging of features of different historical and cultural origins— what earlier we referred to as "syncretism". Such a process of dialogue and action-research— which we call "co-management"— is the very subject of this work.

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[31] Cases in point are the nomadic lifestyle of Qashqai pastoralists-first denigrated and opposed and now re-evaluated (see case example 1.3 in this chapter), and the prohibition of grazing from Keoladeo National Park (Rajastan), later found to be essential for the birds habitat (see the discussion of freshwater wetlands in Chapter 3 of this volume).

Chapter 2. ACTORS, ENTITLEMENTS AND EQUITY IN NATURAL RESOURCE MANAGEMENT

2.1 Management actors

People have diverse perceptions of the same environment. A forest can be seen as an aggregate of trees waiting to be felled and sold, a place of rest and leisure, a source of food and firewood, the hiding nest of dangerous animals, the sacred home of water-giving gods, a place providing safe haven from pursuing enemies, a hiding place for insurgents against a government, or the habitat of a rare sub-species of pangolins. These different perceptions correspond to different under-standings of the values, opportunities and risks that the same environment has to offer. As a basic source of livelihood, the forest should be utilised and protected. As a place of leisure, it should be visited in the weekend in the company of friends. As an immobilised capital, it should be exploited. As a dangerous place, it should be avoided or cleared out. As a sacred place, it should be worshipped and respected. As a valuable ecological niche it should be enlisted as protected area as soon as possible....

In a broad sense, everyone on Earth could recognise opportunities and risks in the

...most people and organisations are principally concerned with the status and management of a specific, and usually local, natural environment.

whole planetary environment and in the management of *all* natural resources.[1] Via the physical cycles of water, air and energy, the movements of living organisms and people and the expanding global exchanges of goods and information, powerful linkages are established among distant ecosystems and the human and animal populations living therein. The most impressive example may be the enormous consumption of fossil fuels in the industrialised North, which is altering the chemical composition of the atmosphere and influencing the climate all over the globe. As a result, nomadic pastoralists in Niger may find that drier seasons will exacerbate their conflicts with sedentary peasants. Mozambicans may find themselves hit by exceptional flooding. And Maldives islanders may even lose their basic "living ground" because of the melting of Arctic ice. Thus, the residents of Niger, Mozambique and the Maldives can indeed have legitimate concerns about the propensity of North Americans and Europeans for a high-energy consumption lifestyle.

In practice, however, most people and organisations are principally concerned with the status and management of a specific, and usually *local*, natural environment. It may be the case of the territory in which they live and work, the resources that generate their sustenance and income, the land they own, have a right to use or a mandate to care for, or the territories to which they feel historically and culturally tied. And yet, even for local environments, recognising environmental values, opportunities and risks is not a simple matter. Some people may not be informed or aware of phenomena, activities and decisions affecting the territory or resources at stake. Others may lack the time, resources, self-confidence and organisation to articulate their concerns and express them forcefully. In addition, environmental interests may not be neatly defined (exceptions are private property borders, and borders of an area defined in the mandate of an institution), or their definition, while clear and binding to some, may seem hazy to others (such as the three stones put on top of each other to set out the exclosures of the nomadic pastoralists in Iran and Yemen). Commonly, however, borders are recognised in a generic and geographically fuzzy way. For instance, down-stream communities may be broadly interested in soil conservation "upstream", fishermen may be concerned with spawning grounds "all along the coast", and hotel owners may be interested in the preservation of the "landscape" that attracts tourists.

...bundles of [different values, opportunities and risks are recognised] for the same territory or resources... [a fact that] may generate all sorts of dilemmas.

What is more, individuals, groups and institutions do not usually recognise single values, opportunities and risks, but *bundles* of those for the same territory or resources at stake. This may generate all sorts of dilemmas. Local people may be willing to preserve their unspoiled scenery (aesthetic value) *but also* need a new road and the jobs provided by factories (economic opportunity). A conservation organisation may have a mandate to preserve a species habitat (ecological value) *but also* may recognise that, as a consequence, another interesting species may disappear from the territory (ecological risk). The local administration needs tourist revenues (economic value) *but also* knows that the tourists will introduce cultural and health problems in the area (cultural and health risks). The very *recognition* of certain environmental values, opportunities and risks and not others is a cultural phenomenon at the core of a society's world-view and of the body of knowledge, practices and technology that characterises its economy, politics and lifestyle. And it depends on inputs and capabilities that may not be under the control of the people concerned.

The above complexities notwithstanding, we will assume here that for any specif-

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[1]   Lovelock, 1979.

ic territory or set of natural resources, some communities, organisations, groups and individuals will recognise some relevant values, opportunities and risks. Such communities, organisations, groups and individuals are the ones who, once properly organised, may effectively express their interests and concerns and become actively involved in management. The awareness of relevant opportunities and risks (*i.e.*, interests and concerns) and some form of organisation to express those *vis-à-vis* others are necessary preconditions for any social action in natural resource management. Murphree (1994) postulates such prerequisites when he refers to the difference between individuals and groups, on the one hand, and "institutional actors" on the other:

> "*The concept of actor is a social construction rather than simply a synonym for individual. Nor is an institutional actor a synonym for group. An institutional actor is an entity organised for the interests of some group or set of goals. Groups and individuals are considered within the context of organised institutional arrangements.*"

Thus, according to Murphree, the difference between an institutional actor and a non-specified individual or group is that the institutional actor is *organised* for an interest or purpose. It is in this sense that we will use the term "institutional actor" or "relevant social actor" in this work. In the current literature, another term— stakeholder— is often employed to describe the same concept. We have purposefully chosen not to adopt such term in a prominent way in our analysis of co-management approaches. Although the term "stakeholder" is widely recognised, it is not accepted by all. Some recall that it derives from the times of land grabbing in North America, when ownership titles were distributed to people who would demarcate new lands with stakes. Stakeholders, then, were the individuals who ran with a stake in hand to cover as much land as possible within a given time. As pre-existing rights and concerns of indigenous inhabitants were not respected in those land appropriation processes, the term "stakeholder" carries a negative connotation for some people, especially in non-western cultures.[2]

The very recognition of certain environmental values, opportunities and risks, and not others, is a cultural phenomenon....

Another term applied in the literature (especially in French) is the one of "strategic groups" understood as "groups of social actors possessing the same interests with respect to a given issue". This concept is essentially empirical. The strategic groups cannot be defined *a priori*, even though some hypotheses may be made about how certain actors may react and behave with respect to a given issue. In fact, it is often the case that some unforeseen factors— such as a system of social and cultural ties, reciprocities, alliances, some political or personal rivalries— reveal themselves much more

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2   Smitu Kothari, personal communication, 1998.

influent than other "objective" conditions in determining motivations and positions *vis-à-vis* NRM decisions.[3] For instance, in a village in Senegal the strategic groups identified a *priori* by the staff of a project included: the youth within a local cooperative; the youth outside of it; the adult population; the local elite; and the outside actors (governmental agencies and NGOs). What was later revealed in practice was that the key strategic groups were, in fact, only the lineage groups that had different access and tenure to specific landholdings. Another strategic group, the one of local women buyers of vegetables, became also apparent as time went by.[4] In contrast, a project among the Qashqai nomads of Iran dealing with rangeland biodiversity and sustainable livelihoods simply asked the local people to identify their own internal structures and subdivisions. They identified nomadic camps, clans and sub-tribes as institutional actors, and certainly not the externally promoted cooperatives— the only local actors recognised by the central government.

Box 2.1   Institutional actor (also "relevant social actor" or "stakeholder")

An institutional actor in a given subject or event is a bearer of specific interests and concerns *organised* to express them and carry them forward.

With reference to the management of natural resources, an "interest" refers to a recognised opportunity with potential origin in the natural resources or influence/ impact on them and a "concern" refers to a recognised risk also with potential origin in the natural resources or influence/ impact on the same.

The term "stakeholder" is at times used in place of "institutional actor". In this volume we have chosen to do so only rarely (e.g., when used by original authors), for reasons explained in the text. We will, however, report here some conceptual definition from recent literature:

"Stakeholder is a term which, over the last few years, has come into common usage by most donor organisations; it was first used in business management theory and has since been widely adopted as a further refinement of the user concept. It is an umbrella term, which covers all the people and organisations who have a stake in, and may be affected by, an activity, a development programme or a situation, or who may have an impact or influence on it. In some situations stakeholders may both "be affected by the intervention and also have an impact on the intervention." (Hobley, 1996)

"... the various institutions, social groups and individuals who possess a direct, significant and specific stake in the protected area will be referred to as its 'stakeholders'." (Borrini-Feyerabend, 1996)

"In the context of Bank-supported activities, stakeholders are those affected by the outcome— negatively or positively— or those who can affect the outcome of a proposed intervention." (World Bank, 1996)

Some authors include among "stakeholders" not only organised social actors, but also animals and plants (or wildlife in general) whose survival depends on the resources of a given area (Hobley, 1996, page 96). This approach is not taken here, as those animals and plants would still need some human advocate to foster their interests in co-management processes.

Which social actors are most likely to express interests and concerns in the management of a given territory, area or set of natural resources? Checklist 2.1 lists a typology of possibly relevant social actors, including communities, organisations, groups and individuals. Among the listed actors, only some will be willing and

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[3] Lavigne Delville, 2000.

[4] Olivier de Sardan quoted in Lavigne Delville, 2000.

capable of investing their own time and resources, organising themselves, acting
to get their interests and concerns socially recognised and taking on some NRM
responsibility. Those will effectively become the "institutional actors" in the man-
agement of that territory, area or resources.

Checklist 2.1 **Categories**[5] **of social actors possibly relevant in natural resource management**

- **Local actors,** including the communities, organisations, groups and individuals who live and work
  close to the resources, the ones who possess knowledge, capacities and aspirations that are relevant
  for their management, and the ones who recognise in the area a unique cultural, religious or recre-
  ational value. (This is an ample category, including several sub-categories.)

- **Natural resource users,** including local and non-local, direct and indirect, organised and non-organ-
  ised, actual and potential users, as well as users for subsistence and income purposes.

- **National authorities and agencies** with explicit mandate over the territory or resource sectors (*e.g.*,
  ministries or departments of forests, freshwater, fisheries, hunting, tourism, agriculture, protected
  areas and, in some cases, the military).

- **Sub-national administrative authorities** (*e.g.*, district or municipal councils) dealing with natural
  resources as part of their broader governance and development mandate.

- **Non-governmental organisations and research institutions** (*e.g.*, local, national or international bod-
  ies devoted to environment and/ or development objectives) which find the relevant territories and
  resources at the heart of their professional concerns.

- **Businesses and industries** local, national or international (*e.g.*, tourism operators, water users, inter-
  national corporations) which may significantly benefit from natural resources in the area.

- **Non-local actors,** national and international, indirectly affected by local environmental management
  practices (*e.g.*, absentee landlords, down-stream water users, environmental advocates or animal
  rights groups).

- **Individual professionals** employed in environment and development projects and agencies dealing
  with the management of natural resources in the area.

Institutional actors usually possess specific capacities (*e.g.*, knowledge, skills) and/
or comparative advantage (*e.g.*, proximity, mandate) for resource management,
and are usually willing to invest specific resources (*e.g.*, time, money, and politi-
cal authority) for it.[6] Among them, traditional groups and organisations (*e.g.*, a
council of elders, a fisher folks society, or a peasant association) are particularly
valuable. Traditional groups possess a tested structure and representation system
and generally enjoy a broad social recognition— what some commentators called
social capital— to take on an effective role in natural resource management.[7]
Table 2.1 shows a list of relevant social actors for a specific National Park in
India: eighteen major stakeholders, bearing different interests and concerns! The
analysis of the relevant social actors was carried out by the staff of the govern-
mental agency in charge of Park management and provides a telling example of
the complexity of stakeholder differentiation.

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[5]   These categories are obviously not exclusive, and some institutional actors may belong to more than one category.
[6]   Borrini-Feyerabend, 1996.
[7]   Ostrom and Ahn, 2001.

Table 2.1 Relevant social actors in Rajaji National Park (India)
(adapted from Rathore, 1997)

Relevant social actors	Main interests/ concerns
Gujjar communities (more than 500 households, total population over 10,000, now semi-permanent residents)	Cattle rearing and marketing of milk (Gujjars depend entirely on park resources)
Ban workers (18 villages south of Dhaulkhand; prior to 1991, 6,707 households were allowed Bhabbar grass collection)	Bhabbar grass extraction from the park (average income: Rs700-800 per month)
Other dwellers in the surroundings of the Park (in all 57 villages, including the Ban workers)	Fuelwood, fodder collection, cattle grazing, water source for agriculture, theft for subsistence
Taungya villages (four in number, 250 Taungya workers)	Same as above
Tehri Dam oustees (occupy 48.56 hectares, more than ten houses constructed)	Maintaining their camps inside the park, along the elephants' movement route
Army ammunition dump	Defence requirements
Hydle Power Department	Irrigation in the command area
Railways and Road transport department	Providing surface transport facilities
District Administration in Hardwar/ Dehradun/ Pauri Garhwal	Space for headquarters construction on the park periphery, socio-economic uplifting of people dependent on park resources
Rajaji Park Management (8 Rangers, 15 Deputy Rangers, 22 Foresters, 66 Forest Guards and 49 Wildlife Guards)	Wildlife Conservation in Rajaji
Social Forestry Division, Hardwar (buffer zone east of Rajaji)	Productivity of the buffer forests and forest conservation
Forest Division in Shiwalik and Dehradun	Same as above
Township of Hardwar	Dependable supply of fuelwood and medicinal plants
NGOs	Representing and defending the interests of local people
Wildlife Institute of India.	Preserving Rajaji as a learning laboratory for researchers, faculty and trainee officers
Zila Parishad and Panchayats	Development of viable local institutions
Tourism Department	Promotion of tourism in Rajaji and elsewhere
State Forest Department and Ministry of Forest & Environment	Biodiversity conservation through the Protected Area concept
Doon Valley Integrated Watershed Management Project	Ecological restoration in Doon Valley

Indigenous and local communities

Indigenous peoples and local communities— including mobile communities (see Box 2.2)— have a central and pre-eminent role to play in natural resource management. Typically, they have long associations with nature and a deep understanding of it. Often they have made significant contributions to the maintenance of many of the earth's most fragile ecosystems, through their traditional sustainable resource use practices and culture-based respect for nature[8]. This argument has recently been forcefully brought to the fore,[9] counteracting years of theoretical and practical neglect of the rights, interests and capacities of local people *vis-à-vis* "scientific" management practices, agency decisions and national development schemes. Nonetheless, indigenous and local communities are not yet recognised as full partners in mainstream environment or development initiatives. In the best of cases, only their *participation* in activities identified by outside experts is recommended and has become an issue to tackle.

Indigenous peoples and local communities are social units that possess a strong, usually historical, relationship with a given territory and natural resources and are involved in the different but related aspects of local livelihoods.

Box 2.2   **Indigenous peoples and mobile indigenous peoples**
(adapted from ILO, 1989; and Dana Declaration, 2002)

According to the ILO Convention no.169 (1989) indigenous peoples include:

● tribal peoples in independent countries whose social, cultural, and economic conditions distinguish them from other sections of the national community, and whose status is regulated wholly or partially by their own customs or traditions or by special laws or regulations;

● peoples in independent countries who are regarded as indigenous on account of their descent from the populations which inhabited the country, or a geographical region to which the country belongs, at the time of conquest or colonisation or the establishment of present state boundaries and who, irrespective of their legal status, retain some or all of their own social, economic, cultural and political institutions.

According to the same Convention, self-identification as indigenous or tribal shall be regarded as a fundamental criterion for determining the groups to which the provisions of the Convention apply. Among the criteria used by indigenous peoples to identify themselves as such are: their own historical continuity with pre-colonial societies, the close relationship with the land and natural resources of their own territory, their peculiar socio-political system, their own language, culture, values and beliefs. In general, they do not belong to the dominant sectors of a national society, they see themselves as different from it and prefer to relate with the international networks of indigenous peoples.

The term mobile peoples (*i.e.,* pastoralists, hunter-gatherer, sea nomads, shifting agriculturalists and other peoples with dynamic regular changing patterns of land and resource use) encompasses a subset of indigenous peoples whose livelihoods depend on extensive common property use of natural resources and whose mobility is both a management strategy for dealing with sustainable use and conservation and a distinctive source of cultural identity.

Indigenous peoples and local communities are social units that possess a strong, usually historical, relationship with a given territory and natural resources and are involved in the different but related aspects of local livelihoods. As this definition can apply to a range of sizes (*e.g.,* is a city a community? Is the sum of all people

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[8]   Beltrán, 2000.

[9]   See, for instance: Durning, 1989; Agarwal and Narain, 1989; West and Brechin, 1991; Western and Wright, 1994; Pye-Smith and Borrini-Feyerabend, 1994; Stevens, 1997; Ghimire and Pimbert, 1997; Kothari *et al.,*1998; Pimbert and Pretty, 1998; Posey, 1999; Borrini-Feyerabend *et al.,* 2004 (in press); and, with specific regard to mobile indigenous communities: Scoones, 1994; Niamir-Fuller, 1999; Chatty and Colchester, 2002; and Farvar, 2003.

inhabiting a given watershed a community?), one could further specify the term to describe people likely to have "face-to-face" encounters and/ or direct influences in their daily life. In this sense, a rural village, a tribal group moving together in a transhumance path or the inhabitants of an urban quarter can be considered a "community", but not all the inhabitants of a district or town. A community usually possesses some form of *social organisation*— often based on the need for the management of a particular resource or set of resources— and its members share in varying degrees political, economic, social and cultural characteristics (in particular language, behavioural norms, values, knowledge, skills and technologies) as well as ethnic and health features. It is not usual, however, for communities to be recognised as micro-political bodies with administrative capacity.

Important processes in community life regard *social integration* (cooperation to address common needs) and *cultural continuity*. Mechanisms that promote integration in communities include patterns of *reciprocity* (like exchanges in labour, pooling resources, births, marriages and deaths, or economic trade) and *redistribution* (sharing resource or economic surpluses among individuals or households). Mechanisms that promote continuity are the *acculturation* of children in society and a variety of *local organisations* with specific tasks, responsibilities and rules of functioning. Many local communities thus constitute important cultural units, and the self-awareness, pride, sense of common identity and solidarity of their members often represent the last defence against massive socio-cultural change and incorporation by outside models and socio-economic forces.

[Indigenous peoples and local] communities constitute important cultural units... the self-awareness, pride, sense of common identity and solidarity of their members often represent the last defense against massive socio-cultural change and incorporation by outside models and socio-economic forces.

In the sense just described, a local community can indeed be regarded as *one* actor for a variety of decisions concerning the territory and natural resources of its interest. And yet, for other decisions the communities may include a variety of different opinions and be willing to have them all expressed. As a matter of fact, communities are neither perfectly homogeneous bodies nor are they culturally static. On the contrary, they continuously grapple with *cultural change* and *social conflict* (for instance clashing of needs and wants among people belonging to different families or ethnic sub-groups). Thus communities need to continuously manage a balance between the opposite forces of integration and conflict, continuity and change. Their capacity to deal with contrasting socio-cultural phenomena as well as their capacity to gain a livelihood from a given environment provides us with a measure of their capacity to adapt and their social resilience.

No community can be regarded as homogeneous regarding all interests and concerns on the management of the local environment and resources. On the contrary, most of them, including traditional rural communities, are highly internally differentiated. Among the factors at the roots of different interests and concerns in environmental management within the same community are basic characteristics such as clan, ethnic group, gender, age, caste, social class, economic status, education, skills and profession. Ownership of land or other resources is a discriminatory factor but other factors are also important. These include place of residence, existence of cash savings in the household (or tent-hold), linkage to a particular party or religious group, access to means and sources of external information (*e.g.*, technical or bureaucratic), social standing, physical ability, intra-household

division of tasks, household surplus or scarcity of labour, presence of salaried people in the household, and so on.

One of the important innovations of the co-management approach is that it spotlights different interests and concerns not only between communities and other actors in society but within local communities as well. In this sense, one may speak of co-management when a community joins in management with external actors, but also in entirely community-based and community-run initiatives, as long as different interests and concerns within the community are recognised and represented.

Table 2.2 provides a typology of interest groups within a local community *vis-à-vis* the management of a regional park in Liguria (Italy). The expressed interests and concerns, although only schematically reported, illustrate the spectrum of interests and concerns that can exist within a small and relatively homogeneous local community. Noticeably, the information provided in Tables 2.1 and 2.2 is available because someone took the initiative to organise a meeting to discuss the management of the local park. The individuals who participated in the meeting introduced themselves as members of a given category (mostly related to resource ownership and profession) and spoke in the name of their categories. The spectrum of community interests and concerns would likely look different if someone else would have called the meeting and/ or different social groups (for instance the village elders or an association of women) would have participated and expressed their interests and concerns. It is important to keep this in mind, as often the "interest groups" get organised on the basis of an external impulse or occasion.

...one may speak of co-management [even for] entirely community-based and community-run initiatives, as long as different interests and concerns within the community are recognised and represented.

Table 2.2   Local stakeholders in Aveto Regional Park (Italy)
(adapted from Triantafyllidis, 1996)

Individuals, groups and organisations within the "local community"	Key interests/ concerns
Local authorities	Avoiding jurisdiction conflicts
Aveto Regional Park Committee	Respect of law; sound ecological management
Farmers	Cropping, breeding & forest harvesting
Cooperatives	Fair income for members
Hunters	Good hunting and fishing grounds available
Landowners	Maintaining property rights
Holders of Common Properties *("beni frazionali")*	Maintaining property rights, harvesting and grazing included
Restaurants, hotels and shop owners	Enhancing commerce and tourism
Pro Loco (local association to promote tourism)	Enhancing tourist flow and revenues; social animation
Students (primary & secondary school)	Leisure and future involvement (jobs?)

Among the many categories of potentially different interests in a local community, two may be relevant nearly everywhere: age groups and gender groups. As such, they deserve particular attention. Younger people represent the future and, at least on that account, are supposed to have the most compelling interest in maintaining their environment viable and productive. There are, in fact, telling examples of effective involvement of adolescents and children in natural resource management.[10] But not all youngsters can be expected to be sensitive to environmental values or good managers of natural resources. In great part this is due to modern school systems, which, following the colonial legacy, often succeeded, over and above everything else, in alienating the young from their ancestral traditions and culture. Often, indeed, the "stakes of future generations" are most forcefully represented by the traditional elders of a community. In Yemen, the traditional systems of land and water management that assured for millennia the prosperity of the country are now rapidly falling in disarray. Most youth and adult men leave the rural villages in search of easy and lucrative jobs in the cities. The ones left behind to care for the land and preserve the ancient management systems, when they still succeed in doing so, are only the elderly and the women. This is the case in many so called developing societies.

With the possible exception of usually temporary living and working arrangements (*e.g.,* labour camps, or villages abandoned by migrant workers), human societies always include men and women, and their interests in natural resources and roles in managing them are usually different. For instance, a survey of forest product uses was carried out in villages surrounding Mount Elgon National Park, in Uganda.[11] It was found that women were mostly interested in being able to gather firewood, vegetables, mushrooms, medicinal plants and bamboo shoots from the park's territory, while the men were keener on grazing permissions, and on collecting less frequently extracted resources, such as materials for house construction and maintenance. In addition, the men wished to gather bamboo shoots for sale, rather than for household consumption, as stated by the women.

For the communities living in the surroundings of Mount Elgon decisions that are pleasing or acceptable to the men may then be detrimental or unacceptable to the women, and vice-versa. A programme to protect wildlife may bring revenue to men (such as jobs as park guards) but more abundant wildlife may be only a cost to women, because of crop damage or increased danger in daily tasks. Forest protection may favour the commercial farmers who use water to irrigate their fields, but disfavour the women and children who have to walk much further to find fodder, poles or firewood. If only men or only women are allowed to negotiate resource management agreements for the whole community, the other gender group may find its interests poorly represented, if not outright neglected. It may thus be inequitable and unwise to accept the voice of one gender group as representing a whole community: both men and women should organise and participate in management.

Madhu Sarin, a most effective advocate of gender consideration in stakeholder analysis,[12] adds a further dimension to this point, and warns against generalisations and gender stereotypes. She stresses *combinations of social characteristics* (*e.g.,* gender and caste, gender and socio-economic class) as main determinants of interests and concerns in resource management, and she recommends remaining open to surprises:

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[10]   Hart, 1997.
[11]   Scott, 1994.
[12]   Sarin, 1996; Sarin and SARTHI, 1996.

"...forest-related roles and responsibilities [of] women and men in Haryana's Shiwalik belt... vary dramatically within and between villages in terms of occupational, caste, economic and cultural characteristics.... Jat women do not go to the forest at all. While some Gujjar village women collect fodder from forest, in the majority of villages they do not do so. [Among the Banjaras] men harvest the grass from the forest [but] processing into ropes is done by women. In Bar Godam, only the men collect bamboo from the forest while in another Banjhida village, Kalka... the collection of bamboo from the forest was done by the women. The Lavana women of main Nada villages collect heavy headloads of both grass and tree leaf fodder for several months of the year.... [But] the stereotyped image of rural women carrying heavy head loads of firewood is extremely rare in Haryana's Shiwalik belt. Practically none of the women in the area's diverse communities are responsible for domestic firewood collection. Occasionally they do pick fallen twigs and branches while collecting fodder, but firewood collection in the belt is essentially a male task, done by either male children, adults or elders."*

Combinations of social characteristics (e.g., *gender and caste, gender and socio-economic class*) are main determinants of interests and concerns in resource management....

2.2 Entitlements to manage natural resources

We have seen that the interests and concerns of different social actors in natural resource management can originate from a variety of roots. Some may live in close geographic proximity to the resources, or their ancestors may have been associated with them from times immemorial. Others may own the resources, either legally or by custom, or may have acquired some use rights on them. Some organisations may have been assigned a management mandate by the government. Some households may be totally dependent on natural resources for livelihood or income. And some individuals or groups may simply possess unique knowledge and skills applicable to the local environment. Such different interests and concerns, which can well coexist for the same territory or body of resources, may compel different social actors towards contrasting management options. Whose opinions should count? Who should decide?

The above questions are fundamental in co-management processes, and no single answers are appropriate or possible. Always, however, it is advisable to understand the "playing field" as thoroughly as possible. This involves an analysis of the relevant social actors (organised and non-organised), their mutual relationships, the context in which they live, their management claims and the justifications— foundations, motivations, historical roots— they put forth for them. Who are the social actors willing and organised to take part in management (the institutional actors)? What are their claims? How do they justify those claims? Can their different justifications be compared and weighted *vis-à-vis* one another?

In the analysis mentioned above— at times referred to as "stakeholder analysis"

...an entitlement... is a dynamic social construct that finds its meaning only within the social context that created it.

in current literature— we can utilise the concept of "entitlement" to great advantage. We understand here as an entitlement to manage a territory or set of natural resources a socially recognised (legitimate) claim to participate in one or several of its relevant management activities. Entitlements do not usually refer to exclusive or extreme powers (all or nothing). Rather, they cover some specific activities, such as using part or all of those resources, deriving indirect benefits from them, taking responsibilities on related tasks or speaking up and negotiating on management decisions. For instance, an entitlement to manage a given territory could be a broadly recognised claim to speak up and negotiate with others in relevant decision-making processes. An entitlement to manage firewood and fodder from the local forest may be recognised as the right of a household to gather enough dry and green material to warm their home, cook and feed their animals. Gathering more than that, for instance gathering firewood for the market, would be seen as going beyond their entitlement, and would have to be negotiated.

In the working definition used in this volume, an entitlement does not need to be legally codified, and it is more a statement of facts ("what is") than a statement of norms ("what should be"). It can in effect be understood as the end result of a combination of determinants including both accepted normative values (see Checklist 2.2) and differentials of power (see Checklist 2.3). As such, it is a dynamic social construct that finds its meaning only within the social context that created it.

Different social actors are not all equally entitled to manage resources. On the contrary, some have most of the relevant decisions at their fingertips and others have almost none. In general, a mix of visible and hidden factors combines to generate a given distribution of the benefits and costs of management. In some cases, an open debate can take place on those matters and an adjustment of the respective positions and influences can be agreed upon. In others, poorly recognised social actors struggle for years to enhance their own measure of control over natural resources. Still in others, even attempting to put forth some interests and concerns may be a dangerous activity. A re-arrangement of the entitlements of different social actors can even be promoted and supported from outside the relevant context (e.g., by some conservation and development initiatives), but it is only within the local context that a new balance of entitlements must be achieved and sanctioned.

| Box 2.3 | Entitlements in natural resource management |

An **entitlement** to manage a territory or set of natural resources is **a socially recognised claim** to partici-
pate in one or several management activities, such as planning, advising, taking decisions, implement-
ing plans, appropriating benefits (including using resources), assuming responsibilities, monitoring and
evaluating results, etc.

An entitlement is a formal or informal **title to do**, a dynamic social construct that finds its full meaning
only within the social context that created it. Sometimes it is codified by the legal system, but often it
is not. It reflects facts ("what is") rather than norms only ("what should be"). It usually results from a
combination of social determinants that include both accepted normative values and differentials of
power. And it is an evolving social phenomenon, more akin to a process than to a fixed state of affairs.

The concept of entitlement owes a lot to the seminal work of Amartya Sen, for whom[13] *"the word enti-
tlement does not refer to people's rights in a normative sense— what people should have— but to the
range of possibilities that people can have."* Thus, entitlements are *"the set of alternative commodity
bundles that a person can command in society using the totality of rights and opportunities that he or
she faces... based on processes such as production, own labour, trade, inheritance or transfer."* In the
words of Leach et al. (1997): *"An extended entitlement approach sees entitlements as the outcome of
negotiations among social actors, involving power relationships and debates over meaning rather than
simply the result of fixed moral rules encoded in law."*

Leach et al. (1997) provide a further analysis of the concept: *"Environmental entitlements are the alter-
native sets of utilities derived from environmental goods and services over which social actors have
legitimate, effective command and which are instruments in achieving well being."* Such entitlements
*"...enhance peoples' capabilities, which are what people can do or be with their entitlements. For
example, command over fuel resources derived from rights over trees gives warmth or the ability to
cook, and so contributes to well being."* Also: *"Entitlements are what social actors actually get in prac-
tice.... By "legitimate" we refer not only to command sanctioned by a statutory system but also to
command sanctioned by customary rights of access, use or control or other social norm."*

In the words of de Graay Fortman (1997): *"Entitlement is the possibility to make legitimate claims, i.e.,
claims based on rights. It is a function of both law and power. Power means opportunity, actual com-
mand. Law legitimises and hence protects in case of dispute.... People continue to try to improve their
entitlement positions. Hence, more than a given state of affairs, entitlement is... a process in society."*

As entitlements are social constructs, we can attempt to understand their social
roots and justifications. To begin with, there exist a variety of grounds for entitle-
ments recognised as valid and legitimate on the basis of accepted normative val-
ues in different societies (see Checklist 2.2). For any given society, such validity
and legitimacy may be acknowledged in a more or less explicit way. For instance,
they could refer to a body of written law, but also to customary law or to the basic
tenets of social life. The latter may include the right to life and the other basic
human rights of the United Nations (UN) Charter but also human solidarity,
democracy, social equity, sustainability of the environment, or obedience to a cul-
tural or religious credo. Some specific principles may be upheld by the large
majority of a society, and thus become a sort of social norm. These may include
"respect of law and order", pragmatism, adherence to "scientific principles", liber-
alism, respect of free market and private property, basic fair play, affirmative
action, patriotism, effectiveness and efficiency in management, and so on.

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[13] Quotes of A. Sen (1984) from Leach et al., 1997.

Checklist 2.2   The roots of entitlements:
                examples of grounds to claim a "title" to manage natural resources
                (adapted from Borrini-Feyerabend, 1996)

● legally recognised rights to land or resources (*e.g.*, property rights, usufruct rights)

● customarily recognised rights to land or resources (*e.g.*, use rights, communal property, ancestral domains of indigenous peoples)

● specific mandate by the state (*e.g.*, statutory obligation of a given agency or governmental body)

● proximity to the resources (*e.g.*, the residents of the local community)

● direct dependence for subsistence and survival (*e.g.*, food, medicine, communication)

● direct dependence for basic economic resources

● historical, cultural and spiritual relations with the natural resources at stake (*e.g.*, in the case of indigenous peoples)

● continuity of relationship (*e.g.*, local communities and long-time resource users *versus* recently arrived immigrants, tourists, hunters from other areas)

● social equity (fairness) in access to resources and distribution of benefits from their use;

● number of people bringing forth the same interests and concerns

● unique knowledge and skills for the management of the resources at stake

● losses and damage incurred in the management process

● degree of commitment, effort and resources invested in natural resource management

● actual or potential impact of the activities of the social actor on the resource base

● general recognition of the value of the perspective/ position (*e.g.*, "scientific validation", "fitting the local knowledge system", aiming at "sustainable use", following the "precautionary principle", etc.)

● compatibility with the country's policies and body of law (*e.g.*, a Freedom of Information Act, the special rights of indigenous peoples)

● compatibility with international conventions and agreements (*e.g.*, the Convention on Biological Diversity, the Ramsar Convention, the UN Convention to Combat Desertification).

In all, different "grounds", differently acknowledged and respected by different cultures, can be upheld and used by social actors as a *justification* for their claims to participate in managing natural resources. For instance, an indigenous community may claim a role in managing a territory within a state-controlled protected

area on the basis of their customary rights. A local business may claim a right to use certain resources as in so doing it is providing jobs for local people. A governmental agency may impose some rule of access to a territory for the sake of national security. But this is not the whole story.

In many societies, the emergence of specific environmental entitlements has little to do with an explicit social consensus on claims and values, and more to do with the exercise of coercive physical power, power of position, economic power, household and group power, etc. (see Checklist 2.3). As some have put it:[14] "The history of environmental management systems shows that those are more a reflection of dominant socio-economic thinking than of the level of ecosystem knowledge." The social actors who can exercise various types of power, do so to overcome, distort or impose upon more legitimate claims. At times, however, one form or another of power is also utilised to back up a socially legitimate claim. For instance, coercive power may be necessary to prevent some people from hunting wildlife, even though the hunting ban may be fully inscribed in a country's environmental legislation. Or personal charismatic power may be necessary to advance the claims of an ethnic minority demanding a more equitable distribution of water rights within a community.

Checklist 2.3 **Forms of power that shape and affect environmental entitlements**
(adapted from Lewis, 1997)

● power of position (having authority, being in a position to make or influence decisions)

● power of knowledge (having information unavailable to others)

● personal power (being personally forceful, persuasive)

● household power (being from a well-connected family)

● group power (being a member of an ethnic, religious or other type of group that has a dominant social position or, for example, being male in male-dominated society)

● economic power (commanding financial and other economic resources in overwhelming amount with respect to the resources of others)

● political power (having a powerful supportive constituency or access to political leadership)

● legal power (having strong expert legal council, or privileged access to courts)

● coercive physical power (having police or military backing or weaponry)

Another important kind of power— the power of passive non-compliance, subtle sabotage, evasion and deception— has been the route of escape for many of the disenfranchised (dis-entitled) throughout history.[15] At times, this has allowed them to survive and gather more environmental benefits than the established system of power would have allowed (the environmental impact of this type of behaviour is still in need of thorough investigation).

Whether today it is advisable for many under-privileged to continue on the route

[14] Weber and Bailly, 1993. On this, see also the illuminating article by Ramírez (2001).
[15] Scott, 1985.

of passive non-compliance or attempt "developing their own entitlements" in a transparent and open struggle is still a matter of debate. In some societies characterised by large power disparities, the recent development of democratic systems and the state of law allowed a number of social movements, unions, consumer and minority groups to adopt a transparent and direct strategy of confrontation, sometimes even in a overtly legal manner. For example, a recent struggle in India, where the legal system has always favoured the literate gentry, led to the recognition by the Supreme Court of the right of a community elder to provide oral testimony in matters of customary law. Other societies, however, cannot yet provide the conditions that would make a transparent and direct debate safer and more convenient than a hidden search for private advantages. In fact, even in relation to the above example, the experience of many Indian community activists working on land rights issues shows they are constantly exposed to physical danger and repression.[16] This is by no mean an isolated case, as activists attempting to improve the NRM conditions of their communities are routinely singled out for violent repression[17] and non infrequently murdered.[18] This represents a most serious obstacle to the promotion and spreading of partnerships in natural resource management.[19]

2.3   Equity in managing natural resources

In the context of multiple social actors with conflicting interests and concerns or competing entitlements on the same territory or set of natural resources, is there a way (or are there many ways) of pursuing *equitable* management arrangements? One fairly obvious first consideration brings to the fore the essential distinction between equity and equality. Certainly not all social actors deserve the same entitlements to natural resources. We are far from the simple democratic rule of "one person, one vote", as the interests and concerns of different social actors with respect to the same resources can be enormously different in both quantity and quality. But *who* deserves a privileged position? Who should be considered a "primary stakeholder", and thus a rightful decision-maker *versus* an associate, an advisor, or simply someone to be kept informed about the decisions of others?

...distinguishing
between local and
non-local actors...

For some authors, one or more roots or grounds for environmental entitlements appear much more fundamental than others. Marshall Murphree, for instance, stresses that there is one major and most important distinctive characteristic among social actors with a claim on natural resources, and this is the distinction between local and non-local actors:[20]

"The danger is that this perspective [stakeholder analysis] can easily transform interests into a conceptual collective proprietorship by a vast and amorphous

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[16]   Prabhu Pradip, personal communication, 2002.
[17]   One example among many is recounted in Varela, 2003.
[18]   Again, one example among many is illustrated in Henderson, 2000.
[19]   Borrini-Feyerabend, 1997.
[20]   Murphree, 1994.

circle of stakeholders. Those stakeholders who have invested most in professional expertise and monetary capital form the board of directors. But this accounting procedure is false. Communities' investment in their environments— their land, their resources, their labour, their local environmental knowledge, their managerial presence, and their stake in the future... is far higher than that of all external actors put together.... Community interests, responsibility and authority should be paramount."

Consequently, Murphree organises social actors into three categories (Table 2.3), according to their range of action and institutional affiliation, clearly distinguishing between *local* and non-local institutional actors (governmental and non-governmental) and stressing that the former should have a pre-eminent position in management decisions.

Table 2.3   Categories of institutional actors (from Murphree, 1994)

Community institutional actors	"Responsive to local relational dynamics, accountable to collective community interests, and able to articulate views and positions effectively with external institutional actors."
Government institutional actors	"State institutional actors derive much of their strength from their status as "gatekeepers": coercively backed authorities that determine what communities can and cannot do. They also derive strength from their ability to control the flow of fiscal and other resources from the centre to the periphery. Rarely do flows to communities offset what has been extracted from them. Finally, state agencies act as gatekeepers for donor grants and aid projects."
Non-Governmental institutional actors	"...focus on specific issues or problems. NGOs arise in response to perceived needs and their *raison d'être* falls away when the need (or the perception of it) changes. They can mobilise financial and personal resources comparatively quickly and efficiently. They have the money, personnel, and rapid-response capacity for programmes and projects, while national governments claim sovereignty and gate-keeping authority."

The distinction between local and non-local actors is not the only one possible. Elinor Ostrom offers another demarcation criterion between resource "appropriators" and resource "providers". The appropriators are the ones who simply harvest or pull out resource units. The providers are instead engaged in the process of creating, maintaining, or restoring a resource. Fishermen are usually appropriators but become engaged in provision when they change the structure of the seabed in order to improve the habitat for nesting. Irrigators are engaged in provision when they construct or maintain a canal. Many self-governed systems of common property resources *provide* their own rules as a result of extensive discussion, bargaining, and negotiation over what these rules should be, and only those rules ensure the long-term sustainability of the resource.[21] Obviously, the providers have stronger grounds to claim resource entitlements than pure appropriators do.[22]

... distinguishing between resource appropriators and resource providers...

A similar but not identical distinction is made by Gorman (1995) between primary and secondary users of coastal resources in Tanga (Tanzania). In Table 2.4,

[21] Elinor Ostrom, personal communication, 1998. See also Ostrom and Walker, 1997.

[22] For a given set of natural resources, providers and appropriators can mix, coincide or remain neatly separate.

...distinguishing
between primary and
secondary users of
natural resources...

primary users are defined as the ones who directly depend on the resources for their livelihood, either in situ or by harvesting. The secondary users are the ones whose use of a particular resource follows after the direct harvesting or *in situ* uses. The former would be "more entitled" than the latter in resource management.

Table 2.4   Users of coastal resources in Tanga (Tanzania)
(adapted from Gorman, 1995)

Resource	Primary users	*Secondary users*
Ocean ecosystem/ seawater	Seaweed farmers, salt boilers, solar salt producers, sea transport workers	Exporters & users of sea transport; tourism operators
Coral reefs	Lime collectors/ burners, house builders, tourism operators, trophy collectors	Builders (cement, limestone)
Fisheries	Fishermen— hand lines, traps, nets (seine & dragnets), dynamite, divers, boat owning fishermen "visiting" fishermen, trawlers Fisherwomen— ach seining, octopus & mollusc collectors, tourism operators (game fishing)	Men and women fish traders, fish processors (fryers, driers, and smokers), and fish dealers for inland market and for export, tourism operators.
Beaches	Fishermen, fisherwomen, households (sanitation needs), tourism operators	Traders, processors
Mangroves	Pole cutters, fishermen, salt boilers, solar salt producers, lime burners, boat builders, house builders, traditional healers, households engaged in crab & other fisheries, mariculture.	Mangrove pole traders, saw millers.
Bare Saline areas	Solar salt producers, brine wells	Salt traders
Rivers	Households, sisal estates, coconut plantations, transport, industries	
Ground Water	Households, farmers, sisal estates, industries.	
Coastal forests & woodlands	Households of salt boilers, lime burners, timber cutters, charcoal makers, boat builders, traditional healers, honey gatherers, hunters	Saw millers, transporters of fuel wood, fish processors
Wildlife	Hunters, tourism operators, trophy collectors, safari companies	

Finally, there is also a school of analysis that stresses not only an attribute of relevant social actors ("local", "producer", "primary user") but singles out outright one of them— the indigenous peoples and local traditional communities— as being in all cases the primary and most important of them all. For Farvar (1989) the most important characteristic of local communities is that they have evolved with the natural resources, and have developed rich and detailed management systems that have stood the test of time. A variety of *intruders* in the community space (colonial powers and other foreign invaders, the national state and government agencies, missionaries of various denominations, traders and business, national and international corporations, donors and developers of all venues) clamour for attention and pretend to be considered rightful stakeholders. The solutions to the local problems imported by these outsiders have generally not improved the management systems devised by local communities and have at times even destroyed whatever existed and replaced it with tragically ineffective open access regimes. The local communities may or may not wish to accept the claims and/ or enter into partnership relationships with external actors in a variety of syncretic natural resource management systems adapted to the new environmental, social and economic conditions (see Chapter 1). The local communities, however, should always maintain a position of predominance and control *vis-à-vis* others.

...considering local communities the primary and most relevant social actor... as they have evolved with the natural resources, and have developed rich and detailed management systems that have stood the test of time....

We may agree with Murphree, Ostrom, Gorman or Farvar on a crucial distinction among key relevant social actors on the basis of locality, productive efforts, dependency for livelihood or belonging to an age-old resident or mobile community. We may pick an entirely different criterion, whether or not listed among the ones in Checklist 2.2. Or we may remark that many important criteria— such as locality, productive efforts or dependency for livelihood— tend to converge on the same social actors. In a typical situation, a complex patchwork of claims (often several claims for each relevant actor) interplay with important power differentials within a context of relatively limited opportunities and resources. In all cases, having appreciated a plurality of relevant actors and their related bundles of entitlements and claims— we can ask ourselves a crucial question: in a given, specific and usually complex context, what does "striving for equity" mean? How could the system be rendered the fairest possible? The following statements offer some initial reflections:

- Striving for equity in natural resource management means helping the under-privileged to "develop their own entitlements"[23].

- Striving for equity in natural resource management means recognising entitlements rooted in valid and legitimate grounds (as defined by the relevant society) rather than entitlements rooted in the exercise of one or the other form of power.

- Striving for equity in natural resource management means promoting a fair negotiation of functions, benefits and responsibilities among entitled social actors.

To explore the practical implications of the above we may examine a generic (and by necessity fairly idealised) process by which social actors empower themselves as entitled and responsible resource managers (see Figure 2.1). At every step of that process we will ask ourselves what concrete conditions and inputs may be necessary to enhance equity. (Figure 2.1 is indeed an "idealised" sketch, as real life processes are generally more chaotic, with steps back and forth in place of a linear and smooth progression.)

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[23] This point is stressed by Vithal Rajan (personal communication, 1997).

Figure 2.1 Towards social actors empowered and responsible in natural resource management— a schematic view

Responsible actors

Co-management partnership: the institutional actors partake of the management benefits and responsibilities amongst themselves; contribute knowledge, skills and financial resources to resource management; are held accountable for their agreed responsibilities; learn by doing in management tasks

Empowered actors

Negotiating agreements among several entitled actors and set up organisations, rules and systems to enforce the rules, to share the natural resource benefits according to their respective entitlements and capabilities

Entitled actors

Recognition/ negotiation by society of the interests and concerns of the institutional actors as "entitlements" (customary and legal rights included)

Relevant actors

Recognition of the values, opportunities and risks associated with land and natural resources; self-organisation to express those as own interests and concerns

Potential actors

We propose that the first step in the process is for social actors to *recognise some specific opportunities and risks* in a relevant territory or set of natural resources. Opportunities may include all kinds of feasible or profitable utilisation of natural resources, ranging from shifting cultivation over a forested region to indigenous nomadic pastoralism in rangelands; from harvesting and channelling water for irrigation to covering the land with cement to enlarge a landing strip; from gathering medicinal plants and other natural products to pasturing animals in rangelands,

...relevant information [should be made] available to everyone potentially concerned.

and from recreation by spending a few days in wilderness to setting up a habitat preservation area. Risks may include all kinds of damages that may come from the environment— from contracting malaria in the surroundings of a tropical wetland to having agricultural plots destroyed by flooding; from losing a harvest because of pests to being exposed to attacks by wild animals in the surrounding of a protected area. Risks may also include all sorts of negative impacts the environment may suffer as a result of human activities.

Many environmental opportunities and risks are well know by people and acted upon on a daily basis. Others, however, are not known at all, possibly because of lack of specific information or awareness of conditions and consequences. A second equity concern is thus about assuring that the *relevant information is available* to everyone potentially concerned. If some social actors are not sufficiently informed and aware about the resource management issues, there is little they can contribute or do about them.

Once individuals, groups and organisations recognise for themselves some relevant environmental opportunities and risks, they need to *articulate and express* those as their own interests and concerns. Thus, a head of household in rural Burkina Faso planning to open up new land to agriculture will express his intention to the local *Chef de Terre*, and ask for the customary permission. An environment NGO in the United States of America (USA) will call for a meeting of its members, discuss the priority issues among a number of potential topics, and then begin a letter campaign, organise a demonstration, lobby politicians, or do whatever else is appropriate to be heard and obtain results. A national environmental protection agency will set up an investigation on a topic of concern and then develop, publicise and enforce rules on the matter on the basis of the obtained results. A Council of Elders in a nomadic pastoral community in Iran will meet to assess the carrying capacity of their summering and wintering grounds before the season of migration and to take decisions on migratory routes for their flocks. As we have already argued, communities, organisations and individuals become "institutional actors" by expressing their interests and concerns and organising for action. The latter point is particularly important, as social actors may be powerless simply because they are not sufficiently or effectively organised.

...communities, organisations and individuals become "institutional actors" by expressing their interests and concerns and organising for action.

In the above, equity would require that social actors are free to express their views and opinions, as well as free to gather and organise to further their views and interests. Both of these requirements are far from trivial in many countries today. In fact, assembling and organising— a fundamental human right in the UN Charter— can still be treated as a crime. When organising is politically feasible, it may still be difficult because of legal constraints (such as complex procedures, or simple lack of a legally-recognised status for communities and local associations of resource users). Finally, the process of organising may be challenging because of a more prosaic but no less impeding lack of time, financial resources or human skills.

Depending on the context in which the interests and concerns need to be heard, social actors may require more or less extensive preparatory work before being able to effectively convey their claims. Sometimes this includes establishing one's own legal identity (as an accepted association or organisation gathering a constituency that shares some basic NRM interests and concerns, and is willing to act (see Box 2.4). Nearly always, however, this involves discussions and agreements on priorities, objectives and strategy. It may include establishing a representation system (see Box 2.5), joining an existing organisation or even establishing a new one (with membership rules, etc.).

Box 2.4   Social groups organised to manage forests in India
(adapted from Sarin, 1996)

Among the more complex aspects of the forest protection process is the definition through inter-group negotiations of the "social units of organisation" and of the specific boundaries of the forest area to protect. Due to the scattered settlement pattern of tribal and semi-tribal communities, most villages near the forests do not have compact settlements. Instead, they consist of individual houses scattered next to agricultural landholdings. Most villages have a number of *falias* (hamlets) named after the particular sub-caste or tribe residing in it. These are not easily identifiable as physical units as they are essentially *social* units. In addition, the boundaries of the administrative "revenue village" (*gram panchayat*) do not necessarily overlap with the boundaries of the social units. There is also considerable variation in the amount of forestland within the boundaries of different revenue villages, with little correlation between a village's population and the forest area within its boundaries, despite the fact that the majority of the population continues to have similar levels of dependence on forest produce. In all, physical proximity, extent of dependence and social relations, rather than formal "revenue village" boundaries, have determined which people use which forest area, as well as the composition of the forest protection groups.

The process of organising with others to bring forward one's own interests and concerns requires time, financial resources and human skills that may not be readily available, especially among the underprivileged social actors who may need them the most. A poor, single head of household may be a careful natural resource manager, possess a wealth of knowledge and skills and have solid customary rights over a given set of natural resources. Yet she may have little spare time to take part in meetings, no transport facilities to travel to a gathering place, no literacy to check on background information and little self-confidence to speak in public.

Traditional and long-standing local bodies of various kinds offer important opportunities for local people to be represented *vis-à-vis* external actors inter-

ested in the management of the same territory or set of resources. Today, however, many such local bodies are losing rather than acquiring importance. It is an unfortunate development of recent history that many communities that did possess traditional institutions for resource management have seen them devalued and weakened by modern state policies that do not recognise them, learn from them, nor assign to them any meaningful role.[24] In the words of Baland and Platteau,[25] *"...state authorities have an interest in tightly controlling all significant attempts by local communities at organizing themselves, particularly so if these attempts result in the development of large-scale grassroots movements or networks or in the assertion of claims for more authority."* In some cases, effective traditional systems of resource management exist and could play a most important role for conservation and development, but their recognition by outsiders may still be limited.[26] In other cases, the traditional organisations exist but are unable or unwilling to represent the variety of interests and concerns of their communities and can be corrupted by outside forces.[27]

...many communties that did possess traditional institutions for resource management have seen them devalued and weakened by modern state policies that do not recognise them nor assign to them any meaningful role.

Box 2.5   **Forms of representation**
(adapted from Borrini, 1994)

⊃ **self-representation** (face-to-face; people personally express their opinions, discuss, vote, work, offer a material contribution, receive a benefit, etc.; people represent themselves);

⊃ **direct representation** (people delegate others— relatives, friends, respected members of their community, traditional leaders, leaders of a community-based group— to represent them in all sorts of activities but maintain a direct, face-to-face relationship with their representatives);

⊃ **indirect representation** (people delegate others— experts, appointees of large associations, non-governmental organisations, parties, elected or other government officials— to represent them in all sorts of activities, but they rarely, if ever, interact with their representatives on a person-to-person basis).

Some may argue that elected political officials and administrators at various levels are the ones to represent local interests and concerns, including concerns regarding natural resource management. There is some truth in this, insofar as freedom of information and the formal procedures of democracy (*e.g.*, periodic elections) are respected, but there are also obvious limitations. For instance, indirect representation systems (see Box 2.5) are rarely appropriate to convey the specific and detailed concerns of small groups of people, and surely cannot deliver the full range of knowledge and skills of local resource users. In general, effective direct representation is crucial to assure the participation of stakeholders who do not enjoy a high social status, and it is thus an essential concern for equity in natural resource management.[28] In many cases, the traditional organisational structures for the management of common property or common pool resources (such as a council of elders) remain the most appropriate to represent local interests. These organisations may need to be identified, recognised,

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[24] Bromley and Cernea, 1989.

[25] Page 379 in Baland and Platteau, 1996.

[26] In the Bijagos archipelago (Guinea Bissau) the local people have a varied, complex and effective system of natural resource management of enormous value for the Bijagos Biosphere Reserve (IUCN, 1996a; Maretti, 2003). Yet, the communication between the local councils of chiefs and the rest of society (state administrators, economic operators, etc.) is still limited.

[27] A community in New Guinea faced a choice between fast, lucrative and destructive timber exploitation and slower, a bit less lucrative but sustainable timber exploitation in its own ancestral territory. The elders from the community— in charge of deciding for everyone— unequivocally chose the former option. One of them, interviewed on why they did so, replied "I have old teeth and like to eat tender rice. I like to eat it *now*." See McCallum and Sekhran, 1997.

[28] Borrini-Feyerabend, 1998.

understood, supported and empowered to act. Some corrective and support measures could in fact be negotiated with them (for example, to incorporate the representation of missing segments of the community, to take on some self-monitoring and feed-back procedures or to ensure a high level of interaction with their constituencies).

Informed, organised and effectively-represented social actors are just a starting point in the struggle to further one's interests and concerns in NRM. It is only in the political moment of acceptance and recognition by society that those interests and concerns become "entitlements". Some entitlements are legally-sanctioned and uncontested rights, recognised pretty much everywhere in the world (*e.g.*, an owner of a plot can cut grass on her land). Other management entitlements are fuzzily defined and/ or actively challenged. A governmental agency with responsibility about public health matters might need to fight and win a legal battle with industry owners before being able to tighten regulation on polluting discharges in the environment. A community that lived for centuries in a territory now declared protected area might need to struggle at length if it wishes to maintain some form of access to its natural resources. A factory owner dependent on the water discharge from a watershed might have to negotiate with a watershed committee to assure a regular supply to his factory. Justly or unjustly, others in society may not share the subjective perception of one's own entitlements and that recognition might have to be achieved, bargained for, or even "conquered".

Again, some equity considerations are paramount to assure a fair chance to all relevant actors in the sensitive moment of negotiation. A society ridden with discriminatory procedures, for instance, will not be able to assure to all the same chances to be heard and responded to in a positive way. Moreover, only a political arena open to new ideas and offering the concrete possibility to meet and discuss conflicting views and interests allows new key relevant social actors to emerge and their entitlements to be recognised. In other words, a measure of political openness and participatory democracy is needed for new subjects to be socially accepted (*e.g.*, for community representatives to sit on a Park Management Board, or for an association of squatters to manage a water supply and sanitation system in their own neighbourhood).

[Equity demands] a measure of political openness and participatory democracy.

In time, the newly recognised entitlements will be specified, systematised and codified. Stronger or weaker types of entitlements will then correspond to the breadth and strength of the social consensus around them. Within stable systems of reference, entitlements will likely evolve and stabilise into socially-codified norms and/ or legally-codified rights.

Box 2.6   **Asymmetrical rights in Joint Forest Management in India**
(adapted from Sarin, 1995)

The Joint Forest Management (JFM) programme seeks to develop partnerships between local community institutions (as managers) and state forest departments (as owners) for sustainable management and joint benefit sharing of (usually degraded) public forest lands. In essence, the states Joint Forest Management resolutions assure participating villagers free access to most non-timber forest products and a 25 to 50 % share of poles and timber at final harvesting. In return, the villagers are expected to protect the forest

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after conforming to the membership and structure specified by the forest department. The forest departments reserve the right to cancel the JFM agreement unilaterally (and, in most cases, even to dissolve the community institution itself). In such a situation, the community has no right to any compensation for its investments of labour, time or capital. If the forest department fails to honour its commitments, the villagers have no reciprocal rights for penal action (except in Haryana where they can at least demand compensation).

On the basis of the entitlements recognised in society, concrete management initiatives can begin. The entitled social actors can identify priorities, develop plans and find among themselves, or acquire from outside, the skills and resources necessary to manage the territory or set of natural resources at stake. It is here that each actor can assume, on the basis of the agreed entitlements and its own capabilities, a specific set of management functions, benefits and responsibilities. With Leach et al. (1997), it is paramount to recognise that, in this essentially political moment of negotiation: *"...different groups of actors may give priority to different environmental resources and services, and particular trajectories of landscape change will bring a different distribution of costs and benefits to different groups of people.... Landscape change is a fundamentally political process, involving negotiations and conflicts between actors with different priorities [and] who are differently positioned in relations of power."*

In political struggles, equity considerations are again paramount. On the one hand, there should exist places and times for negotiation (*negotiation platforms* or *fora*) and some form of logistical organising. A powerful way to maintain an inequitable *status quo* may be simply never to allow a meeting and organised discussion to happen. If the meetings do happen, however, every participating actor should possess the capability to negotiate. Such capability is the end result of a subtle combination of qualities, which may involve various human skills (*e.g.*, personal assertiveness, clarity and forcefulness of communication, language skills, etc.) but also freedom from fear and freedom from needs which may impose the silence and withdrawal of some actors. In the negotiation process, the use of relatively neutral meeting places, timings that allow everyone to participate and presence of impartial and competent facilitators are generally helpful (see Chapter 6).

A limited space of anarchy (... "absence of fixed governing structures") [promotes] democratic experimentalism, which, in turn, is likely to foster more resilient and stronger societies.

When the management functions are expected to last through time, it is appropriate to institutionalise the social agreement by establishing a multi-stakeholder management body. (The process of negotiation among relevant actors and the types of plans, agreements and organisations that may result from it are explored in detail in Chapters 5 to 9 of this volume). Again, only a socio-political context in which the development of new organisations is allowed in a non-regimented way would permit such events to take place. Such a measure of *democratic experimentalism* characterises strong societies, in which the citizens and civil subjects in general are accustomed to assuming social responsibilities.[29] A limited *space of anarchy* (where anarchy is intended in the literal sense of "absence of fixed governing structures") seems thus to promote democratic experimentalism, which, in turn, is likely to foster more resilient and stronger societies.[30] For instance, if a national law establishes that the management board of protected areas in the country *must* be composed of— let us say— ten elected local officials and university experts, the Boards will never include other concerned and well-informed representatives of the civil society. Important management contributions that may surface on a case-by-case basis will not have a chance to be incorporated...

Only by assuming responsibilities corresponding to their own socially recognised entitlements and by engaging in a flexible process of learning by doing in management, the relevant actors become effectively and fully empowered. Again, for the sake of equity, flexibility is needed in revising plans and agreements and in re-arranging rules on the basis of lessons from experience (this may allow some partners to contribute in the implementation phases what they might have not been able to contribute earlier on). To balance that flexibility and to protect the interests of the weakest actors, reliable conflict management, arbitration and legal enforcement procedures, and a fair and effective judiciary system, are also paramount.

[Equity demands that] the interests of the weakest actors [be protected by] reliable conflict management, arbitration and legal enforcement procedures and by a fair and effective judiciary system.

In Part II of this volume, Checklists 5.3, 5.4 and 5.5 offer some concrete ideas about how to foster equity in natural resource management. Figure 2.2 also offers a sketch of what can be done to increase equity in the various steps of the CM process.

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[29] An example in point is Switzerland, where federalism and strong devolved powers created a society where social responsibility if fully assumed by citizens. See Dorf and Sabel, 1998 and Scott, 1998.

[30] Borrini-Feyerabend, 2004 (in press).

Figure 2.2 Including equity considerations in the process towards empowered and responsible social actors— a schematic view

Responsible actors		**Co-management partnership**: the relevant social actors share benefits and responsibilities amongst themselves; contribute knowledge, skills and/ or financial resources; are held accountable for their agreed responsibilities; "learn by doing" in natural resource management tasks	Acceptance of a measure of **democratic experimentalism** ("legal and political space" to accept new actors, new rules and new systems to enforce rules); **flexibility** to adjust plans on the basis of experience; **effective enforcing** of negotiated agreements and rules
Empowered actors			
Entitled actors		Entitled actors **negotiate agreements** and set-up **organisations, rules** and systems to enforce the rules to share natural resource benefits according to their own entitlements and capabilities	Existence of **negotiation platforms; capability** of entitled actors— including economic and political capability— **to negotiate** with others; non-discriminatory time, place, language and format of meetings; impartial and effective facilitation, in languages all actors understand
Relevant actors		**Recognition/ negotiation** by society of the interests and concerns of the institutional actors as **"entitlements"** (customary and legal rights included)	Absence of social discrimination; **fair hearing** available to all institutional actors; political openness towards participatory democracy
Potential actors		**Recognition** of the values, opportunities and risks associated with land and natural resources; **self-organisation** to express those as own interests and concerns	Relevant **information** accessible to all; **freedom** of expressing views and **organising** for action; time and resources to organise; fair system of **representation**

Chapter 3. CO-MANAGEMENT OF NATURAL RESOURCES

3.1   What's in a name?

There are two main challenges in managing natural resources. One is to respond appropriately to the *ecological characteristics* of a given environment, preserving its integrity and functions while assuring a flow of benefits from it. This challenge is mostly about *content*— the *what* and *when* of managing natural resources. The other is to respond to the *social characteristics* of the same environment, dealing in an effective way with the inevitably conflicting interests and concerns of different social actors. This challenge is mostly about *process*— the *who* and *how* of managing natural resources. Throughout history, attempts to respond to the latter social challenge have included many forms of hostile struggle, both open and violent and hidden, via various means of social control. Fortunately, they also include a variety of collaborative, co-management solutions.[1]

In this chapter we will attempt to illustrate and systematise some contemporary collaborative solutions to resource management challenges. Under diverse socio-political and economic circumstances, these span a bewildering array of processes, agreements and organisations, as it will be apparent from the concrete examples we will describe.

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[1]   And at times, they include a mix of both...

Terminology is not a trivial issue here. There is no doubt that it would be useful to have a common lexicon for phenomena found throughout the world, which in the least would facilitate communicating experiences and lessons learned. But there are pitfalls to avoid. We could use the term "co-management" in a broad and general sense, but lumping too much under the concept may add to a generic "corrupted language" by which some vague and appealing terms are utilised to cover all sorts of practices and behaviours.[2] We could, on the contrary, develop a set of air-tight definitions for similar yet slightly distinct phenomena. But that may complicate communication, without necessarily fitting the complexity of real events. In the last decades, various terms have been employed to describe different levels, stages or areas of application of "co-management situations". A selection of those terms is listed in Table 3.1, given in the chronological order in which they were introduced, beginning with a quote of historical value.

...but air-tight definitions may complicate communication, without necessarily fitting the complexity of real events....

Table 3.1   Concepts and terms used to understand and describe collaboration in managing natural resources

Mutual aid	In the practice of human aid we can retrace the earliest beginning of evolution, we thus find the positive and undoubted origin of our ethical conceptions, and we can affirm that in the ethical progress of man, mutual support— not mutual struggle— has had the leading part. In its wide extension, even at the present time, we also see the best guarantee of a still loftier evolution of our race. (Kropotkin, 1902)
Adaptive management	A guiding principle for the design of the interface between society and biosphere, between community and ecosystem, between household and environment.... The release of human opportunity requires flexible, diverse and redundant regulation, monitoring that leads to corrective action, and experimental probing of the continually changing reality of the external world.... The emphasis is on social learning about the complex adaptive systems of which we are a part. Human institutions are crucial factors in this learning. (Holling, 1978 and others quoted in Röling and Maarleveld, 1999)
Participation	Organised efforts to increase control over resources and regulative institutions in given social situations, on the part of groups and movements of those hitherto excluded from such control. (UNRISD, 1979)
Networking	A number of autonomous ... groups link up to share knowledge, practice solidarity or act jointly and/ or simultaneously in different spaces. Based on moral (as distinct from professional or institutional) motivations, networks are cooperative, not competitive. Communication is of their essence. ... Their raison d'être is not in themselves, but in a job to be done. ... They foster solidarity and a sense of belonging. They expand the sphere of autonomy and freedom. The source of the movement is the same everywhere— people's autonomous power— and so is their most universal goal, survival. (Nerfin, 1986)
Co-management	...a political claim [by local people] to the right to share management power and responsibility with the state... (McCay and Acheson, 1987)
Collaboration	The pooling of appreciation and/ or tangible resources (*e.g.*, information, money, labour) by two or more stakeholders to solve a set of problems neither can solve individually. (Gray, 1989)

[2]   Majid Rahnema (1992) powerfully warns against this danger, which has plagued terms such as "participation," "aid" and "development" for a long time.

Popular participation	As an end in itself, popular participation is the fundamental right of the people to fully and effectively participate in the determination of the decisions which affect their lives at all levels and at all times. (African Charter for Popular Participation in Development and Transformation, 1990)
Co-management	The sharing of power and responsibility between government and local resource users. (Berkes, George and Preston, 1991)
Community forestry	The control and management of forest resources by the rural people who use them especially for domestic purposes and as an integral part of their farming system. (Gilmour and Fisher, 1991)
Co-management (of protected areas)	The substantial sharing of protected areas management responsibilities and authority among government officials and local people. (West and Brechin, 1991)
Democratisation	The act of subjecting all interests to competition, of institutionalising uncertainly. The decisive step towards democracy is the devolution of power from a group of people to a set of rules. (Przeworski, 1991)
Joint forest management	Collaboration in forest management between agencies with legal authority over state-owned forests and the people who live in and around these forests. (Fisher, 1995)
Environmental partnerships	Voluntary, jointly defined activities and decision-making processes among corporate, non-profit, and agency organisations that aim to improve environmental quality or natural resource utilisation. (Long and Arnold, 1995)
Collaborative management (of protected areas)	A situation in which some or all of the relevant stakeholders are involved in a substantial way in management activities. Specifically, in a collaborative management process the agency with jurisdiction over natural resources develops a partnership with other relevant stakeholders (primarily including local residents and resource users) which specifies and guarantees the respective management functions, rights and responsibilities. (Borrini-Feyerabend, 1996)
Joint protected area management	The management of a protected area and its surrounds with the objective of conserving natural ecosystems and their wildlife, as well as of ensuring the livelihood security of local traditional communities, through legal and institutional mechanisms which ensure an equal partnership between these communities and governmental agencies. (Kothari et al. 1996)
Participation	A process through which stakeholders influence and share control over development initiatives and the decisions and resources that affect them. (World Bank, 1996)
Collaborative management for conservation	A partnership in which government agencies, local communities and resource users, non governmental organisations and other stakeholders negotiate, as appropriate for each context, the authority and responsibility for the management of specific area or set of resources. (IUCN, 1996b)
Co-management	True co-management goes far beyond mere consultation. With co-management, the involvement of indigenous peoples in protected areas becomes a formal partnership, with conservation management authority shared between indigenous peoples and government agencies... or national and international non-governmental organisations. [...] true co-management requires involvement in policy-formulation, planning, management and evaluation. (Stevens, 1997)

Affirmative democracy	In analogy to [the concept of] "affirmative action" prevailing in the USA, in affirmative democracy marginalised social groups are to be given the same capacities and rights as those enjoyed by the groups on the top. (Navarro, 1997)
Collaborative management agreement for a conservation initiative	Representatives of all key stakeholders agree on objectives for the conservation initiative and accept specific roles, rights and responsibilities in its management.... [They] ensure that the trade offs and compensations are clear and that all parties are aware of the commitments made by the others. (Borrini-Feyerabend, 1997)
Patrimonial mediation	Patrimonial refers to all the material and non-material elements that maintain and develop the identity and autonomy of the holder in time and space through adaptation in a changing environment.... The mediation establishes long-term patrimonial objectives, legitimates them by culturally appropriate rituals, elaborates strategies to achieve the objectives and sets up natural resource management organisations. (Weber, 1998)
Stewardship	People taking care of the earth... a range of private and public approaches to create, nurture and enable responsibility in users and owners to manage and protect land and natural resources. (Mitchell and Brown, 1998)
Shared production regimes	Regimes that produce goods or services by utilising inputs from at least two individuals or legal entities which are not part of the same organisation and are not under the control of the same principal. Each party independently decides the level of input to contribute to the shared production process and the overall goal or goals are jointly determined. Responsibility for bearing the costs of inputs is negotiated between the partners as is the share of any eventual profit and no single entity has the right to modify these terms unilaterally. (Vira et al., 1998)
Natural resource co-management	The collaborative and participatory process of regulatory decision-making among representatives of user-groups, government agencies and research institutes. (Jentoft et al., 1998)
Co-management	A system that enables a sharing of decision-making power, responsibility and risk between governments and stakeholders, including but not limited to resource users, environmental interests, experts and wealth generators.... Essentially a form of power sharing... by degrees... through various legal or administrative arrangements... often implying a discussion forum and a negotiation/ mediation process. (NRTEE, 1998).
Pluralism	The recognition of the presence and role of multiple actors and their influence in shaping the performance of both natural systems and man-made institutions. (Ramírez, 1998)
Democratic experimentalism	Citizens in many countries directly participating with government in solving problems of economic development, schooling, policing, the management of complex ecosystems or drug abuse. Central governments of nearly all political colours at times encourage these developments by devolving authority to lower levels and loosening the grip of public bureaucracies on the provision of some services while wholly privatising others. At times they simply tolerate local experimentation by waiving formally, or through inaction, their statutory rights to specify how programmes are administered. (Sabel, 1998)
Platform for collective action	A negotiating and/ or decision-making body (voluntary or statutory) comprising different stakeholders who perceive the same resource management problem, realise their interdependence in solving it, and come together to agree on action strategies for solving the problem. (Steins and Edwards, 1999)

Co-management of natural resources (also participatory, collaborative, joint, mixed, multi-party or round-table management)	A situation in which two or more social actors negotiate, define and guarantee amongst themselves a fair sharing of the management functions, entitlements and responsibilities for a given territory, area or set of natural resources. (Borrini-Feyerabend et al., 2000)
New social partnerships	People and organisations from some combination of public, business and civic constituencies who engage in voluntary, mutually beneficial, innovative relationships to address common societal aims through combining their resources and competencies. (Nelson and Zadek, 2001)
Deliberative democracy	Deliberation is the "careful consideration" of the "discussion of reason for and against". Inclusion is the action of involving others, with an emphasis on previously excluded citizens. Deliberative inclusionary processes enable participants to evaluate and re-evaluate their positions in the light of different perspectives and new evidence. Democracy without citizen deliberation and participation is ultimately an empty and meaningless concept. (Pimbert and Wakeford, 2001b)
A management-centred paradigm	In contrast with a benefit-centred paradigm, this approach to community participation is concerned with transforming the way the forest is managed and seeks to achieve this through a transfer of responsibility with authority to the forest-local communities. This is a power sharing rather than a product-sharing process. (Alden Wily and Mbaya, 2001)
Decentralisation (de-concentration) Privatisation (delegation) Democratic decentralisation (devolution)	Decentralisation is any act in which a central government formally cedes powers to actors at lower levels in a political-administrative and territorial hierarchy. De-concentration involves the transfer of power to lower branches of the central state, such as prefects, administrators or local ministry agents. Privatisation is the transfer to non-state entities, including individuals, corporations, NGOs, etc. Democratic decentralisation is the transfer to authorities representative of and downwardly accountable to local populations. (Ribot, 2002)
Multi-stakeholder processes	Processes that bring together all major stakeholders in new forms of communication and decision-finding (and possibly decision-making),... recognise the importance of equity and accountability... and the democratic principles of transparency and participation. (Hemmati, 2002)
Sound governance	Sound governance is based on the application of UN principles, such as legitimacy and voice (through broad participation and consensus-based decisions), transparency and accountability, performance (including responsiveness to stakeholders, effectiveness and efficiency), fairness (equity and the rule of law) and direction (including strategic vision and the capacity to respond to unique historical, cultural and social complexities). (Institute on Governance, 2002)
Public involvement in governance	Public involvement is generally recognised to have three pillars: public access to information, public participation in decision-making processes and access to justice. As a practical matter, it also implicates the right of free association and free speech. These rights operate synergistically. (Bruch and Filbey, 2002)

In this work we deal mostly with the concept of "co-management", for which we have adopted a broad but factual working definition (see Box 3.1).

Box 3.1   Co-management of Natural Resources

In this volume we employ the term co-management (CM) to describe a partnership by which two or more relevant social actors collectively negotiate, agree upon, guarantee and implement a fair share of management functions, benefits and responsibilities for a particular territory, area or set of natural resources.

Our definition of "co-management" is not specific regarding forms, types or levels of power sharing, and it is more concerned with actual events (shared management functions, benefits and responsibilities) than with stated management objectives. Some believe that it would be more appropriate to use different terms for different formal levels of involvement.[3] It is difficult, however, to identify a sharp demarcation between formal types of participation and actual power sharing in management activities. For instance, a process of active consultation with local stakeholders may result in the full incorporation of their concerns into the management plan of a state-controlled protected area. Or a multi-party body without legal authority may enjoy a high level of social recognition and see its recommen-

A pluralist body in which decisions are made by consensus— ther than by vote— assigns the full value to the meaning of co-management.

dations invariably endorsed by decision makers (see Box 6.12). This is *de facto* power sharing. Conversely, it is possible that several actors who officially participate in negotiating management decisions (let us say because they hold seats in the decision-making body, they are *de jure*[4] in charge) end up more often than not in a minority position and are powerless to influence the final decisional outcome. Is the second case necessarily more "co-managed" than the first? There is, however, one situation, in which the formal inclusion of social actors in a decision-making body makes the entire difference. This is when decision–making is stipulated by consensus rather than by vote. A pluralist body in which decisions are made by consensus— rather than by vote— assigns the full value to the meaning of co-management.

In sum, we understand co-management as a broad concept spanning a variety of ways by which two or more relevant social actors develop and implement a management partnership. We speak about it in a pragmatic, *de facto* sense, regardless of the *de jure* condition it corresponds to, ignores or contradicts. Obviously, supportive tenure rights, policies and legislation strengthen collaborative processes and partnerships. Yet, more often than one may think, there is a schism between policy and practice, and practice is ahead of policy in many cases.[5]

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[3]   See, for instance, Franks, 1995, for the case of a protected area. Stevens (1997) also discusses this at some length.
[4]   The distinction between *de jure* and *de facto* corresponds to the distinction between what is prescribed by norms and laws and what actually happens in real life.
[5]   See Part IV of this volume.

Co-management is not a new approach. Partnerships for resource management are as old as human cultures,[6] exist in all countries of the world[7] and concern all types of territories and natural resources. Forests, fisheries and coastal resources, grazing lands and wildlife are included in existing management agreements among various parties.[8] At times the partnership does not regard any specific territory but only a resource that may be temporarily found on a given territory– *e.g.,* water or migratory wildlife.

Management partnerships can be found in state-owned, communally owned, privately owned and mixed-property territories. The scale at which the agreement works may be as large as an entire watershed or as small as a forest patch. The partners may include state and para-statal bodies— such as national governments, ministries, district development committees, state universities and protected area agencies, and private bodies— such as indigenous councils, landowners, communities and interest groups within communities, NGOs and private operators. Usually, different types of partners are involved (*e.g.,* a public agency, several local communities and private operators) but the partners can also be all of the same kind, for instance several landowners or several interest groups within a community. As discussed in Chapter 2, the co-management approach stresses partnerships *with* communities as well as *within* communities.

Some find it useful to distinguish between management partnerships for productive purposes (*e.g.,* agriculture or animal husbandry) and partnerships for conservation (*e.g.,* to preserve the habitat of a given species or manage a protected area). Such distinction, however, is not easily drawn. Whenever the management of natural resources for productive purposes involves some consideration of future and not only present production, it inevitably involves measures for the preservation of the environmental elements that sustain production— *e.g.,* soil, water, vegetation and fodder, biodiversity, or the local climate. Conversely, biodiversity and environmental functions sustain community livelihoods and support many small and big businesses throughout the world. As a matter of fact, it is hardly possible to separate what is done by society for the sake of conservation from what is done for the sake of the economy.

In the following, a variety of concrete examples of co-management are introduced and discussed. A possible distinction between productive and conservation objectives is mentioned, but ultimately left to the judgement of the reader.

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[6] Kropotkin, 1902.

[7] For a recent review of principles and practices of partnerships see McNeely, 1995.

[8] McCay and Acheson, 1987. Co-management settings for non-renewable resources (*e.g.,* oil and mineral deposits) seem to be much less common, although some initiatives may now be promoting them (Mate, 2001).

3.2 Practicing co-management

...in agriculture

A variety of partnerships are in place through-
out the world to sustain agricultural production.
Some have traditions rooted in the millennia,
such as the *minga* (communal works) of
Andean people,[9] the *naam* gatherings of
Sahelian societies[10], the *nafir* systems of Sudan
or the *boneh* systems still found throughout
western and southern Asia (see Box 3.2). The
minga, for instance, is a central event in the
lives of Andean communities and a main
avenue of people's solidarity. It is communal
work, decided upon and regulated by the com-
munity members themselves during their assem-
bly at the end of each month. Every family
sends a member to the *minga*, which can be called upon to open an irrigation
channel, break up some particularly hard soil in common agricultural plot or
carry out any other task needed by the community. The *minga* usually happens
once a week, and after work the people eat together or conclude their efforts with
a drinking party. If a family does not fulfil its obligations, it is subjected to heavy
social pressure. Today, this traditional practice is still very much alive and actually
spreading to private land, with people working on privately owned plots on a
rotational basis (in this case the *minga* is called *prestamano*— "lending a hand").

*...[common agricul-
tural work] is a
central event in the
lives of [rural]
communities and a
main avenue of
people's solidarity.*

Even in non-traditional societies farmers, communities, government agencies,
researchers and non-governmental organisations collaborate in agricultural pro-
duction by contributing a variety of inputs and supportive conditions.[11]
Increasingly, they also link their production-oriented efforts to forms of care that
allow extracting natural resources sustainably, *i.e.,* to maintain productivity in the
future. For this, farmers communicate with one another, agree on a common
course of action and share the responsibilities for carrying it out.

Box 3.2   **The *boneh*— a co-management system based on crop-sharing**
(adapted from Farvar, 1991)

In most of southwest Asia crop sharing is common when the factors of production are owned by differ-
ent people or groups. For instance, some people own land, others own water, others have seeds and
animal traction, and still others can provide labour. If they pool together what they have to produce
some crops they will be entitled to a share of the harvest according to their contribution. In this system
each partner, including the landlords and the landless peasants, have benefits and responsibilities.

One such crop sharing system, which has been quite common in Iran and neighbouring countries, is
the *boneh* (known also with many other names including *haraseh, sahra, jogh, boluk, dang,* etc.). A
boneh is a production unit including an area of land usually equal to what the water source available
will irrigate in one 24-hour period, the water rights to irrigate that land, the peasants assigned to work-
ing it, and the animal power needed for ploughing and harvesting. The entire agricultural land of a
community is often subdivided into a number of *bonehs* equal to the number of days in the irrigation

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9   Sanchez Parga *et al.*, 1984.
10   Pradervand, 1989.
11   Thrupp, 1996.

cycle. The council of Elders of the community roughly coincides with the Council of the Chiefs of the *bonehs* (Irrigation Council). The turn for irrigation is usually determined by drawing lots. Once a year, prior to the start of the irrigation season, the elders representing all the *bonehs* get together and decide by drawing lots whose *boneh* would get to use all the water available to irrigate on the first day, whose on the second, and so on. In this way, the risk of starting on the last day of the irrigation cycle (which would expose the crops to longer periods of drought) is distributed at random ("decided by God"). Within each *boneh*, a further management system for water distribution usually functions like clockworks.

At the end of the season, the crop is harvested collaboratively, and literally heaped up into the number of shares decided by agreement or tradition. Each owner of a factor of production arrives on the scene and hauls away his or her share of the harvest. These arrangements are often codified and written down in contracts, some of which are still preserved and studied.

Although the various land reform schemes in Iran have in some respects weakened the *boneh*, this is still the preferred system for irrigation management and the organisation of production in the semi-arid areas of the country. Entrepreneurs from central Iran use it to organise workers, land and irrigation when penetrating new agricultural lands, for example areas irrigated by a new dam.

If [the members of the Landcare Group] decide to take action together, they usually elect a steering committee, which is then asked to investigate local problems, opportunities and available resources in a systematic way.

A telling example of farmer collaboration comes from Australia, where thousands of voluntary groups are currently engaged in what is known as Landcare programme.[12] The programme aims at developing more sustainable systems of land use, counteracting the severe environmental impact brought about by the un-adapted farming practiced of European immigrants in the last centuries. There is no typical Landcare group (they show a remarkable diversity among themselves) but, basically, a Landcare group gathers individuals who come together voluntarily to co-operate in caring for the land. One of the points of strength of Landcare is that such individuals are not only farmers, but also community members at large, environmental activists and government agency staff. A Landcare group may begin with an informal gathering of individuals who end up discussing land management problems. If they decide to take action together, they usually elect a steering committee, which is then asked to investigate local problems, opportunities and available resources in a systematic way. That steering committee may in turn call for a more formal group to take shape, and elect its own executive team.

A Landcare group becomes operational with decisions regarding management boundaries, goals and memberships. The land degradation problems are discussed, the potential resources to solve them investigated, and the relationships with state and governmental assistance agencies and other sources of support developed. Among the routine duties of a group is usually the monitoring of local land status via innovative "land literacy" approaches (community-based action research, farmer-fly-overs, using of living organisms as indicators, listening to interpretative tapes when travelling, or even becoming "hands-on" users of sophisticated techniques and computer programmes for Geographic Information Systems— GIS). Participatory methods (observation walks and drives, mapping, etc.) are used to plan the management of farms and water catchments in an integrated way. In all this, new relationships are established with government extension agents and consultants, who may provide specific technical support. Many groups identify a facilitator (possibly a professional one). If the group's activities require on-going care that cannot be provided by volunteers only, they hire a pro-

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[12]   Campbell, 1994a.

fessional co-ordinator. If necessary, the groups apply for funds and other resources from the government and other sources.

The organised groups with worthy projects to implement can also refer themselves to the Landcare Programme itself, which may decide to assign some financial support. The Programme fosters various and non-uniform rules among the Landcare groups, and this has proven one of its winning features. It is too early to have conclusive data on the impact of the Programme for the whole country. Today, however, communities and agencies co-operate to define and tackle land degradation problems and further research and new extension approaches in ways that did not even seem possible only a decade ago.

...in water and watershed management

Perhaps more than any other natural resource, water has been co-managed for centuries, under different cultures and geographical conditions, resulting in the effective utilisation of a most essential input to life and agriculture (see Box 3.3). Throughout the world, there exist innumerable examples of traditional associations for water management, many of whom have been studied extensively to understand their characteristics and functional mechanisms[13], often as part of the study of traditional management practices of common property resources. Some insights from these studies will be reviewed in Part III of this volume.

...water has been co-managed for centuries, under different cultures and geographical conditions.

Box 3.3   Cultural co-management in Bali
            (adapted from Reader, 1990)

The island of Bali enjoys a constant climate, suitable for the continuous production of rice throughout the year. To fulfil this potential the Balinese people have had to cope with two main challenges: adapting to cultivation in their steep, deeply fissured mountain environment and managing water. In fact, although water is available all year around, it is needed in the rice fields only part of the time, such as during planting and growing but not at harvesting and immediately afterwards. The Balinese people have solved the problem of steep terrain by building terraces on the mountain slopes. They have solved the water management problem by setting up an irrigation system that controls the flow of water down the slopes, alternatively flooding and draining fields, and maximising production on every terrace.

An optimal use of the water can be achieved only if the timing of cultivation in different fields is co-ordinated in a rotational cycle. For instance, the fields at the top may be flooded and prepared for planting while the crop is already well-advanced in the middle terraces and already being harvested in the lower ones. Obviously, such a well-timed cycle needs advanced co-operation among all farmers. Since times immemorial, this has been achieved in Bali by local organisations called *subak* (irrigation societies), comprising all the owners of the landholdings irrigated by the same water source.

An individual water source (*tempek*) is composed of a dam and system of channels and aqueducts that keep water flowing at optimum speed from the main lakes on the top of the island. Each land unit (*tenah*) is due to receive precisely the same amount of water from the *tempek* it depends on, regardless of its owner and position. The technical difficulties of dividing water accurately and regulating the timing of its supply are taken in charge by the *subak* council, who also collects taxes to finance upkeep and improvements and calls the members to contribute to maintenance and construction works. Each *subak* has a written constitution (at times written on a palm leaf!), each member casts one vote on matters of policy and election of officials (regardless of the size of land units held)

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[13]   Ostrom, 1992; Tang, 1992.

and fines are imposed for infraction of *subak* rules.

The Balinese people have set the context of the *subak* in the realm of a transcendent authority– Dewi Sri, the goddess of rice and fertility. Every stage of water division is marked by a ritual ceremony, held in the temples at the top of the water flow and in the shrines interspersed among the rice terraces. The ceremonies are scheduled according to the Balinese calendar (the Balinese year is 210 days, exactly the double of the local cycle of rice growing), and at each ceremony the *subak* farmers are reminded of the timings and sequence of the water flows. Thus, at each ceremony the co-operative relationship among farmers is strengthened. The religious occasions and the growing cycle of rice match closely, structuring the whole island into a co-ordinated system in which water management, rice production, spiritual life and social reciprocities closely merge.

Partnerships for water management can play an important role for the sake of local ecosystem health but also for social development. For instance, a "River Parliament" has been created among various bearers of interests and concerns on the management of the river Drôme, in France. France's law declares rivers to be property of the nation, to be managed for the general interest. The problem is that everyone needs to agree on what this interest is, within a complex system of management conditions. For the Drôme, three years of meetings, studies and encounters produced a consensus among all major interested parties. This consensus, spelled out in a document called "The Drôme Sage", is now the management plan for the river, the ground on which a number of contracts mobilise conspicuous national resources, and a most fruitful and appreciated experience in local democracy.[14] French politicians are proud of their experience with the Drôme, and are proposing it as a model for the European Community, on the basis of the European Union (EU) Directive on watershed management.

...the management plan for the river [was the occasion to create] a most fruitful and appreciated experience in local democracy.

In Argentina, the Encadenadas lake watershed (south-west of Buenos Aires) has been subjected for decades to a recurrent alternation of floods and droughts that

has accustomed the local residents to natural disasters. Such disasters went side-by-side with social conflicts, as some groups could protect themselves from floods only if others would accept to be subjected to water shortages. Thus conflicting interests stalled decisions or prompted one-sided measures that left many people unsatisfied. In fact, at one time or another, everyone in the Encadenadas area was hit very hard by water management failures. Droughts severely affected agriculture and tourism. Destructive floods became so severe as to make some areas permanently un-inhabitable. The crucial challenge was managing water as a common good for different local administrative units, each with its own socio-geographic peculiarities and ecologic/ economic priorities.

For some time the Argentinean government saw the problem as merely technical, *i.e.*, a problem that could be solved by appropriate technical solutions such as water reservoirs and other

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14   Voir Media, 1998.

hydraulic works. It was not as simple as that. In practice, the providers of public service did not even manage to agree on a definition of the problems that satisfied all interest groups (e.g., tourism-dependent businesses, agriculturists, fisher folk, people from upstream and downstream villages, etc.). In addition, some of the hydraulic works they set in place actually ended up aggravating local hardships rather than solving them. It was at this time that a change of attitude began to be felt among the various actors interested in water management. Rather than discussing technical fixes, they turned to discussing rights, responsibilities and equity issues. The management of the whole watershed took centre stage, instead of the usual conflicts to appropriate specific water benefits in specific locations. This change also signalled the emergence of new social actors, viz. local ad-hoc associations, which started acting alongside the state-sponsored technical administrators and the political administrators elected in various municipalities. Thus began a laborious process that eventually established some co-ordinated management plans and set in place a Watershed Management Committee. The richer definition of the water problem and the emergence of organised social actors, capable of co-managing water rights as well as economic compensations and indemnities for water damages, are now widely regarded as crucial steps in both the development of the region and its democratic re-awakening.[15]

...a change of attitude began to be felt among the various actors interested in water management. Rather than discussing technical fixes, they turned to discussing rights, responsibilities and equity issues.

...in agricultural research

Not only soil or water can be profitably co-managed, but also agricultural research,[16] for instance on new seed technologies, on irrigation systems and on a variety of management practices. In fact, the participation of peasants— the main users of the research results— in defining research objectives and methods is considered by some among the most promising innovations in modern agriculture.[17]

| Box 3.4 | Participatory research with women farmers in dry-land agriculture |

Box 3.4   **Participatory research with women farmers in dry-land agriculture**
(adapted from Pimbert, 1991, and Pastapur and Pimbert, 1991)

Joint problem solving, mutual learning and negotiated agreements were at the heart of a participatory research process involving scientists and women farmers cultivating marginal land in Andhra Pradesh, India. Actors involved in this decentralised research jointly established reversals in the conventional roles of scientists and farmers: women farmers took key decisions and scientists acted in a facilitating and support role. This was farmer-led research on insect pest management.

To begin with, major insect pests of pigeon-pea, an important food crop in India, were jointly identified by farmers and scientists who surveyed the crop as they walked through farmers' fields. Women farmers discussed and documented together the characteristics of their pigeon-pea varieties and their local crop management practices. They thus agreed that pest-resistant varieties were an important component of integrated pest management approaches. On the basis of such an indication, the scientists searched for and identified improved pest-resistant pigeon-pea lines that closely matched the characteristics of the farmers' varieties. Small batches of pest resistant pigeon-pea identified by the scientists on research stations were then grown out by farmers along local varieties (landraces) to test their performance in different risk-prone farming situations. The results of these trials were evaluated entirely on the basis of the farmers' own criteria. In fact, the parameters considered by the women went well beyond the scientists' conventional ones, such as "yield" and "pest resistance". The women rated the pigeon-pea lines according to ten agronomic and social criteria, including pest resistance, taste, wood production and

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[15] Monachesi and Albaladejo, 1997.

[16] Pimbert, 1991; Sowerwine et al., 1994; and http://www.prgaprogram.org

[17] Carmen Aalbers, personal communication, 1997.

quality, fodder value, obtainable market price and the retention of quality during storage. The women farmers' criteria and priorities were elicited in individual and group interviews using ranking methods drawn from Participatory Rural Appraisal approaches.

At all stages of the co-managed research process, women of different ages and wealth, and from different villages, were included in negotiations with scientists and a local non governmental organisation to reach agreements on what to monitor and evaluate, what indicators to use, how and when to collect and analyse data, what data actually meant, how findings should be shared and what follow up was needed. The women *sanghams* (collectives or community groups) from different villages were regularly involved in discussing and cross-checking the findings, as well as planning each next step in a flexible and adaptive way. The women collectives offered invaluable guidance to the outside scientists as to which research questions and categories of knowledge were most relevant to farmers' needs and priorities and to the local agro-ecological and social contexts.

The participatory research resulted in stunning outcomes:
● One of the improved pigeon-pea lines evaluated by the women farmers was decisively rejected by the farmers because of its bitter taste. However, by the time the women farmers reached this conclusion, the same pigeon-pea variety had just been officially released in the state of Andhra Pradesh on the basis of research station and on-farm trials managed by scientists alone, as part of a conventional transfer of technology approach to agricultural development

● Two other improved pigeon-pea varieties evaluated by the farmers performed well under their conditions and, in some cases, were rated as superior to the local landraces. But despite the advantages of the improved pest resistant pigeon-pea, the women farmers still wanted to retain their landraces and other improved varieties they had tested. They believed that pest attack was lower when they grew a mosaic of mixed varieties than when they grew a single variety. The farmers' insistence on biodiversity as a principle of production in risk-prone environments led the scientist to further explore this pest management option by analysing the pest-suppressant impact of mixing different pigeon-pea lines in various combinations.

The participatory research and jointly agreed procedures were particularly appropriate in supporting diversity as a means of sustainability and food security in the local, risk-prone environments. The co-management of agricultural research by scientists and the largely illiterate women farmers also highlighted the needs for changes in institutions, attitudes and behaviours to allow more people to learn and create knowledge and technologies together, through dialogue, collective inquiry and negotiation of roles, rights and responsibilities.

...in rangeland management

Partnerships among pastoralists and between pastoralists and peasant communities have stood the test of centuries in many environments. In the first case, it is necessary to assure that communities dependent on similar modes of production coexist and do not compete destructively with one another.[18] In the second, as different modes of production draw resources from complementary ecological niches, pastoralists and peasants must find rules for a fair exchange of products and for benefiting from one another (*e.g.*, because of the fertilising of the land by passing animals).[19] In both cases, the need for co-operation and the potential for conflict are high, and entire cultures developed to respond to these challenges.

The *hema* system, once common in the Islamic world and now sadly rarer, consists of a set of rules for the grazing of herds on a given territory utilised by one

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[18] Horowitz and Salem-Murdock, 1987; Bassi, 1996.
[19] Franke and Chasin, 1980; Horowitz and Little, 1987.

or more pastoralist communities (*e.g.*, particular tribes or villages).[20] The families may possess hereditary ownership or right of use or have *de facto* been grazing on the territory for a long time (in other words, the property regime is usually mixed). The *hema* rules bind all the members of the community and specify areas where animal grazing is prohibited (with the exception of specific periods and drought times, when cutting of grass is allowed as special privileges for needy people); areas where grazing and cutting is permitted except in some seasons; areas where grazing is allowed all year round (but the kind and number of animals permitted to graze are specified); areas reserved for beekeeping; areas reserved to protect forest trees such as juniper, acacia or *ghada* (these areas are usually held under common property of a village or a tribe). A person committing offence against the *hema* rules has to pay a fine; repeated offenders receive severe social sanctions.

The hema *system... consists of a set of rules for the grazing of herds on a given territory utilised by one or more pastoralist communities....*

A most interesting feature of agreements within and among pastoral societies is a propensity towards flexibility through informality, *ad-hoc*-ness, un-boundness, porosity, impermanence and a continual socio-political negotiation.[21] In other words, pasture access is often granted through alliances and political processes that better serve the interests of the partners when they are open and informal, leaving space for bargaining and re-adjustments. This best responds to the variable ecological and economic conditions that characterise pastoral life

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Box 3.5   Forole, the sacred mountain of the Galbo people
(adapted from Bassi, 2003)

Forole is a sacred mountain just north of the border between Kenya and Ethiopia where the Galbo peoples (a sub-group of the Gabbra) hold the *jila galana* ceremonies. Most of the Galbo live in Kenya, but they move in pilgrimage to the Forole on occasion of the ceremony. The trees of Forole Mountain are totally protected by the Gabbra and access to the upper part is only allowed to a few people who preside over the ceremony of the sacrifice to the Sacred Python. The lower part of the mountain provides permanent water and is used as reserve grazing area by both the Gabbra and the Borana pastoralists. Sometimes there are tensions over pastoral resources among the two groups, but the Borana fully respect the sacredness of Forole Mountain and the inherent restrictions, indirectly assuring its conservation. This community conserved area is not univocally associated with a single ethnic group and engages local actors in complex economic and symbolic relationships that work quite effectively in maintaining the quality of pasture and the livelihood of people.

Unfortunately, the forces of economic modernisation (*e.g.*, the money-dominated economy, the predominance of market values *versus* use values) and socio-cultural change (emergence of state power and bureaucracies, urbanisation, loss of value of traditional institutions and systems of reciprocities, propensity towards fixed access rules and regulations in place of flexible, on-going, political negotiations) managed to severely weaken many culture-based partnerships throughout the world,[22] such as the *hema* and *ghada* mentioned above. In some places the occupation of crucial land and destruction of traditional natural resource management systems of pastoral communities has resulted in tragedies of huge proportions, as in Ethiopia, where millions of Oromo-Borana people survive today at the mercy of climatic conditions to which earlier they were well able to respond.[23]

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[20] Draz, 1985.
[21] Turner, 1999. See also Box 3.5 in this Chapter.
[22] Watts, 1983a; Watts, 1983b; Horowitz and Little, 1987.
[23] Bassi, 2002.

It is a welcome change that some national governments and international donors are now "discovering" the management capacities of pastoral people.

It is a welcome change that some national governments and international donors are now "discovering" the management capacities of pastoral people. Thus in Kenya, the Loita Maasai communities have recently been re-assigned the management rights over the Loita Forest, after a decade of struggles in court and in the field.[24] In Mauritania, a recent law called *Code Pastoral* recognises the economic and management value of pastoral practices and some projects have promoted the establishment of various types of pastoral and farmers associations. These associations are encouraged and facilitated to enter into agreements with the government and among themselves to improve herds' health and land productivity while preserving the environment from excessive exploitation.[25] And in Iran, pastoral communities, the government and progressive NGOs are experimenting with new forms of support to sustainable use of pastoral resources.[26]

...in forest management

Besides agricultural and grazing lands, forestlands throughout the world have been the objects of multiple interests and seen many conflicts developing around them. Fortunately, they have also been the focus of encouraging types of collaborative solutions. Here below are contemporary examples from three continents.

In the Pacific Northwest region of the United States, the Applegate River watershed is located in Southwest Oregon and northern California. Long the object of intense polarisation and controversy over forest management practices, the Applegate Valley is composed of a patchwork of federal, state, county, and private lands. Tired of the gridlock, a number of the key stakeholders convened in 1992 to form the Applegate Partnership, a group uniting natural resource agencies, industry, conservation associations and local residents towards the goal of ecosystem health, diversity and productivity. This sixty-member group is co-ordinated by a nine-member Board of Directors. The partnership serves in an advisory capacity to relevant resource management agencies and seeks to educate private landowners and provide them with incentives to manage their forestlands in a sustainable fashion. The partnership has no legal authority to make decisions on behalf of participating agencies but, because of its broad representation and shared purpose, it has considerable *de facto* influence over forest

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[24] Karanja *et al.*, 2002.

[25] Pye Smith and Borrini-Feyerabend, 1994. For a summary of the achievements of Mauritania's second livestock project see Shanmugaratnam *et al.*, 1993.

[26] See the case example 1.4 in chapter 1 of this volume.

management practices in the Applegate Valley, and has succeeded to improve the whole management climate in the region. In particular, it succeeded to remove from the scene the deeply entrenched animosity and the polarity around the issues that had been so pervasive before. In place of the gridlock, "positive relationships developed between polarised groups, agencies and the community; a common vision was attained."[27]

In India, beginning in the 1970s, the expansion of an informal grassroots forest protection movement eventually triggered the issuing of a national resolution in June 1990. The resolution provided the authority for communities to participate in the management of state forests (no other institutional actor was contemplated in the resolution and the private sectors remained out of its scope). Subsequently, sixteen state governments issued resolutions extending rights and responsibilities to local communities for state forest protection under what is now called the Joint Forest Management (JFM) programme. As part of the programme, forestry department officials and *ad-hoc* local committees from the villages sited close to the forests develop joint management agreements and microplans. Over 10,000 village committees are currently active, representing a significant but still limited percentage of the potential and need in the Indian federation.[28] The Joint Forest Management programme has achieved impressive results in forest conservation, but is limited by local people's lack of secure tenure to the resources they are managing. The state regulations, in fact, fail to address the long-term rights of participating communities.[29]

...forestry department officials and ad-hoc *local committees from the villages... develop joint management agreements and micro-plans.*

Box 3.6   Conserving their palm groves: the pride of Gaya communities in Niger
             (adapted from Price and Gaoh, 2000; and personal communication by Anada Tiega, 2003)

The Gaya region in southwest Niger offers an example of local communities re-appropriating— as well as reinventing and reorganizing— their rights to their surrounding natural resources. About 80 villages with a population of 80,000 reside in the midst of a region of the Sahel blessed with superior conditions for agriculture, including a resource unique in potential and diversity of use: the ron palm (*Borassus aethiopum*). Benefits derived from the ron palm extend to much of the rural population in Gaya, with distribution of goods and revenues shared between different groups in the society. Thus, women, farmers, herders, fisher folks and artisans all have recognised rights to access to, and use of, the palm.

The palm is of particular interest given a wide range of products harvested from its different parts. In the past it had been overexploited throughout the country to the point that Gaya harboured one of the few standing groves left in the whole country. External support to conserve and develop the potential of the local ecosystems initially focused on "technical" conditions for environmental regeneration, but has since progressively moved to efforts to promote community initiatives for conservation, management of wild resources and establishing basic conditions necessary for sustainable livelihoods. The ron palm has become the central focus for important changes in local forms of association, governance, law and economic organisation. In particular, some community land-use management groups (*unités de gestion de terroir*) have emerged, enjoying great local specificity and independence in their decision making process. Each group exercises the right to govern common resources as well as financial autonomy. The progressive recognition by government of the groups and their rights has a direct impact on revision and application of land tenure law and legislation on forms of association, as well as on common property and rights and responsibilities in natural resource management. Progressively, the local groups have extended their interests to a variety of other resources, such as wetlands and fisheries. Their success has been so important that one of their wetlands has now been declared a Ramsar site.

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[27] Wondolleck and Yaffe, 1994. See also Box 8.6, in chapter 8 of this volume.
[28] Pandey, 1996; Poffenberger, 1996.
[29] SPWD, 1992. For a thorough analysis of Joint Forest Management in India see Poffenberger and McGean, 1998.

In Tanzania, local user groups in the Babati district are entrusted with full decision-making power about conservation and resource use in the communal forests close to their villages. The forestry department and the Swedish aid agency worked with the user groups to develop management tools and criteria, but all final decisions were left to them. For their local "communal forests", this is fully in agreement with Tanzanian law. Discussions are being held, however, to extend their management responsibility also to nearby state-owned forests, a fact that falls outside of the scope of the existing legislation.[30] Some pilot experiences are occurring in the south of the Babati district (Duru-Haitemba) where several forests controlled by local communities have been declared Village Forest Reserves. These are gazetted nationally but planning, management, patrolling and enforcement of rules (established as village by-laws) remain with the locals. In this sense, local groups are recognised to have not just some rights and responsibilities in management, but full authority and control over the local resources that they themselves wish to place under protection.[31] A similar situation is found for Mgori Forest, which, however, had a different starting point. Prior to 1995, Mgori Forest was claimed as government land. When it became apparent that the

Fires, illegal harvesting and clearing for millet production ceased, and the illegal hunting of elephants was also curtailed.

government did not have the means to manage it, it turned for assistance to the local communities. The resulting agreement stipulated that the 44.000-hectare forest would be managed by the five forest-adjacent villages in partnership with their district council. The presence of the district council was not too strong (one field officer only), but the communities soon organised to establish five Village Forest Management Areas, each demarcated and guarded by their village forest guards (totalling more than 100 people) on the basis of village by-laws. Fires, illegal harvesting and clearing for millet production ceased, and the illegal hunting of elephants was also curtailed. The villages have now obtained their Certificates of Village Land and plan to register their Forest Management Areas as common property.[32]

Box 3.7 Devolving power: a way to promote management partnerships!
(adapted from Garreau, 2002)

The 1996s law on the devolution of management authority and responsibility to organised local communities that goes under the name of *GELOSE (Gestion Locale Sécurisée* or local security of resource management) created the conditions for a profound change of approach in natural resource management in Madagascar. Typical "integrated conservation and development projects"— such as the one operated by WWF around the protected areas of Marojejy et Anjanaharibe-Sud— took advantage of this law and offered a new chance to management partnerships in the region.

At the beginning the project accompanied the local communities, as well as the administration of the communes and the sub-districts, in revisiting their history and discussing the future of their land, resources and livelihoods. This patrimonial approach created new ties among the local families and villages, which discovered similarities among their problems and wishes. Local people seemed even to start developing a common identity, despite the mixed ethnicity of the region (a pole of recent immigration). At the same time, the project diffused information on the two main components of the GELOSE law: the devolution of power regarding forests and other common property resources and the clarification and attribution of land tenure rights regarding areas under family cultivation. As time went by, the project ended up playing a role of advisor and intermediary between the communities and the administration and help building the capacities of everyone in the process, including the "mediators" foreseen by the national GELOSE procedures. It also helped the communities to ritualise the long-term manage-

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[30] Johansson and Westman, 1992. Also: David Gilmour, personal communication, 1996.
[31] Wily and Haule, 1995.
[32] Alden Wily and Mbaya, 2001.

ment objectives, to organise internally (developing structures and rules through traditional agreements called *dina*) and to develop the necessary simple management plan and terms of reference.

The quality of this process was highly dependent on the pace of activities, which proceeded at the actors' own rhythm. The issues, beginning with forest conservation, slowly became "owned" by the communities and no longer needed to be promoted by outsiders. The communities discovered the complexity of forest management and the ways of sustainable use of forest products as well as soil and water. They themselves ask for all available tools and technical help to fulfil their forest management obligations and guarantee their future. Importantly, the state technical services become their natural partners, both to assist in surveillance and to provide technical solutions to problems. And the state administrations found their role in the coordinating initiatives and defending the established management rules vis-à-vis the external partners. In this light, the management devolution promoted by the GELOSE law seems indeed to have offered a unique occasion for collaboration and partnership among local actors.

...in the management of coastal resources

If examples of participatory management of forests abound, co-management regimes are also becoming frequent for water-based resources.[33] The firths of Scotland,[34] for instance, are marine and coastal wetlands including large estuaries, sea areas and coastal hinterlands— a sort of "arms of the sea", where water changes from salty to fresh and generates a complex mosaic of habitats and species. The firths are also the subject of numerous economic and cultural interests of local communities. In recent years, separate management projects have been set up for each firth, each run by a cross-sectoral, non-statutory partnership called "forum". Individual people have a chance to participate, although the statutory agencies tend to play a predominant role. The voluntary nature of these bodies constitutes both a strength and weakness for them. It is a strength insofar as people generously contribute their time and efforts for something they deeply care for. It is a weakness insofar as the decisions of a non-institutionalised forum may be stalled by a variety of obstacles and vested interests.

Box 3.8   Co-managing the Sian Ka'an Biosphere Reserve
(adapted from Ramsar Convention Bureau, 2000)

In Mexico, an impressive co-management case is under way in the Sian Ka'an Biosphere Reserve, a coastal limestone flat of 628,000 ha located mid-way between Belize and Cancun on the eastern coast of the Yucatan peninsula. There, the land and sea converge gradually into a complex hydrological system of mangrove stands and creeks, salt and freshwater marshes, brackish lagoons and huge shallow bays of varying salinity, sea grass beds, islets and mangrove keys— all protected by a barrier reef growing along the coast. This sensitive ecological system has been under severe threat of irreversible degradation because of unbridled "development" based on forest exploitation, tourism and cattle ranching, and unplanned urbanisation.

In the early 1980s, the state government, headed by a committed governor named Joaquin Coldwell, agreed to take some major immediate measures: ending timber concessions to private companies, establishing community forestry programmes with local *ejidos* (a Mexican system of communal ownership) and asking that the area be classified as a biosphere reserve. In 1984, the process of developing a management plan for the reserve was started. The state and federal government created a steering com-

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33   For an illustrative review, see White *et al.*, 1994.
34   de Sherbinin, 2000.

mittee to coordinate the work and established a local council including representatives of the fisher folks, coconut growers, cattle owners and peasants besides employees of the municipalities and scientists from the Autonomous University of Mexico. Gradually, forest concessions and cattle growers were asked to leave the area, fishermen organised themselves to control their fishing grounds and a zoning scheme was discussed and adopted. The initiative attracted the attention of national and international people and NGOs, which came together to create an association called the *Amigos de Sian Ka'an*.

The Association has promoted participatory action research and development initiatives based on the sustainable use of local resources and local environmental knowledge. Land tenure issues also needed to be addressed. The land in the *ejidos* belongs to the communities but the land in the biosphere reserve was federally owned and the local residents were concerned about their access to resources. The Council proposed the establishment of 90-year concessions for agricultural lots, reversible in case the occupants would not respect the regulations of the biosphere reserve. In a unique experiment, this concept was also applied to the sea. The lobster fishing grounds in the two bays were divided by the fishermen into "fields". Strictly speaking this modality cannot be legalised, but it has already become a "traditional management structure" in Sian Ka'an. Each fisherman cares for his field, devoting efforts to improve the lobster habitat, while their overall organisation carries out the surveillance against poachers.

...local residents survey against dynamite fishing [and] monitor marine biodiversity.

In the coastal area of Tanga (Tanzania), a co-management experiment has been on its way for several years with yearly planning workshops that bring together representatives of villages, government authorities, commercial users of the coastal resources and non-governmental organisations.[35] The workshops are promoted by an IUCN-assisted project, which is also engaged in encouraging villagers to analyse the situation and prospects of their natural resources and plan appropriate management activities for their land and sea territories. This is done with the concurrence and support of the other institutional actors gathered in the yearly workshops. To tackle coastal erosion, some villagers have replanted degraded mangrove areas. To support their fish stock, others are surveying their waters against dynamite fishing. The coastal residents had enjoyed resource abundance for centuries, and the project did not find a trace of traditional systems of coastal resource management in the area. Today, however, local residents not only survey against dynamite fishing, but they monitor directly marine biodiversity (including coral reef health and presence and abundance of fish species), after being specifically trained by the project staff.

In Thailand, the Yadfon Association has been working with 40 small fishing communities in Trang province starting with three villages in 1985, when the organisation was formed. The motivation was not to protect these habitats for the sake of conservation, but to secure the source of local livelihood, threatened by continual declining harvest of fish, squid, crabs, and shellfish. Fishers joined together to stop using destructive gear and practices, such as dynamite fishing and cyanide poisoning, and to restore the mangroves and sea grass beds. They successfully petitioned the local government to ensure regulations within their coastal zone. Following their successful example, in the upstream wetlands the rice farmers established a network to protect the sago palm and nypa palm forests. In all, the villagers are demonstrating their willingness and capacity to manage their coastal resources and are now active to ask the government to formally recognise their role.[36] In Sri Lanka, co-management of natural resources has been promoted by Special Area Management (SAM) processes in 11 coastal sites. These processes

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[35] Gorman and van Ingen, 1996.
[36] Ferrari, 2003.

sought to involve communities as key managers and are now being evaluated in terms of their capacity to contribute to local livelihood sustainability.[37] Initiatives are also advancing, with different results, in countries as far as Belize,[38] Fiji,[39] Ecuador,[40] Australia (see later under co-management of protected areas) and Mauritania, where the Banc d'Arguin National Park and World Heritage Site is moving towards a co-management setting with the local fishing communities.[41]

Box 3.9   **Marine Co-management in Soufriere (Saint Lucia)**
           (adapted from Renard and Koester, 1995; and Geoghegan *et al.*, 1999)

In the Caribbean island of Saint Lucia, a regional NGO called the Caribbean Natural Resource Institute (CANARI) and the local Department of Fisheries jointly facilitated a laborious conflict resolution process among local fishing communities, hotel owners, dive operators, community institutions and government agencies– for years in bitter confrontation over different management options for their area's coastal resources. The conflict resolution efforts paid off beautifully, as an effective co-management agreement is now in place.

A pluralist coordinating body, named the Soufriere Marine Management Association (SMMA), is composed of representatives of all major actors interested in the management of coastal resources. The Association developed a shared vision of the future of the marine and coastal environment of the Soufriere region, which includes sustainable development, the equitable sharing of its benefits and the fostering of wide social participation in decision-making. The Association is constituted as a "non-profit company" with charitable, developmental and scientific objectives and is assigned the powers of coordinating the implementation of the agreements to manage the Soufriere Marine Management Area, as well as related programmes and financial, technical and human resources.

Zoning is a main component of the agreement. So far, five zones have been identified, including Marine Reserves, Fishing Priority Areas, Multiple Use Areas, Recreational Areas and Yacht Mooring Sites. According to the zoning, different regulations for resource use are established for fishing, diving, yachting and water sports. Complementary programmes include activities in education, public awareness and communication, social and economic development, infrastructure, research and monitoring. The Association has established its own by-laws, with periodicity and arrangements for meetings, conditions for new members (they would have to become signatories to the agreement and be accepted as legitimate stakeholders at an annual general meeting of the Association), conditions for the nomination or election of officers on the board of directors (Chairperson, Deputy Chairperson, Secretary and Treasurer) as well as the duties of these officers, and procedures to constitute advisory committees and other bodies to assist the Board in the implementation of its programmes and the running of its operations.

The co-management setting has enhanced the protection of the marine reserves and thus profited the tourism industry. The fishermen, on the other hand, obtained a guaranteed access to the fishing zones and feel more secure in their livelihood. As a consequence, they actively support the reproduction and maintenance of the fish stock, resulting in environmental and economic benefits for everyone.

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[37]   Senaratna and Milner-Gulland, 2002.
[38]   http://www.communityconservation.org/Belize.html
[39]   http://www.lmmanetwork.org
[40]   See Box 6.12 in Chapter 6.
[41]   Heylings, 2002.

...in the management of freshwater wetlands

For the management of freshwater wetlands, typical limited attempts at participatory approaches are supported by conservation and development projects, as in the cases of Djoudj National Park, Senegal and the adjacent Diawling National Park, Mauritania[42]. For neither Park an effective co-management setting is yet in place, but in both a variety of committees and meetings to engage stakeholders in discussions and advice are slowly substituting top-down decision making practices. The local environmental knowledge and the indisputable advantage of local communities in carrying out park surveillance are today recognised by governments and experts alike. With those, the right of the local people to maintain the integrity of their livelihoods (which includes their own forms of resource management and use) is also becoming recognised.

In Mexico, the coastal wetlands of the southern state of Sonora encompass 62,000 ha of high biological diversity located along an important shorebird and migratory bird flyway. Effluents from irrigated agriculture pose the primary threat to the conservation of the wetlands, followed by cattle husbandry, shrimp aquaculture and urbanisation. Among the social actors with primary interests and concerns are the local permanent and seasonal fisher folks and the indigenous residents (*Yaquis* and *Mayos*) but also the aquaculturalists, farmers, livestock raisers, hunters, tourists, industrialists and other local residents. Through a series of workshops beginning in 1994 all these groups had the opportunity to work together and provide inputs into a strategic plan prepared together with governmental agencies, academic bodies, NGOs and donors.[43]

In India, Keoladeo National Park[44] (Rajastan) is a natural depression re-designed by local kings (*e.g.*, using small dams) to attract as many birds as possible. Throughout centuries of careful water management, the site became an internationally famous bird sanctuary and began attracting more and more tourists. In order to favour conservation and tourism, however, the Indian government went possibly too far. In 1992 a three-meter wall topped with barbed wire was constructed all around the Park to prevent buffalo grazing and other Park access. These measures were implemented without consultation with the local communities, who saw their historical pattern of access and use suddenly becoming illegal. Years of violent conflict, non-cooperation and passive resistance ensued. Paradoxically, a very expensive scientific study ended up "discovering" that buffalo grazing is essential for the maintenance of the ecological characteristics that attract the birds, something that local people had known and fought for all along! It is with the help of the World Wide Fund for Nature (WWF) that a new atmosphere of dialogue and collaboration is finally developing between the park management and the local communities. A number of agreements have been drawn to regulate fodder collection and access to temples inside the park. Some welfare measures have also been initiated by park authorities and the tourist fees to visit the Park have been increased. The Park authorities report to be willing to allow controlled grazing of weeds inside the Park, sharing of tourist revenues with the local communities and setting up effective joint management schemes. In 2000, however, the situation was still quite unclear and potentially stalled, as national park policy in India was deemed not yet equipped to allow these kinds of formal agreements.

> ... the right of the local people to maintain the integrity of their livelihoods (which includes their own forms of resource management and use) is... being recognised.

> ...a very expensive scientific study ended up "discovering" that buffalo grazing is essential for the maintenance of the ecological characteristics that attract the birds—something that local people had known and fought for all along!

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[42] Hamerlynck, 1997; ould Bah et al., 2003.
[43] Ramsar Convention Bureau, 2000.
[44] Pimbert and Gujja, 1997; and 8iksham Gujja, personal communication, 2000.

Kenya's Lake Naivasha is the only freshwater lake in the otherwise saline lakes in the Great Rift Valley, supporting a rich biodiversity of plants, mammals, birds and amphibians. Over 60,000 people live close to the lake, using its water for drinking water and agricultural production. Human activities on the shores and the untreated water flowing back into the lake threaten the local ecology. Most land around the lake is privately owned and since 1931, the landowners organised themselves in the Lake Naivasha Riparian Association. This association manages the lands around the lake in the way it sees fit, the only constraint being that no permanent structures may be erected. Some years ago, the Association's Environmental Subcommittee, out of a growing concern about the state of the lake and its environs, started a management plan development process. This led to establishing codes of conduct (e.g., for the flower growers, the tourism industry people and the livestock keepers) for the wise use of the lake's water,[45] which prompted the listing of the lake as a Ramsar site.

Box 3.10   Community based river conservation in Mandailing (North Sumatra, Indonesia)
(adapted from Ferrari, 2003)

The *Lubuk Larangan* system has been carried out by the people of Mandailing Natal district (North Sumatra) since the 1980s. The system is used to protect a river, which is entirely forbidden to exploit during the "closed season" that generally lasts a full year. The monitoring for the fishing prohibition is carried out by the community located close to the river and applies to all the people who interact with the river. At the end of the closed season— which usually coincides with the Islamic celebration of the end of the fasting month, *Raya Idul Fitri* in Bhasa Indonesia language— the prohibition is lifted for a few hours. Everyone can participate in fishing activities in the river after paying a fee which goes to fund community development activities. The occasion generally turns into a community festival.

Before the spread of the *Lubuk Larangan* system in the 1980s traditional conservation activities applied to rivers and forests were practised by the Mandailing and known as *rarangan* (prohibition). These were closely interlinked with the traditional land use system, which was governed by the traditional authority. Since Indonesian independence, however, these traditional systems have been replaced by the central government and the local forest prohibitions have been abandoned. One of the major ecological and social problems currently affecting the province of Mandailing Natal is both legal and illegal logging. Various local communities in Mandailing restarted practising river protection in the 1980s in order to raise funds for public needs such as teachers' salaries, building of religious schools, provision of assistance to orphans and the poorest people, community road construction, etc. The fee collected during the fishing festival varies between 3 to 10 million Rupias which goes a long way in meeting community needs. The *Lubuk Larangan* system has been adopted from a neighbouring province but closely resembles local practise of the past. The district government passed a decree to regulate the *Lubuk Larangan* system in 1988.

The re-introduction of the *Lubuk Larangan* has created a spirit of cooperation and solidarity among the local people and has provided valuable economic benefit to the community. More studies need to be done to assess the ecological effects. It is believed, however, that an increase in river biodiversity should be revealed.

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[45] http://www.iucn.org/themes/wetlands/naivasha.html

...large river basins call for a joint jurisdiction regime involving multiple stakeholders at various levels. The co-management path is ridden with difficulties but the costs of not attempting it are even greater.

The management of large scale river basins is determined by the competing claims on water and water-dependent resources by international, national, sub-national and local actors. Such competing claims need to be resolved by a socio-political negotiation and the resulting decisions need to be properly enforced. Indeed, the very complexity of the situation of large river basins calls for a joint jurisdiction regime involving multiple stakeholders at various levels. The co-management path is ridden with difficulties but the costs of not attempting it are even greater. Two typical cases, the ones of Mekong and Okavango,[46] illustrate the attempts at establishing river-wide commissions, involving various countries and tackling issues according to collaborating rather than competing or hostile processes. Given the extent, importance and complexity of the relevant issues, the programmes developed by such River Basin Commissions begin by detailed, and often interminable, socio-ecological surveys. Fortunately, while the surveys are going on, limited attempts at co-managing resources, in particular fisheries, can be pursued with success in particular locations (see Box 3.11).

...in fishery management

Fisheries is a sector where co-management has been practised for a long time with excellent results. In the words of Pinkerton (1989) "The accomplishments of co-management [fishery] regimes in which governments and users have shared power and responsibilities in enhancement of long-range stock recovery planning and habitat protection are especially notable in producing superior and more efficient management". In Europe, one of the earliest arrangements to involve devolution of central government powers and the formal sharing of fishery management jurisdiction with fishermen is the Lofoten Cod-fishery Co-management. This arrangement evolved as a solution of last resort to serious and protracted conflicts among fishermen crowded in the same, exceptionally rich cod migration routes. On the basis of the Lofoten Act, approved in Norway in the 1890s, the co-management arrangement became possible, and indeed succeeded in bringing peace where the Norwegian state had not been able to. As soon as the fishermen assumed responsibility to manage the fishery, they developed their own committees in charge of developing rules (fishing time, type of gear, space allocated, inspections, etc.). Those rules, upon adjustments on a "learning by doing" mode, have been effective for more than a century.[47]

The maritime tradition of Japan never included the idea that the sea could be an open access environment.

In Japan, the offshore, distant fisheries and deep-water resources are managed in much the same way as other countries, by granting licenses to commercial companies. The inshore fisheries, however, have a long history of collective marine tenure arrangements, comparable to the one of land commons in Europe, with records that at times go back nearly a thousand years.[48] The current co-management system assigns regulatory authority at national and regional levels and decision-making power mostly at the local level.[49] This arrangement was designed to formalise traditional fishing rights, which in the past were in the hands of village guilds. Interestingly, the maritime tradition of Japan never included the idea that the sea could be an open access environment.[50] The rights are vested now in local fisheries co-operative associations, with membership based on residency and a period of apprenticeship in the fishery.

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[46] The Permanent Okavango River Basin Commission (OKACOM) was established in 1994, while the Mekong River Commission (MRC) was established already in the 1950s.

[47] Jentoft, 1989.

[48] Ruddle and Akimichi, 1984, quoted in Weinstein, 1998.

[49] Lim, Matsuda and Shigemi, 1995.

[50] See the summary of the Japanese fishery case in NRTEE, 1998.

The members of a co-operative obtain their own individual rights of use, which are not transferable.[51] The co-operative associations own the local coastal waters but need to apply to the government for fishing licences, which they then distribute among their members. The national government establishes the total allowable catch for the offshore and coastal fishing areas, and the local co-operatives sub-divide the quota among the fishermen. In addition, and in co-operation with other local authorities and partners, the co-operatives set up regulations, special projects, management plans, commercial ventures, purchase of supplies, and so on.

Rio Grande da Buba[52] is a brackish estuary with very productive fisheries, a high density of marine and terrestrial mammals and a wide range of bird life in the south-western coast of Guinea Bissau. Since the early 1990s the IUCN has facilitated there the development of co-management arrangements between local villages and government agencies for the sustainable use of fisheries. The local fishermen were assisted to organise and set up among themselves a credit scheme based on traditional customs, which was remarkably successful. At the same time, government-assisted research was underway to identify sustainable levels of fishery exploitations. When it became clear that barracudas were being over-exploited, the local communities and government agencies agreed on promulgating and enforcing limitations on the number of boats and the use of fine meshed nets during reproduction time. These limitations have been overall very well respected. In the meantime, the IUCN was supporting the commercialisation of fish through women's co-operatives, which met astounding commercial success. Prior to the conflict that unfortunately engulfed the country in 1998 there were more than 30 organised groups of fishermen and women fish-sellers in Rio Grande da Buba. They had managed to stabilise their fishery catch while greatly increasing the benefits for their own communities. All the above was accompanied by repeated requests for training and social support by villagers, the result of successful village-driven development efforts. At the time of this writing some relatively peaceful if not stable political conditions have returned to the country and the fishermen organisations are active as ever, demonstrating a remarkable sustainability and resilience, and the capacity to survive even the most erratic socio-political conditions.

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[51] Weinstein, 1998.

[52] de Sherbinin, 2000.

Box 3.11   Fishery co-management in the Mekong— Khong district (southern Lao PDR)
            (adapted from Baird, 1999)

Between 1993 and 1998, 63 villages in Khong district, Champasak province, southern Lao People's Democratic Republic (PDR) established co-management regulations to sustainably manage and conserve inland aquatic resources, including fisheries in the Mekong River, streams, backwater wetlands, and rice paddy fields. Local government endorsed these regulations, but the villages themselves choose what regulations to adopt based on local conditions and community consensus. The same communities are now empowered to alter regulations in response to changing circumstances.

Up until the 1950s and early 1960s fisheries practices in Khong were largely traditional. Fishing was conducted almost entirely for subsistence purposes, with the exception of a small amount of barter trade for certain high quality preserved fish, and the resources were managed as common property. Over the last few decades there have been many changes in aquatic resource management patterns in Khong district, and in Laos as a whole. The human population of Khong has increased rapidly. Lines and nets made of nylon, including mono and multi-filament gillnets, have become extremely common. As fish now fetches higher prices in the market and people are becoming accustomed to consumer goods, subsistence fishing has turned into market fishing.

The Lao PDR is supporting co-management with the assistance of some specific projects. Communities generally learn about this from neighbouring villages, friends and relatives, or from government officials. If their leaders are interested, they write a short letter to the Khong district authority, who later come to visit and assist in the process of developing a co-management plan (see also Boxes 5.10, 6.10 and 9.21). The plan included detailed regulations, such as fisheries conservation zones (partial or total), bans on stream blocking, on using lights at night, on chasing fish into nets, on destroying flooded forests and forests at the edges of the river, on using frog hooks and traps, on catching juveniles, and so on. It is generally up to the village headmen to assure that regulations are implemented. Most communities rely on a mixed strategy that includes enforcement of regulations and awareness raising, which are both important, especially at initial stages of implementation.

The aquatic resource co-management programme in Khong has been very successful. It has enhanced village solidarity, increased natural resource management capacity and increases the fish and frog stocks and catches. It demonstrated to be a most important option for equitably managing natural resources in the region.

...in mountain environments

Mountain environments present unique difficulties for the development of co-management settings. The relevant territories are often large, sparsely populated and comprise difficult terrains, sometimes including barriers that separate entire cultures and countries. And yet, remarkable examples of co-managed natural resources in mountain environments do exist. In the Annapurna Conservation Area— an internationally renowned high mountain environment in Nepal— a large-scale attempt at integrating conservation and local development has been promoted and supported for a decade by the King Mahendra Nature Conservation Trust.[53] Local, regional and national organisations discuss on an on-going basis the specific management decisions to be taken at various levels (including decisions over distribution of tourism revenues). The main aim is to involve all the relevant parties in management, so that their interests, concerns

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[53] King Mahendra Trust, 1994.

and capacities are fully taken into account. Several committees participate in developing specific agreements, and dedicated agents called *lami* (matchmakers) facilitate the process.

A similar co-management experience is also pursued, albeit with different mechanisms and results, in the buffer zones of some National Parks in Nepal.[54] This builds upon several years of experience and positive results in community forestry initiatives in the country, another example of co-management involving governmental agencies and local communities.[55] In Pakistan, the Mountain Areas Conservancy Project is engaging local communities, concerned government departments and various conservation agencies such as IUCN, WWF, the Aga Khan Rural Support Programme and the Himalayan Wildlife Foundation. One of its aims is the development of community conservancies. A conservancy has a territory (usually a watershed), various conservation committees and a valley conservation plan and fund. The pluralist watershed conservation committees are organised into clusters and apex bodies at each level.[56]

In Scotland, the Cairngorms Area is an important element of the natural heritage— probably the largest integral area of high and wild ground in the United Kingdom. The Area is managed by a Partnership Board composed of 20 members in representation of a wide range of social actors with relevant interests and concerns. In turn, the Board calls together the even larger spectrum of concerned individuals, groups, agencies and organisations that need to agree and co-ordinate action if any measure of conservation and sustainable development is to take place. This is done in meetings and conferences, privately and in public, and via many community-outreach activities. Through such extended consultations, the Board has developed a conservation and sustainable development strategy.[57] Zoning is a major means of composing different interests and concerns in the strategy, and several projects have been identified in different zones.

A similar pluralist management setting is sought but far from being achieved for the Mont Blanc region, a foremost scenic and biodiversity icon in Europe. This charismatic mountain environment, shared among Italy, France and Switzerland, is home to 30 municipalities with important common cultural characteristics developed through centuries of human and economic exchanges. On paper, a Trans-boundary Conference for the Mont Blanc and an ambitious joint programme have been set up, but in practice only the elected politicians of the three countries seem to have a voice in the management of the area, downplaying environmental concerns, responding only too well to economic imperatives and derailing any attempt at genuine participatory conservation attempts.[58] Currently, an umbrella NGO is actively organising national and international meetings among social actors concerned with the future of the mountain, its people and culture, and demanding an active role in deciding about it.

...dedicated agents called lami *(matchmakers) facilitate the process of developing specific agreements.*

Zoning is a major means of composing different interests and concerns in the strategy, and several projects have been identified in different zones.

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54 Kettel, 1996a and 1996b.
55 Gilmour and Fisher, 1991; Hobley, 1993.
56 Pathak *et al.*, 2003.
57 Cairngorms Partnership, 1996.
58 Chatelain and Ehringhaus, 2002.

Box 3.12   Ambondrombe (Madagascar): caring together for a sacred mountain
(adapted from Rabetaliana and Schachenmann, 2000)

Ambondrombe is a sacred mountain and historic site on the border between Betsileo and Tanala lands, towards the southern end of the Malagasy eastern escarpment between Ranomafana and Andringitra National Parks. Still relatively intact, dense tropical forest covers its flanks, giving way to rare cloud forests at the summit. At lower elevation to the East, the forest dwelling Tanala cultivate mainly bananas and robusta coffee. At lower elevation to the West the undulating savannah gives way to the manicured farms of irrigated rice, tobacco, maize, potato and fruit trees of the Betsileo agriculturists. In the last century, the Ambondrombe Mountain and surrounding lands were also inhabited by several generations of Betsileo royal families. These families called in some Merina people, who brought in their handicraft and agricultural skills. The Merina's cultural influence was absorbed rather then fought by local people, and its impact is still evident today in local architecture, handicrafts, legend, folklore and taboos. For both the Tanala and Bestileo peoples, the mountain forest offers rich natural resources, abundant water, relatively fertile soils, wood for building and cooking, natural fibres, medicinal plants and a vast variety of bush food for hunting and gathering, It is only too reasonable that they both claim the mountain forest as part of their ancestral inheritance and favour settlements of their own people at the edges of this forest corridor. More claims are also coming from new migrants and stakeholders (scientific, commercial and tourism) as Ambondrombe constitutes the only intact biodiversity bridge left between north and south along the eastern Malagasy escarpment.

How can the complex interests and conflicts at play be effectively managed to conserve this unique natural and cultural jewel of Madagascar? The exceptional self-help spirit of local elders and leaders around Ambondrombe is showing the way. A community-based natural and cultural resource management programme has started with voluntary forest guards organised by a committee of village elders. The elders are accustomed to protecting the forest against illegal migrants and settlers and to make sure that the use of local resources is done in a sustainable way according to customary laws (dina).

The programme is taking advantage of a state-approved system of natural resource management called GELOSE (Gestion Locale Sécurisée, or local security of resource management) in which they work with various national and international, governmental and non-governmental partners (see also Box 3.7 in this Chapter). The Water and Forests Service assists in land use and fire control and management. An NGO is helping with reforestation for timber and firewood, training local farmers in plantation management, sawing and semi-industrial charcoal production with improved mobile kilns. Another NGO assists in agricultural diversification and intensification, e.g., the restoration of silk worm production for the weaving of traditional garments (lambas) and in agroforestry approaches. Local consultants assist with a comprehensive ecotourism strategy, involving the descendants of the Betsileo royal family, custodians of cultural and sacred sites in the area.

The stakes are high and the challenge is impressive. In the course of the negotiations the poor face the rich; the local visions, aspirations, actions and taboos stand up to global perspectives, interests and influences; the demands of traditional subsistence livelihoods clash with the ones of modern economy; and the local governance system based on customary law needs to deal with the rules and inflexibility of a modern nation state. Fortunately, all the stakeholders involved have expressed a common aim: developing and applying self-help approaches to preserve the natural and cultural diversity and identity of the unique Ambondrombe "lifescape". The work is on-going.

...in managing migratory wildlife

Co-management arrangements do not necessarily refer to a specific territory or area of sea. Such is the case for agreements on the management of migratory

wildlife, which refer to specific animal species, for instance the Beluga whales found in the coastal and estuarine areas of the Eastern Canadian Arctic. This species of whales has been managed for years through agreements between Fisheries and Oceans Canada and various communities and organisations of the Inuit indigenous nation. Under the agreements, female whales are protected, there is a sanctuary area where calves can grow undisturbed, and hunting rules are established and respected[59].

Similarly, a large herd of porcupine caribou, ranging across two Canadian territories and the state of Alaska, is managed as a result of an international agreement between the governments of the USA and Canada.[60] The herd is of major economic and cultural importance to a number of Alaskan and Canadian indigenous communities. This is true not only because the caribou meat is an essential component of their diet. Hunting, preparing the meat and sharing the harvest are the building blocks of their cultures. The agreement between the USA and Canada provides for the constitution of the International Porcupine Caribou Board, in charge of developing a management plan for the herd and its habitat. In Canada, a similar "national" Board exists, including members from the Gwich'in Tribal Council, the Council for Yukon Indians, the Inuvialuit Game Council, the Yukon Territorial Government, the Government of Canada and the Government of the Northwest Territories. Every year, management plan updates and reports are agreed upon and distributed among the various interested groups within Canada, and across the border.

Co-management arrangements do not necessarily refer to a specific territory or sea area. Such is the case for agreements on the management of migratory wildlife, which refer to specific animal species....

Possibly the best known example of co-management of migratory wildlife is the CAMPFIRE initiative in Zimbabwe.[61] The initiative— described also in case example 1.3 in chapter 1 of this volume— has succeeded in establishing many specific partnerships among local communities, district authorities, the national government, some national NGOs, research institutions and business operators. The "producer communities" involved live right in the midst of the habitat of wildlife (including the large animals prized by trophy hunters), and directly sustain the relevant opportunity costs and direct damages. Occasionally they also actively improve the habitat of wildlife, for instance by digging water pits for the elephants in case of severe droughts. On the basis of a specific Act of the national government, the district authorities are in charge of wildlife management. The national NGOs and research institutions provide technical and organisational help to the producer communities and district authorities. The business operators organise the flow of tourists and hunters that inject financial resources into the system and provide a return to the producer communities and the district administrations. The initiative has obtained positive results for both conservation

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[59] Drolet *et al.*, 1987.

[60] Porcupine Caribou Management Board, 1995. See also Table 8.1 in Chapter 8.

[61] Jones and Murphree, 2001.

Even limited levels of authority and responsibility seem to make a significant difference.

objectives and the local economy and livelihoods. At the time of this writing, big game hunting seems to remain the only economic initiative strained but not substantially affected by the current socio-political crisis in the country. Big game hunting remains popular, allowing a relatively stable source of income to the wildlife-dependent communities.

The CAMPFIRE initiative has been so successful that it has been replicated under similar models in Botswana, Zambia, Mozambique, Namibia, Tanzania, and has inspired practice in many other African countries. The devolution of management authority and responsibility to local communities, however, has been more or less effective depending on a country-by-country basis. In Namibia the communities that joint together to form conservancies (see Box 3.13) have substantial decision-making power. The 51 communities in the surroundings of Tanzania's Selous Game Reserve— one of Africa's oldest and largest protected areas— on the other hand, have much less power. They are assigned rights and responsibilities over the wildlife that penetrates in their territories in a rather paternalistic way.[62] And yet, even such limited levels of authority and responsibility seem to make a significant difference. There appear to be a reduction in poaching between the Serengeti and Selous by a factor of 10, attributable to the fact that only in the surroundings of Selous the local communities benefit from the wildlife that moves out of the park into their adjacent lands.[63]

Box 3.13   Private and community conservancies in Namibia:
co-managing land for game farming and wildlife-related livelihoods
(adapted from Jones, 2003)

Namibia has about 75% of its wildlife outside formal state-run protected areas. Private farms developed a multi-million euro industry based on consumptive and non-consumptive uses of wildlife. But individual farm units are not large enough for successful game farming, as game requires large areas where to take opportunistic advantage of pasture growth and water supply in arid and unpredictable environments. Mobility and flexibility are the keys to survival. Private farmers soon realised the advantages of pooling their land and resources to manage wildlife collectively and established "conservancies" with common operating rules, management plans and criteria for distribution of income derived from wildlife. There are now at least 24 conservancies on private land in Namibia (there were only 12 in 1998) covering an area of close to four million hectares. Efficiency of scale means that their returns are more than twice those of individual wildlife ranches.

Namibian communities have followed suit. There are now also 15 "community conservancies" in Namibia, managing another four million hectares of land with more than 200,000 wild animals, including endangered black rhino, endemic species such as Hartmann's mountain zebra, and large parts of Namibia's elephant population. Important habitats managed by community conservancies include the western escarpment of the central plateau, which is a major centre of endemism, seasonal and permanent wetlands; northern broad-leafed woodlands; and west flowing rivers which form linear oases in the Namib Desert. Several community conservancies have set some of their land aside as core wildlife and tourism areas within broader land use plans and wildlife has been re-introduced to at least three such conservancies. Torra[64], a community conservancy with more than 350,000 ha in north western Namibia, has one up-market tourism lodge generating about €50,000 annually. Trophy hunting is worth nearly €18,000 annually and a recent sale of Springbok raised

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[62]   Baldus *et al.*, 2003.

[63]   R.K. Bagine, Chief Scientist of Kenya Wildlife Service, personal communication, 2003.

[64]   Torra is the first and most economically successful community conservancy in Namibia. Other conservancies are less fortunate in terms of tourism potential and the lack of sustainable income may constitute a problem for their long-term viability.

€13,000. The size of the conservancy means that it could certainly develop two more lodges without causing environmental damage or spoiling the wilderness experience for tourists. This would more than double the existing income, making considerably more money available for the 120 households once the operating costs of about €18,000 have been covered.

...in managing protected areas

Protected areas of various IUCN categories— from national parks to protected landscapes— are increasingly managed by partnerships involving governmental and non-governmental actors.[65] The 2003 World Parks Congress in Durban (South Africa) endorsed recommendations that identify and acknowledge several governance types for protected areas (PAs), including co-management and community management (community conserved areas). The openness to a diversity of institutional arrangements was recognised as a determinant of strengthening the management and expanding the coverage of the world's protected areas, addressing gaps in national PA systems, improving connectivity at the landscape and seascape level, enhancing public support for conservation, increasing the flexibility and responsiveness of PA systems, improving their sustainability and strengthening the relationship between people and nature. It was also endorsed that the IUCN PA category system (based on key management objectives) was to be integrated with a new dimension for "governance type" and strengthened with reference to cultural management objectives (more attention to be given to the crucial ties between biological and cultural diversity). As major as they appear, these statements do not signal a change in orientation but, rather, the full legitimisation of processes underway for several years, which were already recognised at the World Parks Congress in Caracas (1993) and at the Seville International Conference of 1995.[66] The Caracas Congress stressed the importance of "conservation partnerships"[67] and the Seville Conference emphasised that the biosphere reserves are to be managed with the active involvement of local authorities, NGOs and economic operators, in addition to local communities, scientists and conservation professionals.[68]

The 2003 World Parks Congress endorsed recommendations that identify and acknowledge several governance types for protected areas, including co-management and community management (community conserved areas).

An interesting example of a biosphere reserve engaged to transform the participation theory into practice is the Sierra Nevada de Santa Marta (Colombia), the highest coastal mountain range in the world (it raises to 5,775 meters just 42 kilometres from the Caribbean coast). There, the Fundación Pro-Sierra Nevada de Santa Marta conceived and tirelessly supported a collaborative process to develop a strategy for the preservation of biodiversity and the sustainable use of natural resources. Innumerable meetings have been held among various institutional actors— including representatives of thirteen municipalities, two national parks, the indigenous inhabitants of the territory, the business sector (heavily dependent on the Sierra as a "water factory"), as well as the army and even some guerrilla groups and paramilitary factions. Despite the foreseeable spectrum of opinions and interests among stakeholders, some common concerns could be identified and a large number of potential initiatives were consolidated

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[65] See, for instance, West and Brechin, 1991; Barzetti, 1993; Amend and Amend, 1995; Sarkar et al., 1995; IUCN, 1996b; Borrini-Feyerabend, 1996. For recent reviews of case examples of co-managed protected areas and community conserved areas, see two recent special issues of *Policy Matters*, the journal of IUCN/ CEESP, No. 10 on Co-management and Sustainable Livelihoods and No. 12 on Community Empowerment for Conservation http://www.iucn.org/themes/ceesp/publications/publications.htm

[66] UNESCO, 1995.

[67] McNeely, 1995.

[68] This statement was needed. A survey of biosphere reserves concluded in 1995 that they had made little progress in involving communities in decision making. The study stated that collaborative action was slow to develop, alternative lifestyles were not taking hold, biological scientists were remaining in the drivers' seat and local participation was not given the attention it deserved (IUCN, 1995).

... management agreements can be signed between the landowners and the Park Authority and are considered to be legally binding contracts.

into a Sustainable Development Plan for the whole bioregion.[69] This Plan is the expression of a major social agreement developed under extremely difficult socio-political conditions. The implementation of the plan is understandably constrained by the political instability of the area, but the process has been very positive overall.

In some parts of the world, the participatory approach to protected area management has been for some time the rule rather than the exception. In Western Europe, for instance, the interests of local people are central to the stated objectives of protected areas ("...the well-being of those who live and work in the National Parks must always be a first consideration..."[70]), privately owned plots are commonly included in the protected territory, and local administrators are largely involved in management activities. This is not surprising, as the landscapes of Europe are the product of a long history of interaction between people and the land. In fact, biodiversity values are often found in association with traditional land uses (such as pastoral farming systems) and the most appreciated landscapes are those that combine natural and cultural features. For such "cultural landscapes", as aptly described by Phillips (1996):

"...the real protected area managers are not the park rangers but the farmers and the foresters who live there and make use of the land in a traditional way, as well as some branches of regional or local government in democratic representation of local residents. Day to day conservation is undertaken in partnership with a range of stakeholders in the public, private and voluntary sectors. In this sense, collaborative management has been widely practised in Europe for many years".

The Park Director believes that the attitude of both management and the local parties is the most important ingredient of effective collaboration.

An example in point is the North York Moors National Park (United Kingdom), which includes land settled and farmed for millennia.[71] The landscape encompasses large areas of semi-natural vegetation— such as ancient woodlands— interspersed with grazing areas, hedgerows, farmland and some small towns and villages. The relationship between the park and the local people is so close that the Park Management Plan is included as part of the general plan of Town and Country Development, prepared with the extensive involvement of the public. In fact, most of the land in North York Moors is under private ownership (a factor common to many protected areas in Europe) and the management plan is therefore dependent on the co-operation of the landowners. Management agreements can be signed between the landowners and the Park Authority and are considered to be legally binding contracts. The agreements are entirely voluntary, although the Park Authority can provide financial incentives and compensations in return for agreed works or environmentally sound farming practices. Land use changes can be controlled in part by the Park Authority, but farming activities generally remain outside these controls. The formal structural arrangement for co-management involves regular meetings, various forms of consultation, local input to the management plan and the representation of the local community on the Management Board. The Park Director, however, believes that the attitude of both management and the local parties is the most important ingredient of this very effective collaboration.[72]

In France, the *Parcs Naturels Régionaux*[73] (PNRs, Regional Natural Parks) fully

[69] Fundación pro Sierra Nevada de Santa Marta, 1997.
[70] Harmon, 1991.
[71] Statham, 1994.
[72] Wilson, A., 2003.
[73] Allali-Puz, Béchaux and Jenkins, 2003.

demonstrate the power of a new approach, citizen-based and citizen-controlled, to establishing and managing protected areas. For each of the 38 existing PNRs in the country (covering 11% of the national territory), the state retains its role of evaluator and supervisor but all other decisions, from boundaries to management objectives, are taken by local social actors. Such decisions are collected into "the Charter" of each Park, a voluntary contract among all the relevant parties. In other words, the citizens get together (usually through their elected representatives but also because of the impulse of NGOs and others) and decide that they want to manage their land, protect their natural and cultural patrimony and experiment with the best way of doing it. Together, they generate a vision, transcribe it into the Charter, and identify a variety of initiatives, partnerships and new and innovative agreements to take the Charter to action and awaken the natural, cultural and economic potential of the land. They themselves originate the request to the government that their land is declared a Regional Natural Park, which is a stamp of environmental quality. The state delivers the denomination on the basis of certain criteria and withdraws it if and when the criteria are no longer respected. A typical PNR is managed by a mixed body gathering elected officials at various levels and socio-professional representatives. This body works in on-going, close consultation with the civil society at large, organised in commissions, committees, etc. The adherence to the PNR is totally voluntary (a municipality can "keep itself out" of a PNR even if entirely surrounded by it) and the territory of the Park is entirely accessible.

The citizens generate a vision, transcribe it into the Charter, and identify a variety of initiatives, partnerships and innovative agreements to take the Charter to action and awaken the natural, cultural and economic potential of the land.

Box 3.14   Tayna Gorilla Reserve (Democratic Republic of Congo)
(adapted from Nelson and Gami, 2003)

The Tayna Gorilla Reserve located in North Kivu, DRC was created in 1999 through collaboration between conservation agencies and two traditional leaders of the Batangi and Bamate people. The Statutes for this "Community-based Reserve" of 800 sq km constitute a formal agreement between the customary landholders, government and NGOs. Local people directly participate in the management of this protected area, whose goals includes both the conservation of biodiversity and the promotion of rural development. In this region of ongoing armed conflict, the Tayna forest guards are unarmed, and repressive protection measures are not employed by them. Communities have been directly involved in the development of the Reserve's management plan, including to establish a forest zoning scheme and to address the long-term development of the protected area. The Reserve programme recognises that customary use of the local resources will continue as part of the long-term management and conservation of the forest habitat. Key dilemmas faced by this initiative are the degree to which unauthorised use by outsiders can be prevented during periods of political instability, and how to include the local Pygmy population, which so far has been marginalised in the process of establishing this initiative.

Unlike in Western Europe, in most countries of the developing South the forms of participatory management of protected areas now in place has evolved as a sort of "last resort" measure. Many have been promoted to palliate the scarcity of management funds, to deal with situation of high political uncertainty (see Box 3.14), or to mend long standing conflicts.[74] The latter was the case, for instance, for Bwindi Impenetrable National Park, one of the most famous and valuable national parks in Uganda, including as the habitat of the rare mountain gorilla. At the establishment of the Park the conflicts between local residents and park authorities were so severe that "spontaneous fires" in the park became a common phenomenon. Local people even refused to help when a ranger died in the area.[75] This was entirely understandable, as the local communities had been suddenly deprived of access to forest products needed for their own physical and social survival (forest foods, honey, medicinal herbs, poles, vines necessary to build their tools, etc.). Fortunately, a number of studies ascertained the conditions for sustainable, non-damaging use of some Park resources and a project supported by the Cooperative for Assistance and Relief Everywhere (CARE) facilitated the development of co-management agreements between the Uganda Wildlife Authority and the local communities on the border of the Park.[76] The agreements guarantee that a number of community-selected and certified local users can extract a limited quantity of specific resources (*e.g.*, vines, honey, medicinal plants) from the National Park. In exchange, the communities agree to comply with rules and restrictions and assist in conserving the habitat as a whole. The "spontaneous fires" have greatly diminished and the relationship between the Park authorities and the local communities has substantially improved.

Co-management is also embraced in other National Parks in Uganda. In Ruwenzori, agreements were developed to specify in detail what types of rules and limits are to be followed for the collection of specific types of resources in the park area (*e.g.*, for mushrooms, medicinal plants, honey, etc.).[77] Similarly, agreements are being signed between the Park agency and local parishes for Mt. Elgon National Park and Kibali National Park, assigning some surveillance responsibility to local groups, which, in turn, are allowed to gather natural resources that can be extracted in a sustainable way (*e.g.*, bamboo shoots). Between 1996 and 1998 a number of agreements were developed and tested in both Mt Elgon[78] and Kibale.[79] Kibale entered into eight agreements, involving 29% of surrounding parishes. Of these, three agreements were for harvesting wild coffee in the park by people in Mbale, Kabirizi and Nyakarongo parishes (each parish consists of about 10 villages), one agreement allowed extraction of multiple resources such as papyrus, craft materials, medicinal plants, grass for thatching and access to crater lakes for fishing at Nyabweya, and four agreements allowed placement of beehives inside the Park. Meanwhile Mount Elgon entered into three agreements that provide access to a wide range of subsistence resources, such as firewood, and dozens more were developed later. As a whole, Mount Elgon is attempting to engage about 20% of its surrounding parishes (over 10,000 households) in collaborative resource management agreements. The Ugandan experience has been financially and technically supported by several foreign donors and international NGOs.

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[74] See, for instance, West and Brechin, 1991; Adams and McShane, 1992; De Marconi, 1995; Ghimire and Pimbert, 1997; and Kothari *et al.* 1997. For an illustrative review of conflicts around protected areas and ways to attempt managing them, see Lewis, 1997.
[75] Philip Franks, personal communication, 1995.
[76] Wild and Mutebi, 1996.
[77] Penny Scott, personal communication, 1996.
[78] Scott, 1996.
[79] Chhetri *et al.*, 2003.

Many co-management initiatives for protected areas in the South begin timidly, as if the government agencies were afraid to lose power if the experiments went too far. Most often, the local institutional actors are invited to participate only in an advisory way. For instance, this was the case in Jamaica, where an Advisory Committee including representatives of different interests and concerns was established during the setting up phases of the Blue Mountains National Park.[80] In India, the debate on the possibility of Joint Protected Area Management (JPAM) is very lively and pilot initiatives are being promoted in selected protected areas,[81] but their importance is much less than the one of the Joint Forest Management Programme. Even in the Ugandan cases described above, much is still to be done to assure the true and effective engagement of local actors. The agreements satisfy some of the needs of local communities and give them a new status and a voice that may grow with time, but the Uganda Wildlife Authority still retains full management authority. When "participatory planning" is limited to *"consulting"* local actors, it cannot and does not affect the substance of accepted management narratives and related action.[82] Some ask whether the experience is not more an attempt to shed responsibilities than to devolve rights.[83]

...land restitution claims by displaced indigenous and local communities are acquiring legitimacy and sprouting innovative solutions.

The partnership approach to managing protected areas is likely to have to expand under the current socio-political and economic conditions. Several countries are under pressure to restructure their internal budgets, and reluctant to invest scarce resources in government-run conservation. Sharing the burden among various entities, public as well as private, or even transferring control of territories to communities or private owners are becoming increasingly appealing options. Even governments that expect major tourist revenues out of the conservation investments are concerned that local social support is essential to guarantee the conditions for tourism to prosper. Meanwhile, the growing reality of private engagement in conservation is becoming better known and recognised and, in the wake of the fifth World Parks Congress of 2003, a wide constituency is building up around the recognition of the conservation importance of community conserved areas and co-managed protected areas. As part of this, a major phenomenon can be singled out: land restitution claims by displaced indigenous and local communities are acquiring legitimacy and sprouting innovative solutions.[84] And, after years of hostile relationships, indigenous peoples and local communities and national conservation agencies are beginning to work together to establish and manage new protected areas.[85]

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[80] Northrup and Green, 1993.
[81] See Kothari *et al.*, 1996. As an example, in Kaila Devi Sanctuary (western India) local pastoralists have access to pasture in the sanctuary's territory in return for help in monitoring against illegal grazing and mining (Kothari, 1995). Several action research studies have been carried out on the possibility of developing joint management agreements in a number of protected areas (Kothari and IIPA Team, 1997).
[82] Risby *et al.*, 2002.
[83] Blomley and Namara, 2003.
[84] See Box 4.3 in Chapter 4. On 14 October 2003, the Constitutional Court of South Africa ruled that indigenous peoples had both communal land ownership and mineral rights over their territory. Laws that tried to dispossess them are to be considered "racial discrimination." The decision is that indigenous people who own land under their own unwritten law have the right to have this upheld in spite of the legal systems subsequently imposed by the state. This ruling has important implications also for other countries, such as Botswana, which operate under the same "Roman-Dutch" legal system.
[85] See examples described in Boxes 3.16, 4.4, 4.9, 4.10, 7.10 and 8.5.

...for private property under stewardship conditions

Land Trusts are a key force in land protection in the USA and Canada.[86] Basically, they involve a partnership among an environmentally oriented NGO, some local authorities, state authorities (when relevant) and a number of local landowners. The NGO, typically staffed by volunteers and endowed with a tiny budget, mobilises to respond on a timely manner to special conservation opportunities or risks. It contacts a number of landowners in adjacent lands and convinces them to agree to some management practices, sign a conservation easement and/ or donate their land for conservation purposes. The landowners are motivated by conservation values and positive social pressure but also by the tax advantages provided by local authorities and/ or the state to those who enter into such a partnership.

...there are now over 1,200 Land Trusts in the USA (a third of them in New England) and many are also found in the Atlantic coast of Canada.

At times, the agreement is simply a verbal statement between the landowner and the NGO, with technical assistance sometimes provided to the landowner. It may include restrictions to certain types of land development, assurance of keeping the land under appropriate use (*e.g.*, forestry or agriculture) or assurance of using specific management practices (*e.g.*, integrated pest management or run-off control devices). In other cases, full management plans are agreed upon by the landowners and the NGO or a conservation easement (deed restriction) is signed. The latter formally prohibits "in perpetuity" certain land uses (*e.g.*, infrastructure developments and buildings) and allows only others (*e.g.*, traditional agriculture). In other words, land ownership is retained with restriction of uses. For an easement to be effective, a specific legislation needs to be developed and approved, usually to provide tax incentives to the signatories of the easement. An extreme form of Land Trust is the one in which the landowners donate their property to the NGO, which assumes the responsibility to manage it. There are now over 1,200 Land Trusts in the USA (a third of them in New England) and many are also found in the Atlantic coast of Canada. The basic outcome is more land dedicated to conservation while people enjoy their property rights but also save in terms of taxes.

Conservation partnerships with the private sector are not limited to the North America continent. In South Africa, for instance, the National Parks Trust has negotiated an agreement with a private group, the Conservation Corporation, for the management of the Ngala Game Reserve. This led to the establishment of the first "Contract Reserve" between Kruger National Park and a private enterprise. Signed in 1992, the agreement foresees that the Conservation Corporation has exclusive rights for operating tourist activities over 14,000 hectares of Kruger National Park. The Corporation pays dues to the Park, which uses them for wildlife management, research, educational programmes and community-based projects in areas bordering the protected environment.[87] This is an example of a quite extreme partnership, basically the passing on of management authority to a private institutional actor in exchange for economic benefits to be re-invested in conservation.

Another private arrangement is found in Belize. There, the Community Baboon Sanctuary was formed in 1985 to protect one of the few healthy black howler monkey populations still existing in the world. Unlike other wildlife management projects, the sanctuary is a voluntary, grassroots conservation programme depending on the co-operation of private landowners within active farm communities. Nearly all the landowners in the eighteen-square mile sanctuary along the Belize

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[86] Mitchell and Brown, 1998.
[87] Conservation Corporation Ltd., undated.

River signed voluntary conservation pledges to make their farming practices compatible with the preservation of the habitat of the black howler monkey. Each landowner pledged to follow an individual conservation plan, receiving only modest financial support from the World Wildlife Fund and the Zoological Society of Milwaukee County.

...promoted by conservation and development projects

The so-called Integrated Conservation and Development Projects (ICDPs) grappled for years with the complexity of issues at stakes and the multiplicity of actors involved in pursuing joint conservation and development goals. Recently, the contractual approach has become a fairly commonplace response to such complexities.[88] In this approach, more or less formal contracts spell out the rights and responsibilities of various parties (e.g., donors, local authorities, local communities, natural resource user groups) for the management of a territory or set of natural resources. Typically, a contract assigns to a local community the responsibility to carry out certain management tasks and/ or prevent certain destructive practices and unsustainable uses. In exchange, the community receives an assurance of access to certain natural resources and benefits and/ or it is provided with external aid in various forms (see Box 3.15)

Box 3.15   **The contractual approach to manage forest resources in Mali**
            (adapted from Aalbers, 1997)

In Mali's Kita district, the local forest reserves used to be heavily exploited by firewood merchants with the tacit consent of forestry officers and authorities. In contrast, local residents— dependent on the forests for firewood, timber, game and other non-wood products— were subjected to fines and imprisonment if they entered the forest even to gather for their livelihood needs. They were denied access to the forests that belonged to their ancestors from times immemorial. Obviously, strong hostile relations developed between the villagers and the forestry officers. From the early 1990s, that hostility has given way to new forms of collaboration as a direct result of an experimental project supported by the International Labour Organisation (ILO). The project, with joint development, conservation and social organising objectives, focused on elaborating new contractual arrangements for wood supply and forest management.

After completion of a forestry and socio-economic study, the project began by hiring some local villagers to carry out forest improvement works, including regeneration, scarification, and the building of firebreaks and access roads. The collaboration was stipulated in labour contracts and the work was remunerated with carts and donkeys, so that the villagers could more easily transport wood to the villages or to the town of Kita. This equipment, together with the experience gained in performing the forestry improvement works, enabled the villagers to undertake further contracts. The new contracts were more specific and sophisticated, and through them the villagers agreed to comply with forest management rules in exchange for a direct share of profits from the sale of wood. The villagers received training on methods of cutting and species to be preserved, and the amount of wood authorised for harvest remained a fraction of the regenerative capacity of the forests concerned. The latter Contracts for Wood Supply and Forest Management were institutionalised in 1991 by an Interim National Government sensitive to the needs of rural populations. This took place despite the opposition of forestry officers at regional and district levels, who did not readily accept either a partnership with the villagers or the obligations this entailed (loss of power, financial gain, etc).

The contractual forest exploitation is closely linked to the establishment of a wood distribution network

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[88] For a review of experience with integrated conservation and development projects that recommends the contractual approach, see: Larson, Freudenberger and Wyckoff-Baird, 1997. See also Agersnap and Funder, 2001.

organised according to principles defined by the villagers and the state. Contractual exploitation, in fact, competes with uncontrolled and illicit exploitation. A revised taxation system now gives preference to wood derived from contractual exploitation. Together with tight controls at the entrance to the town of Kita, this is providing an incentive to contractual exploitation. A system of tax rebates— to establish funds for forest improvement and maintenance works, and for village investments— is under consideration by the Government. A share of the rebates would be received at the local level.

Entrusting villagers with forest management and exploitation has increased their sense of responsibility for the forest resources within their village lands. Through their own organisation (which now includes a federation uniting about thirty five villages), villagers currently survey their local forests and require that merchants pay for the resources they gather, rather than getting them for free. Moreover, the role of the forestry officers has been redefined as advisory, rather than enforcement or executive. All this had positive consequences on the villagers' own sense of dignity. The acceptance of the contractual approach at the national level, as well as its integration into the country's forestry legislation, generated great interests in rural populations outside Kita district. Rural people throughout the country are impatient to become involved in controlled contractual exploitation.

In general, many ICDPs have now adopted a methodology that includes an in-depth stakeholder analysis early on into operations, stakeholder workshops to involve various partners in the design and implementation of initiatives and conflict mediation support. Setting up various kinds of pluralist workshops and committees has proven useful in various circumstances. For instance, CARE has helped set up a pluralist task force in the process of demarcating the boundaries of the Pa-Kluay community territory (a Karen community in northern Thailand), the local forest, the Doi Inthanond National Park and three neighbouring communities.[89] The Task Force included several villagers from the local communities, staff of the forest department and staff of the national park. The demarcation was carried out with the satisfaction of everyone involved with the help of both in-forest surveys and analysis of existing maps of the area.

...with indigenous peoples

In the last decades, many indigenous peoples have negotiated agreements with national governments for the management of their ancestral territories. In Australia, the Great Barrier Reef Marine Park (a major source of revenue to the country— more than one thousand million Australian dollars per year[90]) is managed by a specific Authority with hundreds of staff and a budget larger than the national budgets of some small countries. In the last decade or so, the Authority has substantially developed its position *vis-à-vis* local interests and concerns in the management of the Park. In the beginning, they used to only consult the stakeholders (including the Aboriginal People and people whose livelihood depends on Park resources). Then they started calling for workshops among local stakeholders to agree on specific management decisions (*e.g.*, zoning arrangements). Now, some stakeholders (*e.g.*, representatives of the Aboriginal People from the area) sit permanently in the Management Board of the Authority itself. This latter development happened after a ruling by the Australian High Court repealed the concept of *terra nullius* (no-man's land) held true at the time of the colonial conquest of Australia, and began the complex process of recognising the tenure rights of the Aboriginal People.[91] The development also built upon the positive experiences of co-management regimes established elsewhere in the

...the Australian High Court repealed the concept of terra nullius (no-man's land) held true at the time of the colonial conquest of Australia, and began the complex process of recognising the tenure rights of the Aboriginal People.

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[89] Prasittiboon, 1997.

[90] GBRMPA, 1994.

[91] This ruling, which recognises that a native title existed under British common law, is known as the Mabo Decision.

country (e.g., in Gurig, Coburg and Kakadu National Parks[92]) and on the positive experience of the Authority itself in its interaction with local institutional actors. The trend appears to be from informal to formal mechanisms, from advisory to power-sharing roles, from a management focus to a policy and planning focus.[93]

In Canada there exist several Joint Management Boards, on which both representatives of government agencies and indigenous peoples sit.[94] Such Boards deal with a full range of management matters, from long-term strategic planning to daily operations. The Boards, established by legislation, have formalised the right of indigenous stakeholders to participate in management. Numerous umbrella agreements have obtained legislative backing,[95] and under those agreements several communities have, in turn, prepared their own co-management plans (only some of those plans, however, take into account the interests of non-indigenous stakeholders[96]). Despite this, a recent review reports only a few bright spots (see Box 3.16) and not a few problems with regards to the establishment and management of national parks in aboriginal land in Canada, especially regarding the Government's "duty of consultation" with the owners of aboriginal title.[97] The Supreme Court of Canada has not offered a clear direction on this, stating that the nature and scope of such consultation may "vary with the circumstances".

...the trend appears to be from informal to formal mechanisms, from advisory to power-sharing roles, from a management focus to a policy and planning focus.

Box 3.16   Gwaii Haanas: the bright spot among Canada's co-managed Parks
(adapted from Gladu, 2003)

In the Haida language, *gwaii haanas* means "islands of wonder and beauty." The Gwaii Haanas National Park Reserve, located within the Queen Charlotte Islands off the coast of British Columbia, was established in 1986 under an agreement between Parks Canada and the Council of the Haida Nation. The Haida themselves initiated the process, after their land and culture started to disappear due to heavy logging in their traditional territories. Through alliances with conservation organisations, the Haida people drew international attention to the spectacular beauty and diversity of their homeland and the need to protect it. The dual Park-Reserve status stems from the land ownership dispute. Both the government of Canada and the Haida claim ownership of the land. Fortunately, both sides have been able to put aside their differences regarding ownership and promote instead their common interests and goals. The Haida intent is to protect the area from environmental harm and degradation and continue traditional resource uses. The federal government's intent is to protect the area as a natural cultural environment as part of the national protected area system. Such objectives are perfectly compatible, leading to a relationship based on respect, reciprocity, empowerment and effective cooperation. In fact, Gwaii Haanas is now governed by a joint Management Board, made up of two Haida representatives and two Parks Canada representatives, working by consensus. This may slow down

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[92]   See Table 4.3 in Chapter 4; Hill and Press, 1994; and Smyth, 2001. For Australia as a whole an impressive and far-sighted development now sees Indigenous Protected Areas, declared and run by the Aboriginal People, recognised and supported as part of the national protected area system. See Chester and Marshall, 2003.

[93]   Weaver, 1991.

[94]   East, 1991.

[95]   For instance: the James Bay and Northern Quebec Agreement of 1975; the Inuivialuit Agreement of 1984 in the western Arctic; the Nunavut Agreement of 1993 in the eastern Arctic; the Yukon First Nation Settlement Agreement of 1995 and the Nis'gaa agreement of 1996 in northern British Colombia. Some non-aboriginal groups failed to be recognised as legitimate parties in the agreements (Fikret Berkes, personal communication, 1996).

[96]   In the early agreements, the Management Boards included nearly exclusively representatives of government agencies and aboriginal peoples, and some of the latter fought to exclude from the agreements other stakeholders, such as sport hunters (Fikret Berkes, personal communication, 1996). In some later agreements, the Boards include non-aboriginal, non-governmental stakeholders as well (Stephan Fuller, personal communication, 1996).

[97]   Gladu, 2003.

some decisions but assures that they are all well thought out and widely accepted. The connections between land and culture are vital for the Haida, who are dependent on the natural resources for livelihood (through fishing, hunting and trapping) and also for medicines and the expression of their cultural identity through art. Five heritage sites within the borders of Gwaii Haanas are of particular high value to the Haida and are carefully protected. All this has been recognised and supported by Parks Canada. Consultation during the establishment and management of the protected area was adequate, and the process was not rushed (it took five years to come to an agreement). The establishment of the Park has promoted a shift in the local economy from logging to tourism. Employment opportunities have also been created by the Park itself (more than 50% of Park staff is Haida people). The only remaining challenge is to acknowledge the Haida presence, rights and participation in the management of the boundary waters of Gwaii Haanas. To the Haida, there is no separation of land and sea. Parks Canada, on the other hand, is promoting a new federal legislation that could disrupt the Haida Nation's ability to move freely between the land and the sea by introducing different levels of protection for various areas and restricting the fishing rights in some of those areas.

...the process... managed to legitimise the traditional ownership rights of the indigenous peoples, in the absence of other legal avenues for the registration of customary claims.

Several inspiring examples of management collaborations between indigenous peoples and national conservation agencies exist in Latin America, some of which are described elsewhere in this volume.[98] In Asia co-management is accepted in principle in the Philippines and is being put into practice in the buffer zone of the National Park of Ratanikiri in Cambodia and in the Annapurna Sanctuary in Nepal.[99]

In Papua New Guinea "wildlife management areas" are a special type of protected area initiated by local communities on their customary territories and only later formalised by official government legislation.[100] An example in point is the Bagiai Wildlife Management Area, declared in the Bagiai Island in 1976. The area occupies slightly more than half of the island and was declared under protection because the local people had become concerned about the decrease in wildlife, the over-fishing and the clearing of vegetation. The management rules for the area nearly entirely prohibit the use of firearms, large nets and lamps to attract fish at night, and ban fishing altogether in certain seasons. The central crater in the island is declared a sacred area, which cannot even be visited. The indigenous communities developed all these rules and boundaries and the government participated only in the sense that it approved and codified them and had them printed in the National Gazette. Not only did the process succeed in improving the resource status in the area, but also managed to legitimise the traditional ownership rights of the indigenous peoples in the absence of other legal avenues for the registration of customary claims.

For cases such as the last one, in which the participation of the national authority is rather "hands-off" and limited to a policy decision, the terms "community-based management" or "indigenous management" are also appropriately used in place of "co-management".[101] Hopefully, however, these examples of direct management by indigenous peoples remain examples of co-management as well. This is the case if they still associate in management a multiplicity of institutional actors *within* the local communities and societies.

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[98] See Boxes 4.4 and 4.10 in Chapter 4. as well as Parques Nacionales de Colombia, 1999; Winer, 2001; Aburto and Stotz, 2003; Luque, 2003; Oviedo, 2003; Winer, 2003; Zuluaga *et al.*, 2003.

[99] See Colchester and Erni, 1999; Pathak *et al.*, 2003; and Ferrari, 2003.

[100] Fauna Protection and Control Act of New Zealand, 1966.

[101] Stevens, 1997.

3.3 The characteristics of co-management systems

From the examples described above, we can draw some general understanding and identify characteristics pertaining to co-management approaches.

- Co-management capitalises on *multiplicity* and *diversity*. Different social actors possess different capacities and comparative advantages in management, and a partnership stresses and builds upon their *complementary roles*. Different social actors, however, may also possess contrasting interests and concerns. The challenge is to create a situation in which the pay-offs for everyone involved are greater for collaboration than for competition.

- Co-management is usually *multi-party* but also *multi-level and multi-disciplinary*. Processes, agreements and institutions are *inclusive* rather than exclusive, they attempt to include all the bearers of interests and concerns who wish to participate. Yet, inclusiveness has to be balanced by the requirement to *contain the transaction costs* of the process (information provision, individual consultations, large facilitated meetings, translation costs, time and skills to negotiate, etc.).

- Co-management is based upon a *negotiated, joint decision-making approach* and some degree of *power-sharing* and *fair distribution of benefits* among all institutional actors. While the type and extent of power-sharing and benefit distribution varies from situation to situation, all entitled actors receive some benefits from their involvement. This fact alone may uplift the least powerful stakeholders, redressing power imbalances in society and fostering *social justice*.

- Co-management strives to assure all relevant actors of the chance and capacity to express concerns and take part in decisions on the basis of entitlements recognised by society. In short, co-management attempts to achieve more *equitable* management. Yet, *equity does not mean equality* and different grounds for entitlement need to result in different roles in resource management.

- Co-management stands on the principle of *linking* management *rights and responsibilities*. In the words of Murphree (1996b): "*Authority and responsibility are conceptually linked. When they are de-linked and assigned to different institutional actors, both are eroded*".

- Collaborative management stands on the concept of common good, the trust that it is possible to follow a course of action that harmonises different interests while responding, at least to some extent, to all of them. An inclusive, collaborative approach to the identification of institutional actors and negotiation of management agreements is a necessary condition for the common good to be identified and achieved.

- Co-management is part of a broad social development towards more direct and collaborative democracy. In it, the *civil society*— organised in forms and ways that respond to variable conditions— *assumes* increasingly important *roles and responsibilities*.

Co-management is based upon a negotiated, joint decision-making approach *and some degree of* power-sharing and fair distribution of benefits *among all institutional actors.*

Effective co-management depends on quality of public opinion... *and strives to* recognise cultural differences *while building upon some underlying common interests.*

- Effective co-management depends on *quality of public opinion*. This means that people understand the consequences of their choices (risks and opportunities) and are willing to pay the price for those. Both an excellent flow of relevant information *and* transparency in the management process are essential for this. Yet, different people hold true different values, opinions and wishes even on the same basis of "factual" information. Co-management strives to *recognise* such *cultural differences* while building upon some underlying common interests.

- Co-management initiatives can take on a large variety of shapes and forms

Co-management initiatives can take on a large variety of shapes and forms and need to be tailored to fit the unique needs and opportunities of each context.

and need to be *tailored to fit the unique needs and opportunities of each context*. Approaches to stakeholder participation in different environments have to be sensitive to their specific historical, cultural and socio-political contexts and cannot be appreciated outside of such contexts. CM regimes may present very different characteristics from place to place.

- Co-management builds upon what exists, in particular local, *traditional institutions for resource management*. It usually begins with an analysis of existing management systems, including institutional problems and opportunities. The next step is to strengthen what can be strengthened, also drawing from the creativity and inventiveness of new management partners. In taking advantage of the capacities and practices of new actors, co-management may play an important role in *socio-cultural innovation*.

- Co-management is a *process requiring on-going review and improvement,*

rather than the strict application of a set of established rules. Its most important result is not a management plan but a management partnership, capable of responding to varying needs in an effective and flexible way. As in the case of the Great Barrier Reef Marine Park Authority,[102] intervening changes in legal, political, socio-economic and ecological factors induce consequent modifications to the institutional setting and/ or practice of conservation. In addition, a process of *"learning by doing"* generally leads towards a better recognition of specific needs, and new opportunities to involve institutional actors.

In other cases it may not be wise to have people express openly their opinions and concerns when they could expose themselves to violent repression and persecution.

Potential advantages for natural resource management exist in all types of arrangements, but so do potential problems. For instance, when authority is fully in the hands of a local body which has broken loose from traditional social controls, this may be co-opted by powerful individuals for their own interests, which may win over the interests of both conservation and the national and local communities. Conversely, when control is fully in the hands of a public agency, local rights, knowledge and skills in resource management may go unrecognised. In some cases, there can even be a decline in biodiversity as a result of the removal of people from a given territory.[103]

Is co-management thus a panacea? Should it be attempted and pursued in all possible circumstances? Indeed, it is not and it should not be pursued in all circumstances. If the social actors with relevant interests and concerns are not effectively organised, capable of conveying their positions and willing to develop an agreement, the time and resources invested in a collaborative process may be fully wasted. In other cases it may simply not be wise to have people express openly their opinions and concerns when they could expose themselves to violent repression and persecution. In addition, mistrust among the social actors (at times amply justified by lack of transparency and good faith) can stall negotiations seemingly forever (see Box 3.17). As a matter of fact it seems appropriate to close this chapter, which listed many relatively successful examples of co-management settings, with an example of failed agreement and persistent conflicts. Co-management is not easy and indeed requires a constellation of circumstances to be taken to fruition.[104]

Box 3.17   **Contested reefs in the Miskito Coast of Nicaragua: no co-management in sight!**
(adapted from Nietschmann, 1997)

The Miskito people, living on the north-east shore of Nicaragua, are the indigenous owners of one of the largest and least disturbed tracts of coral reef in the near shore Caribbean. The Miskito Shelf contains large expanses of coral patch and bank reefs, large beds of sea grasses and several coastal lagoons and associated wetlands, habitat of rare species such as the manatee and a small coastal-marine dolphin. For a long time, the Miskito control of their reef and shoreline has been a contested matter. Their opponents included foreign powers and commercial fishing businesses (one can count eleven wars against invaders since the early 1970s). More recently, they also included the Sandinista government (at the time of Contra-led insurgencies), resource pirates and drug dealers, and US-supported conservationists attempting to establish a biosphere reserve in the area. With whatever means they could master, the Miskito have consistently opposed the resource

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[102] For another example of variation of management regime, see Bertrand and Weber, 1995.
[103] Ghimire and Pimbert, 1997; Brown and Wyckoff-Baird, 1994.
[104] On this, see also Chapter 4 and Part IV of this volume.

management schemes proposed from outside their communities. What they wish is to establish their own indigenous coral reef management system based on customary rights and responsibilities, including regulation of fish catch, number of allowed fisherfolk and access to fishing areas. They also need concrete help to defend themselves against the large-scale exploitation of their marine resources by outsiders.

In 1991, twenty-three coastal Miskito communities, the Nicaraguan Ministry of Natural Resources and an international conservation NGO formally agreed to establish the largest Latin American coastal marine protected area, including the Miskito's Reefs. The agreement included provisions for Nicaragua to recognise the Miskito ownership of their ancestral land, lagoons and sea territories, and to assist in protecting them against resource piracy, industrial fishing and drug trafficking. The indigenous communities would manage the protected area with some technical assistance from outside, and receive financial assistance to carry out a number of conservation and development projects.

The Nicaraguan government administration includes people interested in donor funding and tourist revenues (and thus in favour of resource conservation), but also others accustomed to receiving income from the sale of fishing permits and payoffs by resource pirates and drug traffickers. As a result of internal power struggles, the government soon retreated from the initial agreement and attempted to open up to commercial fishing a large corridor that cut in two the original area to be managed. It also declared protected territory an inland area including five communities that had not yet entered the discussions on agreement. As not uncommon in the developing South, the government ministries of Nicaragua had little financial means, poor disposal of technical capacities, and overlapping and conflicting internal authorities (different ministries and branches responsible for conservation, commercial fishing, fishing permits, law enforcement and regional governance). In addition, they were used to planning for short-term goals only and showing an omnipresent desire to control the natural resources from far away offices. It is not surprising that the interests of the Miskito people found themselves in contradiction with those of the government.

In 1992, a local Miskito NGO was created to protect the local interests in management. The name of the NGO is Mikupia, meaning "Miskito heart". Despite meagre means, Mikupia managed to foster environmental discussions and organising in several communities. But new and powerful actors soon entered the scene. As soon as the provisional protected area was declared, a number of conservation and development NGOs from the North received some major funding to assist in the management and further their own goals— such as the conservation of local biodiversity but also more prosaic conservation of their own organisations and jobs. About 10% of the financial resources made available by the donors went to the Miskito communities and Mikupia. The remaining 90%— in the name of "community-based development"— was disbursed to US-based non-governmental organisations (with the consent of both the US donors and some branches of the Nicaraguan government). A new biosphere reserve management plan was soon prepared, with no mentioning of the provisions agreed upon in the initial plan— in particular the measures to confront piracy, industrial fishing and drug trafficking, and the conservation and development projects to be carried out by the local communities. On the contrary, the funds meant for those projects were spent to support the operations of the Northern NGO that considered itself the decision-maker on behalf of the communities and developed the management plan according to its own analysis and understanding.

The Miskito communities eventually learned the truth and realised that the foreign NGOs were more inclined to blame them for resource depletion than to support them in obtaining their resource rights. They banned the NGO from their land, and denounced it to the US donor. An investigation from the US donor was carried out, but did not acknowledge any wrongdoing on the part of the NGO. This prompted the Miskito communities to ban also the US donor from their region.

Despite these heated conflicts, the US donor decided to invest in the contested project and assigned management responsibility to other international NGOs, again without consultation or agreement with the Miskito people or their local NGO. On their part, the Miskito Reef communities created their own Miskito Community Protected Territory, and are now busy fighting drug trafficking and resource piracy in their area, and mapping their reefs and marine resource. The "colonialist conservationists" are still banned from their territories and no co-management agreement is in sight.

Part II. TOWARDS EFFECTIVE PROCESSES

Chapter 4.   A POINT OF DEPARTURE...

4.1   What is to be managed? Who is to be involved?

The basic point of departure for co-management (CM) is a situation in which several social actors— bearing different interests, concerns and capacities for the management of a given territory or set of natural resources— not yet found, or possibly not even explored, the possibility of joining their forces and agreeing on a way to do it together. These actors may comprise indigenous and local communities, local authorities, government agencies and representatives at different levels, NGOs, associations, individuals with special interests and private companies and businesses of various kinds. In recent decades, the number of social actors interested in managing natural resources has increased as a result of widespread socio-political change, including governments' decentralisation processes, the privatisation of previously state-controlled initiatives, the emergence of new democratic institutions, and the proliferation of NGOs, associations and business companies. Many such "new actors" perceive environmental or social problems and opportunities and believe that they can adequately respond to those if they are allowed to participate in management decisions and actions.

Box 4.1   What type of decentralisation?
            (adapted from Ribot, 2002 and Alcorn *et al.*, 2003)

The term "decentralisation" describes an act by which a central government formally cedes power to actors and institutions at lower levels in a political-administrative and territorial hierarchy. If those are local branches of the central state (*e.g.*, prefects, or local administration and technical ministries) the process is referred to as "*administrative decentralisation*" or "*de-concentration*". If those are private bodies such as individuals, corporations or NGOs, the process is called "*privatisation*" or "*delegation*". If those are local authorities downwardly accountable to local people, the process is called "*democratic decentralisation*" or "*devolution*".

The powers that can be transferred are: legislative (elaboration of rules), executive (implementing and enforcing decisions) and judicial. These powers and the financial resources to implement actions are rarely transferred together in integrated packages or ways that create positive synergies, a fact that complicates the process and often creates conflicts.

Extremely rare are the territories or natural resources not under some form of management (*de jure* or *de facto*), even if not outright "visible" or discernible by non-local people. Usually, one or a few social actors have access to the resources and can take management decisions. Others are excluded and may sometimes feel (and be) damaged, deprived of their rights, unjustly treated and unsatisfied. They also may be attempting, overtly or covertly, to gain access to natural resources and their benefits, engendering acute or chronic conflict situations. In other cases, the control over natural resources is shared among some organisations, groups or individuals, but the rules and conditions of this sharing are unclear or have fallen in disrespect. Or the management activities are simply ineffective, and are themselves a cause of ecological and economic damages. In some extreme cases it may even be that control on the part of any one actor is utterly limited and that the resources are in an "open access" state, with no one willing or capable of exercising management authority. In all the cases just mentioned, the need to attempt more effective and collaborative solutions is likely to become, sooner or later, evident.

Yes but... where to begin? In an ideal case, all relevant social actors would together take the initiative to meet, decide what to do and share fairly among themselves the relevant management rights and responsibilities. They would aim at a negotiated agreement and would have all the necessary means and capacities at their disposal, including professional help and time to negotiate. Unfortunately, this ideal case is far from common. A more typical situation sees only one or a few social actors holding most of the authority and the means to set a partnership process in motion. A co-management process is thus strongly dependent on the initiative of the most powerful parties, a good reason to explain why the phenomenon is not yet as widespread as it could be. This notwithstanding, the variety of "prime movers" and practical occasions to initiate a co-management process is impressive. These comprise responses to ecological and socio-economic *crises* (including natural disasters and conflicts over resources, such as legal battles and violent clashes), the emergence of *new legislation* and favourable *socio-political changes* (e.g., attempts to promote more equitable and democratic societies), new *conservation or development initiatives* (especially internationally-assisted projects) and, last but not least, the dedication and commitment of some *exceptional individuals*.

A typical situation sees only one or a few social actors holding most of the authority and means to set a partnership process in motion.

In India, it was deforestation and the loss of local control over forest resources that prompted villagers to organise sit-ins in the state forestry directors' offices until their grievances were heard and at least some solutions were found.[1] In Argentina, a destructive succession of floods and droughts made everyone aware of the need for co-operation in managing local water resources.[2] In Canada, co-management agreements marked the end of decades of legal conflicts opposing the federal government and the representative of Indigenous Nations. In Ecuador, a major natural disaster ushered a wave of cooperation, solidarity and joint initiatives (see Box 4.2). In many island states, the growth of tourism and its impact on local livelihoods generated social conflicts that eventually provided the impetus for CM processes (see Box 3.9 in Chapter 3).

Box 4.2   A natural disaster gives birth to solidarity, partnerships and participatory democracy in the Andes
(adapted from Rodas, 2002)

In the municipality of Paute (Ecuador), much has changed in less than a decade. It all started after an event that disrupted everyone's life: the "disaster of the Josephina". In the Spring of 1993, a landslide from the hill of Tamuga dammed the rivers Cuenca and Jadan. The natural dam resisted for some time, but eventually broke down and flooded a huge area, including several villages and the town of Paute. The residents of the town— originally not a particularly cooperative population— ended up sharing the same plastic tents and precarious uphill quarters for months. They had to live together, organise themselves for basic necessities, talk and listen to one another. Later, they had to clean up the town from the tons of mud that invaded it and rebuild all that had been destroyed. From this long and humiliating but also empowering experience, a new sense of communality and solidarity was born.

They begun with an organisation called Paute Construye, which started rebuilding the damaged or destroyed homes with a totally new conception of community involvement in all stages— from the definition of who should be helped on the basis of local "scale of need" (defined and established by the people themselves), to the local drawing of construction plans (all houses being different and designed according to the needs of the families to live there), to the cooperation between families and new organisations of local artisans in the construction of the houses themselves. A women's network was created, which is still active ten years later with training, various types of production and credit initiatives. The peasants from the driest rural areas got together and built one of the most ambitious irrigation and water supply efforts in the region. The artisans created new associations and improved their skills, a new cooperative credit scheme was set up (now serving 11 municipalities and having more than 10,000 members) and several community buildings were collectively designed and constructed. Currently, a five year development plan has been developed and approved for the Municipality of Paute. The Plan is simple but extraordinary, as it is centred on common visions of the relevant people about what they want their municipality, and their single parishes, to become. The visions were developed in local community workshops and, from those visions, specific areas of intervention were drawn and for each of those a number of specific projects, many of whom are now in operation.

The process that developed the plan was as important as the product. The participation of all actors, and the local communities in particular, has been its true heart. Support was provided by the Church, a local NGO called CECCA *(Centro de Educación y Capacitación del Campesinado del Azuay)* and the municipal authorities. Innumerable meetings and workshops took place in forty-three villages and urban quarters of the seven parishes in the municipality, as well as many encounters with the main agricultural employers (production of flowers for the foreign markets) and the national, regional and district institutions. Early in 1999, as a consequence of all these meetings but also because of contingent social rebel-

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[1]   Madhu Sarin, personal communication, 1997.
[2]   See the example of Encadenadas Lakes, in Argentina, described in Section 3.2 under "water and watershed management".

lion against corruption, the process gave birth to the Municipal Development Committee, a local parliament with representatives of 27 organisations. The development plan has been the result of the work of this committee, with ideas from workshops at the grassroots being sent to the committee, which commented upon them and sent them back to the grassroots, which commented and sent them back again for final approval, in an iterative process. The committee has also established some local expert commissions to assess specific issues or problems. Once the decisions are taken, an Executive Committee has the responsibility of carrying them out. The Executive Committee is composed of four delegates from the Municipal Development Committee and four representatives of the municipality, headed by the Mayor.

Not everything is well in Paute. Many peasant families still survive on smallholdings in harsh environments, health and social problems are serious, migration from the area is still high, environmental problems with roots in the last fifty years of unplanned "development" are very severe. With respect to other municipalities, however, Paute shows a tremendous difference in terms of local organizing, solidarity, achievements and hope. Surely, this is because of the presence of generous and genial individuals that motivated and supported the participatory process. Most likely, however, this is also because of the shock— and aftershocks— of the disaster of the Josephina.

In Zimbabwe, the CAMPFIRE operation owed its existence to a new piece of legislation assigning wildlife management power to "deserving" districts,[3] and its subsequent success to the economic profitability of the sector and to the fact that many operations were self-directed and motivated.[4] In Madagascar, the GELOSE law, providing for the transfer of management rights and responsibility of common pool natural resources to local communities under specified conditions, ushered a series of impressive social processes and NRM regulations. In the United States, the 1964 Wilderness Act, the 1969 National Environmental Policy Act, the 1972 Endangered Species Act, and the 1976 National Forest Management Act all contained provisions for public input into agency decision-making. And yet, they stressed public participation in an individual and nationalistic sense rather than in a collective or community-based sense and did not generate much dialogue or discussion. The factor that prompted the enormous popularity currently enjoyed by collaborative stewardship of forests— by 1997, 90% of US forests were managed through some co-management structure— was, in fact, the success of a few concrete examples of collaborative regimes.[5]

In Mali, an ILO project prompted the conditions for a new share of benefits and responsibilities between the government and the local villages in forest management.[6] In Cameroon, an initiative for the rehabilitation of the Waza Logone flood plain identified the need for collective management institutions and assisted the local society to express them.[7] In Australia, informal discussions among local farmers are at the roots of the impressive and widespread Landcare co-management programme.[8] And all over Africa co-management agreements have been developed to attempt providing a solution to the many conflicts opposing local communities and authorities in charge of enforcing protected area regulations.[9]

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[3] In turn, this was the result of the work of some exceptional individuals (Child, 2003). See also case example 1.3 in Chapter 1 of this volume.

[4] Child, 2003.

[5] Wilson, R.K., 2003.

[6] See Box 3.15 in Chapter 3.

[7] de Noray, 2002.

[8] See a brief description of the Landcare initiatives in Section 3.2 of this volume.

[9] Numerous examples are illustrated in this volume. See, for instance, Boxes 3.6, 3.7, 3.13, 4.3, 5.5, 5.9, 5.12, 5.14, 6.11, 6.17, 7.11, 7.15, 9.5, 9.8, 9.17, 9.22.

The case of Miraflor (Nicaragua) is an uncommon example of the opposite situation. There a cooperative of small-scale farmers successfully struggled to have their land declared under a protected status (protected landscape under IUCN Category V)[10] and co-managed with the environment ministry. This demand for officially-sanctioned constraints was a conscious attempt to make the land less attractive to resourceful landowners who had started buying it up, and to avoid the health and environmental problems the farmers had experienced elsewhere under large scale production approaches.[11] The farmers offered the environment ministry their commitment to a livelihood based on small-scale, organic farming and their support to rehabilitate the local cloud forest patches. In exchange, they obtained legal and management support to remain in control of their land and some financial support from external donors.

Box 4.3   Balancing the powers in Makuleke land (South Africa):
a co-management framework solves conflicts over land ownership and use
(adapted from Steenkamp, 2002)

In 1969, the Makuleke community of the Limpopo province was forcibly removed from a tract of land in the northeastern-most corner of South Africa. Their land was incorporated into the Kruger National Park (KNP) and the community relocated some 70 km towards the south. Close to thirty years later, ownership of the land was returned to them by way of a co-management agreement with the South African National Parks (SANP). This settlement was negotiated under the auspices of the land reform programme launched by South Africa's first post-apartheid government.

Land ownership gave the Makuleke substantial bargaining might and the settlement fundamentally changed the balance of power between the two parties. The agreement made it possible for the Makuleke to pro-actively pursue their interests in the land relative to those of the SANP and the state. It also created a secure framework for the longer-term conservation of the Makuleke Region's exceptional biodiversity.

A lack of conflict around management issues is often indicative of the prevalence of an oppressive relationship. In this instance, the open conflicts that emerged as part of the redressing of rights after the fall of the apartheid regime were successfully settled as part of the co-management process. The implementation of the agreement did not immediately "solve" the controversies, but all tensions were ultimately dealt with within the framework of the agreement. With the resource base secured, the ultimate success of the "Makuleke model" will depend on the Makuleke leadership's ability to ensure the rational and equitable distribution of the benefits of conservation to all sections of their community.

Energetic and dedicated individuals are found in nearly all situations where a management partnership successfully developed.

At the roots of effective co-management are often some visionary and dedicated individuals. Some of them work hard for a long time to prepare the conditions for local NRM agreements. Others suddenly change the scene by introducing new incentives. In the region of Menabé, in Madagascar, Mady Abdoulanzis managed to awaken a relatively sleepy, depressed and dis-organised civil society by calling it to decide what to do with a sizeable sum of money. Mady was a Member of Parliament and in the early 1990s he had been offered, according to a national law, some resources to help in the "economic development" of his constituency. Many other MPs spent those resources enriching their friends and personal supporters. Mady called the social actors in the region (*"les forces vives de la société"*) to meet, analyse together the situation and decide how to invest the

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[10]   IUCN/ WCPA, 1994.
[11]   Munk Ravnborg, 2003.

resources for the best environmental and social returns. This led to the significant engagement of many people and, over the years, the *Comité Régional de Développement* (CRD) du Menabé became a model of civic engagement and participatory decision-making for the whole country and the true "development and regulations engine" in the region. As Mady used to say, the strength of the CRD was that, despite no legal mandate, it had all the legitimacy one could desire!

Energetic and enthusiastic individuals are invariably found in nearly all situations where a management partnership successfully developed. These people may be local residents, project staff and consultants, or government and NGO personnel. Community leaders may take the initiative to meet with governments to claim specific rights and solve specific conflicts and problems. NGOs and research professionals may seek alliances to promote the conservation of a territory in management limbo or of a species in jeopardy. The staff in charge of a protected area may call for local actors to discuss common issues and concerns and reach some agreements for the benefits of both the territory and the surrounding communities.[12] Such dedicated individuals usually prompt the creation of a local team to find the needed resources and to set the co-management process in motion (more on this later).

Some distinctions should be made among the impressive variety of "potential beginnings" for a management partnership. Co-management is, overall, a political process. The aim of many of its promoters is a more equitable management of natural resources. But the aim may also be the co-option of others, and the gaining of unfair advantages over established entitlements. As briefly discussed in Chapter 1 of this book, colonialism and the emergence of nation states and private property have progressively weakened and disempowered the traditional, community-based institutions in charge of common property resources in many countries. From such a starting point, a co-management regime may offer new chances to local institutions— e.g., village committees and community user groups— to regain lost influence and positively affect the environment and society. Some indigenous peoples are also using co-management agreements as a way of securing their entitlements over their ancestral lands (this has been the case for some time in Canada, Australia and now in various countries in South America, see Box 4.4). From different starting points, however— for instance where traditional structures are still effectively in charge of indigenous domains— a move towards shared management responsibility with the government and other actors should be carefully evaluated (see Section 4.4 in this Chapter).

Some indigenous peoples are using co-management agreements as a way of securing their entitlements over their ancestral lands.

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[12] It may seem paradoxical that government staff initiates a process to relinquish some of their powers. Indeed, this is still the exception rather than the rule, but conservation professionals are increasingly aware of the benefits to be expected from co-management agreements. Many are willing to go well beyond the call of duty to improve the long-term chances of the protected areas they are entrusted with.

| Box 4.4 | Securing land tenure and rights through a co-management agreement: the Alto Fragua–Indiwasi National Park (Colombia) |

Box 4.4   Securing land tenure and rights through a co-management agreement:
           the Alto Fragua–Indiwasi National Park (Colombia)
           (adapted from Oviedo, 2003 and Zuluaga *et al.*, 2003)

The Alto Fragua-Indiwasi National Park was created in February 2002, after negotiations involving the Colombian government, the Association of Indigenous Ingano Councils and the Amazon Conservation Team, an environmental NGO focusing on projects to assist the Ingano and other indigenous peoples in the Amazon basin. The Park is located on the piedmont of the Colombian Amazon on the headwaters of the Fragua River. Inventories conducted by Colombia's von Humboldt Institute determined that the site is part of a region harbouring the highest biodiversity in the country and is also one of the top hotspots of the world. The protection of the site will assure the conservation of various tropical Andean ecosystems, including the highly endangered humid sub-Andean forests, some endemic species such as the spectacled bear (*Tremarctos ornatus*) and sacred sites of unique cultural value.

Under the terms of the decree that created the Park, the Ingano peoples are the key actors in charge of its design and management. The area— whose name means House of the Sun in the Ingano language— is a sacred place for the indigenous communities. This is one of the reasons why traditional authorities have insisted that the area's management should be entrusted to them. Although several protected areas of Colombia share management responsibilities with indigenous and local communities, this is the first one where the indigenous people is fully in charge. This has been possible thanks to Colombia's legislation that recognises traditional authorities (*Asociaciones de cabildos*) as legal subjects with faculty to develop their own development plans, including environmental management provisions.

The creation of the Park has been a long dream of the Ingano communities of the Amazon Piedmont, for whom it naturally fits their Plan of Life (*Plan de Vida*), i.e., a broad, long-term vision for the entirety of their territory and the region. The creation of Alto Fragua-Indiwasi National Park, with the Ingano as principal actors in the design and management of the site, represents an important historic precedent for all the indigenous peoples of Colombia and elsewhere, and an example to follow.

There is no simple way of distinguishing between a co-management process that leads to increased social justice and more sustainable use of natural resources, and one that may "sell-out" existing entitlements or resources. The unique set of entitlements recognised at a given time over a body of natural resources is a socio-cultural construct, a product of a negotiation in a given historical and socio-political context, which can only be appreciated in its light. It is clear, however, that important power differentials among the relevant social actors do *not* create a positive and constructive climate. And it is clear that some basic political and social conditions (*e.g.*, freedom to express needs and concerns, freedom to organise, confidence in the respect of laws and agreements, some democratic experimentation allowed in society) need to be present for the process to develop. When these conditions are unclear, a co-management process can be complex, long, arduous and even distressing and confused. Rather than a smooth operation, one should expect surprises, conflicts, the emergence of contradictory information and the need to retrace one's own steps.[13] And yet, with good will and political support, a co-management process can also be smooth and rewarding...

Given the need to cope with social complexity and the dependence on political feasibility, we would venture to state that effective co-management regimes are the expression of "mature societies". Mature societies can be defined as societies whose institutions enjoy a widespread sense of legitimacy, whose collective rules are generally respected and whose internal socio-political structuring is vibrant

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[13]   For a case of co-management derailed in mid-course in the Republic of Congo, see Box 9.25.

and complex. Many examples are found among traditional societies, and some also among modern societies. The opposite are societies that combine utmost centralisation of decisions, feeble respect of rules and the repression of free social structuring.[14] Indeed, mature societies tend to reject the myth of unique and objective solutions to manage natural resources. They instead realise that there exists a multiplicity of suitable options compatible with both traditional and scientific knowledge systems and capable of meeting the needs of conservation and development... as well as a multitude of negative or disastrous options. The relevant parties in the co-management process analyse and choose among such options in the light of their multiple interests, concerns, capacities and entitlements. They generally seek to define and foster both effectiveness and equity in the management of natural resources but, in so doing, they also bear upon some of the most important aspects of social life— such as human and economic development, citizen participation and culture.

In a generic situation in which one or more social actors are concerned enough to be willing to work towards a management partnership, they usually begin by the following steps:

- identify the management unit and main social actors with interests, concerns and capacities to manage it (at times referred to as "relevant social actors")

- re-assess together the need and feasibility of co-management in the specific context and for the specific unit;

- if co-management is found to be needed and feasible, identify the human and financial resources available to support the process;

- establish a "Start-up Team" to promote and facilitate the process up to the setting up of the multi-party negotiating forum.

The above are not always undertaken in a conscious fashion or in the order mentioned. Sooner or later, however, an analysis of the relevant management unit and actors and the needs, feasibility and resources available is done for all CM processes. These steps will now be explored in more detail.

The natural resource management unit

At the very beginning of the CM process, the territory or resources to be managed should be identified, at least in a preliminary way. This is very important and less straightforward than it may appear. A natural resource management (NRM) unit needs to make ecological sense, i.e., it should comprise the essential elements of an ecosystem, allowing the coherent planning and implementation of needed initiatives (sustainable use, protection, restoration, etc.). The natural limits of an ecosystem, however, are often hard to define, and even more so when we try to comprise into a "unit" all the key factors impinging upon the ecosystem. For instance, a coral reef can be affected by the detritus and pollution brought to the sea by a river. Should the relevant NRM unit comprise only the reef or also the river basins opening into it? If we wish to conserve the reef, it is apparent that we need to act at the level of the river basins— a fact that significantly enlarges the scope of management.

In addition, a management unit needs also to make economic sense, which can

Effective co-management regimes are the expression of "mature societies"... [which] renounce the myth of unique and objective solutions to manage natural resources [and] realise that there exists a multiplicity of suitable options....

The definition of NRM unit brings us to face the complexity of socio-ecological systems.

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14   Examples are the so-called "weak states" or societies dominated by a few private interest groups. See http://www.yale.edu/leitner/pdf/PEW-Way.pdf

best be illustrated by another example. Let us say that most of the benefits of protecting a given watershed are enjoyed by the inhabitants of a plain, while the costs are felt by the inhabitants of the upper watershed alone. For the sake of management effectiveness, but also of equity and sustainability, the inhabitants of the plain should be involved in bearing some of the management costs and the inhabitants of the upper watershed should be receiving some of the relevant benefits. In this sense the whole river basin would be a more appropriate management unit than the upper watershed or the plain alone. Thus, if we wish to make sure that a NRM unit is ecologically and economic coherent, we often see it grow in size. This is not necessarily a problem, but the larger the size the more numerous the social actors that will ask/ need to be involved. In the example of the reef, we may see the relevant communities multiply, as well as the affected municipalities, some of which may be centrally interested in the reef management and others very limitedly so. In addition, besides fishing and tourism operators, we will see the agricultural and industry sectors becoming hotly involved. In other words, the definition of NRM unit brings us to face the complexity of socio-ecological systems while the "solution of the problem" necessarily involves a compromise among competing requirements.

... in traditional societies there is generally a remarkable coincidence between a distinct body of natural resources and the social unit ("local community") managing them... the territories, areas and natural resources under the care of a local community identify a management unit.

In traditional societies there is generally a remarkable coincidence between a distinct body of natural resources and a social unit ("local community") closely related to those resources. Many villages have been created to take advantage of the water and forest products related to a patch of forest or a mountain system, or to the fishery resources of a coral reef. Many nomadic tribes coincide with the management of specific wintering and summering (or wet season and dry season) pasture grounds and the migration routes in between. Specific social groups or tribes have been, through generations, the caretakers and users of a given spring, animal species or portion of a river. In fact, in traditional societies natural resource management and social organisation are closely intertwined (see Box 4.5). As communities manage and conserve natural resources they ensure other needs, such as food production, dwelling, income and security, and they exercise and continuously re-build their identity and culture— all of which instil and strengthen their

social interdependence. In more than one way, thus, the territories, areas and natural resources under the care of a traditional community *identify* a management unit in a rather straightforward and natural way.

This does not mean that at community level all is simple. Overlaps between the territories under the care of different communities, in particular nomadic and sedentary communities, do exist. They present particular challenges today, in the context of diminishing resources for livelihoods and larger

numbers of people. Boundary issues between sedentary communities may also be thorny, as it may be the management of water and wildlife, not usually confined to the territory of any one community. Ideally, issues related to broader problems and opportunities would *define* a higher management level where the representatives of the communities and other relevant actors can meet and agree on common decisions. In this sense, an effective management structure would comprise a series of nested NR management units (for instance several micro-catchment units managed by different communities, nested within a river basin watershed, itself part of a larger island ecosystem).

Besides linkages among management levels, the key challenge in nested systems is about the effective interaction between traditional and "modern" authorities. Most governments are organised in a compartmentalised manner, with separate line agencies handling different issues and objectives at different levels, and administrative responsibilities that do not reflect ecological or socio-cultural boundaries. Because of this, communication and collaboration between communities and governmental agencies at one or more of the nested levels may not be easy. The fact remains, however, that territories and resources traditionally managed by different communities offer a natural way to subdivide an environment into viable management units, and that nested management bodies offer to national governments ingenious ways to benefit from existing capacities and resources.

Box 4.5   "Natural" geographic units in aboriginal management systems
(adapted from Weinstein, 1998)

The aboriginal fisheries of coastal British Columbia (BC, Canada) were differently organised than the contemporary fisheries that derive from European fishing traditions. The geographic scale was very different, as were the rules for who had access. The details of the organisation varied among different cultural groups. Some groups used formal, quasi-legal arrangements to limit and transfer rights of access to resources. Other groups controlled access more informally by limiting the distribution of critical knowledge about the territory and its resources.

For the Nisga'a and the Gitksan, the lands and adjacent coastal and riparian areas were divided into territories. These territories belonged to house groups, or *wilp*, whose membership was defined by matrilineal descent rules. Typically, the boundaries of a territory radiated from a reach of the coast or river shore up mountain slopes, framing a salmon stream in between. Each house had exclusive ownership rights to their territory and its resources. The separation of land into controlled territories was the basis for the traditional management system for fisheries and for other natural resources.

In general, contiguous territories, consisting of a drainage area or a coastal inlet and its tributary drainages, were recognised as belonging to specific tribal groups. These territories might be considered the geographic units for the aboriginal management systems. The tribal groupings were made up of kinship units, which often resided in one large dwelling, housing about 50 people. These house groups were the coastal societies' economic unit. The house groups held recognised tenure to designated areas and resources within the tribal territories. A group's economy was based on the resources within the area to which they held rights. The specifics of management varied among the different cultural groups, but all coastal BC groups appear to have had two institutions in common: 1) territorial resource harvesting rights held by residential corporate kinship groups, and 2) an obligation for the leaders of these groups to publicly demonstrate adequate resource husbanding through the ceremonial re-distribution of harvested products.

A rather safe option for identifying a NRM unit may be to start from a relatively small and clearly delimited geographical territory or set of resources, selected as preliminary. Alternatively, one can start from a recognised social unit and its management territory. When such a unit is fairly small, the actors who negotiate the co-management agreements are likely to be the same ones later called to implement the related activities, a characteristic often conducive to good management. In addition, smaller units are easier to manage than larger ones. In fact, many professionals would maintain that the best management level is the lowest possible one with the sufficient capacity to take decisions and authority to implement them. This criterion, which goes under the name of "subsidiarity", derives from various religious and cultural traditions, including Catholic social teachings, and is now included in European Community Law.[15] The subsidiarity principle is also commonly applied in traditional resource management systems. One example is nomadic pastoral societies, where the management of range-lands, their rehabilitation and the resolution of disputes and conflicts are handled at the level of the camp, clan, subtribe and tribe, as appropriate, in that order. Another example is the traditional management of water in a *karez* system, where the neighbourhood, the *boneh* and the village are responsible for the hourly and daily management of the distribution, once the allocation of shares and turns has been made at the level of the whole water source. As a matter of fact, subsidiarity often prompts the recognition of the existence and capacities of local communities as environmental managers.

Box 4.6   Conservation of the Asiatic Cheetah in Iran— defining the management "ring"

Once widespread in South, Central and West Asia, the Asiatic Cheetah became a highly endangered species in the second half of the twentieth century, confined only to the peri-desert regions of Iran. A joint project of the Global Environment Facility, the United Nations Development Programme (UNDP) and the Department of the Environment in Iran sought to respond by following a co-management strategy for its conservation. The basic analysis of the social situation was carried out in 2003 by IUCN's Commission on Environmental, Economic and Social Policy (CEESP), backed by the Iranian Centre for Sustainable Development (CENESTA). The survey found that the same rangeland areas where the prey species of the Asiatic Cheetah (including gazelles, mountain sheep and ibex) normally live are shared by both nomadic pastoral communities, such as the Sangsari Tribe and local villages and other communities of sheep and camel pastoralists, and that the local communities were just as upset as anyone about the disappearing wildlife. In a workshop gathering all the contacted local community groups, they saw themselves as the stewards of their natural heritage, and identified the causes and consequences of the wildlife loss. They pointed at the widespread ownership of heavy firearms and at urban hunters, who at times come accompanied by cold storage trucks, ready to kill large numbers of wildlife indiscriminately and make commercial use of it.

Initially the Department of the Environment in Iran was considering a protection programme based on five specific protected areas. These had been established over the past three decades and were supposed to serve as relatively "secure" areas for cheetah. In reality neither cheetah nor local communities pay much attention to the boundaries of these areas. Cheetah, in particular, is a highly mobile species, often going up tens and even hundreds of kilometres in search of prey and mate.

A co-management Start Up Team (see Section 4.3 in this Chapter) was set up consisting mostly of staff

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[15]   Treaty on European Union (Maastricht Treaty).

from CENESTA with experience in co-management and linkages with the relevant communities. The Team also included a professional from the Government's Organisation for Nomadic Peoples Affairs. The Start-up Team proceeded to identify the stakeholder groups, in particular the local communities with a role and interest in the issue. They were all contacted and asked to contribute to the analysis. It was this enlarged Set-up Team that, after long discussions, realised that the NRM unit for the Cheetah and its associated prey and habitat was a "ring" around the central desert in Iran, some 1500 kilometres across.

The "ring" covers the territory of eight official protected areas and the interstitial spaces among them, thus including the land and resources utilised by the nomadic and sedentary herders and their traditional institutions of management. The best way to assure the protection of the wildlife throughout the "ring" is through encouraging local communities to create and manage "Community Conserved Areas" (CCAs). These could be set up by alliances among these communities and formally backed up by the government. In this scheme, all CCAs and all official protected areas would constitute management "sub-units" of the same overall habitat of the Cheetah."

Figure 4.1   A ring around the Central Desert as a possible "management unit" for the Asiatic Cheetah in Iran— a schematic diagram including the official protected areas (numbered areas) and the migration routes of the Sangsari nomadic pastoral tribe (large arrows).
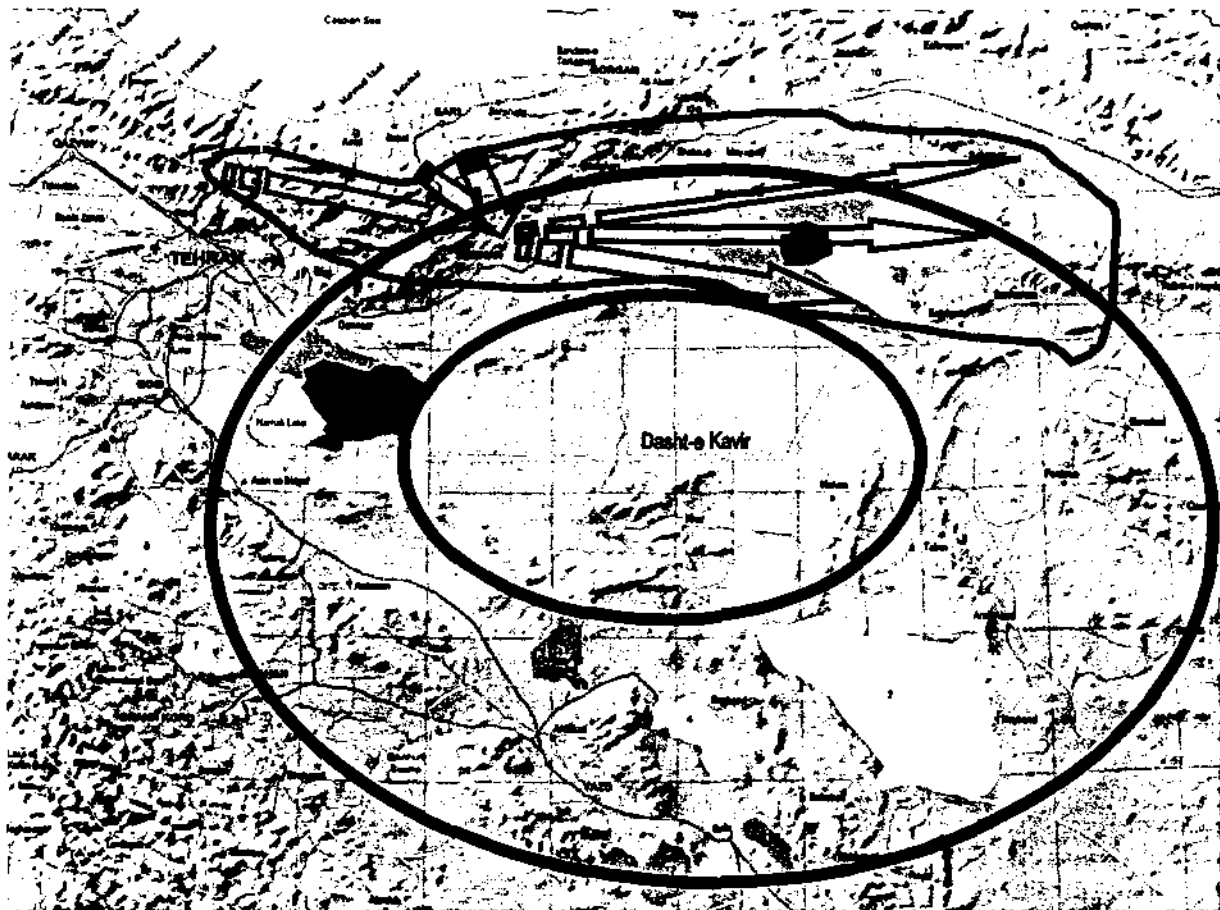
In the USA, the Center for Watershed Protection[16] carried out a study among watershed practitioners from a wide cross-section of disciplines (planners, municipal officials, consultants, scientists, and others) and found that most plans failed to adequately protect their watersheds. A chief reason was that they were drawn up on too large a scale— 50 square miles or more. Too many sub-watersheds and their individual problems had to be consolidated, and the focus of the plans became blurred. As the number of relevant social actors proliferated, responsibility for implementing the plans became diffused. In short, the planning process appeared too large and complicated, with a typical municipality or county in charge of 10 to 50 sub-watersheds. Based on such analysis of first-generation watershed plans, the Center proposed a dozen elements that every plan should incorporate. Chief among them, the plan was to be developed around the sub-watershed unit— defined as having a drainage area between 2 to 15 square miles. Due to their size, many such sub-watersheds were entirely contained within a single political jurisdiction, which helped to establish a clear regulatory authority. Sub-watershed mapping, monitoring, and other study tasks could be completed relatively quickly (6 to 12 months) and the entire management plan could be completed within a year. A division into management sub-units can also be prompted by the existence of different ecological requirements. The area of Mount Cameroon National Park, for example, has been sub-divided into different units for the purpose of rationally managing different species (e.g., Prunus africanus) and sub-ecosystems.[17]

Box 4.7   By splitting the area into five, problems in one corner of the bay will not hamper progress elsewhere...
The experience of Limingalahti Bay (Finland)
(adapted from: Kovanen, 1997)

Around the Gulf of Bothnia, one of the continent's youngest landscapes is still emerging from the waters. The vast 116 km Liminganlahti bay, one of Finland's finest wetlands, is undergoing a process called isostatic uplift wherein its post-glacial bedrock is rising to its original level. Almost one third of the bay is less than 1 metre deep, with the coastline moving forward at 18 metres a year or 1.5 Km per century. The exceptional natural wealth of Liminganlahti bay is reflected in the presence of a particularly rich and diverse wildlife, including 250 bird species and flora that include 20 species endemic to the Baltic. Centuries of traditional human activity have maintained the shore meadows, vital for many birds and rare plants, as open grasslands. This went against their natural tendency, which was to succeed into forests. Four townships and several settlements ring the bay with privately owned farmland. Under ancient law and custom, the newly risen lands are collectively owned by the landowners bordering them.

A recent increase in waterfowl hunting, fishing and tourism has required an integrated approach to the different land uses as well as an extensive consultation process to reconcile site conservation needs with the socio-economic needs of the local community and interest groups. The Liminganlahti LIFE project, approved in 1995, is run by a partnership among the Finnish Environment Ministry's regional office, the five municipalities which govern Liminganlahti and its island of Hailuoto, two NGOs (WWF and Birdlife), two scientific institutes, several local schools and the regional council for the district concerned. Such a large cross section of local society in the project steering committee allows for it to air and solve many of the conflicts. But further, the project has embraced a bottom up approach and divided the bay, its shores and its islands into five sub-regions. Each sub-region has established a working

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16 EPA, 1997.
17 Mambo Okenye, personal communication, 1999. See also box 7 in Borrini-Feyerabend et al., 2000.

group, with an 18-month mandate to allow for meetings to bring together the relevant authorities, conservationists, landowners, hunters, farmers, fisher folk, etc. Using the knowledge already acquired on the ecology of the area, each working group is given the task to draft a plan for its sustainable use, *i.e.,* to find a consensus on practical ways to combine nature conservation with the livelihoods and pastimes of the local population. By splitting the area into five, it was considered that problems in one corner of the bay should not hamper progress elsewhere! In this sense, the management "units" have been designed with effectiveness and efficiency of work in mind.

The sub-regional plans are expected to be later merged into a general plan, including some strict nature reserves within it. The general plan will represent the nearest thing to the consensus of *all* citizens and interest groups affected, and will be integrated into the official land use plans of the local municipalities. The initial sub-regional meetings have been lively, with attendance often higher than expected. People with very different backgrounds and agendas, many of them not used to formal meetings or policy debate, voiced their wishes and concerns. The very fact that all interest groups are being heard by the authorities (the hunters, in particular, claim they were previously ignored) is seen as a sign of positive change.

In general, the management unit should be large enough to accommodate an ecosystem or habitat, and small enough to accommodate a social unit in charge. A coherent socio-ecological topography is fundamental for management sustainability and the identification of the "units" and "sub-units" to be managed is a crucial decision, which bears upon all the subsequent co-management steps. As eloquently expressed by Murphree (1977b):

A coherent socio-ecological topography is fundamental for management sustainability. The identification of the "units" and "sub-units" to be managed is a crucial decision, which bears upon all the subsequent co-management steps.

"The institutional requirements of a local natural resource management regime include social cohesion, locally sanctioned authority and co-operation and compliance reliant primarily on peer pressure. This implies a tightly knit interactive social unit spatially located to permit this. However, while social topography suggests "small-scale" regimes, ecological considerations tend to mandate "large-scale" regimes. This may arise from ecosystem considerations or when key resources are widely dispersed or mobile, as in the case of elephant and buffalo. Economic considerations may also dictate "large-scale" regimes where market factors require that several ownership units manage and tender their resources collectively. There is no inherent reason why social and ecological topographies cannot be harmonised, although this requires context-specific institutional engineering through negotiation. Often this will involve nested systems of collective enterprise between proprietary units. Built upward in this fashion such larger ecosystem units of management have a built-in incentive to spread, even beyond national borders. Dissonance arises when larger ecosystem regimes are imposed rather than endogenous. Such impositions in the form of ecologically-determined project domains often force together social units which have not negotiated between each other. Worse still, they could cut through existing social units. In so doing they would concentrate on ecological sustainability at the cost of ignoring the institutional sustainability on which it depends."

The relevant social actors

Once a tentative management unit is identified, a second step in the co-management process is to compile a preliminary list of the agencies, organisations, groups and individuals possessing interests and concerns relative to it. These are usually referred to as "relevant social actors" or "stakeholders" (see Chapter 2). At this stage, the purpose is not to conduct a detailed analysis of these actors (see Chapter 5), but simply to identify them. Checklists 4.1 and 4.2 offer a number of questions that may assist in the task.

Checklist 4.1   A snapshot of the interests and concerns at stake

- **Affected groups.** Are there communities, groups or individuals actually or potentially affected by the management decisions? Who lives and works in or around the territory at stake? Are there historic occupants (e.g., indigenous communities or regular transients and nomadic user groups) and other traditional resource users with customary rights of ownership or usufruct? Are there recent migrants? Non resident users of resources? Absentee landlords? Major secondary users of local resources (e.g., buyers of products, tourists)? Are the territories or resources currently being accessed and used? By whom specifically? Are people of different gender, age, class or economic power differently affected and concerned? Are there businesses and industries potentially impinged upon by the NRM decisions? How many employees (national and international) live in the area because of such projects? Are these people active in natural resource management?

- **Concerned groups.** Are there communities, groups or individuals with specific *concerns* about management decisions? Are there government agencies with a specific mandate to manage all or part of the relevant resources? Is anyone officially responsible for them? Which government sectors and ministry departments share some such responsibility? Are there local associations or NGOs dealing with natural resources? Are there research, development or conservation projects in the area? Are there local authorities or local and national politicians with a specific stake in territory or resources? Are there national and/ or international bodies involved because of specific laws or treaties?

- **Dependent groups.** Are there communities, groups or individuals *dependent* on the resources at stake? Is their dependency a matter of livelihood or economic advantage? Are these resources replaceable by others, possibly in less ecologically valuable or fragile areas?

- **Groups with claims.** Are there communities, groups or individuals upholding *claims*, including customary rights and legal jurisdiction over the territory, area or resources at stake? Are there communities with ancestral and/ or other types of acquired rights? Are indigenous peoples involved? Are tribal minorities involved? Are various government sectors and ministry departments involved? Are there national and/ or international bodies involved because of specific laws or treaties? In general, who are the social actors with recognised entitlements and the ones with unrecognised claims on the territory or resources at stake?

- **Impacting groups.** Are there communities, groups or individuals whose activities *impact* on the territory and its resources? In addition to those of local users, are there activities that take place outside the territory and that impact on its resources and their sustainability?

- **Special circumstances.** Are there seasonal/ geographical variations in resource use patterns and interests of the users? Are resource uses geographically and seasonally stable (e.g., are there seasonal migration patterns)? Are there major events or trends currently affecting local communities and other social actors (e.g., development initiatives, land reforms, migration, important phenomena of population mobility or natural growth or decline)?

Table 2.1 in Chapter 2 provides a list of 18 different relevant social actors identified for Rajaji National Park, in Northern India, only on the basis of their own stated interests and concerns. From that example one can easily appreciate the variety of intertwining issues at play for a given territory. It is true that the stakeholders identified for Rajaji could be further subsumed under broader categories, such as the following four: residents of local communities, government agencies with official mandates (including park authorities), NGOs and research/ training institutions. Yet, it would soon be apparent that conflicts of interest and concerns are as common *within* such categories as they are *among* them.

An important area in which the initial promoters of a co-management process may play a role is the identification and recognition of those social actors who not only have interests and concerns at stake, but also capacities and comparative advantages to offer for resource management. Some of them may be individuals or local groups already involved in managing natural resources, such as a user group in charge of a community forest patch, a fisherfolks association that established rules for a given fishing area, a committee in charge of a water source or a council of elders protecting a sacred grove. The following checklist offers some examples of questions to identify social actors with capacities to offer for the management of natural resources. Obviously, social actors with specific interests and concerns and social actors with specific capacities and comparative advantages often overlap.

Checklist 4.2   A snapshot of the capacities and comparative advantages at stake

- **Managers and users.** Who is currently *managing the territory* or resources? With what results? Who used to manage those in the past? With what results? Who has *access* to the land, area or resources at stake? Who is *using* the natural resources at present— whether permanently, seasonally, occasionally or temporarily? In what ways? Has this changed over time?

- **Holders of knowledge and skills.** Who are the people or groups most *knowledgeable* about, and capable of dealing with the territory or natural resources? Are there examples of valuable "local knowledge and skills" for the management at stake?

- **Neighbours.** Are there communities or individuals *living in close proximity* with the resources and thus able to monitor and survey them with relative ease and comparative advantage?

- **Traditional authorities.** Who are the main *traditional authorities* in the area at stake? Are there *respected institutions*, to which people recur in a variety of needs and circumstances? Are there agencies and organisations capable of offering human resources, technical capacities and financial resources to the management cause?

- **National authorities.** Which local or national authorities have the mandate to develop and implement *rules, policies, legislation and accompanying measures* for the benefit of the territory or resources at stake?

- **Well trusted individuals.** Are there groups or individuals trusted by the majorities of the relevant social actors and possessing *convening power*, and/ or *negotiation and conflict management* skills?

- **Potential investors.** Are there local and non-local groups and individuals who may wish to *invest* human or financial resources in developing a more ecologically and socially sound situation in the local context?

● **Special circumstances.** Are there people who can convey lessons from examples of *similar territories and resources* managed with good results in relatively similar social contexts? Are there projects that may be willing to provide technical or financial help? Are there NGOs and associations that may provide some form of assistance?

By identifying not only the main actors possessing interests and concerns but also the ones possessing specific capacities and comparative advantages for the management of the territory or resources at stake, one can enrich the preliminary list of key relevant social actors and begin to explore the potential management roles they could assume (see Table 4.1, below).

Table 4.1 Relevant social actors in Kikori watershed (Papua New Guinea) (adapted from Regis, 1997)

Relevant social actor	Main interests and concerns	Main capacities and comparative advantages
Government	Revenue maximisation	Setting of policies and rules
Local Communities	Development and cash income; social & physical infrastructure	Living close to the natural resources, surveillance ability, knowledge of the resources
Local Land Owner Companies & Incorporated Land Groups	Business opportunities; capturing maximum rent and benefits from developers	Legal authority over some land
Chevron New Guinea & Partners	"Bottom line" (petrodollars)	Financial means
Local NGOs	Social development, awareness building, community empowerment, protection of forests	Staff time and (limited) resources that could be dedicated to the sustainable management of the watershed
WWF	Protecting biodiversity	Technical support, financial means, capacity to attract national and international attention
World Bank	"Independently certified community-based forestry and sustainable development projects"	Financial resources, technical staff, international visibility
Collins Pine company	Marketing "green timber"	Can provide economic opportunities for the sustainable use of timber
Kikori Pacific company	Local "green timber" operation	Local sustainable management capacities
Logging Companies	Quick profits through export of unprocessed logs	Financial resources

The preliminary identification of key relevant actors should be quite inclusive and detailed. More parties may mean more controversies and discussions, but excluding some of them may, in the long run, be even more costly. Factions and divisions rarely disappear spontaneously and, as they surface, they may direct their energies against the co-management process itself. In some cases, however, the outright exclusion of one key actor from the negotiation forum appears to be the necessary condition for all the others to be able to work together effectively, or even to work at all. This was the case for the Galapagos Marine Reserve, where the participatory process that set up both the legislation and the practice of the local co-management regime decided to eliminate from the area and from the overall management discussion the industrial fishing sector, whose goals and practices were deemed incompatible with the conservation goals of the reserve. The artisan fishermen and tourist operators participate in the management discussions, but the industrial fishermen are *de facto* and *de jure* excluded.[18] The decision has been fiercely opposed, and the industrial fishermen have kept both contravening the law, and fighting it in court. The last court case was for the alleged anti-constitutionality of the measure of exclusion, but the Supreme Court of Ecuador, in 2001, rejected nearly unanimously such a denunciation. The exclusion of industrial fishermen from the management of the marine reserve is now thoroughly legal.

The promoters of co-management should ask themselves whether the identified relevant social actors represent *all* major concerns at stake. In particular, does anyone speak for conserving local biodiversity, using resources in a sustainable way and preserving environmental functions? In many traditional societies this was the responsibility of the elders and chiefs, but cultural change has sometimes eroded these responsibilities.[19] In a number of countries, conservation and sustainable use are government statutory responsibilities, mandated to specific agencies.[20] When this is not the case, or when there is an ample gulf between stated responsibilities and actual performance, non-governmental organisations, conservation groups or even charismatic individuals may take upon themselves the defence of sustainability.

Does anyone effectively represent the interests of future generations?

Once the process promoters have identified the preliminary "relevant social actors" they may find out whether they are clear about their interests and concerns in the NRM unit, whether they are organised to communicate and promote them and whether they are willing to take on NRM responsibilities. Often, this is not the case. Some may not be willing to invest time and resources. Others may be willing but disorganised. Still others, willing to participate in management, might not have been identified as relevant actors. Basically, the "list" should be kept open and expected to change. The important point is that the promoters do not miss the social actors that obviously possess *major* and *distinct* interests, rights, concerns, capacities and comparative advantages in natural resource management— and especially the local communities.

What to do when an identified relevant actor (let us say a community in the vicinity of a forest) includes a *variety* of different interests, concerns and capacities *vis-à-vis* the natural resources? Should one or several actors be invited to participate in the management negotiation process? There is no simple answer to this ques-

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18 Heylings and Bravo, 2001; Bravo and Heylings, 2002.

19 A telling example can be found in McCallum and Sekhran, 1997.

20 In the case illustrated in Table 4.1 sustainability is stated as the main interest of an involved NGO (WWF). In Table 2.1 of Chapter 2, sustainability (expressed as "wildlife conservation") is the concern of the state agency in charge of park management (this is a relatively special case, however, as it involves a protected area).

tion. The CM promoters may wish to explore the pros and cons of different solutions with the most directly concerned people and groups while assisting them to organise (see Chapter 5). For instance, a united community has more weight at the discussion table than several people who cannot agree on a common position. And yet, many communities may be willing to speak as one voice on certain occasions and as many on others. In other words, the people who find themselves united as "one relevant actor" for some decisions may need to split and regroup for another one. This phenomenon, at times referred to as "multi-cultural character" of stakeholders[21] should be acknowledged and recognised as normal. Allowing it to be accommodated in co-management settings would prevent the forced lumping of contrasting interests— a subtle but recognised problem of representative democracies.

Another fundamental dilemma: are "interests and concerns" and the willingness to participate sufficient for a social actor to claim a management role? Shouldn't the promoters also ask: "Who are the social actors *entitled* to manage the unit(s) at stake?" They certainly should. And yet, the understanding of what constitutes a legitimate entitlement is an evolving socio-political phenomenon, best approached in a participatory way. The CM promoters could begin by asking the potential relevant social actors whether they consider that they have a fair claim to participate in the management of natural resources and, if so, on what grounds. In this way, they will obtain a list of factors and characteristics that at least *some* people recognise as legitimate "roots of entitlements" in the local context. Some examples of such factors and characteristics are listed in Checklist 2.2 in Chapter 2.

Many communities may be willing to speak as one voice on certain occasions and as many on others.

4.2   Is co-management needed? Is co-management feasible?

Collaborative approaches to natural resource management capitalise on two main lessons. The first is that there exist a variety of interests and concerns at stake for any given set of natural resources, and what meets conservation objectives and benefits one social actor, may harm another. The owners of tourist businesses may be well served by a hunting ban, but the local hunters club may find it totally inappropriate. The forest agency personnel may wish to restrict forest uses until timber can be felled and provide revenues to the district's coffers, but the local residents may need timber on an on-going basis for their own domestic uses. The water resources utilised by the families living closer to a river may be interesting also for the peasants owning plots far from it, who may wish to gain their equitable water share. Even relatively homogeneous units (*e.g.*, a local "community") include among themselves a variety of interests and concerns and, as just men-

[21]   Otchet, 2000.

tioned, may wish to speak as one voice certain times and as many voices at others. Indeed, accepting the existence and legitimacy of a multiplicity of voices and interests in resource management is a fundamental tenet of the co-management approach.

The second lesson is that different social actors possess different and often complementary capacities and comparative advantages to optimally manage a set of natural resources. For instance, important regulatory and coordination faculties are usually with public bodies, often at the national or district level, but local knowledge and surveillance power most often stay with local communities. In the words of Kothari:[22]

"Communities lack the resources to tackle threats or ecological issues at a regional scale, and in many places have lost their traditional ethos and institutions; government agencies lack the necessary micro-knowledge, on-the-spot human power, or even often the necessary mandate when other agencies overrule them. With rare exceptions, neither local communities nor governmental agencies are able to face on their own the onslaught of commercial forces, or able to check the destruction caused by some of their own members".

Thus, both agency staff and local residents can broaden their perspectives and join forces to become stronger and more effective natural resource managers. Management partnerships can provide some protection against ineptitude and corruption (at times associated with agency management) and the parochialism and other shortcomings sometimes associated with local communities and other stakeholders. Examples of complementary capacities include entrepreneurial power (*e.g.,* to set up a tourism initiative), unique technical capacity (*e.g.,* understanding and acting upon the crucial conditions for the conservation of a species), business sense (*e.g.,* for keeping accounts straight) and convening capacity (*e.g.,* to obtain that all relevant actors sit together and begin discussions). All of the above are rarely found in one social actor alone!

Different social actors possess different, and often complementary, management capacities and comparative advantages.

Is it thus *always* appropriate to pursue a management partnership? Is it sufficient that different social actors exist, with capacities to offer and interests and concerns to convey? Not really. In some situations the promoters need to use their best judgement before embarking in a process that may be unacceptably long or destined to failure under the prevailing conditions. For instance, when the basic conditions for freedom of speech and personal safety are missing, a "partnership" loses its meaning and attempting it may actually endanger people. When a seemingly endless "search for consensus" is utilised by some parties as a way to stall

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[22]   Kothari, 1995.

There are situations of entrenched powers in which a confrontational strategy is more appropriate than a collaborative one. In such cases, promoting CM would mean supporting an illusory "social pacifier", which may waste time and energy that can be used to muster a more useful opposition stand.

decisions, others may be rightly compelled to abandon the game. And when rapid decisions and action are required, e.g., to block the very fast ecological deterioration of an area, it may be better to act unilaterally than to achieve a broad consensus on how to protect... a devastated territory. Most importantly, there are situations of entrenched powers in which a confrontational strategy is more appropriate than a collaborative one. In such cases, promoting CM would mean supporting an illusory "social pacifier", which may waste time and energy that can be used to muster a more useful opposition stand. In general, the decision to pursue a CM process is both technical and political, and should thus be based on an analysis of technical and political needs.

It has been proposed[23] that there exist situations in which a management partnership is clearly needed, namely:

- when the active commitment and collaboration of various social actors is essential for the sustainable management of the natural resources; and

- when the access to the natural resources is essential for the livelihood security and cultural survival of one or more social actors.

In these cases, two fundamental values— environmental sustainability and livelihood security— need to be pursued together if they are to be pursued at all. Other conditions that would recommend embarking upon a CM process may be relevant from the perspective of particular social actors. For instance, from the point of view of government agencies possessing legal jurisdiction over a territory, area or resources at stake, it may be very appropriate to pursue partnership agreements and prevent wasteful conflicts when one or more of the following conditions apply:

- local actors have historically enjoyed customary/ legal rights over the territory or resources;

- local livelihoods are strongly affected by NRM decisions;

- the decisions to be taken are complex and controversial (e.g., different values need to be harmonised or there is disagreement on the distribution of entitlements over the land or resources);

- the current NRM system has failed to produce the desired results and meet the needs of the local actors;

- the relevant actors are ready to collaborate and request to do so;

- there is ample time to negotiate.

On the contrary, it may be inappropriate or not yet appropriate to embark on an entirely new CM process when very rapid decisions are needed (emergency situations).

From the point of view of local communities who have customarily enjoyed full access to the relevant territory, area or resources, it may be appropriate to pursue a NRM partnership when:

- powerful non-local actors are forcing their way into the territory or extracting resources with no respect for traditional customary rules and rights (in this case a partnership agreement with the state government or some NGO or research organisation may help assure some protection and respect for customary practices);

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[23] Borrini-Feyerabend, 1996.

- customary practices are falling into disarray and an open access status has ensued with resources being extracted in unsustainable ways.
- the state is willing to provide legal recognition to the customary rights as part of the co-management agreement.

It may instead be not advisable to enter into a NRM partnership when:
- in so doing the local communities would be renouncing a customary status of unique rights with no comparable advantage in exchange;
- the political environment does not secure the safety of all negotiating parties.

A mild version of participatory management, involving the consultation of key relevant actors and the seeking of a broad social consensus on management practices can be maintained to be an essential component of any successful management setting. A strong version of CM, implying the inclusion of various social actors in a management board endowed with authority and responsibility, may or may not be appropriate according to the specific conditions at stake. In general, a management partnership offers benefits and has costs. Some examples of such benefits and costs[24] are summarised in Checklist 4.3 and 4.4.

Checklist 4.3 Co-management of natural resources: potential benefits

- the effective sharing of management responsibilities among all the parties involved in the agreement lessens the burden of any one party in charge;

- CM produces negotiated specific benefits for all parties involved (this point has major ethical implications, as some negotiated benefits may be crucial for the survival of some local communities and/ or to compensate for losses incurred[25] or for the survival of wildlife species);

- alliances between governmental agencies and local social actors tend to fend off resource exploitation from non-local interests, which often represent the main threat to conservation and sustainable resource use;[26]

- CM promotes more effective management as a consequence of harnessing the capacities[27] and comparative advantages of various social actors (e.g., local knowledge and skills for monitoring the status of natural resources, proximity for surveying the protected area's borders, maintenance of natural resource uses that are beneficial to the local ecology);[28]

- CM reduces enforcement expenditures because of agreed, voluntary compliance;

- CM enhances the capacity for resource management among all parties involved (as a consequence of enhanced communication, dialogue and shared experience);

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[24] Lists adapted from Borrini-Feyerabend, 1996.

[25] In countries of the South, more emphasis may be placed on tangible benefits such as access to natural resources for food and income, while in industrialised societies local residents may stress their active choice in the type of land uses they wish for an area.

[26] For instance, in Sariska Tiger Reserve (western India) villagers and local forest officials have fought together against mining interests (Kothari et al., 1996).

[27] See, for instance, Gadgil et al., 1993; Ruddle, 1994; and Poffenberger, 1997. See also the dedicated journals Indigenous Knowledge and Development Monitor, published by CIRAN in the Netherlands and Etnoecologica, published in three languages by the Centro de Ecología, Mexico.

[28] In Keoladeo National Park (India) buffalo grazing is an essential practice for the conservation of the local ecosystem and species, yet the PA management initially banned the grazing, which resulted in violent clashes with local herders and residents (Kothari et al., 1996). In the Royal Bardia National Park (Nepal) ecological management relies on human disturbance in the form of grass cutting, which is currently "permitted" for a ten day period each year. All throughout Europe, the ecological conditions of many rural or Alpine environments are dependent on the permanence on them of local populations, engaged in cattle rearing and forest and water management.

- CM enhances the trust between state agencies and relevant actors, shared "ownership" of the conservation process, and strong commitment to implement decisions taken together;

- CM promotes a sense of security and stability (of policies, priorities, tenure...) leading to increased confidence in investments, long-term perspective and enhanced sustainability of negotiated management;[29]

- CM promotes understanding and knowledge among all concerned about the views and positions of others, preventing or minimising conflicts and disputes due to miscommunication;

- CM promotes the public awareness of conservation issues and the integration of conservation and sustainable use efforts within social, economic and cultural initiatives;

- CM contributes towards participatory democracy in society (by promoting social communication, conflict prevention and resolution, and the development of rules, policies and laws via the direct involvement of citizens and interest groups).

Checklist 4.4   Co-management of natural resources: potential costs and obstacles

- early and substantial investments of time, financial resources and human resources (high "transaction costs") in both the preparation of the partnership and negotiation of agreements. This is a serious issue, as the time requirement may be unaffordable for short-term projects and/ or the financial requirements may be unaffordable for some relevant actors. The human resources need to include professionals with uncommon skills (e.g., capable of carrying out a fair stakeholder analysis, supporting the organizing of the relevant actors, facilitating participatory processes and the negotiation of agreements, etc.) who may not be easily available.

- potential opposition by the parties required to share authority, substantially change their livelihood systems[30] or forego current advantages and benefits (the commitment of most parties in the CM process is a crucial condition for success);

- explicit conflicts among relevant social actors with different power bases, which, in the absence of protection measures, may bring about negative outcomes for the weaker ones;

- chances of negotiation stalls when a co-management agreement cannot be achieved without compromising in a substantial way the interests and concerns of some parties (e.g., some key conservation or development goals);

- poor sustainability of the negotiated agreements because of underestimated problems or new intervening factors (e.g., changes in the economic conditions that make a management option viable and profitable,[31] changes of political administration, emergence of new relevant social actors, violent unrest, etc.).

Ultimately, a judgement should be made as to whether the expected benefits are likely to justify the human and financial resources to be invested in the co-management process, i.e., as to whether co-management is indeed *needed*. If so, this

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[29] For instance, co-management has a great role to play in so-called "peace parks" in trans-boundary situations (Sandwith et al., 2001).

[30] This may be the case also for local communities. In South Africa, local communities will oppose the establishment of protected areas if no benefits are made available to them (Koch, 1994).

[31] As expressed by Baland and Platteau (1996, page 351) "...even well conceived schemes of co-management become seriously stressed as market opportunities expand and cause an intensive commercial exploitation of certain natural resources." For instance, in Narayan Srovar Sanctuary (Western India) villagers welcomed the de-notification of the reserve to make way for a cement factory, since they got no income from the forest and are expecting jobs from the factory (Kothari et al., 1996).

information should be combined with the results of a feasibility analysis to decide whether a co-management process should be initiated.

The feasibility analysis

A co-management feasibility analysis begins by a broad assessment of the existing management system,[32] structure and practices, the recognised entitlements and the unrecognised claims for the territory or resources at stake. Together with the list of preliminarily identified relevant actors, this offers a picture of the power system and relationships at stake. The promoters of the CM process should examine this in the light of the legal, political, institutional, economic and socio-cultural characteristics of the context at stake. Some feasibility questions useful in such an analysis are listed in Checklist 4.5. These questions do not spell out all the conditions that need to be met for co-management to be successful. They offer, however, an idea of the potential obstacles and difficulties that may be encountered in any specific context.

Checklist 4.5 Investigating the co-management feasibility in a specific context

Is the process legally feasible?
Who has the mandate to control the land and resources? Can a pluralist approach be accommodated within the existing customary/ legal frameworks? Examine traditional, customary law and modern laws, regulations, permits....

Is the process politically feasible?
What is the history of land management and resource use in the territory or area at stake? Examine current political will and stability, the capacity to enforce decisions, the confidence in the participatory process, the presence of phenomena such as corruption and intimidation.... Are there relevant actors with strong interests to maintain the *status quo*? If some actors are better served by the absence rather than the presence of co-management agreements (for instance they currently enjoy undue benefits and/ or have others bear substantial costs in their place) they have no incentive to enter into a process of negotiation and may attempt to block it or sabotage it from the outside. This is sometimes expressed as the presence of actors with strong "better alternatives to a negotiated solution" (BATNAs)— a powerful feasibility obstacle to co-management.

Is the process institutionally feasible?
Is there a chance of building a pluralistic management institution for the territory, area or natural resources? Examine inter-institutional relations and their possible conflicts, existing examples of multi-party resource management organisations and rules, the capacity of social actors to organise themselves and to identify representatives to convey their interests and concerns....

Is the process economically feasible?
Are there economic opportunities and alternatives to the current, possibly inefficient exploitation of natural resources? Examine local opportunities to reconcile the conservation of nature with the satisfaction of economic needs, examine the extent of poverty in the region, the availability of capital for local investments....

Is the process socio-culturally feasible?
Are or were there traditional systems of natural resource management in the context at stake? What are (or were) their main features and strengths? Are those still valid today? Are the traditional NRM systems

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[32] This should involve not only an analysis of the *de jure* conditions (the existing legal entitlements) but also of the *de facto* conditions, *i.e.*, the management roles actually taken up by various people and institutions. You may wish to answer questions such as: who takes decisions? Who knows about those decisions? Who is accountable to whom? Who plans? Who advises? Who has access to the resources? Who benefits from the resources? Who evaluates whether NRM activities need to change?

promote sustainable development initiatives, they may need an early entry with
local communities and the careful building of rapport and trust.[35]

A summary of the results of a feasibility analysis carried out prior to the inception
of a co-management process is reported in Table 4.2.

**Table 4.2   Developing a co-management setting in the Sierra Tarahumara (Mexico):
are the necessary conditions in place?**
(adapted from Cordova y Vazquez, 1998)

In a feasibility study of collaborative management for the sierra Tahumanara, a list of important condi-
tions were compared with the local socio-economic situation and consequently assessed. Five of the
main conditions were found to be strongly satisfied (+++), three moderately satisfied (++) and two weak-
ly satisfied (+).Three conditions were found to be variable relatively to the specific interest group. The
study concluded that a collaborative management regime would be feasible in the region.

Conditions	Assessment
1. There exist several problems to discuss, several ideas about how to solve them, and several interest groups involved. No interest groups can solve the problems alone.	+++
2. Collaboration is convenient for all parties as they all have common interests and concerns and are inter-dependent.	+++
3. The interest groups are willing to collaborate with external bodies.	++
4. The institutional and legal context is favourable to involving several interest groups in decision making and the development of agreements	+++
5. The moment is favourable: the issues have been already extensively debated and there is time to take decisions.	++ +++
6. There are local capacities to develop a negotiated decision: information and prior experiences are available.	+++
7. There are local capacities to develop a negotiated decision: the interest groups are intrinsically homogeneous, internally cohesive, can easily identify a representative, have functional mechanisms to take their own decisions, and have experience in taking decisions.	+ ++ variable scoring
8. There is a power balance around the decision-making table. The arena will be fair.	+

4.3   Gathering resources and creating a Start-up Team

As part of exploring feasibility, a most important question the co-management pro-
moters ask themselves is: "What human and financial resources can we count
on?" Fortunately or unfortunately, in fact, promoting a co-management process is

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[35]   McCallum and Sekhran, 1997.

all but routine work, and needs especially dedicated resources. The process demands energy, passion, willingness, creativity, sacrifice, continuity... and it needs at least one and possibly more "champions"— dedicated individuals for whom work is a matter of personal satisfaction and pride more than a job or a duty. As stressed by professionals with direct field experience, the development of co-management regimes has much more to do with informal than with formal relationships.[36] For instance, it depends crucially on the capacity of some individuals to communicate with others on a personal basis, and elicit their confidence, trust and support. In addition to the uncommon human qualities of the process promoters, specific capacities and technical support may also be required for a variety of tasks— from mediating conflicts to understanding ecosystem functioning, from social organising to setting up economic enterprises. The co-management promoters need to be able to recognise when such forms of technical support are needed, and where they can be accessed.

Financial support to a CM process is very useful to sustain social communication activities, carry out specific studies or provide professional assistance to the negotiation process and to understand all the issues at stake. Conservation and development projects have played a useful role here, providing funds for events, professional facilitators for meetings and helping to overcome the "culture of distrust" that often inhibits positive relationships between governments and local groups.[37] Yet, co-management should not be made to *depend* on large influxes of financial resources. It may even suffice to have the commitment of some individuals to change a situation of "business as usual" and promote dialogue and agreements

in place of hostility, and interest groups may provide in kind resources as necessary. Indeed, a sudden influx of major external resources may create more problems than solutions and there are cases of co-management that have been thwarted and broken down by financial inflows provided in inappropriate amounts and with strings attached.[38]

As soon as the need and feasibility have been assessed and the necessary human and financial resources have been set aside, it is advisable to create a co-management "Start-up Team", to be in charge of preparing and launching the whole process.[39] A Start-up Team (at times also called initiation committee, launch com-

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[36] Daniel Ngantou, personal communication, 1999. See also Nguinguiri, 2003.
[37] Freudenberger, 1996.
[38] Sarin, 2003.
[39] National Civic League, undated.

generally fewer than ten, in extreme cases even one only,[41] with occasional help from others. Often, the Team is composed of volunteers. At times it includes some paid professionals, especially when a project or other externally supported initiatives are involved. It is important that the people in the Start-up Team have a high personal motivation but that they are also socially recognised as credible and trustworthy. In most cases this amounts to a strong recommendation to involve *local* people in the Start-up Team, and sometimes to even compose it of local people only. In addition, the team should be "diverse", *i.e.*, it should include people with whom all the relevant actors expected to take a role in the management process are able to identify, relate and communicate. In other words, all social actors concerned with the management at stake should trust and be able to relate easily with *at least one person* in the Start-up Team, even if they do not feel represented by him/ her.

An interesting example of a Start-up Team, called *Grupo Nucleo*, facilitated the process that brought about the co-management setting for the Galapagos Marine Reserve in Ecuador. In 1997 none of the institutional or legal frameworks that support this setting today were yet in place. The local *Grupo Nucleo*, including individuals close to the fishing and tourist sector as well as to the local research and conservation bodies, first gathered local interests and concerns in view of the upcoming special law of Galapagos. On the momentum created by such a law, it then facilitated a broad social agreement on a new cooperative, consensus-based institutional setting. For the Galapagos Marine Reserve, all the achievements of today have roots in the numerous meetings and tireless organising promoted by the *Grupo Nucleo* and supported by a far-sighted project from 1997 to 1999.[42]

A good Start-up Team is active, efficient, multi-disciplinary, transparent in all its activities and determined to launch but not to lead or dominate the co-management process. In fact, its role and responsibility are limited to only one phase of the process, namely the one in which the partnership is prepared and rooted in the local context (see Figure 4.2). After that, the social actors themselves need to take charge.

Already at this stage we are facing one of the main characteristics of a co-management process: the iterative mode of work. Nearly every step in co-management is susceptible to subsequent adjustments and re-elaboration, but particularly so the initial steps. These include the preliminary identification of the territory or resources to be managed and of the "relevant social actors" to take an active role in that. These definitions are among the most delicate and controversial in the whole process and thus, inevitably, they are a first approximation of what will be agreed upon by the relevant partners. They even present some circular dilemma. For instance, the management boundaries should be established by the partners involved. But then, the "partners" are themselves determined by their own inter-

One of the main characteristics of a co-management process is the iterative mode of work. Nearly every step in co-management is susceptible to subsequent adjustments and re-elaboration, but particularly so the initial steps.

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[40] In French, terms that are used are *Comité de Pilotage* or *Noyau Dur*, in Spanish *Grupo Nucleo* or *Comité de Lanzamiento*.

[41] In the Nta-ali forest (Cameroon) a co-management process was single-handedly promoted by a key forest official, native of the local community and member of the local elite. His capacity to mediate between the culture of the governmental agencies and the local culture, and the support provided by a dedicated project allowed him to win the confidence of all major relevant social actors. See Box 1 in Borrini-Feyerabend *et al.*, 2000.

[42] Heylings and Bravo, 2001. In some way this *Grupo Nucleo* was already a co-management platform, as it promoted a number of initiatives and events with direct management results. On the other, however, it was only a Start-up Team, as it has now been disbanded and a legal pluralist decision-making system has taken its place.

ests, concerns and capacities *vis-à-vis* the area to be managed! As mentioned, it may be wise to start out with a relatively small geographic area and its primary actors (e.g., the ones with longest tenure status, specific government mandate, highest dependence and highest capacities and comparative advantages *vis-à-vis* the territory or resources at stake), but then such actors should review the definition of the management unit(s) and the list of recognised relevant actors. And so on.

There is no recipe for developing a management partnership. While extremely valuable lessons have been learned in different cases throughout the world— and some such lessons are the very heart of this book— in every new situation the partners themselves need to decide on the most appropriate process to follow. In other words, there is no "right process" to develop a "right management partnership" but the *quality of the process* is extremely important, as a partnership is generally as strong, or as weak, as the process that generated it.

In general, three phases in the co-management process can be broadly identified:

1. organising for the partnership;

2. negotiating the co-management agreements and organisations;

3. implementing and reviewing the agreements and organisations (learning by doing).

These phases are schematically illustrated[43] in Figure 4.2 and will be further described in Chapters 5 and 6 of Part II and in Chapter 9 of Part III of this volume.

Box 4.8   **The co-management conveners**
(adapted from Ramírez, 1998)

Any group or organisation seeking to convene other relevant actors should first analyze its own role and objectives, and its relationship with those actors it seeks to invite. The questions to ask are: are we in a position to convene? What are the constraints of our organisation? Do we have the legitimacy, power and urgency required to bring the parties together? In the words of Gray (1989) "The convener may or may not be an actor in the issue or problem situation. The role of the convener is to identify and bring all the legitimate actors to the table. Thus conveners require *convening power, i.e.,* the ability to induce social actors to participate. Convening power may derive from holding a formal office, from a long-standing trusted reputation with the relevant local actors, or from experience and reputation as an unbiased expert on the problem. The conveners' tasks are distinct from those of a third-party mediator, although at times one person can assume both roles." The decisions made by the convenor are biased by the convenor's understanding of the nature of the issue, the boundaries of the issue, and the criteria to select the relevant actor that appear to be legitimate. These are always approximate decisions and become more accurate through a cyclical adjustment process. Another question to ask is to what extent is the convenor able to transform itself during the process.

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[43]   Modified from Borrini-Feyerabend, 1996.

ing and reviewing the agreement ("learning by doing")
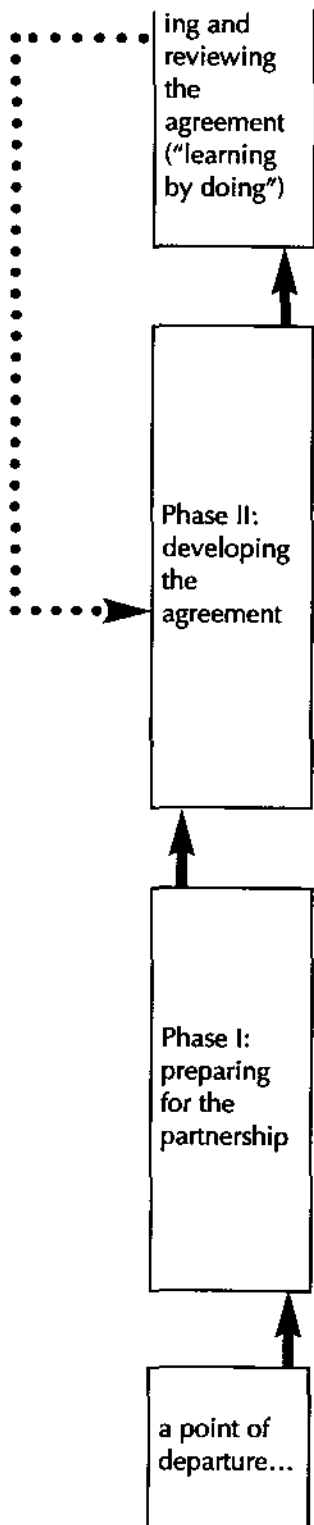
- collect data to monitor progress and impact (as in the follow up protocol)
- as appropriate, experiment with innovation (*e.g.*, as a result of new information, refinement of technical solutions and/ or a wider-scale application of activities)
- organise review meetings at regular intervals to evaluate the results obtained and lessons learned; as necessary, modify activities and/ or develop new management agreements

Phase II: developing the agreement

- hold the first meeting of relevant social actors on the negotiation procedures
- hold one or several meetings to review the socio-ecological situation and its trends, and agree on a long-term, common vision for the area at stake
- hold a ceremony to ritualise the agreed common vision
- hold meetings to identify a strategy towards the long-term vision
- hold meetings to negotiate specific agreements (*e.g.*, management plans, contracts, memoranda of understanding) for each component of the strategy; support the mediation of conflicts, as needed; clarify zoning arrangements and specific functions, rights and responsibilities of the relevant actors; agree on a follow-up protocol)
- hold meetings to agree on all the elements of the partnership institution (*e.g.*, principles, rules, organisations in charge of implementing, enforcing and reviewing the agreements)
- legitimise and publicise the co-management institution

Phase I: preparing for the partnership

- gather information and tools (*e.g.*, maps) on the ecological and socio-economic issues and problems at stake
- launch and maintain a social communication campaign on the need for co-management and the process expected to bring it about
- contact the relevant social actors, facilitate their appraisal exercises and continue the ecological and socio-economic analysis in a participatory way
- as necessary, help the relevant social actors to develop an internal consensus on their management interests, concerns and capacities, to organise themselves and to identify representatives
- propose a set of procedures for the negotiation phase and, in particular, for the first meeting of relevant social actors

a point of departure...

- identify the preliminary management unit and main relevant social actors
- assess the need and feasibility of a co-management setting
- assess the available human and financial resources
- create a Start-up Team

4.4 The special case of indigenous peoples: can co-management help them assert their rights to land and natural resources?

Indigenous peoples are self-identified human groups characterised by peculiar socio-political systems, languages, cultures, values and beliefs, by a close relationship with the land and natural resources in their territory, and often by historical continuity with pre-colonial societies.

The imposition of external values, technologies and livelihood systems has been a main feature of colonisation, imperialism and unequal relationships with traditional and indigenous peoples. Today's new ideas and concepts, such as sustainable use or co-management of natural resources are easily perceived as a new version of such imposition. However sincere the intention of co-management promoters may be, it is a fact that indigenous control over territories and resources has been and continues to be systematically diminished, not least because of conservation aims (in particular to incorporate territories into official protected areas). Thus, while some indigenous peoples and traditional communities may be willing to enter into management partnerships with other social actors, others understandably remain reluctant to any type of external influence on their livelihoods and environments. They prefer to hold to their ancestral land rights and management systems without interfacing or compromising with other systems (see Box 4.9). This may be a decision in view of cultural survival, especially where traditional knowledge systems are already fragile because of strong external influences, but local resistance to decisions and forms of "development" defined from outside has often been beneficial also to conservation.

Invasions on the ancestral lands of the K'iché in the volcanic Sierra Madre ranges of Totonicapán were for territorial domination in the pre-Hispanic and colonial eras. More recent invasions have come in the form of the "Green Revolution": agricultural reforms and rural development projects over the last three decades, which have manipulated use and access to natural resources. Rather than alleviating poverty, however, most interventions benefited the rich and created dependency on modern technology, unaffordable by most peasants. Indiscriminate logging, inappropriate agricultural technologies, "improved" seeds and inadequate water resource management generated pollution, diminished endogenous flora and agricultural biodiversity, and created serious socio-economic impacts and health problems for the native Mayans (95% of the local population). Projects that tried to identify local needs, aspirations and potential ended up reflecting more the opinions of external planners than of local people. "Local participation" has been usually sought only after the design of the project was done and established.

The Mayan culture keeps alive its ancestral resource knowledge and social structures through an oral tradition rich in topographic vocabulary, and a world vision focusing on the value of nature, specific ceremonies, social solidarity and consultation with the community elders. A recent welcome trend has been towards re-evaluating indigenous resource management practices in communally owned forests. There has also been a strong, if not always successful, show of resistance to the unsustainable exploitation and degradation of natural resources by outsiders (loggers, entrepreneurs and transport companies that succeeded in gaining concessions). In one particular region the local people, jointly with the reforestation committee and the municipality, reached an agreement to prohibit governmental and non-governmental agencies from developing projects in communally-owned forests. One Elder declared: "...the government wanted to impose on us a project to create a market for our wood. If we would had allowed it, we would have nothing today. We do not think in the government's way, for we believe that the mountains can give us all we need, but all in measure. We take just what we need, and no one from our community makes a business out of wood or timber." Another community imposed grave sanctions against a park ranger who abused his authority for personal benefit, destroying the oldest and largest tree in the forest, which was sacred to the people. In another case, a mayor was imprisoned for authorising logging concessions without community approval. Since then, no mayor has dared to authorise any logging concession.

As only recently fully acknowledged and described, biological and cultural diversity are strongly linked, as are their alarming losses currently experienced in the world.[44] By preserving cultural integrity, the conditions for maintaining a specific type of interaction with the environment and natural resources are also maintained. The interests of indigenous peoples and conservationists may thus broadly coincide and management partnerships may play a vital role to promote both the survival of cultural diversity and the safeguard of biological environments.

In the light of the above, are indigenous peoples "social actors" on the same level as all others, such as a private firm or a governmental agency? Many would stress that they are not. Indigenous peoples hold ancestral rights to the environments where they have lived and worked for centuries if not millennia.[45] They usually do not possess the economic strength and legal backing enjoyed by modern entrepreneurs and affluent people. And, importantly, many of them have lifestyles with limited impact upon the land (the very reason why, in their midst, there is still much worth conserving and managing sustainably) and are bearers of valu-

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[44] Posey, 1996; Maffi, Oviedo and Larsen, 2000.
[45] Price-Cohen, 1998.

able and unique local knowledge and skills. In other words, they are both a comparatively weaker and more benign and useful social actor.

The Convention on Biological Diversity stresses that: "special consideration [should be] given to the indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity".[46] Such special considerations should involve not only respecting the cultural identity of indigenous and traditional peoples, but also ensuring mechanisms that guarantee fair communication and consultation processes, continuity and/ or revitalisation of their traditional lifestyles (as deemed appropriate by the traditional societies) and the active education and enrichment of non-indigenous partners concerning traditional values, knowledge and practices.

...a Start-up Team should make sure that the rights, needs and capacities of traditional communities are duly respected and recognised. It should also veer to avoid their "acculturation"....

In practical terms, a Start-up Team should make sure that the rights, needs and capacities of traditional communities are duly respected and recognised. It should also veer to avoid their "acculturation", which may be one of the most insidious dangers of co-management for an indigenous community. Many aspects of the participatory management model proceed from a mainstream logic and value system that, in the attempt of accommodating multiple interests, may overshadow or uproot the fundamental tenets of a traditional society. For example, practices such as assigning economic value to natural resources or promoting gender equality in natural resource management may be perceived as appropriate to most social actors but objectionable and destructive to some traditional communities. These different views should be handled with respect. To this end, the Start-up Team has to be well informed about the values, beliefs, lifestyles and management systems of the indigenous and traditional partners, and aware of the benefits of local cultural cohesion. A Start-up Team is a herald of an opportunity to review and improve resource management practices, not an active promoter of social restructuring and cultural change. It may assist different groups within a society to develop their own views on the issues at stake, but the ultimate decisions about how to handle issues of internal consensus and representation belong to the peoples themselves.

...the ultimate decisions about how to handle issues of internal consensus and representation belong to the peoples themselves.

In the last decades, many indigenous communities have agreed on various forms of co-management settings for protected areas. In Australia,[47] relatively strong co-management arrangements for protected areas have been developed following the passing of legislation that recognised aboriginal rights to land and natural resources. In 1981, Gurig National Park became the first jointly managed National Park in Australia and since then further co-management arrangements have been developed for other parks in various Territories, according to several "models" (see Table 4.3). Joint management represents a trade-off between the rights and interests of traditional owners and the rights and interests of government conservation agencies and the wider Australian community. In some arrangements developed subsequent to the Gurig model, the trade-off involves the transfer of land ownership to Aboriginal People in exchange for continuity into the foreseeable future of the national park status and shared responsibility for park management. The transfer of ownership back to Aboriginal People is thus conditional on their support (through leases or other legal mechanisms) for the continuation of the National Park. The land occupied by a Park is simultaneously returned to aboriginal ownership and leased back to a government conservation agency under a co-management board and with the agreement of an arbitration process in case of disputes.

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[46] Convention on Biological Diversity, Article 8j.
[47] Smyth, 2001.

Aboriginal ownership	Aboriginal ownership		remains with the government
Equal representation of traditional owners and government representatives on management board	Aboriginal majority on management board	No guarantee of Aboriginal majority on management board	Aboriginal majority on management board
No lease-back to government Agency	Lease-back to government agency for long period	Lease-back to government agency in perpetuity	Lease of the national park to traditional owners
Annual fee to traditional owners (for the use of land as a National Park)	Annual fee to traditional owners, community council or board	No annual fee paid	
Example: Gurig National Park	Examples: Uluru-Kata Tjuta, Kakadu, Nitmiluk, Booderee and Mutawintji National Parks	Examples: none finalised; the model is currently under review...	Example: Witjira National Park

A further, more recent form of protected area established voluntarily on existing aboriginal-owned land— the Indigenous Protected Area model— presents a challenge to all co-management models, as it is more advanced in terms of self-determination of the aboriginal owners, and self-management practices (see Box 4.10).

Box 4.10   **The new Indigenous Protected Area model (Australia)**
            (adapted from Smyth, 2001)

Since 1998, Indigenous Protected Areas (IPAs) have become officially recognised and promoted in Australia as part of the national protected area system.[48] It was in fact realised that some aboriginal landholders were prepared to "protect" their land and part of the Australia National Reserve System in return for government funds and, if required, other types of management assistance. The first IPA was formally proclaimed in August 1998 over an aboriginal owned property called Nantawarrina in the northern Flinders Ranges of South Australia. Several more IPAs were proclaimed in other states during 1999.

IPAs can be established as formal conservation agreements under state or territory legislation, or under Indigenous Law. Aboriginal land owners there have a variety of legal mechanisms to control activities on their land, including local government by-laws and privacy laws. The declaration of IPAs is the first occasion in Australia whereby aboriginal land owners voluntarily accepted a protected area status over their land. Because the process is voluntary, and fully prompted and promoted by them, Aboriginal People choose the level of government involvement, the level of visitor access (if any) and the extent of development to meet their needs. In return for government assistance, aboriginal owners of IPAs are
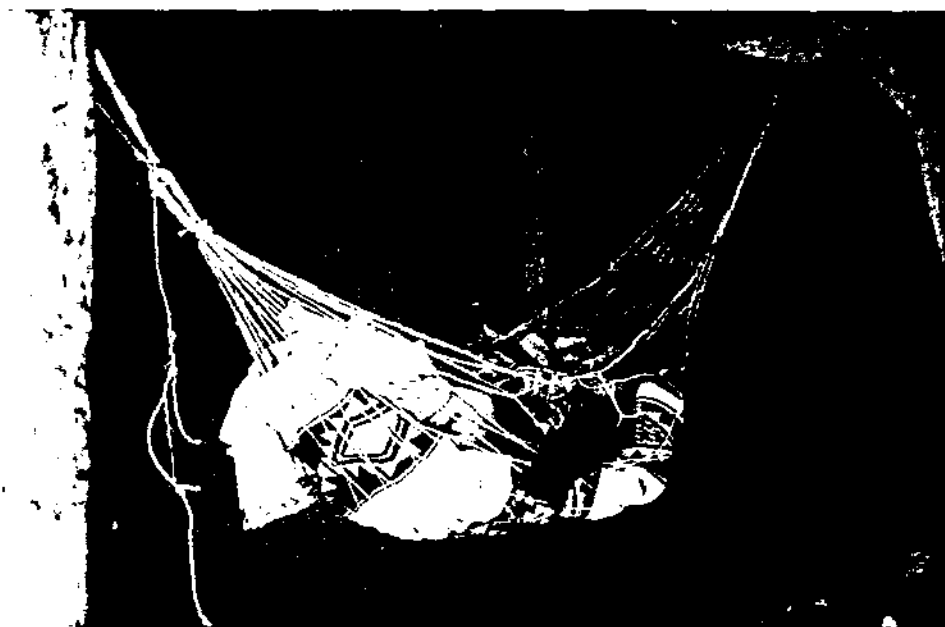
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[48] http://www.ea.gov.au/indigenous/ipa/index.html

required to develop a management plan and to make a commitment to manage their land (and/ or waters and resources) with the goal of conserving its biodiversity values.

IPAs are attractive to some aboriginal land owners because they bring management resources without the loss of autonomy associated with co-management regimes (see Table 4.3). IPAs also provide public recognition of the natural and cultural values of aboriginal land, and of the capacity of the Aboriginal People to protect and nurture those values. IPAs are attractive to government conservation agencies because they effectively add to the nation's conservation estate without the need to acquire the land, and without the cost of establishing all the infrastructure, staffing, housing etc of a conventional national park. Overall, IPAs can be seen as a particularly strong example of Community Conserved Area (strong insofar as the decision making power is entirely in the hands of the Aboriginal People and the government has understood and legalised that).[49]

In other world regions, such as Latin America and the Caribbean, the experimentation with co-responsibility in PA management between the civil society and the state has also been gaining significant strength and recognition. A recent review identified 79 distinct experiences in Central America[50] with an important variety of management types taking advantage of the relative state of flux and openness of the relevant legislations and policies, although the difficulties and potential failures faced by many of these experiences should not be underestimated.[51] Experiences in the Andean region also offer a number of inspiring examples, including areas voluntarily subjected to a conservation regime by indigenous and local communities with the explicit intent of obtaining a legal recognition of their customary land tenure rights, and assurance from governments that the land will be protected and not destined to a variety of forms of exploitation.[52] In a climate of tenure insecurity, lack of confidence in state institutions and policies, and after a long history of abuse of indigenous and community rights, people are searching for all possible instruments to secure long-term access to natural resources. Under present circumstances in a number of Latin American countries a protected area regime can offer them such security, besides also attracting funding, support, visibility, and income from tourism to the concerned areas. When this proves true, community benefits related to the establishment of a co-management agreement can be substantial.

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[49] Borrini-Feyerabend et al., 2004 (in press).

[50] Solis Riviera et al., 2003.

[51] Kaimowitz, Faune and Mendoza, 2003. See also Box 3.17 in Chapter 3.

[52] Oviedo, 2003. See also Boxes 4.4 and 4.10, in this Chapter.

The Kaa-ya Iya National Park (83.4 million hectares) is the largest in Bolivia and contains the world's largest area of dry tropical forest under legal protection. Its most unique characteristic, however, is that the park was created in response to demands for territorial recognition by the Guaraní Izoceño people. This is the first park in the Americas declared on the basis of a demand by an indigenous people and the only park in the Americas where an indigenous people's organisation (CABI— Capitanía del Alto y Bajo Izozog) has primary administrative responsibility. In fact, the Park's Management Committee comprises staff of the Ministry of Sustainable Development and Planning and representatives of CABI, the Wildlife Conservation Society (WCS, a foreign NGO), local municipalities, a community group of Chiquitanos, the Ayoreo Community of Santa Teresita and the group of women of the Izozog indigenous communities. The indigenous representatives are the majority in the Committee, which participates in the definition of policies for the management of the Park.

By Bolivian law, the "Capitanías" are indigenous municipalities that own and administer the land under their jurisdiction. In 1993, the new Agrarian Reform Law first recognised Bolivia as a multiethnic and multicultural country. This law allowed for the existence of community land ownership and legalised the creation of indigenous territories (Territorio Comunitario de Origen— TCO). It was not until these provisions on legal land titling were implemented in the Kaa-ya Iya area that CABI and the indigenous communities could become fully involved in management of the Park, and that many conservation problems started to be effectively addressed. CABI is the long-standing political authority structure of the Guaraní people of the Izozog. It has contributed significantly to the social mobilisation that ushered the national decentralisation reforms. For the indigenous communities represented in CABI, legal recognition of their TCO was the primary condition for any meaningful conservation commitment for their lands

Having established the park has only partially fulfilled the historic objective of re-claiming land upheld by CABI. Currently, 1.9 million hectares bordering the park and straddling the river are titled in their favour and the rest has being gazetted as park territory. CABI would have preferred that all 5.3 million hectares (the 1.9 m. ha. land settlement and the Park's 3.4 m. ha.) were titled in their favour. The park's creation, on the other hand, was a realistic political compromise on all sides. It served to halt the rapid expanse of the agro-industrial sector, fanning out inexorably from its base in Santa Cruz de la Sierra (Bolivia's second largest city), and ensured that traditional lands were not to be clear-cut for farming. CABI has also been able to capitalise on its internal cohesion to pressure the hydro-carbon industry into making significant compensatory payments to them for the impact of that portion of the 32 inch-diameter gas pipeline with a total length of 3,146 kilometres that runs through their indigenous territory and the park. Such compensatory payments, totalling $3.7 million, and the activities that came in with the hydro-carbon industry, ensured CABI's ability to invest significant funds in the running of the park. This strengthened their standing as effective co-management partners. In addition, the hydro-carbon funds were crucial to supporting the indigenous organisations themselves, promoting rural development and accelerating the process of titling indigenous lands. Co-management would have taken hold in Bolivia without these funds, but would not have developed so rapidly, or garnered as much enthusiasm from the governmental agency in charge.