# Conclusions and implications

Studies of various co-management implementations have revealed not only potentials and benefits of co-management but also many unresolved issues and problems to be addressed. There is still a long way to go before a general understanding of various co-management systems and examples of solutions to all the major problems are available. A range of issues and problems need to be addressed:

## Scale

Developing co-management institutions on a larger scale than the local community: Many of the problems and issues facing fisheries can only be solved on a provincial, national or even international level. The resource systems on which fisheries rely are in most cases too large to be entirely within control of a few communities and fisheries management institutions must, therefore, be able to address problems of resource access and sharing on that level. The solution to this scale problem may be representation within nested systems, but this raises a new set of problems relating to mechanisms to ensure genuine representativity and to avoid a new process of alienation between communities and management.

## Local and global

Reconciling local and global agendas: International agreements on fisheries and environmental management are a special case of incongruence between scales. Means must be developed by which the governments can serve the double obligation of attending to international agreements while sharing power in setting objectives for fisheries management with the communities.

## Knowledge base

Identifying a knowledge base for management that is considered valid by stakeholders: The knowledge base for fisheries management should relate to the objectives of management and be considered valid by the stakeholders. A co-management system must develop mechanisms to reconcile formal scientific knowledge and fishers' knowledge about their resource system in a way that maintains scientific validity and wide acceptance. There are no easy solutions to this problem. One approach may be to identify indicators of the status of the resource system that are both supported by science and reflect fishers' observations (Ahmed 2000).

## Conflict resolution

Developing approaches to manage conflicts between resource users who have acquired exclusion rights to a resource through the co-management process and those who are excluded: There is a need to understand the mechanisms and actual reasons behind the alienation process of the different user groups to manage these conflicts.

## Empowerment

Developing appropriate approaches for empowering local communities to participate in the setting of management objectives through institutional reform: This may require substantial change in the way management authorities function to provide fisheries management services and changes in perceptions of stakeholders on the roles of fisheries management agencies.

## Learning from experience

These issues must be addressed by way of practical experiments with co-management. It is, however, important that such experiments are documented and the experiences communicated to others who may be in the process of establishing or developing co-management arrangements. It is, therefore, necessary that attempts to implement co-management are associated with independent research to document and disseminate the experiences.

## Fisheries Co-management Research at the WorldFish Center

In 1994 the WorldFish Center formally known as the International Center for Living Aquatic Resources Management (ICLARM), Malaysia; the Institute for Fisheries Management and Community Development (IFM), Hirtshals, Denmark; and National Aquatic Research Institutions in Asia and Africa started a five-year research project on fisheries co-management. The Danish International Development Agency (Danida) funded the project. The collaborative research project was based on mutual interest to gain practical experience in research on fisheries co-management, to demonstrate its applicability as a sustainable, equitable and efficient management strategy and to develop models for use and adoption by governments, fisheries communities, NGOs and others. The immediate objective of the project was to have a set of globally or regionally applicable fisheries co-management models developed and applied to selected aquatic resource systems in several countries and pilot sites in Asia, Africa and the Pacific. The overall purpose of the project was to determine the prospects for successful implementation of fisheries co-management strategies by systematically and comparatively documenting and assessing models and processes of fisheries co-management implemented at national government and community/fisher organisation levels as well as their results and impacts. Phase one of the project ended in 1998 and the second phase is for a further five years up to 2003. The findings from the project are used as examples in this policy brief.

## List of Collaborating Institutions

- Program for Land and Agrarian Studies, University of Western Cape, South Africa.
- Environmental Evaluation Unit, University of Cape Town, South Africa.
- Instituto de Desenvolvimento da Pesca de Pequeña Escala, Mozambique.
- Center for Applied Social Sciences, University of Zimbabwe, Zimbabwe.
- Lake Kariba Fisheries Research Institute, Zimbabwe.
- Fisheries Department, Malawi.
- Department of Fisheries, Zambia.

- Institute for Fisheries Economics and Planning, Ministry of Fisheries, Vietnam.
- National Center for Social Sciences, Can Tho University, Vietnam.
- Department of Fisheries, Thailand.
- Department of Agricultural Economics, Kasetsart University, Thailand.
- Coastal Resources Institute, Prince of Songkla University, Thailand.
- Andaman Sea Fisheries Development Center, Thailand.
- Department of Fisheries, Cambodia.
- Living Aquatic Resources Research Center, Laos.
- Research Institute for Marine Fisheries, Indonesia.
- Indonesian Fisheries Socioeconomic Research Network, Indonesia.
- Department of Economics, Diponegoro University, Indonesia.
- Faculty of Economics and Management, University Putra Malaysia, Malaysia.
- Department of Fisheries, Malaysia.
- Southeast Asian Fisheries Development Center, Philippines.
- College of Arts and Sciences, University of the Philippines in the Visayas, Philippines.
- Southeast Asian Regional Center for Graduate Study and Research in Agriculture, Philippines.
- Tambuyog Development Center, Philippines.
- Department of Environment and Natural Resources, Philippines.
- Department of Fisheries, Bangladesh.
- Chittagong University, Bangladesh.