

FISHERIES CO-MANAGEMENT
A WORLDWIDE, COLLABORATIVE RESEARCH PROJECT

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Abstract

There is a need for rapid and substantial evolution of existing fisheries management systems in developing countries to support sustainable resource use. It is unlikely that local communities can accomplish this change on their own. But neither can the national government accomplish it entirely through bureaucratic instruments. There must evolve a more dynamic partnership using the capacities and interests of the local community, complemented by the ability of the national government to provide enabling legislation and institutions and other assistance. This partnership can be called co-management, where the national government and the community share authority for fisheries management.

ICLARM, with funding from DANIDA, has embarked on a five-year worldwide research project on fisheries co-management. The research project will address issues of co-management at both the national and community levels. The research framework provides for a structural approach to examining and documenting the origin, current status, operation and performance of fisheries management systems. Institutional analysis, which examines how institutional arrangements, the set of rights and rules by which a community organizes activities and which affect use behavior and incentives, will provide the basic research framework for studying fisheries management institutions.

In the paper, we will provide details on the overall project objectives and scope, the research framework, project structures, and activities to date. It is hoped that presentation of the project framework at this meeting will provide feedback for improvement.

Introduction

In many countries, national governments have increased their role in the management of fisheries, including coastal, coral reef, lake and river/floodplain fisheries. The role of local level control, through traditional management and custom, has correspondingly diminished. By appropriating this control over fisheries management, the national government has often underestimated the capacities of the local management systems by which people have learned through often long and difficult experience to manage local fisheries resource systems to meet their needs. In many instances, the national government has overestimated its ability to manage these same resources (Ruddle 1994).

Without denying that the traditional systems of fisheries management can often be inequitable and ineffective, state interventions that have chosen to ignore them have seldom fared better. National governments have, for the most part, failed to develop an adequate substitute for or complement to these traditional resource management systems. The promotion of nationalization or privatization as routine policy solutions has not solved the problem of resource degradation and overexploitation and, in many instances, has deprived large portions of the population of their livelihood (Bromley and Cernea 1989).

The effective capacity of government agencies to regulate what goes on in widely scattered fishing grounds is distinctly limited. The problem is accentuated by the archipelagic nature of some developing countries. Devolution of major resource management and allocation decisions to the local level may thus be more effective than management efforts which distant, understaffed and underfunded government agencies can provide.

The conventional wisdom that fisheries resources which are held as communal property are subject to eventual overexploitation and degradation and that a centralized management authority is needed to manage resources is not unequivocal. Traditional community-based management systems have an important role to play in the management of coastal fisheries. Recent investigations on community-based fisheries management systems have shown that when left to their own devices, communities of fishers, under certain conditions, may use fisheries resources sustainably.

Fishers, the real day-to-day resource managers, must be equal and active participants in resource management. An open dialogue must be maintained between all the stakeholders in resource management. Property rights to the resource must be assigned directly to its stakeholders - the coastal communities and resource users. The "community" must be reinvigorated through a multisectoral, integrated

approach to both resource management and community development. The community must be provided assistance to organize and provided with the capability to take responsibility for resource management.

Fisheries resource management institutions have not kept pace with our technological ability to exploit the resource. The result is that the management system fails to address the growing problems of fishery overexploitation, dissipation and redistribution of resource rents, and conflicts among different groups of resource users. The starting point in the search for more viable and sustainable institutions is the abandonment of open-access ideals of the old principle of freedom of the seas and a recognition of the failures of centralized management. A new management philosophy is warranted in which the fisher can once again become a part of the resource management team, balancing rights and responsibilities, and working in a cooperative (rather than antagonistic) mode with the government managers.

The purpose of this paper is to present details of an ongoing research project on fisheries co-management being undertaken by ICLARM and the North Sea Centre of Hirtshals, Denmark. The paper will provide details on project objectives and scope, the research strategy, and the research framework. It is hoped that the presentation of the project framework will provide feedback to improve project implementation.

Fisheries Co-Management

There is a need for rapid and substantial evolution of existing fisheries management systems to support sustainable resource use. It is unlikely that local communities can accomplish this change on their own. But neither can the national government (which will be defined in this proposal to include provincial/state and municipal/district government levels as well, if not noted differently) accomplish it entirely through bureaucratic and regulatory instruments. There must evolve a more dynamic partnership using the capacities and interests of the local community, complemented by the ability of the national government to provide enabling legislation and administrative assistance. This partnership can be called co-management, where the national government and the community share authority for fisheries management. Community-based management is a central element of co-management. The amount of authority that the national government and the community have will differ and depend upon country and site-specific conditions (Jentoft 1989; Pinkerton 1989; Rettig et al. 1989; Berkes et al 1991; McGoodwin 1992).

The devolution of authority to manage the fisheries, away from the national government to a local user group or community, may be one of the most difficult tasks of co-management. Fisheries administrators may be reluctant to relinquish their authority, or portions of it, and national governments are often opposed to decentralization. National laws may not be structured to easily devolve management authority or to allow for the legitimization of community-based resource management. Determining what kind of and how much authority should be allocated to user or community groups requires analysis of the different functions of fisheries management and which of those can be best handled at local as against national levels.

There is a growing realization of the need for a stronger community role in resource management and development activities. This can be seen in an increasing number of projects and programs where both increased local participation and institutional restructuring have given greater control to the community (Korten 1986; FAO 1993; Hviding and Jul-Larsen 1993; Ruddle 1994).

Community-based management strives for more active people's participation in the planning and implementation of fisheries management. The theme of CBM is that self-involvement in the management of the resource will lead to a stronger commitment to comply with the management strategy and sustainable resource use. CBM starts from the premise that people have the innate capacity to improve their quality of life. Often what is needed is support to organize and educate people to mobilize available resources to meet their needs.

The potential advantages of CBM include effectiveness and equity. CBM can be more economical in terms of administration and enforcement than national, centralized systems. CBM involves self-management where the community takes responsibility for monitoring and enforcement. CBM provides a sense of ownership over the resource which makes the community far more responsible for long-term sustainability of resources. This is accomplished by establishing a resource management regime and rules of behavior for resource use. CBM allows each community to develop a management strategy which meets its own particular needs and conditions. CBM allows for a sufficient degree of flexibility and can easily be modified. CBM provides for greater participation by the community in resource management. Since the community is involved in the formulation and implementation of management measures, a higher degree of acceptability and compliance can be expected. CBM strives to make maximum use of indigenous knowledge and expertise in developing management strategies.

Community-based management is not, however, suited for every fishing community. Many communities may not be willing to or capable of taking on the responsibility of CBM. Not all elements of fisheries management authority can, or should, be allocated to the local community. For many communities, the incentive(s) - economic, social and/or political - to engage in community management may not be present. The risk involved in changing fisheries management strategies may be too high for some communities.

An essential ingredient for success of any resource management system, whether community-based, centralized or private, is the system of incentives and sanctions - rights and rules - for influencing individual behavior of those who use and depend upon the resource. Thus, at the core of community-based management are the issues of property rights, resource management regimes and institutional arrangements. Specifically of interest in CBM are common property regimes. Common property regimes are forms of management grounded in a set of accepted rights and rules by a group for the sustainable and interdependent use of collective goods (Bromley 1991; Bromley 1992).

Common property management issues have recently received much greater attention since they are felt to be critical to the design or implementation of work on development projects, primarily agriculture, forestry and fisheries. In many parts of the world, rights to common property are all that separate the poor from destitution. It has been pointed out that development planners must eventually deal, either explicitly or implicitly, with the issue of institutional arrangements for property rights and rules over natural resources. Renewed interest in the role of local, community-level institutions and the importance of indigenous knowledge and traditional values and institutions in the management of common property is a result, in part, of past failures of development projects and the search for sustainable alternatives to existing systems of resource use.

The institutions within which groups operate include not only relevant administrative and judicial organizations but also, for example, formal and informal political processes, economic rules and organizations, dispute settlement mechanisms, the bureaucratic structure, communications systems, fiscal arrangements, and other rule-based systems. Fisheries management policies in developing countries are shaped through a convergence of institutional interests between resource users, resource stakeholders, community, local government, national government and international agencies.

It is in the context of the above discussion that a research project has been developed. Recent research on fisheries co-management and community-based fisheries resource management suggests that they have the potential to perform as sustainable, equitable and efficient fisheries management strategies under certain conditions. However, there is a need for a systematic, comparative assessment of the range of approaches being used to implement fisheries co-management, constraints to implementation and the impacts on performance of devolution of resource management authority to communities/fisher organizations. Special attention is needed to assess what supportive legal, policy or regulatory requirements are needed, the need and potential for administrative reform, and the suitability of different levels of co-management under different conditions. There is the need to systematically and comparatively assess the impacts of fisheries co-management on the equity of access to fisheries resources. There is a need to document under what circumstances such institutional reform can lead to empowerment and greater well-being for fishers, as opposed to stratification and greater concentration of resources in the hands of a few. There is a need to provide information to policymakers, resource managers and resource users about the implementation process of fisheries co-management and the prospects for successful implementation. There is a need to address the uncertainty about the impacts of fisheries co-management or institutional performance, as measured by efficiency, equity and sustainability. There is a need to determine what organizational and institutional conditions will bring about self-sustaining community-based resource management systems. Despite widespread interest in fisheries co-management, it is a relatively recent strategy in practice and much more experience is needed to determine which factors will and in what situations it can prove to be a viable alternative fisheries management strategy. It is these issues which this research project will address.

Development Objective and Project Benefits

The collaboration between ICLARM, the North Sea Centre and NARS (National Aquatic Research System) is based on a mutual interest to gain practical experience in 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, fishing communities, NGOs (nongovernment organizations) and others.

The global development objective to which the Fisheries Co-Management Research Project will contribute is: sustainable and equitable management of fisheries in developing countries to meet the nutritive and economic needs of poor people.

The immediate objective of the Fisheries Co-Management Research Project is: a set of globally or regionally applicable fisheries co-management models developed and applied in selected aquatic resource systems in selected countries and pilot sites in Asia, Africa and the Pacific.

The Fisheries Co-Management Research Project will, at the end of the project, have demonstrated the applicability of the fisheries co-management models as a viable alternative fisheries management strategy under varying conditions (political, social, cultural, economic, biophysical, technological) worldwide. General principles and propositions which facilitate successful fisheries co-management will have been identified and documented at both the national government and community/fisher organization levels. While fisheries co-management may not be a viable alternative fisheries management strategy for all countries and fishing communities, the research project will have established in what situations it can prove to be a sustainable, equitable and efficient management strategy and recommend how it can be successfully implemented.

Specific methodologies and guidelines for implementing fisheries co-management at the national government and community/ fisher organization levels will be available for use by the target beneficiaries. It is expected that several of the partner countries for the research project will have taken action at both national government and community/fisher organization levels to implement fisheries co-management strategies.

Project Strategy

The Fisheries Co-Management Research Project will conduct research in selected coastal, coral reef, and lake aquatic resource systems in several regions and countries of the world in order to determine if fisheries co-management can be a viable management strategy under varying conditions (political, social, cultural, economic, biophysical, technological).

Aquatic Resource Systems Selection

The Fisheries Co-Management Research Project will focus its activities primarily on coastal and coral reef resource systems. Lakes are of such importance to fish production worldwide, however, that it is felt that some project activities and resources should be directed toward these resource systems. This activity will be carried out primarily in the lakes of Africa. It is also planned to expand project activities to the river and floodplain systems of Bangladesh later in the project life.

Region, Country and NARS Selection

The three regions of the world selected to conduct the fisheries co-management project (Asia, Africa, Pacific) were given priority based on ICLARM's Strategic Plan. The Strategic Plan indicated that the highest priority regions for fisheries research should be Asia/Pacific and Sub-Saharan Africa.

Within each region of the world, partner countries are selected for conducting the fisheries co-management research. In Asia this includes the Philippines, Indonesia, Thailand and Vietnam. In Africa this includes Zimbabwe, Mozambique, and one or two countries in West Africa still to be selected (tentatively Ghana, Cameroon and/or Ghana). In the Pacific this includes the Solomon Islands.

The partner countries selected to conduct the fisheries co-management project were given priority based on a number of criteria. These criteria include number of beneficiaries to be affected by the research, magnitude of impact on beneficiaries, extent of potential use by NARS and host government, extent to which results will strengthen national programs, interest of NARS and host government to participate in project, contribution of project to sustainable, equitable and efficient fisheries resource management in the country, probability of achieving research objectives, and potential for methodological and paradigm transfer to other countries, NARS and resource user groups.

The Fisheries Co-Management research project is a collaborative project between ICLARM and the North Sea Centre with and through NARS partners in each of the selected partner countries. Each of the project partners brings a complementary body of expertise and competence to the project.

The NARS/NGOs within each country were selected based on their current or planned interest in developing an expertise in fisheries co-management and social science research, their interest to participate in the project, and their current or planned research activities in fisheries co-management.

Working Hypotheses About Conditions for Effective Community-Based Fisheries Resource Management

Fishery resources, subject to individual use but not individual possession provide the classic example of property. By definition, all common property resources share two characteristics: (1) it is costly to exclude potential users from gaining access to the resource (the problem of exclusion), and (2) each person's use of the resource

subtracts from the welfare of the others (the problem of subtractability).

In the case of fishery resources, the exclusion problem is closely related to the "freedom of the seas" principle, the idea that seas should be open access of freely available to all. Exclusion may be approached through traditional management methods such as territorial use-rights and community-based exclusive fishing areas. It can also be approached through some of the more modern management techniques which accomplish much the same purpose through the use of license limitations and the allocation of individual transferable quotas.

The problem of subtractability may be approached by making and enforcing rules to limit short-term individual interest and to protect long-term, collective interest. Role-making and enforcement by government agencies everywhere has been both difficult and costly. Thus, there is renewed interest in many parts of the world to involve fishers in management. But no fishers carry out their business in isolation; purely community-based fisheries exist hardly anywhere in the world. Thus, practical solution to the subtractability problem revolve around some appropriate mix of community-based and state management system (or co-management) for fisheries.

Reliance purely on the government to manage the fishery, based on the conventional wisdom derived from Hardin, Gordon and Scott that all resources held in common will inevitably suffer overexploitation and degradation, has blinded fishery managers to the broad range of possibility offered by systems that involve various degrees of self-management. But integrating communities of fishers into the management process requires, in the first place, the creation of incentive structures for users to fish sustainably. The exclusion problem would almost always require government management to help enforce rights. The subtractability problem requires the building of institutional arrangements for self-management. Thus, the policy implication for a re-assessment of fisheries management include the abandonment of the conventional wisdom that fisheries resources which are held as communal property are subject to eventual overexploitation and degradation and that a centralized management authority is needed to manage resources. It also requires institution building in fishery communities to establish co-management strategies towards sustainable use of resources. Ostrom (1990) has made a useful synthesis of the existing knowledge about what is needed for emergence of viable self-managed, community-based management institutions. The working hypotheses below are adopted from her synthesis.

- (1) Whether the resource boundaries and the rights to use the resource are clearly defined.
- (2) Whether there is a proportional relationship between the rules specifying the amount of harvest a fisher is allocated and rules requiring user inputs.
- (3) Whether benefits of investing in fisheries management institution exceed competing opportunity cost.
- (4) Whether there is a practical system of monitoring and regulating behavior which is accountable to the users or are the users themselves.
- (5) Whether the group which specifies the rules is largely constituted by the fishers who are effected by them.
- 6) Whether those who break the rules are likely to receive graduated sanctions as authorized by the rule-making body.
- (7) Whether fishers and their officials have ready access to conflict resolution arrangements.
- (8) Whether fishers have the legal right to organize and make institutional changes commensurate with their perceived management needs.
- (9) Whether performance results are in accordance with expectations of fishers, are visible to them, and have no serious negative side effects.

These working hypotheses will be used to provide a preliminary framework for accounting for the success of self-managed, community-based fisheries management institutions.

Research Strategy

The overall purpose of this Fisheries Co-Management Research Project is to determine the prospects for successful implementation of fisheries co-management strategies. The project will not advocate or promote fisheries co-management, but systematically and comparatively document and assess models and processes of fisheries co-management implementation at national government and community/fisher organization levels and their results and impacts. General principles and propositions which facilitate success implementation of fisheries co-management strategies will be identified.

The following set of research activities is based on discussions with individuals involved in fisheries co-management and community-based fisheries management in

several countries and on reports on the topic. The research activities will be conducted through three components:

- comparative case studies of fisheries co-management strategies
- country research
- information exchange

The research project will utilize a comparative analytical approach, relying on a common research strategy and research framework for use in each partner country and resource system, in order to integrate and improve the understanding and implementation of fisheries co-management strategies. Additional research activities and modifications to the components may be made during the period of the project based on the availability of new information on fisheries co-management and on capacity, conditions and priorities of the partner countries and NARS/NGOs.

ICLARM and the NSC will provide primary leadership for conducting the comparative case studies of fisheries co-management strategies and information exchange components and for project administration and report preparation and dissemination. ICLARM, the NSC and NARS/NGO research collaborators will share responsibility for conducting the country research component. ICLARM and the NSC will have primary responsibility for methodological development, comparative assessment, process documentation, impact and performance analysis, and technical assistance. The NARS and NGOs will have primary responsibility for conducting national and community/fisher organization/level research and pilot site activities.

Due to the importance of biophysical and technical attributes of the resource, the project will be multidisciplinary in nature, requiring biological expertise to complement the social science aspects of the project. This biological expertise is available from ICLARM, the NSC and NARS.

An Institutional Analysis Research Framework

A research framework has been developed at ICLARM for analyzing fisheries co-management systems in theory and in practice. A more detailed discussion of the research framework is provided in Annex 1. This research framework will be further refined as the project progresses. The research framework of analysis provides for a structured approach to examining and documenting the origin, current status, operation and performance of fisheries co-management systems. Institutional analysis, which examines how institutional arrangements, the set of rights and rules by which a community organizes activities and which affect user behavior and incentives, provides the basic research

framework for studying fisheries co-management institutions. The research framework is both specific enough to provide guidance in case study settings, but general enough for use in a range of situations, and useful in both documentation and implementation of fisheries co-management systems. The framework uses concepts from economics, political science, anthropology and law and relies on work described by Kiser and Ostrom, 1982, Ostrom 1986, 1990, 1992a, 1992b and Oakerson 1992.

The research framework will be used in all three components of the research. The use of the common research framework will allow for data to be collected and analyzed in a standardized format, the results to be compared, and generalizations made about fisheries co-management systems for use within the country and shared with other countries worldwide. Research methodologies to be employed in the practical application of the research framework include, but are not limited to, rapid rural appraisal, indigenous knowledge, socioeconomic surveys and analysis, gender analysis, community development, policy analysis, and biological stock and ecological assessment.

The research framework consists of three components:

(1) System Description and Institutional Arrangements.

This component links contextual variables characterizing key attributes of the resource and the resource user, with the coastal fisheries management institutional arrangements. The rights and rules, or the institutional arrangements devised by fishing communities to manage the fishery, is the focus for examining the conditions or context which provide incentives to organize resource management institutions and which also cause institutional change. The contextual variables are referred as a set since each is composed of a number of interrelated attributes which characterize the structure of the institutional arrangements. A causal relationship has been shown to exist among and between the contextual variables. These variables affect the actions of the resource users by shaping the structure of incentives they face, from which emerges coordinated strategies and outcomes.

The six sets of contextual variables examined are:

- (a) the biological, physical and technological attributes of the resource;
- (b) the market (supply-demand) attributes and community inter- and intra-regional and national linkages;
- (c) the characteristics and attributes of the fishers, stakeholders and community;

- (d) community institutional arrangements including management and allocation rules such as exclusive use rights and indigenous/traditional knowledge;
- (e) external institutional arrangements; and
- (f) external macroeconomic, political and environmental factors that effect the resource and the fishermen.

(2) Institutional and Management Performance

Criteria to evaluate the fisheries management institutional arrangements, including how well the organization(s) is managed and the outcomes and impacts on the resource and its users. Outcomes are defined as accomplishments of meeting the institutional objectives for fisheries management. To distinguish relevant accomplishments, evaluative criteria, such as sustainability, efficiency and equity, shall be specified and operationalized.

(3) Characteristics of Successful Neo-traditional Fisheries Management Institutions

The creation of an organization and the development of institutional arrangements for coordinated strategies for fisheries management are no guarantee that it will survive over time or is transferable to other locations. The specification of what variables and conditions bring about successful fisheries management is an important research task for providing future direction for fisheries management.

Time is also a critical element. All the contextual variables change through time. This causes institutional change, and, in turn, affects outcomes and patterns of interactions. Where possible, institutional change is described at different points in time, to understand both its causes and effects.

Comparative Case Studies of Fisheries Co-Management Strategies

The first component of the research strategy will be a series of relatively concise, selected case studies of existing fisheries co-management strategies under varying conditions (political, social, cultural, economic, biophysical, technological) and locations. These case studies will provide information on the range of institutional arrangements and approaches for fisheries co-management and some indication of their results and performance. The countries and sites selected for the case studies may be different from those selected for the country research. The case studies will rely on secondary data, with

limited primary data collection. The selection of the case studies will depend on availability of secondary data from earlier research and factors related to physical and community attributes and institutional arrangements, both internal and external. The purpose of the comparative case study research is to gain insights into approaches, institutional arrangements, performance and policies for fisheries co-management at national government and community/fisher organization levels. The case studies will be analyzed using the institutional analysis research framework which will emphasize variable related to the resource (location, size, boundaries, biophysical characteristics), to the relationship between supply and demand scarcity, asset structure), to the resource users (number, social, cultural and economic characteristics) to local institutional arrangements (organization, rights, rules, ownership status), and external institutional arrangements (degree of decentralization, legitimization). A time dimension will be included in the analysis to assess survival over time. The case studies will be compared to assess features and performance of different approaches and institutional arrangements. A typology of fisheries co-management strategies will be developed. While the case studies will be conducted primarily by the project staff, some case studies may be carried out through local NARS experts.

Country Research

The second component of the research strategy will be country research conducted in collaboration with NARS and NGO research collaborators, in the previously identified partner countries. The country research will be a comparative assessment to evaluate and document the approaches and processes of fisheries co-management implementation at the community/fisher organization level and performance results, and to examine the legal, policy and administrative conditions for fisheries co-management. The purpose of the country research is to gain detailed and specific practical understanding and experience into the approaches, institutional arrangements, performance, and legal and policy factors effecting implementation of fisheries co-management at both national government and community/fisher organization levels. The country research will be conducted at both national government and community/fisher organization levels.

National Government Level Research

National government level research will focus on the legal, institutional and administrative conditions for and impacts of devolution of fisheries management authority to communities/ fisher organizations, including the kind and content of authority that can and should be delegated to

communities/fisher organizations. The research will include an economic analysis of administrative factors (enforcement, monitoring) of fisheries co-management. The research will use methodologies from law and public administration to evaluate existing fisheries policies, laws and administrative structures for fisheries management and public administration within each country. Research will also be conducted to analyze policies, laws and administrative structures for devolution of authority in other resource systems and sectors within the partner country which may be of relevance to fisheries co-management. The research will also be conducted to evaluate existing fisheries laws, policies and administrative structures at the provincial/ state and municipal/ district government levels. This complementary research at sub-national government levels is critical since in many countries the implementation of national policies is conducted at this level. Central to the research activities will be a continuing dialogue on fisheries co-management policy issues with elected and appointed government officials at all levels. Supportive and contradictory laws and policies for devolution of fisheries management authority will be identified. Recommendations will be made as to how national, provincial/state and municipal/district governments can restructure their policies, laws and fisheries administrations to support, authorize and legitimize community/fisher organization-based fisheries co-management strategies.

Community/Fisher Organization Level Research

Three primary research activities will be undertaken at the community/fisher organization level:

- (1) Evaluation/documentation of informal/neo-traditional fisheries management strategies. Whether formally endorsed by government or not or whether easily observable or not, most communities have established some form of fisheries management system. These management systems, once documented, can serve as the foundation for strengthening an existing system, learning how to extend the system into new areas, or of leaving the system alone and legitimizing it.

There is limited information on informal/neo-traditional fisheries management systems in most of the project partner countries. If effective local-level fisheries management efforts are to succeed, it is essential that resource managers have information concerning local fisheries management strategies. If new local-level management systems are imposed on existing informal management structures, it may be doomed to fail since the fishers may be unwilling to give up a system they devised. By developing a new

local-level management system which complements or builds on the existing system, its chances for success are improved.

A two-step methodology will be developed and utilized. The first step will employ rapid appraisal to determine the existence of informal/neo traditional fisheries management strategies in the community. This rapid appraisal will provide a general description of basic biophysical and community/fisher characteristics and institutional arrangements. The second step will be a more comprehensive assessment utilizing socioeconomic survey and analysis and institutional analysis to describe the institutional arrangements and performance.

- (2) Review and evaluation of fisheries community-based management strategies. Over the past ten years, a number of locally- and foreign-funded projects have been undertaken in each partner country to implement community-based management strategies in fisheries. Undoubtedly, the time, money and collective effort put into these projects have allowed development specialists and participants to accumulate valuable knowledge and experience on successes and failures of community-based management. Unfortunately, in most cases there has never been a comprehensive evaluation and comparative assessment conducted to integrate and document the "lessons learned" from these projects. As a result, an important source of information which could be used to rapidly improve new community-based management implementation has been left untapped.

Through this research, a systematic review and evaluation of co-management and community-based management projects in fisheries will allow for:

- identification of the successes and failures of previous approaches;
- explanation of the reasons for success and failure;
- determination of the major intervention activities, impacts and sustainability of the strategies; and
- determination of the approaches that could be transferred to other locations and projects.

Research methodologies will include an analysis of secondary-source project and research reports and field case studies at selected pilot sites to evaluate the interventions and impact of selected completed community-based fisheries management projects in the country. A data base on co-management and community-

based management will be established which will serve as the basis for a literature review and bibliography.

- (3) Implementation, process documentation and impact and performance analysis of community/fisher organization co-management strategies. Pilot sites where implementation of community-based co-management strategies is being undertaken will be identified in each country to implement, document the process and analyze the impacts and performance of community-based co-management strategies in a collaborative mode with partner NARS. Practical experience and knowledge in fisheries co-management under different social, cultural, economic, political biophysical and technological conditions will be obtained.

The implementation of community-based fisheries co-management strategies is a complex and long process. It involves linking together many disparate activities, some of which can be accomplished immediately while other take more time. Community-based management includes, among others, activities involving political/power structure analysis and acceptability, environmental education, community organization, leadership development, community objective setting and planning, community/ economic development, fisheries management institutional arrangements, community socioeconomic analysis, biological stock assessment, ecological assessment, and alternative livelihood development. Very few institutions have the capacity to undertake all of these activities by themselves or fully document the process and analyze impacts and performance.

The research strategy of this project is to use the strengths of ICLARM and the NSC as research centers to collaborate with and support ongoing or planned community-based fisheries co-management projects of the NARS and NGO research collaborators. Most of the NARS working on community-based management projects have, like ICLARM and the NSC, expertise and experience in certain research and development areas, but do not possess all the scientific capacity necessary for community-based management. The collaboration will allow for improved implementation and process documentation.

The collaborative arrangement will allow ICLARM and the NSC to conduct research at sites with community-based fisheries co-management projects in order to further develop, test and refine methodologies and the research framework for fisheries co-management. The collaborative arrangement will allow the NARS and NGOs to broaden the scope of activities at their project

site(s). It will also allow the NARS and NGOs more resources to develop, test and refine methodologies and research and/or development frameworks of their own. Through the collaboration, the various activities being undertaken at the project site can be monitored, evaluated and documented. The practical experience and knowledge gained at the project site can be integrated and compared with that gained at other project sites in the country and worldwide for the development of overall guidelines for implementing community-based management projects. The interventions taken at the project sites can be analyzed to assess their impact and performance and how sustainable they are over time. Impact and performance analysis criteria will be developed for this activity.

Each NARS, NGO and partner country collaboration will be different but all will be guided by the institutional analysis research framework.

Synthesis of Research Results

The working hypotheses, based on research by Ostrom (1990, 1992), identifies principles and propositions which appear to characterize effective and viable self-managed, fisheries co-management systems. The research activities of this project focus on the testing and further development of these principles and propositions. Each of the research activities of the project builds on the results of other research activities in order to provide increased understanding of the complex, intertwined factors and relationships which can facilitate successful implementation, survival and performance of fisheries co-management systems. The comparative case study research provides for a general assessment and the country research provides for a more detailed and specific practical assessment of fisheries co-management system and institutions and their results and impacts. The institutional analysis research framework provides the underlying conceptual foundation for a comparative assessment and synthesis of the research results. The final product of the research, based on this comparative assessment and synthesis, will be the determination of prospects for and identification of principles and propositions of successful implementation of fisheries co-management as a sustainable, equitable and efficient management strategy.

Information Exchange

The various research activities being undertaken by ICLARM, the NSC and the NARS and NGOs on fisheries co-management worldwide will be coordinated through a network of information exchange, researcher and scientific exchange,

training and collaborative research. This networking will include not only those researchers directly involved in the project but also researchers from other fisheries co-management projects, NARS, NGOs, government agencies and others who are interested in the project topic and activities.

STRATEGY

The Fisheries Co-Management Research Project will be implemented in phases over the five year life of the project. The first phase of the project was the project planning phase, funded by DANIDA, from 1 October 1993 - 31 March 1994. The activities during this phase included establishment of project management and administrative structure, identification of national research partners, meetings of project steering committee and national research partners, preparation of project proposal and workplan, and beginning a literature review on co-management. The project 1planning phase workplan is included in the workplan. As stated earlier, the workplan was overly ambitious and it was not possible to complete all the tasks related to the identification of national research partners. This will be done early on the implementation of the project.

The second phase of the project, a period of two and one-half (2 1/2) years, will be devoted to further refinement and testing of the institutional analysis research framework, national government level research, evaluation/documentation of informal/traditional fisheries management strategies, and review and evaluation of fisheries community-based management strategies. More limited research activities will be undertaken for the implementation, process documentation, and impact analysis of community/fisher organization co-management strategies.

The third phase of the project, a period of two and one-half (2 1/2) years, will be devoted almost entirely to research activities involving the implementation, process documentation and impact analysis of community/fisher organization co-management strategies. More limited research activities will be undertaken in evaluation/documentation and methodological development during this phase. During the latter part of the third phase, research will be undertaken to identify and apply in practice general principles and propositions which facilitate and enhance the successful performance of fisheries co-management at both national government and community/fisher organization levels.

Research activities will be phased-in in each partner country depending on the capacity of the NARS and NGO, priorities of the government, NARS and NGO, current and planned research activities in fisheries co-management, and available resources.

REFERENCES

- Berkes, F. P. George and R.J. Preston. 1991. Co-management: the evolution in theory and practice of the joint administration of living resources. *Alternatives* 18(2): 12-18.
- Bromley, D.W. and M.M. Cernea. 1989. The management of common property natural resources: some conceptual and operational fallacies. World Bank Discussion Paper 57. World Bank, Washington, D.C.
- Bromley, D.W. 1991. Environment and economy: property rights and public policy. Cambridge, Massachusetts: Basil Blackwell.
- Bromley, D.W. (eds.) 1992. Making the commons work. San Francisco: Institute of Contemporary Studies Press.
- FAO (Food and Agriculture Organization). 1993. Report of the FAO/Japan Expert Consultation on the Development of Community-Based Coastal Fisheries Management Systems for Asia and the Pacific. Kobe, Japan, 8-12 June 1992. FAO Fisheries Report No. 474. FAO, Rome.
- Hviding, E. and E. Jul-Larsen. 1993. Community-based resource management in tropical fisheries. Centre for Development Studies, University of Bergen, Norway.
- Jentoft, S. 1989. Fisheries co-management: delegating government responsibility to fishermen's organizations. *Marine Policy* 13(2): 137-154.
- Kiser, L.L. and E. Ostrom. 1982. The three worlds of action: a metatheoretical synthesis of institutional approaches. In E. Ostrom (ed.) *Strategies of political inquiry*. Beverly Hills: Sage.
- Korten, D.C. 1986. Community-based resource management. In D.C. Korten (ed.) *Community management: Asian experiences and perspectives*. West Hartford, Connecticut: Kumarian Press.
- McGoodwin, J. 1992. The case for co-operative co-management. *Australian Fisheries* (May 1992): 11-15.
- Oakerson, R.J. 1992. Analyzing the commons: a framework. In D.W. Bromley (ed.) *Making the commons work*. San Francisco: Institute of Contemporary Studies Press.
- Ostrom, E. 1986. An agenda for the study of institutions. *Public Choice* 48: 3-25.

- Ostrom, E. 1990. *Governing the commons: the evolution of institutions for collective action*. Cambridge, England: Cambridge University Press.
- Ostrom, E. 1992a. *Crafting institutions for self-governing irrigation systems*. San Francisco: Institute for Contemporary Studies Press.
- Ostrom, E. 1992b. The rudiments of a theory of the origins, survival and performance of common property institutions. *In* D.W. Bromley (ed.) *Making the commons work*. San Francisco: Institute for Contemporary Studies Press.
- Pinkerton, E. 1989. Introduction: Attaining better fisheries management through co-management -- prospects, problems and propositions, p. 3-33. *In* E. Pinkerton (ed.) *Co-operative management of local fisheries*. University of British Columbia Press, Vancouver.
- Rettig, R.B., F. Berkes and E. Pinkerton. 1989. The future of fisheries co-management: a multi-disciplinary assessment. *In* E. Pinkerton (ed.) *Co-operative management of local fisheries*. University of British Columbia Press, Vancouver.
- Ruddle, K. 1994. *Traditional community-based marine resource management systems in the Asia-Pacific region: status and potential*. International Center for Living Aquatic Resources Management, Manila, Philippines.