

Building Capacity for Fisheries Research and Policy: Lessons Learned from the Asian Fisheries Social Science Research Network

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Abstract

The Asian Fisheries Social Science Research Network (AFSSRN) was a long-term effort to build social science research capacity for fisheries and marine resources in Southeast Asia. The history of the Network is reviewed. Several case studies of the impact of the AFSSRN on individual Network members and its influence on public policy are presented. Lessons learned and recommendations for capacity building efforts in fisheries and marine resources research and policy analysis are discussed.

Keywords

Southeast Asia, networking, capacity building, fisheries

Introduction

In the early 1980s, the issue of overexploitation of fisheries and environmental degradation of coastal resources was a growing concern to the governments in Southeast Asia. Issues of food security, rural development, employment, foreign earnings, tourism, and the environment all put fisheries and coastal resource management higher on government agendas. Much of the scientific research work that was being undertaken on these issues was biological in nature, and most of the policy-makers were trained in biology. At the same time, there was growing recognition among some scientists and managers in the region that the real solution to these problems were social, economic, political and institutional in nature. There was also recognition of the need for a broader, multidisciplinary approach and research program to address these issues (Smith 1979; Lockwood 1982, 1983; Chua 1992).

The limited information available on the economics and sociology of capture fisheries and aquaculture in Southeast Asia was an indication of a serious shortage of social scientists engaged in fisheries research and policy analysis in the region. The dearth of social scientists working on fisheries and aquaculture issues in Asia was indeed a cause of serious concern. It was felt

that many of the critical issues of traditional fisheries were of a politically sensitive nature and often could be best addressed by national researchers. While a pool of well-educated social scientists was developing in the region, particularly economists, they had little professional interest in these areas. The reason for the lack of interest was that most were conducting research on agriculture or forestry. Their involvement in the problems of the sector had been mainly on a part-time or ad hoc basis. As a consequence, there was no systematic program of economic and policy research on the problems of fisheries and aquaculture being carried out either by government fisheries agencies, research centers, or universities. Government policy-makers were requesting more information from social science researchers in order to improve policy (Smith 1979). There was limited interaction between policy-makers and researchers, especially social scientists. The number of professionals involved in the effort was not nearly adequate to the task, and the distribution within the region was uneven.

It was clear that there was an urgent need to develop the capacity of social scientists in the Southeast Asian region to conduct research and policy analysis on fisheries and marine resources. To address this serious shortage of social scientists and social science research,

in 1983 the Asian Fisheries Social Science Research Network (AFSSRN or Network) was established.

The purpose of this paper is to discuss the role and impacts of the Network in the long-term effort to build social science research capacity and its influence on public policy for fisheries and marine resources in Southeast Asia. The paper will review the history of the Network. Several case studies of the impact of the Network on individual Network members will be presented. Lessons learned and recommendations for capacity building efforts in fisheries and marine resources research and policy analysis are presented.

Methods

The impetus for this paper was an evaluation of International Development Research Centre of Canada (IDRC)-supported research projects and their influence on public policy (Maessen 2003). As part of this evaluation, a series of 25 case studies covering projects in 20 countries were conducted which encompass the range of research and geographic areas covered by IDRC's programming. The Network review was one of these case studies.

Data for this paper came from three sources. First, reports and publications on the Network provided by the International Center for Living Aquatic Resources Management (now the WorldFish Center) and IDRC. Second, interviews with 19 Network members from institutions in Indonesia, Malaysia, Philippines, Thailand and Vietnam. Third, the author's experience as the Coordinator of the Network. A complete copy of the report on which this paper is based is available at the IDRC website: www.idrc.ca

The Asian Fisheries Social Science Research Network: A History

The Network sought to address and remove two serious constraints to social science research related to fisheries and aquaculture in Asia. These were: (1) the serious shortage of experienced social science professionals, and (2) the weak institutional support for long-term fisheries social science research. These constraints had resulted in a dependence on other countries outside the region for education, consultation and research in social sciences. The Network aimed to overcome these problems through a combination of formal and informal training, scholarships, research activities, information exchange, seminars, workshops, and staff exchange.

The Network's overriding objective was to build national research capacity to address important social

science issues in the development and management of fishery resources in the region. This was carried out through two broad-based areas of activity: (1) development of medium- to long-term programs of social science research and training on management and development issues of national and regional importance related to fisheries and aquaculture economics; and (2) development of national programs of professional development in fisheries and aquaculture economics.

The Network had five phases from its origin in 1983 to its current status as a section of the Asian Fisheries Society. Each phase had its own theme, research focus, and educational and information activities. The growth of the Network membership and changes in coordination can also be traced to its phases.

The coordination of the Network was provided by the International Center for Living Aquatic Resources Management (ICLARM), based in Manila, Philippines (now the WorldFish Center based in Penang, Malaysia). ICLARM played the role of Network coordinator and catalyst, provider of technical and information services, and backstopping and facilitation. Its non-governmental, international status and its own active research program in fisheries social science made it suited for the role of assisting Network institutions to develop their research capacity. The Network became an active partner in research and training conducted by ICLARM programs. The Network coordinator was an ICLARM staff member who provided the leadership, management and planning that the Network required.

Phase I (1983-1986)

The Fisheries Social Science Research Network, as the Network was first called, was launched in 1983 as a project of ICLARM and had both a research and training component. It was established with funding support from the International Development Research Centre (IDRC) of Canada and the Ford Foundation. The Network's overall objective was to build research capacity in a network of institutions in Southeast Asia in order to address key social science research issues in capture fisheries and aquaculture. The objective was to be achieved through three mechanisms: (1) research program funding in fisheries economics institutions in the network; (2) training in fisheries economics for research staff of the network institutions; and (3) network support and coordination by ICLARM.

The Network's initial disciplinary focus was economics. It was envisioned as a long-term professional and institutional development program in Southeast Asia aimed at building national research capacity to address

important socioeconomic issues in the management and development of fishery resources.

The first three members of the Network were the University Pertanian Malaysia (UPM)(Faculty of Economics and Agribusiness), Kasetsart University (KU) (Faculty of Economics and Business Administration) in Bangkok, and the University of the Philippines in the Visayas (UPV) (College of Arts and Science). These three institutions were chosen since they were the leading economic programs in the region and using the following criteria:

1. interest and expertise in social science research on fisheries and aquaculture economics,
2. committed researchers or potential researchers available for further training,
3. potential for close collaboration with biological scientists, (preferably in the same institution, or if not, with government fisheries department),
4. potential for contributing to government policy-making, and
5. existing support or potential for attracting such support for fisheries social science research from national governments and international agencies.

It was proposed to add an Indonesian institution to the network in Phase II.

By 1985, the Network formally became an association of institutions. Within each member institution, there was a voluntary association, or team, of individuals with professional interest in the socioeconomic aspects of fisheries and aquaculture. Each team appointed a leader who was responsible for coordinating the program of research and other professional development activities within the framework of the Network.

The Network's primary objective in research was to encourage and help affiliated institutions develop and/or strengthen their professional capacity to effectively plan and implement long-term programs of research on important national and regional issues on fisheries and aquaculture. The most important ways that the Network achieved these objectives were through: (1) funding and technical support for research projects undertaken by individuals and departments/ faculties affiliated with the Network; (2) training of new researchers (mainly UPM programs and supervision of their M.Sc. thesis research; (3) preparation of research programs in each affiliated institution, i.e., statements of long-term research goals and the means (projects) of achieving them; and (4) the development of professional working relationships or linkages with the agencies responsible for policy, management and

development of marine fisheries, aquaculture research institutions and policymaking bodies.

The initial research activities of each of the member institutions reflected the current diversity of interests among the universities. There were three research projects funded under Phase 1 focusing on fish marketing, marine fisheries production, and aquaculture economics. Both UPM and KU developed close working linkages with government agencies responsible for fisheries and aquaculture policy, management and development, particularly in connection with their Network-assisted research projects. This was a priority of the Network and stated in the workplan to, "contribute to government policy-making". The UPM approach was highly successful and formed a model for the other teams. A high priority of the MAJUJIKAN, the Malaysian fisheries development agency was the fish market system. This became the main thrust of the UPM team's 1983-1985 research. The MAJUJIKAN provided data on prices and volume of fish and UPM conducted research on the structure and operation of the market to determine if changes could be made to benefit small-scale fishermen. By using this approach, the team was certain that it worked on a problem of high priority to fishery sector management and its findings were used in developing fishery policy.

The Network also assisted socioeconomic researchers in affiliated universities and research institutions to develop and implement programs of research; provided grants for high priority projects, partly as a means of ensuring continuity in the research programs at the early stages of implementation; drew on experienced scientists from ICLARM and other Network institutions for technical and professional inputs; and organized special workshops to develop and evaluate appropriate methodologies for socioeconomic and multidisciplinary research on fisheries and aquaculture in Asia.

During 1982-1983, IDRC and ICLARM assisted UPM in establishing a new post-graduate training program in fisheries and aquaculture economics leading to the M.Sc. degree in Resource Economics, with a specialization in fisheries and aquaculture, the first of its kind in Asia. In addition, the program offered a one-semester non-degree course with the same subject matter for qualified economists who wished to add fisheries and aquaculture economics to their basic training, and a short course on economics for aquaculturists. These three courses formed the backbone of the Network's training program. By the end of 1984, five lecturers from Network institutions had been awarded Network fellowships for the M.Sc. course, and four for the non-degree course. Staff training was provided to the Faculty of Economics of Universitas

Diponegoro of Semarang, Indonesia to help prepare for its inclusion to Network membership in 1985.

The Network's first priority in Phase 1 was to break the vicious cycle whereby the lack of teachers meant minimal development of training programs and vice versa. This severely limited the quality and quantity of past socioeconomic research on fishery problems and the ability of the social sciences to exercise an effective voice on matters of fishery policy in Asia.

Special courses in economics for undergraduates in fisheries and marine sciences programs were introduced at UPV in 1984 as a Network activity. KU introduced a new undergraduate course in aquaculture economics and a post-graduate course in fisheries management in 1985. UPV introduced a new course in aquaculture economics in the same year. These courses were taught by staff members who studied at UPM on Network scholarships.

The training component of Network activities was crucial to the overall objectives of building research capacity. There existed no stock of trained fisheries or aquaculture economists and it was necessary to train those who would lead the research teams and set up teaching programs in their own universities.

Phase II (1985-1988)

The IDRC, Ford Foundation and ICLARM continued supporting the Network's second phase for a three year period. With an increased level of funding, the Network was able to expand to eight member institutions, to continue funding research projects, and to develop a program of workshops and short-term training courses to support research and training activities of its member institutions.

The overall objective for Phase II was to support an expanded network of institutions in Southeast Asia that would address key issues affecting the development of capture fisheries and aquaculture. The specific objectives were:

1. to increase knowledge about aquacultural technology, fish marketing and resource management,
2. to promote interaction among Asian researchers working on these problems, and
3. to provide information useful in the design of effective fisheries policies.

During Phase I it became evident that the size and the scope of the program needed for teaching and research had been underestimated. As such, it was proposed to

add a number of new institutions. Six new teams were formed during Phase II. There were: (1) Universitas Diponegoro (UD)(Faculty of Economics), Indonesia; (2) Center for Agro-Economic Research (CAER), Indonesia; (3) Department of Fisheries (Fisheries Economics Section), Thailand; (4) Southeast Asian Fisheries Development Center-Aquaculture, Philippines; (5) University of the Philippines at Los Banos, Philippines; and (6) Prince of Songkla University, (Coastal Resources Institute), Thailand.

In Phase II, research activities fell within three program areas: (1) marine fisheries management; (2) coastal aquaculture systems and enterprise management; and (3) farming systems. Each institution, however, had defined its program somewhat differently to suit national needs and the special skills and interests of the team. Most of the research projects in Phase II dealt with the economics of aquaculture, marketing, and small-scale fisheries management and socioeconomics of fishing households.

The research experience of the past five years of the Network also laid the foundation for a change in the scope of Network activities. The problems of managing fisheries had not been addressed. Since marine fisheries provide most of the animal protein of the Network member countries and many of the fish resources are either overfished or nearly so, the need to manage them became increasingly clear to the countries of the region. In this context, research on the economics and social consequences of fisheries management, particularly in the fishing villages and households, was essential to provide decision-makers with information on the implications of alternative management strategies and methods. few of the research activities involved active collaboration between social scientists and scientists from natural science disciplines, although there were cases where biologists provided important advice and counsel to Network researchers.

Phase II training activities played an important role in further enhancing Network members' research skills. The UPM program for M.Sc. Fisheries Economics continued to be the single most important program for this purpose. By 1987, eight Network members had graduated from the program. UPM had become the core training institution for the Network.

The Network also sponsored several short-term training courses which proved very useful to members in enhancing their research capacity. Two workshops and three training courses were conducted under Phase II. Topics dealt with include aquaculture economics research methods, aquaculture production course for social

scientists, microcomputer applications to fisheries social science research, fisheries and aquaculture economics, and marketing. Several non-social scientists participated in the training courses.

The Network gained significant headway in achieving its objectives during Phase II. Member institutions made firm commitments to fisheries social science research. Professional development took place rapidly and network teams were far stronger than they were under Phase I. While providing information for policy was an objective of Phase II, there was little actual policy analysis in Phase II. Most of the research was on the economic analysis of capture fisheries and aquaculture but wasn't policy relevant research. Interviews with Network members and a review of AFSSRN reports indicate that the reason for the lack of emphasis on research on policy analysis was that it was felt that there was still a need in Phase II to develop the basic applied research and social science research skills of Network members. The Network coordinator reportedly felt that it was premature to focus on policy analysis over basic social science capability building.

At the time, institutional organization and support was strong and commitment to fisheries social science research was starting to firm up. Professional development of members was strengthening. However, the networking function of the Network was not fully developed. While workshops and training courses brought members together, there was relatively little interaction among them.

It was also during this phase that the social science research capabilities of member institutions was strengthened. This provided more information from research that was useful to decision-makers both in government and industry. The Network widened its scope beyond economics to sociology and psychology and strongly promoted collaboration of social scientists from diverse disciplines.

Phase III (1988-1994)

IDRC continued funding the Network for another three-year phase. This was later extended to three project extensions lasting for two more years.

Research, training and educational activities under Phase III focused on the social science aspects of fisheries and aquaculture resources management. The general objective of Phase III was to develop social sciences research capacity as a partner with the fisheries, biological and engineering sciences in the planning and decision-making processes for aquatic systems management in Asia. Its

specific objectives included advancing the professional capacities of the members; supporting its members in the conduct of research in the social sciences that would generate results for development policies and management strategies in support of capture fisheries and aquaculture; educational programs; member linkages; and dissemination of results. In Phase III there was a greater emphasis placed on generating results of value for the formulation of these development policies and management strategies. This, as reported in the Phase III project proposal, was because, "The social scientists who have become concerned with fisheries issues relatively recently are now at the point where they can begin to address important issues of fisheries management policy and strategy".

In its third phase, the Network was composed of 14 teams with 80 researchers at universities, research centers, and national government agencies in Indonesia, Malaysia, Thailand and the Philippines. Under Phase III, one institution was dropped (The Center for Agro-Economic Research in Indonesia) and six new institutions joined the Network. These were: (1) Central Research Institute for Fisheries, Indonesia; (2) Research Institute for Marine Fisheries, Indonesia; (3) University of Malaya (Faculty of Economics and Administration), Malaysia; (4) Central Luzon State University (Freshwater Aquaculture Center), Philippines; (5) Bureau of Fisheries and Aquatic Resources, Philippines; and (6) Research Group for Agro-Ecosystems, Indonesia. It was decided to expand network institution membership in the four target countries but not to expand the number of countries. This was a deliberate choice on the part of ICLARM, the team members and IDRC as with a finite budget and capacity building needs still large in the four existing countries, it was felt that expansion into new countries would just dissipate existing resources. Member institution expansion increased the capacity within the four countries to conduct social science research.

Network research fell under three major program areas: (1) capture fisheries systems and their management; (2) aquaculture systems and enterprise management; and (3) market systems analysis. Network activities concentrated on research, training and education, and publications. The research attempted to balance the first two areas and also contribute to an appreciation of the dynamics of the management processes whether they relate to the operation of small integrated fish farms or to management of the nearshore fisheries resources. The Network received a total of 28 proposals under Phase III, of which 18 were funded and completed.

A review of the research projects of the Network in the past phases shows a preponderance of topics in

marketing, aquaculture and fish farming systems. Little work was done on the micro- and macro-aspects of fishery policy considering the importance of small-scale coastal fisheries to Southeast Asia and the critical role enlightened policy may play in addressing serious overfishing problems in many areas of the region. The Network review further stated that, "It bears emphasizing that highest priority needs to be given to coastal fisheries management and fishery policy in the Network's research program" (Lampe, MacCormac and Copes 1987). It should be noted that there was some policy research undertaken by the Network in these early Phases, such as the work undertaken by UPM and the Malaysian Fisheries Development Agency described previously. However, the focus of Network activities was on basic social science capability building and applied research, such as economic analysis; a necessary precursor to conducting policy analysis.

In a Network report it was stated that, "In order to strengthen Network research and public advocacy in fishery and resource management policy, it is recommended that Network teams forge close links and engage in collaboration and/or coordination with non-Network institutions and individual professionals who are undertaking policy research and public advocacy in fisheries, aquatic resource management, economic policy and local administration" (Pomeroy and Trinidad-Juan 1996).

The professional development of the Network depended on the advanced formal education of its members. During 1987 and 1988, the Network and the Institute of Fisheries Analysis at Simon Fraser University in Vancouver, explored possibilities of a collaborative research and training program in the area of capture fisheries. A detailed proposal was developed and submitted to IDRC for funding. IDRC approved the proposal with a six year budget which began in 1990. The collaborative agreement supported three types of activities: (1) degree training of Network members at the M.A. and PhD levels in fisheries economics at SFU; (2) short-term visits by SFU faculty to Network member institutions; and (3) "sabbatical" type visits of Network members to SFU. There were two M.A. and four Ph.D. scholarships taken up by Network members.

During Phase III there were six short-term training courses conducted on fisheries management, aquaculture management, bioeconomic analysis, and socioeconomic analysis for capture and culture fisheries. Seminars and workshops included economic valuation, social anthropology, economics of fisheries management, and priority-setting for fisheries socioeconomic research.

An important component of Phase III was the introduction of a national networking program, which was intended to establish effective links between Network members and other national fisheries policy, research and extension organizations. In 1992, Network members in Indonesia established the Indonesian Fisheries Social Science Network to network and train scientists in that country on fisheries and aquaculture social science issues. An annual meeting and training is conducted and this Network continues today. It links academic and research center social scientists with government fishery managers to assist in research and policy.

Following a mid-term review, the review team concluded that the Network had proven its worth to member institutions over the years. They reported that before the Network's establishment, there was no mechanism in the region to pull together economists and other social scientists to promote research and training in the social science aspects of fisheries and aquaculture. The Network has been able to mobilize a core group of fishery economists for this purpose, which is its fundamental achievement. The Network also played a significant role in improving members' research skills, supporting their research endeavors, providing opportunities to interact with and learn from other fishery social science researchers in the region and expanding the professional pool of adequately trained researchers in fishery and aquaculture social science. The review team further concluded that although the impact of Network activities on fishery policy and aquaculture resource management had been modest, given the limited number of research studies completed under Network funding, it had helped members develop a growing capacity to address issues of fishery policy and fishery/aquatic resource management.

Phase IV (1995-1996)

Under Phase III, the team leaders and members became more active in establishing the future directions of the Network. At a team leaders' meeting, each team was asked to present its institutional and national research priorities for use in defining a strategic research agenda for Phase IV. The highest ranking research priorities were: (1) common property/community based management; (2) integrated agriculture-aquaculture systems; (3) policy analysis; and (4) tools and methods for analyzing capture fisheries, integrated coastal resource management, and aquaculture systems. These four research priorities became the themes for Phase IV. Thus, under Phase IV, policy analysis became a central theme for the first time in the Network history. The goal of the research was to develop policy relevant social science research applicable to fisheries and coastal resource management

and aquaculture development. It was stated in Network documents that the research outputs in Phase IV of the Network members “will be utilized by government decision-makers to influence public policy and projects related to resource management in the fisheries sector to improve the quality of life of the ultimate beneficiaries”.

The reason for the emphasis on policy analysis in Phase IV was that both the Network members and the Coordinator felt that members had the necessary social science skills base and maturity in conducting research to now focus more on policy relevant research over applied research. There were more trained social scientists in the region, many of them with advanced academic degrees, and with the skills, knowledge and position in their institution to undertake policy analysis. Most of the government agencies, for example, were now very supportive and had a better understanding of how to use the outputs generated by policy analysis.

IDRC continued supporting the fourth phase of the Network. The capability to do much-needed and relevant applied research on fisheries and aquaculture has been the result of the initial three phases of the Network. It was recognized that Network members are increasingly becoming key advisors to both central and local governments on a variety of issues as these relate to environmental, social and economic policies and directly influence policy.

Based on changing needs of the Network and recommendations from the Phase III external review team, the priorities and methods employed in Phase IV of the Network differed from those in previous phases. These changes are reflected in the ranking of objectives. Under Phase IV, higher priority was given to networking, education and training. This shift was based on the requirement for asymmetrical treatment of Network members as they had reached different levels of research and professional competence and had unequal needs for assistance in various aspects of institutional development.

The emphasis on networking in Phase IV was to increase the understanding among Network members of the importance of exchange and collaboration in research. Its other purpose was to ensure that Network members continue to network even after formal sponsorship of the Network from IDRC stops. It was extremely important that the associations and relationships among members, fostered by the Network through IDRC support, should continue into the future.

Under Phase IV, the Network extended its membership into Vietnam. New institutional members from Vietnam

were the Institute of Fisheries Economics and Planning of the Ministry of Fisheries, and the Faculty of Aquaculture of Cantho University.

Trainings in the form of advanced degree programs, workshops, short courses and seminars continued to be a major focal point of the Network activities. A regional training course was held in January 1995 in the Philippines on Transforming Research into Policy. The Network supported research activities on the identified priority research themes for Phase IV. One member from the Philippines was supported for his Ph.D. at SFU.

An effort was made to publish Network member research reports. Over 50 research reports have been generated since 1983. A special publication series was developed and the reports distributed throughout the region. This dissemination effort was meant to highlight the work of Network members and to get that work to a wider audience, including policy makers. The coordinator also provided editorial assistance to members to get their research output into peer-reviewed scientific journal articles and other publications.

Beyond IDRC Support (1997-today)

The need to have the Network continue after funding from IDRC ended prompted members to work on its continued existence. ICLARM provided some funding for one annual training and team leader meeting. After meetings and consultation, the Network, which has existed since 1983, became a section of the Asian Fisheries Society. A constitution for the Network as a section of the Asian Fisheries Society was drawn up and approved at a team leaders meeting in Bali, Indonesia in March 1996. Network members meet on an irregular basis at regional meetings.

Providing Information for Policy-making

Policy-makers throughout the Southeast Asian region are now using socio-economic information to better inform themselves in the making of policy. This is in part a result of maturity in policy-making, but also the result of having better research and skilled social scientists available within the country to provide this information, in part as a result of the AFSSRN.

As part of the project to prepare this paper, a number of interviews were held with members of the AFSSRN and with those influenced by the project's research to illustrate the influence of the AFSSRN on fisheries and coastal resources policy in the region. Excerpts from several of these interviews are presented below.

In Thailand, the Coastal Resources Institute (CORIN) of Prince of Songkla University works on integrated coastal management and coastal resources policy. One of the projects supported by the Network was the coastal management of Pak Phanang Bay, east of Nakhon Si Thammarat. This project was conducted jointly by CORIN, Department of Fisheries and Kasetsart University team members. The goal of the project was profiling of the area for coastal management. A historical perspective of the resources and issues was conducted. Policy recommendations were provided for freshwater management, sedimentation in the Bay, rice culture, and fisheries management. This report now serves as the basis for all policies on resource management in and around Pak Phanang Bay.

In Malaysia, members of the faculty of the Natural Resources Economics Department at the Universiti Pertanian Malaysia undertook a research project to provide policy recommendations for fisheries management in the province of Johor Baru. The project, a bio-socioeconomic model for the management of the small pelagic fishery, was used to simulate the fishery under various management scenarios. It was found that the fishery was biologically and economically overfished and that a reduction in fishing effort would result in greater biological and economic returns. These recommendations were used by the Province to develop a new management plan and regulations for the fishery which is reportedly still to be implemented.

In Vietnam, the Institute of Fisheries Economics and Planning of the Ministry of Fisheries conducted the first comprehensive socioeconomic study of fishing villages in Vietnam. Socioeconomic assessments were conducted in eight communities along the coast. In addition to providing a socioeconomic profile of each community, the results of this study provided the Ministry with

the first information it had ever collected on people's attitudes, perceptions, needs and concerns about fisheries. This study served as an important reference source in the development of a new fisheries policy in Vietnam and in the preparation of the Fisheries Sector Master Plan.

In the Philippines, a study on shrimp hatcheries supported by the Network at the Southeast Asian Fisheries Development Center-Aquaculture was critical in the growth of the shrimp industry in Panay Island in the Philippines. The research provided financial information for investment by the private sector and helped to set private enterprise investment policy for shrimp culture.

Also in the Philippines, AFSSRN team members at the Freshwater Aquaculture Center of Central Luzon State University undertook a research project on integrated livestock-fish farming. The project contributed to programs in integrated aquaculture being recognized by the Bureau of Fisheries and Aquatic Resources and aquaculture being included as a national priority in the Medium Term Fisheries Development Program. Integrated livestock-fish and rice-fish are now a priority area for aquaculture policy in the Philippines. This was a direct result of Network supported research.

A senior official in the Department of Fisheries in Thailand stated that, "Before the AFSSRN it was difficult to find economists working on fisheries issues in Thailand. We did not have good economic information on which to make decisions. We relied on biological information, but that only gave part of the information that we needed to make good policy. Now, in part as a result of the AFSSRN, we can ask the Fisheries Economics Division (of the Department of Fisheries) or Kasetsart University for an economic analysis. We now make more informed policy".

Discussion

The AFSSRN and its Influence on Public Policy

The Network's overriding objective was to build national research capacity to address important social science issues in the development and management of fishery resources in the region. However, the networking, training and education, research support, and information dissemination activities did both directly and indirectly influence policy for fisheries and aquaculture in the region. The Network, as a project, was not designed, until its last phase, to have an influence on public policy.

In interviews with Network members, several examples of the types of policy influence were identified:

- Capacity building of economists in the fisheries sector (e.g., in Thailand);
- Providing information to policy makers (e.g., the Department of Fisheries in Thailand);
- More informed policy development (e.g., in the Department of Fisheries in Thailand; in the Ministry of Marine Affairs and Fisheries in Indonesia);
- Capacity building among researchers to do policy relevant research (e.g., Central Luzon State University in the Philippines);
- Increased recognition of the value of

fisheries economics research and analysis to policymaking among policy makers (e.g.; Vietnam, Philippines, Indonesia); and

- The recommendation from a community-based natural resource management project in Thailand served in part as the foundation for the development of a Department of Fisheries program and policies for community-based management and co-management recently implemented.

In reviewing the history of the Network, it became obvious that there were a number of stages in the Network's development and links to its policy influence. These stages, not a linear set but a flow with some going in one direction and some another, are:

1. limited capacity and skill base in the first instance
2. increasing research skills through training and small grants program
3. gaining confidence
4. career development and advancement of network members
5. networking among members
6. publishing research
7. influencing policy
8. providing advice to others (consulting)

Before the Network there was very limited capacity to undertake social science research in fisheries and aquaculture in the region and almost no capacity to undertake policy analysis. Fishery social scientists had little impact on policy in their respective country as they did not have the needed skill base to accomplish their work. The Network first provided training and education on the basics of social science research. This served as a foundation for Network members to be exposed to new concepts and methods which helped them in their work and to advance their careers. Network supported research projects helped Network members gain more experience in using the new concepts and methods. As they gained more confidence, the level of research improved and many of the projects produced policy recommendations which were used by both the public and private sectors. The small grants provided for research projects produced, in many cases, important results which impacted policy.

Network membership has advanced the careers of many members. A large number of the early members in the Network are now Dean, Chancellor or Vice President of a university, or a senior staff member or director in a government fisheries department. These individuals now

make and direct public policy in their country. In all cases, they attribute their advancement, in part, to membership in the Network where they learned new methods and concepts for fisheries and aquaculture management and development. The collegial relationships which have developed over time through networking among and between Network members both in a country and in the region has brought about linkages between research and policy influence which probably doesn't exist in many other places. This has been critically important in influencing policy in all Network member countries.

Network members have published research results in all of the most important peer-reviewed scientific journals related to fisheries, aquaculture and coastal resources in the world and in other publication outlets. These articles are referenced and utilized as the foundation for developing new policies on fisheries and aquaculture around the world. This is an extremely important indirect influence on policy.

With this skills base in social sciences, maturity in conducting research, career advancement, confidence in themselves as researchers, and more acceptance of social science research by policy-makers, Network members became more knowledgeable and experienced in how to conduct policy analysis and began to influence policy. This was especially true in Phase IV of the Network which emphasized policy analysis.

Network members are now hired to give advice as consultants and to work on projects throughout Asia and the world. Often these are policy projects. The grounding that they received in social science and fisheries research through the Network has allowed them to be respected enough to be sought after for these positions. A Network member now works as a senior scientist at ICLARM-The WorldFish Center. Rather than bring in experts from North America, Europe or Australia to work on projects in Asia, Network members are now called upon to provide training, undertake projects, and design programs in Asia.

IDRC has supported many capacity building networks in Asia, including the AFSSRN. These projects have had long-term and lasting impacts on research and teaching, and have influenced policy. What is unique about IDRC is that they have been willing to support the projects for long periods of time to ensure that objectives have been met. The lives of many people have been changed as a result of these efforts. Both directly and indirectly, the members of these networks have influenced policy locally, nationally, regionally and internationally.

Conclusions and Recommendations

Several conclusions and recommendations for capacity building efforts in fisheries and marine resources research and policy analysis result from the Network.

1. Capacity building in policy analysis. Capacity building is a long-term effort. Many researchers are trained to conduct research in their discipline but not how to translate that research to influence policy or how to do public policy analysis. There is a need for researchers to have a good foundation in the concepts and methods of their discipline before engaging in policy analysis. The researcher must be trained in how to do policy relevant research. This can be achieved through advanced degree training, short-term training courses, workshops, and attendance at professional meetings.
2. Research dissemination. Many researchers in developing countries do not publish or disseminate their research results. This may be due to a language problem, lack of funding, lack of support, lack of time, or other reasons. Much of the excellent research which is conducted ends up as "gray literature" and is never seen or used again. There are very good studies that would directly influence policy, and/or enter the peer-reviewed scientific journals and other publications and indirectly influence policy, but never do. Support needs to be provided to ensure that this does not continue to happen.
3. Networking. In any country it is never easy to gain access to policy-makers in order to be able to influence them with new ideas. An academic from a state university may be overwhelmed by how the policy process works and feel daunted by the task of getting his or her ideas to those who can bring about change. Under the Network this was done very effectively by including university faculty, research center staff and government fishery agency staff in the Network. Faculty and researchers could meet and get to know government staff who were themselves or who had a direct line to policy-makers. This linkage improves over time as people get to know each other better and learn each others' strengths and weaknesses. Joint projects are developed which allow researchers and policy-makers to work together.
4. Confidence building. Young researchers fresh out of graduate school are often full of new ideas which can influence policy but often lack the confidence to get these ideas to the right audience. Through the Network, young people were brought together with older and more experienced researchers and government staff which allowed them to quickly gain confidence in working with others and with policy-makers. Through workshops and meetings they often were able to meet more senior scientists with whom they could engage in conversation and share ideas.

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