

# EXPLOITATION AND MANAGEMENT OF MARINE FISHERY RESOURCES IN THE PHILIPPINES

by

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## Introduction

In the last two decades, the capture fisheries of the Philippines have achieved quite remarkable development in terms of technology, production and trade.

The development of new fishing industries in the region occurred concurrently with an overall increase in fishing pressure from an excessive number of artisanal fishermen exploiting nearshore resources.

The following facts give a clear indication of the occurrence of depletion of fishery resources in marine waters:

1. Harvests have reached, if not exceeded, the limits of the harvestable potential of most marine and inland water areas in the Philippines. The problem of over-exploitation is believed to be far more serious in the case of the inland waters (e.g. lakes, rivers) and nearshore marine fishing grounds;
2. In the case of Philippine demersal stocks, it is estimated that the biomass levels in the early 1980s declined to about 30% of the biomass level in the late 1940s. The economic loss (i.e., rent dissipation) from lack of management of the demersal stocks has been estimated to be between \$60 and 85 million per annum;
3. Although less quantitatively documented, the heavy exploitation of pelagic stocks (e.g. tuna, round scad, mackerel, etc.) has apparently resulted in a downtrend of catch rates;
4. There is an over-capacity in harvesting capability (e.g., number of boats, fishermen) in Philippine capture fisheries;
5. The use of destructive fishing methods (e.g., explosives, poisons, etc.) continues to destroy the sustainability of the fishery resources, and exacerbates the overfishing problem;
6. The capture of the young/juveniles of exploited species contributes to the seriousness of the overfishing problem, resulting in low catch rates and stock depletion; and
7. Man-induced stresses (e.g., pollution, siltation, etc.) continue to wreak havoc on the fish resources and their habitat in specific areas, exacerbating the resource depletion

## **A. Indications and evidence of the kinds and severity of problems of excessive fishing effort and conflict in marine capture fisheries**

### *Income levels of fishermen:*

Real incomes of traditional fishermen are deteriorating. A recent socio-economic survey results showed average cash income levels for municipal fishermen to be roughly half of the poverty thresholds established by the Development Academy of the Philippines (Abrera 1976).

One of the major causes of these low income levels appears to be low productivity of the fishing activity. As shown in Table 1, although productivity varies from one region to another, it is uniformly low, averaging on a nationwide basis only 1.33 mt per fishermen annually. Coupled with the relatively low prices received by the fishermen (estimated to be ₱1.50 to ₱2.50/kg), income derived from fishing is low. Moreover, with the exception of baby trawlers that catch shrimp, and of fishermen who catch tuna, the municipal catch is composed primarily of the lower grade, and hence lower priced, species.

Rapid inflation since 1972 has been a major cause of declining income (IBRD 1976), exacerbated primarily by increase fuel costs.

Two findings of a FIDC-ICLARM review stand out above all others. First, it is the municipal fisheries resource that has the most likelihood of being fully exploited, and second, municipal fishermen express a high degree of willingness to shift from fishing to alternative activities (Smith 1979).

**Table 1. Production of Municipal Fishing Craft and Fishermen Productivity by Regions, 1967-77. (Catch data are from Fisheries Statistics of the Philippines, BFAR, Manila)**

Marine Region	1976 <sup>1/</sup>	1977 <sup>1/</sup>	Estimated No. of Fishermen <sup>1/</sup>	Annual Catch per Fishermen	Estimated No. of Vessels <sup>1/</sup>	Percent Motorized
I	16,432	13,487	43,553	.34	13,018	47
II	3,834	6,099	11,793	.42	2,759	27
III	15,416	4,299	36,595	.27	24,926	95
IV		2,904				
IV-A	89,129	105,019	66,026	1.49	24,369	60
V	136,642	135,732	63,912	2.13	26,409	38
VI	52,319	87,040	35,865	1.94	14,506	28
VII	65,436	38,714	67,147	.78	52,770	39
VIII	73,724	73,635	46,549	1.58	18,661	48
IX-A	32,275	97,730	44,111	1.71	15,434	33
IX-B	21,020					
X	59,461	49,728	29,419	1.86	22,253	28
XI	40,303	84,795	42,536	1.47	18,158	62
XII	13,154	13,332	13,159	1.01	10,326	9
SUB-TOTAL						
MARINE -----	629,145	712,514	500,665	1.33	243,589	46
Inland <sup>2/</sup> ---	153,380	162,420	unknown	unknown	unknown	unknown
TOTAL-----	772,525	874,934	500,665	1.33	243,589	46

<sup>1/</sup> Estimated numbers of fishermen and vessels from BFAR Expanded Fish Production Program, 1977. Annual catch per fishermen is derived by averaging regional catch for 1976 and 1977 and then dividing by the number of fishermen.

<sup>2/</sup> Excluding fishponds, but including production from Laguna de Bay fishpens.

*Records of repayments of loans*

Credit is one of the policy instruments considered to facilitate technology transfer, stimulate productivity, generate employment and increase income. Credit provides additional capital to the fisherman to enable him to purchase necessary equipment and inputs for his production. This credit is being used as a tool for more rapid adoption of technology in municipal fisheries. Consequently, it is assumed that such technology would increase the catch and eventually the income of fishermen. However, such assumption should take into account the limitations of natural resources and the open access property of fishing. More entrants to an industry with limited resources could mean either more or the same total amount of catch with possibly lower volume per unit of catching effort.

Since the formulation of the Integrated Fisheries Development Plan (IFDP), municipal fisheries have been receiving increased attention and concern from government planners. Recent attempts to improve the income levels of municipal fishermen have included a variety of financing schemes (BFAR 1977).

The primary aim of many credit programs for municipal fishermen has been to facilitate acquisition of improved vessels, engines and gear. To date, the various credit programs have involved the Central Bank (CB) and rural banks, the Land Bank of the Philippines (LBP), the Development Bank of the Philippines (DBP), the Philippine National Bank (PNB), and the Agriculture Credit Administration (ACA). Other government agencies have been involved in providing initial loan funds such as the National Food and Agriculture Council (NFAC); others, in implementing supervised credit programs such as the Development Academy of the Philippines (DAP) through its Fishery Industry Resources Management (FIRM) Program, and the Bureau of Fisheries and Aquatic Resources (BFAR) through the Biyayang Dagat Program (BDP). The status of these various credit programs is shown in Table 2. A brief summary description of each program follows.

The Small Fishermen Special Credit Fund (SFSCF) was set up with a P2 M initial loan fund from the NFAC to finance the acquisition of boats of not more than 3 GT, fishing gear and equipment. Rural banks serve as the lending institutions. The P2 M initial loan fund also covers the Special Fisheries Credit Program (SFCP) with an amount of P1 M. As of December 1977, a total of P862,000 had been lent out to three fishermen's organizations/associations. The SFCP is a joint project of the CB, LBP, NFAC and DAP. The program aims for an integrated approach to the development of the municipal fishing industry, by financing long-term innovation package (LTIP) of DAP-FIRM. LTIP projects include the acquisition and/or construction of fishing equipment and infrastructure, including marine diesel engines, fishing gear and paraphernalia, fishing boat/hull, ice plants and cold storage and other related marketing facilities. It also extends operating capital for at least one month to qualified fishermen associations or cooperatives.

The most ambitious credit program to date was the Small Foreshore and River Fishermen Program of DBP. Out of its own capital resources, DBP extended loans to finance the acquisition of bancas (small wooden fishing boats, usually less than 3 G.T.), marine engines, fishing gear and accessories, and other items related to fishing. Before acquiring a loan, the fishermen were required to form a liability group or "selda". Each "selda" was composed of five fishermen, each in effect a "co-signer" with the other four. Each member secured his own loan for purchase, or improvement, of his own vessel or gear. Repayment, though an individual responsibility, was to be encouraged by the moral persuasion of "selda" membership.

As of June 1978, loans granted under the program reached P279 millions, covering 70,828 fishermen beneficiaries. However, only 596 borrowers, or less than 1% were paying regularly. The rest were in arrears. The program was suspended indefinitely.

The Biyayang Dagat Program (BDP) is a special financing program for small - and medium-scale fishermen launched in September 1979. The program makes available medium-term loans for the acquisition of bancas, gears and other fishing paraphernalia, and short-term loans for fishpond production inputs and other aquaculture projects. The program is a joint project of MAF thru BFAR, PFDA and financing institution (CB-RB, PNB and DBP).

Table 2. Loans Granted to Municipal Fisheries<sup>1/</sup>

Source/Program	No. of Accounts	Amount Released (P)	Amount in Arrears (P)
<b>CB - DRBSLA</b>			
a) Small Fishermen's Special Credit Fund (SFSCF) as of November, 1977	3 associations	862,000.00	not available
b) Supervised Fisheries Credit Program (SFCP) as of November, 1977	3 associations	650,000.00	not available
c) Biyayang Dagat Program (1979)	8,482 fishermen/borrowers	106,200,000.00	95,580,000.00
<b>DBP</b>			
Small Foreshore and River Fishermen (as of June 30, 1978)	70,282 fishermen	279,125,521.62	266,380,615.64
<b>PNB</b>			
Small Foreshore, Offshore and River Fishermen (1975-78)	not available	49,031,000.00	not available
<b>ACA</b>			
Small Fishermen's Loan (as of December 31, 1976)	22 associations	3,305,404.41	2,402,605.65
<b>TOTAL-----</b>		<b><u>P448,428,926.03</u></b>	

<sup>1/</sup> Sources of data on status of loan are DBP Agriculture Division, PNB and CB.

To date, total funds allocated to the BDP amounts to P290.2 M. Of this only P200.87 M have been actually released from government appropriations to the program. As of August 1986, a total of P106.2 M BDP loans were granted to 8,482 fishermen-borrowers. The program has an overdue loan of 90%.

#### *Reasons for non-repayment*

The partial payment or non-payment of loans may be attributed to a number of factors. Most of the borrowers gave poor catch as a major reason brought about by the increase in the number of fishermen and consequently stiff competition on the fishing grounds.

Fish resources being finite cannot withstand the pressure exerted by heavy fishing. Traditional fishing grounds suspected to be over-fished, as evidenced by the decreasing yields reported by BFAR, include Manila Bay which, being a landlocked area, can be fished throughout the year, San Miguel Bay in Southern Luzon, Lingayen Gulf, Bantayan Island in Cebu, and Samar Sea in the southwestern part of Samar Island (Smith *et al.* 1980).

In addition to overfishing, pollution, siltation and harmful fishing methods have led to the steady destruction of productive fishing areas.

Other reasons cited were: a) introduction of inappropriate technology; b) absence of market and post-production support facilities; c) peace and order conditions; d) distance of borrowers residence from the bank; e) dole mentality among fishermen; f) other demands for cash such as medical expenses, children's education and the like, had also dissipated the capacity to repay.

*Conflicts between large - and small-scale fishermen:*

There are two distinct sectors within the marine fisheries of the Philippines. One is the commercial fisheries, which is defined as fishing for commercial purposes in waters more than seven fathoms deep with the use of fishing boats more than three gross tons; the other is the municipal or small-scale fisheries utilizing fishing boats of three gross tons or less, or using gear not requiring the use of boats.

In the past, conflicts between the two sectors were minor and isolated. Now both the large-scale and small-scale sectors have grown in size - one, because of massive investments by large vertically integrated companies now moving into the fishing industry, and the other due to the natural population increase in coastal villages where there is little alternative to fishing for a livelihood. Numerous conflicts have arisen in fisheries thousands of miles apart and it appears that they are but a foretaste of what is yet to come unless government takes positive action to protect inshore fishing grounds (Thomson 1980).

Section 17 of P.D. 704 provides that commercial fishing boats are allowed to operate only in Philippine waters of seven (7) or more fathoms deep, subject to the conditions that may be stated in the licence and the rules and regulations that may from time to time be promulgated by the Minister of Agriculture and Food.

There are, however, portions of waters seven fathoms deep or more within municipal waters. Although commercial fishing boats are allowed to fish in water areas 7 fathoms deep or more, the small-scale fishermen are complaining that the large-scale fishermen are encroaching on their fishing grounds and allege that they not only destroy their stationary gears but likewise deprive them of their catch because the large-scale fishermen use highly efficient fishing gear like commercial trawl and purse seine.

As a remedial measure, the former President of the Philippines issued Letter of Instructions (LOI) No. 1328 on May 25, 1983 banning the operation of fishing gear such as commercial trawl and purse seine in the marine water areas within a distance of seven km (or 3.78 nautical miles) from the shorelines of all the provinces of the Philippines, provided, however, that in coastal areas 7 fm deep or more which are not reached by sustenance fishermen, the operation of commercial trawl and purse seine may be allowed by the Minister of Agriculture and Food, upon the recommendation of the Director of Fisheries and Aquatic Resources, but only after such areas have been defined and designated as such by the Bureau of Fisheries and Aquatic Resources on a yearly or seasonal basis.

This Letter of Instructions is, however, opposed by the big fishermen composing the Federation of Fishing Associations of the Philippines on the grounds that the contours of the coastal waters are irregular, that the banning leaves only a limited area for them to fish, and that there are even areas where there are no small fishermen fishing within the distance of seven km from the shoreline. They even express apprehension that the contribution of commercial trawls and purse seines to the country's total fish production may decrease as a result of the ban.

## **B. National approaches to dealing with problems**

### *Legislation and regulations*

During the Commonwealth regime, the Philippine legislature enacted Act No. 4003, known as the Fisheries Act, on December 5, 1932 entitled "An Act to Amend and Compile the Laws Relating to Fish and Other Aquatic Resources of the Philippine Islands and For Other Purposes."

With the promulgation however of the Constitution of the Philippines in 1935 providing for the Legislative Department of the Government of the Republic of the Philippines, all legislations on fisheries are enacted by Congress under the Republic Acts. For example, Republic Act No. 177 created the Bureau of Fisheries on July 1, 1947, and Republic Act No. 3512 created in the Philippine Fisheries Commission on March 20, 1963. The provisions of the legislation are then implemented through the rules and regulations promulgated by the Secretary of the Department of Agriculture and Natural Resources upon the recommendation of the Director or Commissioner of Fisheries, and known as Fisheries Administrative Orders.

Following the declaration of Martial Law in 1972, the national policies of fisheries are issued thru the promulgation of presidential decrees like Presidential Decree No. 704, of 1975 otherwise known as the Fisheries Decree of 1975. These are implemented either through the issuance of a Letter of Instructions by the President or through the promulgation of Fisheries Administrative Orders (FAOs) by the Ministry of Natural Resource and lately by the Minister of Agriculture and Food, upon the recommendation of the Director of Fisheries and Aquatic Resources.

Under the present government set up, the President issues Executive Orders but with the ratification of the 1986 Constitution, the legislative functions will revert to the Congress of the Philippines.

The promulgation of administrative rules and regulations on fisheries known as the Fisheries Administrative Orders, is initiated by the fishermen themselves either through their association or federation or through their respective municipal councils, fisheries scientists or conservationists, academics, or through the Bureau of Fisheries and Aquatic Resources itself. The proposals are deliberated upon by the Committee of Fisheries Administrative Orders of the Bureau composed of lawyers and technical men. Once finalized, they are recommended by the Director of Fisheries and Aquatic Resources to the Minister of Agriculture and Food for approval and to take effect fifteen days after publication in two newspapers of general circulation and/or in the Official Gazette, as required by law. Then and only then can these fishery rules and regulations be implemented by the BFAR and other government law enforcement agencies concerned.

#### *Administrative mechanisms for management*

The Bureau of Fisheries and Aquatic Resources has jurisdiction and responsibility for the management, conservation, development, protection, utilization and disposition of all fishery and aquatic resources of the country except municipal waters which shall be under the municipal or city government concerned. To carry out efficiently its functions, fourteen divisions were created in its Central Office, namely: Administrative Division, Conservation and Law Enforcement Division, Fisheries Engineering Division, Fisheries Extension Division, Finance Division, Fisheries Economics and Information Division, Legal Division, Licences Division, Planning and Management Division, Fish Propagation Division, Research Division, Technology Services Division, Fisheries Training Division, and Fisheries Utilization Division.

When the Bureau was still a line agency under the Ministry of Natural Resources, there were thirteen regional BFAR offices all over the Philippines, each one under a Regional Director, to assist the Director of Fisheries and Aquatic Resources in the implementation of its Expanded Fish Production Program. This Program is an operational plan based on the National Integrated Fisheries Development Plan which serves as a guide to the operation of the Bureau. It defines the objectives, projects, production targets and increments and funding requirements of the Bureau, as well as the incremental private capitalization needed to develop the fishery industry.

The Program's objectives are: a) to attain and maintain self-sufficiency in fish; b) to optimize utilization of fish and other aquatic resources; c) to upgrade the livelihood of rural fisherfolk; d) to increase exportation of traditional and non-traditional fish and fishery export products; e) to promote import substitution; and f) to achieve and maintain the optimum productive condition of the country's fisheries and aquatic resources through proper conservation and protection.

#### *Research programmes*

While the country is faced with economic difficulties, the Bureau of Fisheries and Aquatic Resources has

the task of helping the economy through increased production with less financial inputs. Thus, BFAR is also preoccupied with doing research. All its research efforts are geared towards increased production directly or indirectly. Its research priorities includes:

### *1. Research and Survey of Fishing Grounds*

Adequate knowledge of characteristics and potentials of the country's marine resources is indispensable to their rational exploitation and management. A Test Fishing Program was launched as part of the Expanded Fish Production Program to intensify biological and oceanographic studies on marine resources. It will particularly determine the maximum potential yield of fishing grounds and the seasonal availability of fish, as well as test various gears and methods most applicable or adaptable in each ground. Some specific studies to be undertaken are:

- exploratory fishing and oceanographic investigations within territorial waters;
- biological studies and stock assessment;
- hydrobiological and fisheries survey of fish sanctuaries and reservations; and
- study of oceanic and non-traditional fishing grounds.

Likewise, plotting of tuna distribution in Philippine waters will be conducted to gather information, and identify movement and migration patterns of tuna present in Philippine waters through a tagging system.

### *2. Improvement of Fishing Craft*

In commercial and municipal fisheries, increase in utilization capacity of vessels operating within the traditional waters will be achieved through study on improved operating techniques and development of new and innovative gears.

Specific projects to be undertaken are the following:

- modification of fish trap/fish corral using another design and materials in Manila Bay;
- study of fishing with bottom vertical longline in Lamon Bay and vicinities;
- comparative study on the catching efficiency of surface and mid-water trolling using squid;
- experimental fishing with a modified set gill net over coral reefs; and
- identification of locally used efficient method of fishing for within country transfer.

### *3. Production Technology*

In aquaculture fisheries, research efforts on production technology will concentrate on developing methods and processes to increase yields of fish farms, and developing culture technologies in high potential non-traditional areas such as in presently cultivated ricelands.

The most beneficial uses of inland and coastal mangroves, swamplands, estuarine areas and other inland water will be sufficiently identified in order to determine the various activities and technologies necessary to derive optimum benefits from these resources. Among the studies included are a) development/improvement of new culture technologies; b) survey of fry grounds of cultivable species; c) limnological and ecological studies of important inland waters; d) technology verification studies i.e. on spawning of milkfish in captivity; and others.

### *4. Fish and Fishery Products Utilization*

To maximize utilization of fish and fishery products, research studies directly concerned in converting the once non-utilizable minor fishery product into a commodity with economic and commercial values will be continued. Examples of these minor fishery products are shells, sea cucumber, sea urchin, shark liver oil, etc.

Research on quality control standards both for domestic as well as for export products are likewise being conducted.

The following are the research projects undertaken:

- technology verification studies on the processing of mussels and oysters;
- improvement of low salt fish production;
- studies on the handling and transport of live fish;
- handling and freezing of crustaceans and bivalves;
- acceptability shelf-life of frozen cooked crab meat and mussel meat;
- depuration studies for oysters and mussels; and
- development of convenience food items from marine fishes and seaweeds.

#### 5. *Fisheries Conservation and Law Enforcement*

Research on fishery and resource management are being undertaken to provide more rational bases to decisions on conservation and management of fishery resources such as possible closure to fishing, delineation of fish sanctuaries, prohibition for the operation of certain gears and other related matters. Projects undertaken cover:

- Tuna stock assessment;
- biology and stock assessment of *Family Penaeidae* in Sorsogon Bay;
- monitoring of fishery resources in Manila Bay;
- monitoring of plankton in Manila Bay, Sorsogon Bay and Northern Panay waters with emphasis on toxic and nontoxic dinoflagellates; and
- head starting technique or rearing of turtle hatchlings up to yearling stage: A management tool for marine turtle conservation.

#### *Investment Programs in Fisheries*

The government has sought ways and means to set the fishing industry national goals for economic development. Much is being done now and these continuing efforts for the improvement of the fishing industry in the Philippines are being undertaken through national policies, loans and incentives. The government has deemed these things as essential factors in bringing about the desired goals.

The attention of the government given to the fishing industry is a vital means for the Philippines to cope with intensifying domestic and worldwide problems brought about by a growing population, economic crisis and inflation. These factors have placed food production at the top of government priorities. Recognizing the country's vast resources, more attention is being given to fisheries to meet the expanding domestic food requirements, to develop import substitutes, and to expand the export base. The extent of fisheries resources is indicative of its potential contribution to the socio-economic development of the country.

##### 1. *National Policies*

Municipal fishermen numbering some 600,000 - 700,000 are scattered throughout the coastal villages of the country. This contribution by this sector to production has been roughly estimated at more than 50%. Due to its economic and social significance, therefore, the government has instituted several programs aimed at uplifting the municipal fisheries sector, the major ones being extension and education, infrastructures, financing and research.

While Government programs for the fishing industry give the direction, the bigger responsibility for realizing the objectives of development lies with the industry itself, particularly in the manner and extent to which it responds to the package of incentives and/or the extent to which each sector can rise



above the unintended disincentives that might arise from policies aimed at another sector. Conflicts between commercial and sustenance fishermen must be promptly resolved and these two groups should be supportive of each other. The government can play a vital role in effecting this desired partnership.

## 2. *Incentives*

To realize the national fishery development policies, various support and assistance are extended to fishery industry. These consist of special credit programs, investment incentives, fishing industry loans from foreign sources, fisheries commodity loans from foreign governments, and construction of the Navotas Fishing Port Complex (NFPC).

Government efforts geared to small-scale fishing presently include the improvement of fishing bancas, fishing gear, design and construction, introduction of better fishing methods, preparation of project proposals to secure loans. Assistance in the formation of cooperatives is being rendered to facilitate acquisition of inputs and marketing of catch.

The growing awareness of the level of utilization and consumption of fish and fishery products, and an integrated effort at the government level are ample enough to attract investors to the fishing industry.

With the upgrading of fishing technology, improvement of gears and other improvements it may be expected that many investors will find fishing attractive as a business. Small-scale fishermen may avail themselves of various loans while entrepreneurs engaged in large-scale business, may take advantage of investment incentives in the form of exemption or reduction of certain taxes, deduction from taxable income or tax credits. These incentives operate to reduce the initial cost of investment or reduce the tax burden of enterprises. Foreign investors, too are guaranteed repatriation of investments, remittance of profits, freedom from expropriation and requisition of investment.

## 3. *Processing, Marketing and Export*

Supportive to the objectives of increasing production from fisheries is the objective of providing the industry with market and marketing facilities and infrastructures that would promote better handling, storage, preservation and distribution of fish and fishery products. Another objective is the development of organized market information and quality control services for better handling, grading, refrigeration, processing and transport of fish.

Considered the largest port in Southeast Asia, the Navotas Fishing Port Complex (NFPC) has several infrastructure supports and modern facilities which make it easier for traders or exporters to obtain their fish supply. These facilities which may be utilized by the fish traders for their operation are the following:

- ice plant and cold storage which is intended to prolong and preserve the freshness of fish caught in commercial quantity;
- a quayside where producers may transfer their commercial unloading directly to refrigerated vans;
- berthing piers where provisions (such as fuel, food, water, ice, etc.) are loaded and repairs are done;
- a fuel depot which supplies all the necessary fuel requirements of the fishing vessels at NFPC; and
- four market halls (2 municipal and 2 commercial) which allow easier fish trading for both producer or exporter and prospective buyers.

Supplementary to the market halls is a banera warehouse which supplies the needs of producers for fish tubs. Aside from this, fish processing plants intended to absorb excess supply from the wet

markets are being considered for construction inside the port. Moreover, the port has served as main source of fish supply for major fish canneries in the Philippines which in recent years have been exporting their products.

These are some incentives in which the government provides in line with its policy for dealing with the problems of exploitation and management of marine fishery resources.

### *Role of Fishermen's Organizations*

The Bureau of Fisheries and Aquatic Resources (BFAR), Fishery Resources Management Program (FIRM), and Farm Systems Development Corporation (FSDC), in cooperation with the Bureau of Cooperative Development (BCOD), organized *Samahang Nayon* (Fishermen's Associations/Organizations) on a nationwide level to optimize the manpower and resources of the Philippine fishing industry. Some of these *Samahang Nayon* became the nucleus of Fishermen's Cooperatives. The goal is two-fold: to develop the industry to the point where it will be able to meet both the increasing consumption requirement and export demand for fish and fishery products and in the process, to improve the overall socio-economic status of the small fishermen.

The organization becomes the spring board for the subsistence fishermen's development. Firstly, it mobilizes existing internal resources of fishermen for collective undertaking such as marketing and credit. Secondly, through it, individual fishermen-members become the recipients of inputs such as financing, infrastructure, technological innovations and manpower development from external sources.

### *Programs/Projects for Formal Fisheries Organizations*

There are five government agencies responsible for the organization of fishermen, namely: BCOD, LLDA, FSDC, DAP, Laguna Lake Development Authority (LLDA) and the National Power Corporation (NAPOCOR). The fisheries organizations are the channels through which credit, project management and technical assistance are provided by the different agencies. Generally, these organizations are either production cooperatives, marketing cooperatives or joint production and marketing cooperatives.

Presently, fourteen fishermen's marketing cooperatives benefiting 560 fishermen have been organized by BCOD. These cooperatives are located in the provinces of Bataan, Negros Oriental, Sorsogon and Pangasinan. Cooperating agencies are MAF, BFAR, MHS, Philippine Refugee Processing Center and the Maritime Industry Authority. In addition, there are five other fishing cooperatives organized under the new cooperative development programs of BCOD in the provinces of Davao Oriental, Palawan, Cebu, Cotabato and Sulu.

Of the 184 production cooperatives organized under the Laguna de Bay Fishpen Development Project of LLDA, 142 are active and operational with a total membership of 554. These cooperatives are located in Laguna, Rizal and Metro Manila. Cooperating agencies under this program are ADB, OPEC and DBP.

To date, a total of 1,472 fishermen-members of 49 active production cooperatives benefit from FSDC's different programs: Coastal Area Resources and Enterprise (CARE) Development Program, Taal Lake Development Program (TLDP) and the Laguna Lake Cooperative Development Program (LLCDP). The CARE Program is being implemented in Ilocos Norte, Romblon, Masbate, Aklan, Eastern Samar, Davao Oriental and Misamis Oriental; TLDP in Batangas; and LLCDP in Laguna, Rizal and Metro Manila. TLDP and LLCDP are being undertaken jointly with LLDA, MAF, NACIAD and Pagkain ng Bayan while the cooperating agency for the CARE Program is BFAR.

On the other hand, 5,040 fishermen are members of 144 active associations of DAP's Fishery Resources Management Project. These joint production and marketing cooperatives are located nationwide and are being implemented in coordination with MAF and BFAR.

There are 2 community cooperatives with 93 fishermen-members located in Angat, Bulacan and Binga, Mt. Province which are being implemented by NAPOCOR in coordination with BFAR and the local government.

It is also worth mentioning that MHS has completed a tuna fishing project which established a group of tuna hook and line fishermen in the depressed coastal areas in Eastern Samar.

### *Ineffective Institutional Arrangements*

The situation exists in the enforcement of fisheries laws where BFAR, PC, INP, PCG, deputize barangay captains with the task of law enforcement. There is poor coordination of these agencies' participation in law enforcement and accountability of responsibility is difficult to pinpoint. Many of the ills in fisheries lies in the very poor enforcement of laws and regulations on illegal fishing, smuggling, trawling ban, fish sanctuaries and others.

### *Lack of Information*

Recent studies on traditional small-scale fisheries in the Philippines usually point out problems of resource management that are due to poorly developed or deficient data collection systems which do not permit data analysis. There is insufficient baseline information on the status of marine resources which hampers the institutionalization of regulatory mechanisms and relevant policies.

### *Political Pressures and Interference*

In the formulation of policies, plans and programs as well as in the drafting of the fishery laws, rules and regulations on fisheries, it is not only the economic and technical aspects that are considered but also the political as well. With the recent political upheaval the people have become highly conscious of their part in almost all government undertakings. Hence the need for regular dialogue and consultations with the private sector and the rural fisherfolk is imperative in the fishery planning and policy formulation process including the promulgation of fishery laws, rules and regulations.

Every time a closed season is established the scientists and the academicians ask whether a scientific study has been undertaken first and the public on the other hand also ask whether there was a public hearing conducted with those who will be affected by such a regulation. Any conservation measure lacking these twin elements is called a political decision. The enforcement aspect of such a regulation becomes difficult because the fishermen affected once caught will seek the intercession of politicians either to amend or suspend the regulation, to dismiss or compromise the case against them or perhaps request exemption from the regulation. Sometimes the scientific study is done simultaneously with the introduction of the closed season and at the same time also the enforcement of the closure is regularly monitored to see if it can be smoothly implemented. The regulation is then amended or modified accordingly as warranted by the circumstances.

To minimize if not totally eradicate political pressures and interference, the Ministry of Agriculture and Food thru the Bureau of Fisheries and Aquatic Resources is conducting a public hearing initially on the following critical fishery laws, rules and regulations:

1. Exportation and importation of prawn fry;
2. Exportation of prawn spawners;
3. Exportation of milkfish fingerlings;
4. Exportation of corals;
5. Exportation of canned sardines and mackerels;
6. Importation of prawn feeds; and
7. Titling of government-leased fishponds.

### *Problems of Alternative Employment for Fishermen*

If access to an over-exploited fishery resource remains open despite the declining share of the catch for small-scale fishermen, the development of alternative income sources offers the best hope for raising income standards in fishing communities. Seaweed, oyster and mussel farming in marine waters and cage culture in inland waters are seen as the most promising fisheries related activities.

However, these alternative employments are confronted with problems of erratic prices due to over-production, cut-throat competition, and the uncertain buying practices of wholesalers/retailers.

Several studies concluded that it is not sufficient to simply introduce a more profitable alternative to

capture fishing in order to raise the income levels and standards of living in fishing communities. If such communities are to benefit on a longterm basis from a new activity, it is probably necessary to preserve that activity for former fishermen through legislative means. Moreover, if the concern is for equitable distribution of benefits within such communities, some basis for cooperative or community management of the activity that reduces entry barriers and distributors benefits on the basis of participation must be found and promoted.

#### **D. Suggestions for improved approaches for more effective management of marine fisheries and reduction of conflict**

Effective management of fisheries is an integral part of the country's development process. Basically in the Philippines, the formulation of management decisions are made on the basis of reliable data and research on the biological, environmental, economic and social aspects of fisheries. Consequently, the government needs to acquire more relevant knowledge and structure necessary for the design and implementation of conservation and management schemes. Improved approaches for more effective management of marine fisheries and reduction of conflicts are also required.

##### *1. Improved Approaches for the Commercial Fisheries Sector*

Where there is open access to the fishery resources, there is little incentive for individual fishermen to conserve stocks. As stocks become fully utilized, competition among fishermen often leads to depletion of the resources, severe over-captialization and lower earnings for individual operators. One approach to this is to ensure that fishermen have clearly defined fishing rights and that the allowable catches do not exceed the productivity of resources. Likewise, because of the new legal regime of the oceans (200 mile Exclusive Economic Zone (EEZ), new responsibilities have been vested in the Philippine government. This means that the government should encourage effective surveillance of the areas under its jurisdiction - a prerequisite for the management and rational development of fisheries resources. Fishery laws, rules and regulations should be enforced accordingly and effectively.

With the assistance from other specialized institutions, information on resources including their magnitude, distribution and state of exploitation should be obtained, as essential for any policy of fishery management or development. These activities should likewise include the collection of statistical and other relevant data; improvement of the classification of species as recorded in catch statistics; surveys of unexploited resources; and regular monitoring of exploited resources; and stock assessment. Information will also be sought on the users of the resources, including their socio-economic characteristics, the number and types of vessels and gear, to ensure that national policies are effective and appropriate for the management of small-scale as well as the commercial fisheries.

Particular emphasis will be given to developing a range of specific skills through training and education and to the encouragement of multi-disciplinary approaches. The latter are essential when dealing with such matters as planning the optimum use of inland waters or coastal resources exploited by both small-scale and large-scale fisheries. The skills required are the collection and analysis of biological data; resource assessment; socio-economic analysis; management and development; planning and monitoring; and control and surveillance.

The pollution and environmental degradation which have resulted from various aspects of economic development should be given preferential attention, thus helping to maintain fish resources in good condition; to protect critical coastal ecosystems such as mangroves; and to ensure the quality of fish as food. Bolder steps will then be required to prevent or abate pollution and any form of environmental degradation should be undertaken.

##### *2. Improved Approaches for the Municipal Fisheries Sector*

The government is aware of the importance of the role of the small-scale fisheries in the development of fisheries as a whole, not only because they contribute about 50% to the total national fish production, but the more

so because of their socio-economic importance through the involvement of impression covering more than 700,000 fishermen excluding their household members. The development of the small-scale fisheries is a complex task, and there is no way of reaching a reasonable and complete result even in a short or medium-term period. This is particularly true where government intervention or inputs are required.

Improvement of the fishing effort alone will not lead to the betterment of the rural community as a whole. This is because the problems of rural fishing and fish farming communities are not related solely to fish production, the development therefore needs to be approached within the context of integrated rural development. Small-scale fisheries development should not only seek to improve the incomes of the fishermen but also to increase opportunities for alternative employment when stocks are in danger of over-exploitation. In planning for the development of small-scale fisheries, due consideration will need to be given to the provision of shore facilities, adequate marketing and distribution/infrastructure services, and financing.

The depletion of resources in inshore waters creates problems to the development of small-scale inshore fishermen. Credit facilities were provided to improve their fishing capabilities but were normally not sufficient to move them in to the offshore waters, resulting in more overfishing in the inshore waters. To overcome this situation, the government is at present increasing the maximum limit of the small-credit scheme to cover bigger boats, even if they should be owned and operated by a group of fishermen. In support of this, the government is likewise extending loans for medium-scale operators and provides infrastructure facilities and assistance to facilitate the marketing of catch.

Technologies developed are geared to the implementation of development programmes for intensification (or modernization), extensification and diversification of fishing effort in accordance with local conditions and resource potentials. Institutional improvements are particularly geared to promote participation by the rural fishing community. The group approach should be pursued for training and extension services.

Regulatory measures are taken by the Government to promote fisheries development aimed at the rational utilization of fishery resources throughout the country, and in particular to promote the development of the small-scale fisheries. They include among others re-allocation of fishing areas and limitation of fishing effort in favor of the small-scale operators. Some of the large-scale fisheries enterprises are even allowed to buy fish from the small-scale fishermen to help them market their catch at better prices.

Attention needs to be focused on the area of socio-economic data collection with community involvement. This should form the basis of any plans and strategies that seriously and earnestly propose a bias toward small-scale fisheries.

Education, training and other forms of social investment should be undertaken and more BFAR Extension Officers trained within cooperatives and small-scale fishing communities particularly in fisheries technology, social welfare and community development and in the management and operation of small-scale enterprises and organizations. Likewise, the link between extension and applied research will be strengthened.

Active participation of small-scale fishing communities should be encouraged in the planning and formulation of development activities to ensure their successful implementation. The role of women in fisheries both in trading and processing should likewise be developed and fishermen's associations/organizations should be organized as a channel through which management decisions can become operative and technical/financial assistance allocated.

The government continues to develop and create supplementary or alternative sources of income and employment for fishermen so as to reduce pressure on limited fishery resources, possibly by engagement in aquaculture or mariculture. In conjunction with this, the Bureau provides credit facilities to small-scale fishermen on special terms and conditions in keeping with their generally weak economic positions and special needs.

### *3. Approaches to the Reduction of Conflicts*

In almost every fishery, there will be competition among different fleets for the same stocks. There are many examples of this type. They can arise between different socio-economic groups (municipal fishery and large-

scale fishery, commercial and sport fishing, etc.), different methods (seine net and pelagic trawl, for example), or from different uses of the resource and the environment (shellfish farming and pollution).

These conflicts are not confined to competition for the resource. They can be between fishing operations, e.g. fixed gear-fishing (longlines, driftnets, traps, etc.) which are physically incompatible with trawling. This kind of conflict can be settled by allocating different sectors of the fishery to each fishing method.

Very often a coastal strip of varying width is reserved for the municipal fishery in order to allow for its small range of action and scarce mobility. Such measures influence schemes for sharing the resources between different groups of fishermen, and their development. They may be completely justified in social terms, to protect certain social groups which are at disadvantage in regard to mobility, access to resources or markets or to maintain the employment level in certain sectors where there are few alternatives.

Conflicts among fisheries can also be expressed in the competition for markets. Thus the government, particularly through the Philippine Fisheries Development Authority, implements programs and projects for the effective market distribution of fish and fishery aquatic products including their export.

The marine water areas within a distance of seven km from shorelines of all the provinces of the Philippines were reserved for the development of small-scale fisheries, that is fishing boats of three gross tons or less, to protect the small inshore fishermen from other fishermen using sophisticated fishing methods. The government's decision to ban commercial trawl and purse seine operations has three objectives, namely: a) to facilitate better resource management; b) to stimulate the growth of the traditional small-scale fisheries; and c) to prevent social friction and unrest.

Actually, there was no intention to force the trawl and purse seine owners out of the fishing business. These owners were given opportunities to continue their fishing operations by using other fishing gears.

While the efficiency of municipal fisheries in terms of catch per unit of investment or through the quantity of fuel consumed is generally higher, they are often handicapped by less labour mobility, poor capacity to mobilize capital and technological innovations, and wide dispersion of landing points and its consequences for the placement and marketing of the output. The national administrations cannot ignore these disparities.

The final decisions will continue to be of a basically political character, since they determine the way certain national assets will be divided between different socio-economic groups. The government through the BFAR will administer the marine fisheries which concerns not only the activities of foreign fleets liable to operate in the 200 Exclusive Economic Zone, but also extends to the commercial fishing bodies and municipal bancas in operation in the Philippine waters.

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