THE COASTAL ENVIRONMENT AND THE SMALL-SCALE FISHERFOLK: ADVOCACY FOR COMMUNITY-BASED COASTAL ZONE MANAGEMENT*

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Many critical survival issues are related to uneven development, poverty, and population growth. They all place unprecedented pressures on the planet's land, waters, forests, and other natural resources, not the least in the developing countries. The downward spiral of poverty and environmental degradation is waste of opportunities and of resources. In particular, it is a waste of human resources.

G. H. Brundtland

I. FIRST STEPS

The Conceptual Framework

In this Age of Technology, the human need for technological achievement, coupled with the craving for material prosperity and wealth, has accelerated the pace of industrial and commercial development to an extent never before seen since the Dawn of Man. Until this last quarter of the century, the human race has proceeded with the exploitation of the natural resources of the planet with alacrity and marginal concern for the long-term repercussions of its activities. Exploitation and utilization proceeded in earnest, but without perceiving the consequences of such unrelenting and careless appropriation upon the environment in which we live and its effect upon future generations. With the approach of the 21st century, interest in the environment has somewhat belatedly grown, as whole nations are confronted with the prospect of incredible adversity due to this shortsightedness.

In all the world, Third World countries face the greatest dilemma. While their populations increase geometrically each year, meager resources dwindle perceptibly, and governments are hard-pressed to respond to the needs and problems of their constituents. The quandary is further exacerbated by ill-conceived economic planning and

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policies, both deliberate and unintentional, which only place a greater drain on scarce resources, and by the attendant social problems of poverty, unemployment, and stratification. Environmental effects and conditions are frequently ignored in the effort to quickly respond to the urgent demands of Third World populations.

The concept of "sustainable development" was thus devised in an attempt to establish a new theoretical framework for economic development thrusts that could respond to the problem posed by increasing needs in the face of dwindling resources. Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.[1] In essence, it is a process of change wherein the exploitation of resources, the direction of investments, the orientation of technological development, and institutional change are all in harmony and enhance both the current and future potential to meet human needs and aspirations.[2]

The Environmental Management Bureau of the Department of Environment and Natural Resources (DENR) formulated a working policy definition of sustainable development, expressed as a process of change to meet the needs of the people, as defined by them, without lessening the potential for meeting their future needs, the needs of other societies, or those of future generations.[3] At the core of a Philippine development strategy embodying such a process will be measures to address the issues of impoverishment and unequal access, and concern for the survival of life-support systems on which all people depend.[4]

Sustainable Development, then, addresses two major concerns simultaneously -- the welfare of the masses and the state of the environment. The DENR has adopted it as a policy framework[5] in recognition of the increasing problems of depletion of our resources and degradation of the environment, and the need for integrating rehabilitation and management efforts with economic development goals. However, since the policy is basically discretionary upon the

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[1]G.H. BRUNDTLAND, OUR COMMON FUTURE 43 (1987).

[2]*See* generally *id.*, at 43-65 for an extended description of the concept as accepted by the U.N. World Commission on Environment and Development.

[3]ENVIRONMENTAL MANAGEMENT BUREAU, PHILIPPINE STRATEGY FOR SUSTAINABLE DEVELOPMENT 1 (1988). This was a draft document prepared by the EMB for discussion by the participants of the National Workshop on the Formulation of the Philippine Strategy for Sustainable Development held on May 23-24, 1988 [hereinafter cited as PSSD].

[4]*Id.*

[5]*Sustainable Development Strategy Emphasized*, Aggie Trends, June 1990, p. 2, col. 4.

department concerned, there is still a need to elevate the concept from mere operating guidelines to a primary national development thrust, articulated through relevant legislative enactment. Otherwise, projects and goals will be subject to the changing dispositions of different department heads and managers.

Sustainable Development is essentially concerned with maintenance of a viable environment. Thus, it is in the field of environmental law that it is apt to be manifested. Environmental law has been defined as the law of planetary housekeeping, primarily concerned with protecting the planet and its people from activities that upset the earth and its life-sustaining capacities; but it is not concerned solely with the natural environment, that is, the physical condition of the land, air, and water.[6] Were this so, environmental law would be strictly limited to the science of pollution control. It is a common misconception that environmentalists are merely people who wish to keep the surroundings clean; this aspect, however, is but a small part of the coverage of environmental law.

If we take as an example the United States, which probably has one of the most developed disciplines in Environmental Law, its National Environmental Policy Act provides in Section 102(2)(A) that all agencies of the Federal Government are obliged to "utilize a systematic, interdisciplinary approach which will ensure the integrated use of the natural and social sciences and the environmental design arts in planning and decision-making along with economic and technical considerations".[7] This recognizes the high degree of integration and interdependence that characterizes the multiple components of our fragile ecosystem, such that no activity can take place without affecting some aspect of the environment.

Environmental law can involve many disciplines, and permeate a broad range of activities that have direct and indirect impact on the environment. The synthesis of appropriate and relevant legislation will require the mobilization and utilization of diverse scientific, technical, social, and administrative skills and integration with both human and technological resources of society.[8] Understanding the problems of a specific environment alone, as will be demonstrated by this paper, requires the employment of diverse fields in the applied and social sciences. And the formulation of solutions will demand even more.

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[6]W. RODGERS, HANDBOOK ON ENVIRONMENTAL LAW 1 (1977).

[7]442 U.S.C.A. 4332(2)(A), *cited in id.*, at 7.

[8]1 V. YANNACONE, ET. AL.,ENVIRONMENTAL RIGHTS & REMEDIES 9 (1972).

The cornerstone of environmental law is the assertion that all national resource treasures are held in trust for the full benefit, use, and enjoyment of all the people of the State, not only of the present generation, but of future ones as well. The basic principle is that "there are things which belong to no one, and the use of which is common to all."[9] This is known in American jurisprudence as the "Trust Doctrine", derived from an interpretation of the compass of the protected but undefined rights under the Ninth Amendment of the Constitution of the United States.

Under the Trust Doctrine, governments serve as "public guardians of those valuable natural resources which are not capable of self-regeneration and for which substitutes can not be made by man."[10] Protection ought to be extended to all air, water, and land resources, the preservation of which is important to society.[11] The doctrine is not, however, limited in application to non-living resources; under common law, it has extended even to renewable resources such as wildlife within a given ecosystem,[12] on the premise that living creatures inhabiting any specific locale are as much a part of the environment as the non-living resources contained in it. It is sufficient that any resource be identified as having natural and primary uses which are public in nature and for which there is a public need, and being common to all citizens of the State. Ultimately, the "patrimony" of the nation -- all that such a loose term could embrace -- may properly come under the coverage of the Trust Doctrine.

But environmental law cannot pertain to physical surroundings alone; it is also concerned with the human environment -- the health, social, and other man-made conditions affecting a human being's place on earth.[13] Man is the most influential factor in almost all changes in the natural environment to date, as he is also part and parcel of the ecosystem in which he lives. It is logical, therefore, that in attempting to regulate and maintain the natural environment, the human element must also be considered. To successfully maintain the environment through law and policy, the society living within it must also be properly managed.

The 1987 Constitution of the Republic of the Philippines, expressly provides in its Declaration of State Policies that the State shall protect and advance the right of the people to a balanced and

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[9] *Id.*, at 11.
[10] W. RODGERS, *supra* note 6, at 173.
[11] *Id.*
[12] V. YANNACONE, *supra* note 8, at 29-31.
[13] W. RODGERS, *supra* note 6.

healthful ecology in accord with the rhythm and harmony of nature.[14] While not stated as a constitutional right, this presents an advantage over the unstated rights of the Ninth Amendment in that it allows a clearer and more direct importation of developed laws and jurisprudence on environmental rights, remedies, concepts, and methodology, even though there is no parallel between the American and Philippine Constitutions on the environment. Thus, developments in the field of environmental law need not arise from legislative initiatives alone, but also from executive action operating under the constitutional guideline.

This presents government with a considerable degree of freedom in creating and implementing environmental programs. And given the wide latitude for governmental action with an environmental thrust, the people, individually or collectively, may be able to take advantage of an equally wide arena wherein they may be able to affect local or national environmental policy and strategy. Initiatives to press for governmental action need not be limited to Congressional lobbies, but may be directed to the President, the various executive departments, field offices, local governments, and the like. Individuals, interest groups, non-government organizations, peoples' organizations, and government agencies can independently pursue such efforts.

But without a unifying thread, such actions are akin to the cacophony of noise produced by an undirected crowd; ultimately, it will be ineffectual and prove a waste of resources. There is a need to give all these independent movements a general thrust and common guideposts which are aimed toward an end goal to be achieved. Moreover, there is a need to address the lack of data upon which alternative laws and policies may be based. Without easy access to such data, proposals and alternatives will never be possible or viable. Thus, the unifying thread that will bind the disparate actions of different sectors requires not merely the formulation of fundamental principles upon which to base a general plan of action, but also that generally unknown or unaccessed but relevant information be disseminated. Policy cannot be formulated or advocated without facts; only when facts are known can scattered individual efforts be marshalled into a collective movement that can introduce actual and effective changes in law and policy.

This article attempts to integrate the most important data on our coastal environment and the people inhabiting it. After presenting all relevant information, it proposes the possible fundamental guidelines for an alternative environmental policy that is sustainable and pro-people. Hopefully, it is the first step in filling the need for such

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[14]CONST., art. II, sec. 16.

an alternative policy for our coastal resources, which have suffered from both the ignorance and neglect of the government and the people.

II. UNDER THE SEA

Philippine Coastal Resources

The coastal zone[15] is one of the most dynamic and complex environments where the interdependence between the natural, physical and biological processes are most intense.[16] Being an interface between the three major life-sustaining elements of land, water, and atmosphere, it is biologically unique.[17] As a natural resource, it contains the richest and most diverse supply of living and non-living matter that could provide for the many basic needs of a coastal state; fishery resources comprise only one of these many treasures. Yet, in spite of this ecosystem surrounding all of the islands of this archipelago, too little is known of its present condition, the problems plaguing it, the causes thereof, and the millions of Filipinos directly affected. Limited, perhaps, by perceptions born of land-locked life, the Filipino people have yet to realize that its forest ecosystems are not their only rapidly declining major natural resource.

Scope

The Philippines has a coastline 17,460 kilometers long, and has at its disposal some 212,000,000 hectares of marine waters; under international law, it lays claim to an Exclusive Economic Zone that covers 395,400 square nautical miles of coastal and offshore areas.[18] The coasts contain nearly 2/3 of the country's 1,525 municipalities.[19] About

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[15]*Coastal zone* is commonly referred to as the interface or transition between two environmental domains, the land and the sea. It has been defined as the band of dry land and adjacent ocean space (water and submerged land) in which land ecology and use directly affect the ocean's ecology, and vice versa. J. SORENSEN, et. al., INSTITUTIONAL ARRANGEMENTS FOR MANAGEMENT OF COASTAL RESOURCES 5-6 (1984) [hereinafter cited as INSTI. ARRANGEMENTS]. In comparison to inland environments, it is more richly endowed with renewable natural resources; most notably productive fisheries, soil and forests as well as the recreational quality of coastal waters, beaches, and shorelands. *Id.*, at 16.

[16]G. Trono Jr., *Coastal Zone Management in the Philippines: Problems, Issues, and Strategies*, 2 LIKAS YAMAN 11,15 (1980).

[17]*Id.*

[18]P. Sajise, et. al., Resources and Environment: Can We Resuscitate Our Dwindling Natural Resources? (unpublished paper, University of the Philippines, Los Banos, p. 15).

[19]THE WORLD BANK, PHILIPPINES: ENVIRONMENT AND NATURAL RESOURCES MANAGEMENT STUDY 33 (1989) [hereinafter cited as PHIL. ENVIRONMENT].

55% of the population reside in coastal barangays (the smallest local government unit), including 17 of the 25 cities.[20]

Coastal resources[21] may be divided into two major groups: renewable resources, and those that are non-renewable. The former applies to all biological units which are of primary importance to man as a source of food and other products of economic value such as fisheries, which by their nature can regenerate themselves under favorable conditions.[22] The latter, on the other hand, comprises the non-living materials commonly found within the zone, usually the geological riches that may be extracted from beneath the surface, whose regeneration times, if at all, extend far beyond the human lifespan.

Significant and large-scale exploitation of non-renewable resources within Philippine coasts have not yet begun, except perhaps in the field of oil exploration. Such activities are not yet being pursued in earnest by the government, possibly due to the uncertainty caused by the United Nations Convention on the Law of the Sea (UNCLOS). Small-scale fisherfolk are generally not involved with extraction and use of non-renewable resources, and thus the subject is excluded from the scope of this paper.

Fisheries

Fisheries comprise the most accessible, important, and developed component of Philippine coastal resources. The Philippines has already fully developed its fishery resources to the extent that the country is now the twelfth most productive fishing nation in the world.[23] The fisheries sector contributed about P28 Billion to the GNP in 1985 (4.7%), P33 Billion in 1986 (5.4%), and P36.32 Billion in 1987 (5.1%)[24] On the average, fisheries account for 5.1% of GNP and annually contribute net foreign exchange earnings of around P4.7 Billion to the economy. It also holds an important place in the domestic economy, since fish ranks next to rice as the staple food of the Filipino family. The average

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[20]*Id.*

[21]*Coastal resources* are usually defined as natural and often renewable commodities, the existence of which depends on the coast, or because the commodity's value to society is appreciably enhanced by its location within the coastal zone, or the production activities of which derive substantial advantages from the location near the coasts. INSTI. ARRANGEMENTS, *supra* note 15, at 10-11.

[22]G. Trono, *supra* note 16, at 16.

[23]D. Pauly, *Fisheries Resources Management in Southeast Asia: Why Bother?*, in 1 COASTAL ZONE 6-7 (1989).

[24]NATIONAL CENSUS AND STATISTICS OFFICE, 1989 THE PHILIPPINE YEARBOOK 354 (1989) [hereinafter cited as PHIL. YEARBOOK].

Filipino eats as much as 40 kilograms of fish per year, which composes over half of his daily food intake.[25]

By type of waters, Philippine fishery resources are divided into coastal, inland, and deep-sea fisheries. Our territorial waters cover 1,473,900 square kilometers of coastal waters, and 1,207,927 sq. km. of deep-sea or oceanic waters. Of the total, 266,000 sq. km. cover coastal areas from the shore to 200 meters deep; within, traditional fishing grounds comprise about 126,000 sq. km. Fishing vessels at present operate within this small and limited area. Thus, more than a million square kilometers of the territorial sea remain untapped, and beyond it still lies the great expanse of the Exclusive Economic Zone.[26]

Inland resources comprise about 421 principal river systems covering more than 31,000 hectares, 105 lakes with a total area of about 200,000 hectares, 19,000 hectares of reservoirs, and an aggregate area of 222,000 hectares of developed brackishwater and freshwater fishponds.[27] While these resources are for most part not located within the coastal zone, they are inextricably linked to the latter by the interface of the land and water. Most inland waters empty out into the sea, passing through the zone.

Total fishery production has been steadily increasing since the 1950's. (**Figure 1**) Milkfish, freshwater molluscs, scads, and sardinellas dominate the species caught. The bulk of fish caught in marine waters is tuna, scad, sardines, mackerel, slipmouth, anchovies, bream, snapper and perch species, while inland waters and aquaculture provide milkfish, tilapia, and shrimp species; most of these are consumed domestically as staple food.[28] In 1989, overall annual production reached a record 2,366,588 metric tons, with a value of P46.5 Billion.[29]

In 1988, the Bicol Region (Region IV) accounted for the largest share in total fish production, followed by Western Visayas (Region VI), Western Mindanao (Region IX), Metro Manila (National Capital

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[25]BUREAU OF FISHERIES AND AQUATIC RESOURCES, ET. AL., MAIN REPORT OF THE NATIONAL CONFERENCE ON FISHERIES POLICY AND PLANNING 4 (1987) [hereinafter cited as 1 CONFERENCE].

[26]POPULATION, RESOURCES, ENVIRONMENT, AND THE PHILIPPINE FUTURE, PROBING OUR FUTURES: THE PHILIPPINES 2000 A.D. 111-112 (1980) [hereinafter cited as PREPF REPORT] .

[27]PSSD, *supra* note 3, at 6; PHIL. YEARBOOK , *supra* note 24, at 355.

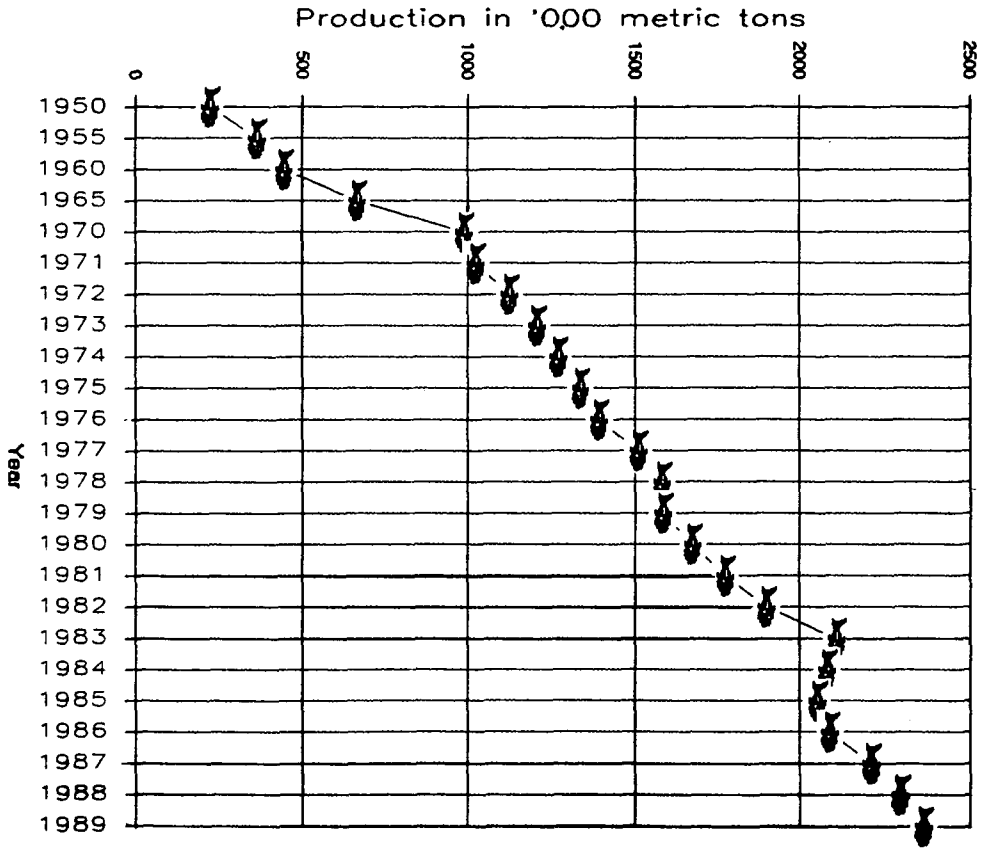
[28]PHIL. ENVIRONMENT , *supra* note 19, at 41-42.

[29]*1989 RP fish catch a record despite deteriorating marine resources*, Animal Husbandry and Agricultural Journal, March 1990, p. 70, col. 1 [hereinafter Animal Journal].

Region), and Central Luzon (Region III). All other regions produce less than 100,000 metric tons of fish annually in all sectors.[30]

The BFAR further divides fisheries production into several distinct categories by the type of fish produced, consisting of marine, inland, and aquaculture fisheries.

Fig. 1. Total Fisheries Production from 1950 to 1989



Source: Phil. Statistical Yearbook, 1989; Data for 1989 - BFAR.

[30] *Id.*

Marine fisheries

Marine fishery resources are classified into pelagic fisheries, tuna fisheries, and demersal fisheries.

Pelagics refer to migratory fish which thrive in the open waters of the sea, although they also occur in inshore waters. The larger pelagics are the tuna fishes, while "pelagics", as used, pertain to smaller fish which are not as migratory or move in smaller distances. These include sardines, anchovies, and roundscads; virtually all small pelagics are caught between Central Luzon and Southern Mindanao. It has been estimated that the maximum sustainable yield for Philippine small pelagics is about 260,000 tons per year.[31]

Tuna fisheries consist of the larger pelagics such tunas, skipjacks, and other related groups. There are 21 species of tuna in Philippine waters, but five (5) form the basis of the tuna industry. In turn, three of these have export value. Tuna fishery has been the largest fishery in the country since 1975, averaging 207,000 metric tons annually, comprising 20% of the total marine catch in 1985. More than half the total tuna catch comes from the seas surrounding Mindanao; among other important areas are Regions IV (Southern Luzon) and Region VII (Central Visayas).[32]

Demersal fisheries are various fishes and invertebrates found on or near the sea bottom, caught by using bottom trawls or other fishing techniques. These have contributed from 25 to 40 per cent to marine landings since the late forties, though the productive shelf areas (those 200 meters deep) comprise only 13%, or 255,000 square kilometers, of the country's marine waters.[33]

The BFAR has identified several rich marine fishing grounds, namely, the Moro Gulf; East, West, South sides of the Sulu Sea; Lamon Bay; Guimaras Strait; Bohol Sea; Manila Bay; and Cuyo Pass. By far the most productive marine area is the Visayan Sea, which in 1987 alone accounted for more than 13% of marine fisheries production.[34] **(Figure 2)**

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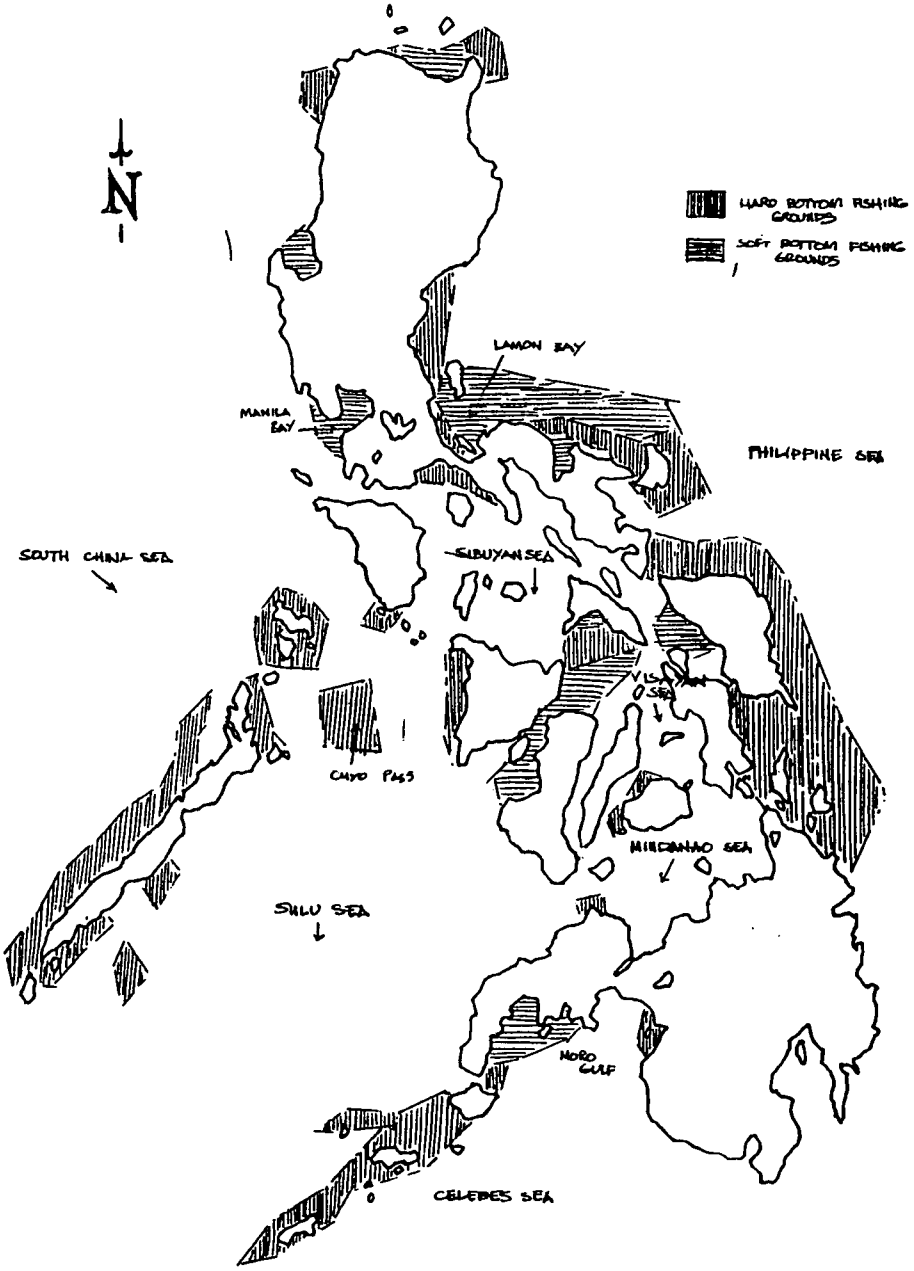
[31] 1 CONFERENCE , *supra* note 25, at 5.
[32] *Id.*
[33] *Id.*, at 6.
[34] PHIL. YEARBOOK , *supra* note 24, at 359.

Fig. 2. Philippine fishing grounds



Source: World Bank, Philippines: Environment and Natural Resources Management Study (1988)

Inland fisheries

Inland freshwater fisheries aggregate about 350,000 hectares of lakes, swamps, rivers, and reservoirs. It has been recorded to have delivered some 260,000 metric tons, or 13%, of the total national fish production, but has levelled off and declined in recent years.

A major portion of the total inland municipal fisheries catch comes from the 90,000-hectare Laguna de Bay. Other prominent sources include Taal Lake in Batangas, Lake Bato in Bicol, San Pablo Lake in Laguna, and various smaller lakes and rivers in Bulacan, Pampanga, Bukidnon, Agusan del Sur, and Agusan del Norte. However, little reliable data is available at present on the productivity of these locales; no data has yet been published on inland resources of Southern and Western Mindanao, the Visayas, and some areas of Luzon.[35]

Aquaculture

Aquaculture[36] is a rapidly growing industry. It is dominated by brackish-water pond production, which comprises 56%, followed by fishpen culture at 29%. The former is primarily centered on finfish like milkfish and tilapia. Aside from finfish production, aquaculture is also concerned with cultivation of molluscs, shrimps, seaweeds, and crustaceans.[37] The year 1989 saw the greatest growth in aquaculture production, by 6.3% over 1987. This increase was due to the expansion of seaweed farming in Sulu, Tawi-tawi, and Zamboanga del Sur, and fishpond production in Western Mindanao.[38]

Mangrove ecosystems

Mangrove swamps are among the richest and most productive ecosystems, forming the foundation of the food chain for coastal fisheries. They provide large amounts of organic material which form the nutrients for the coastal waters through the build-up of detritus from plant litter, periodic release of larvae, and an abundance of invertebrate life, upon which fish from outlying waters feed on during high tides. Mangroves are also the breeding and nursery grounds for a

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[35]SMITH, IAN, ET.AL., PHILIPPINE MUNICIPAL FISHERIES: A REVIEW OF RESOURCES, TECHNOLOGY, AND SOCIO-ECONOMICS 22 (1980) [hereinafter cited as MUNICIPAL FISHERIES].

[36]*Aquaculture* connotes all activities involving the production of fishery products through artificial culture in fishponds, fishpens or seafarms. It embraces all forms of cultivation of aquatic products such as fish, mussels, shrimps, and seaweeds.

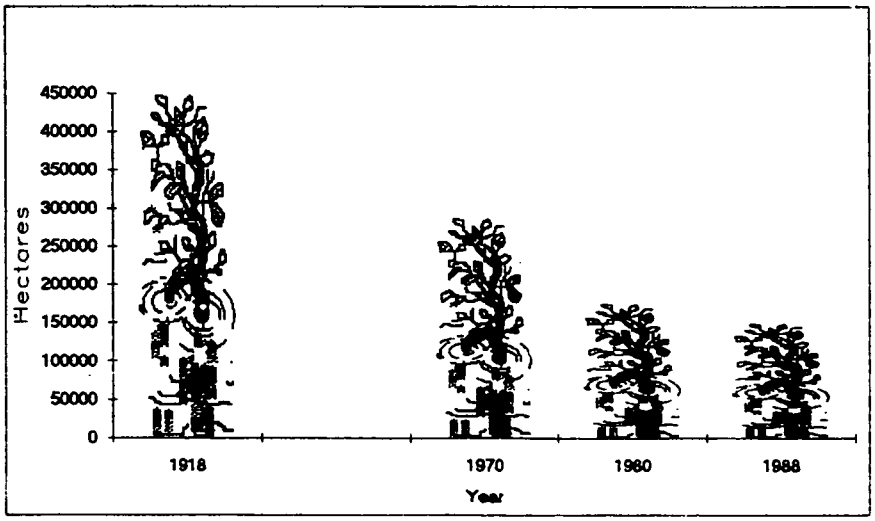
[37]Chua Thia-Eng, et. al., *Coastal Aquaculture Development in ASEAN: The Need for Planning and Environmental Management*, in COASTAL ZONE 57, 60

[38]Animal Journal, *supra* note 29.

variety of fishes and prawns, and home to crabs, bivalves, other invertebrates, and countless species of fish representing at least 68 families.[39] Without mangrove swamps, fish would not be inclined to inhabit the near-shore coastal areas. Species dependent on mangrove areas for reproduction purposes would be forced to seek shelter elsewhere or be driven to extinction.

Philippine mangrove stands have decreased from about 450,000 hectares believed to exist in 1918 to a residual area of only 149,000 hectares in 1988, according to satellite surveys. (**Figure 3**) These remaining stands are widely scattered, but tend to be concentrated in Palawan, the east and southwest coasts of Mindanao, and the Eastern Visayas and Bohol. Only about 10,000 hectares of this are old-growth, the rest being second-growth mangroves.[40]

Fig. 3. Recorded Depletion of Mangrove Areas



Source: World Bank, Philippines: Environment and Natural Resources Management Study (1989)

Coral resources

Coral reefs are one of the greatest resources of the Philippines because of their species diversity, prolific growth, and the excellent

[39]PHIL. ENVIRONMENT , *supra* note 19, at 34.
[40]*Id.*

quality of living reef which contributed substantially to the fisheries resource base. Philippine corals are unique for their diversity, as a total of 488 species in 78 genera have been catalogued, and many of more than 2000 fish species recorded in the Philippines either inhabit or are dependent on the reef complex.[41]

Coral reefs collect, retain, and recycle nutrients from adjacent nearshore areas such as mangroves, seagrass beds, and reef flats. They provide food for marine plants and animals, and the reef structure serves as a protective shelter for organisms in the water. Several thousand species of invertebrates and fish are associated with coral reefs, many being valuable for food and other uses. Recent studies indicate that the reefs from 1976 to 1981 could have accounted for some 210,000 tons, or some 15%, of the total fish production per year.[42]

Current estimates place coral reef areas at 44,000 sq. km. within seabeds 40 fathoms deep, 33,000 sq. km. at 20 fathoms, and from 12,000 to 27,000 sq. km. at 10 fathoms.[43] Three major locations of coral reefs are Palawan (38%), Visayas (21%), and the Sulu archipelago (28%). The rest (13%) are in waters surrounding Northern Luzon, Turtle Island, and Northern and Southern Mindanao.[44]

Problems and Issues

Policy stems from the key issues to which it is intended to respond. An overview of the prominent problems of Philippine coastal resources is necessary before any further action may be taken to develop a suitable management policy proposal. The various coastal resources mentioned above are plagued by numerous difficulties which threaten to destroy them.

Overfishing

The steady increase in total fish production in the past two decades conceals the preeminent challenge to the continued viability of Philippine fisheries resources. Approximately half of the annual figures since 1973 come from the municipal fisheries sector,[45] as municipal fisheries are presently subjected to the greatest utilization. However, municipal fisheries production has been essentially stagnant

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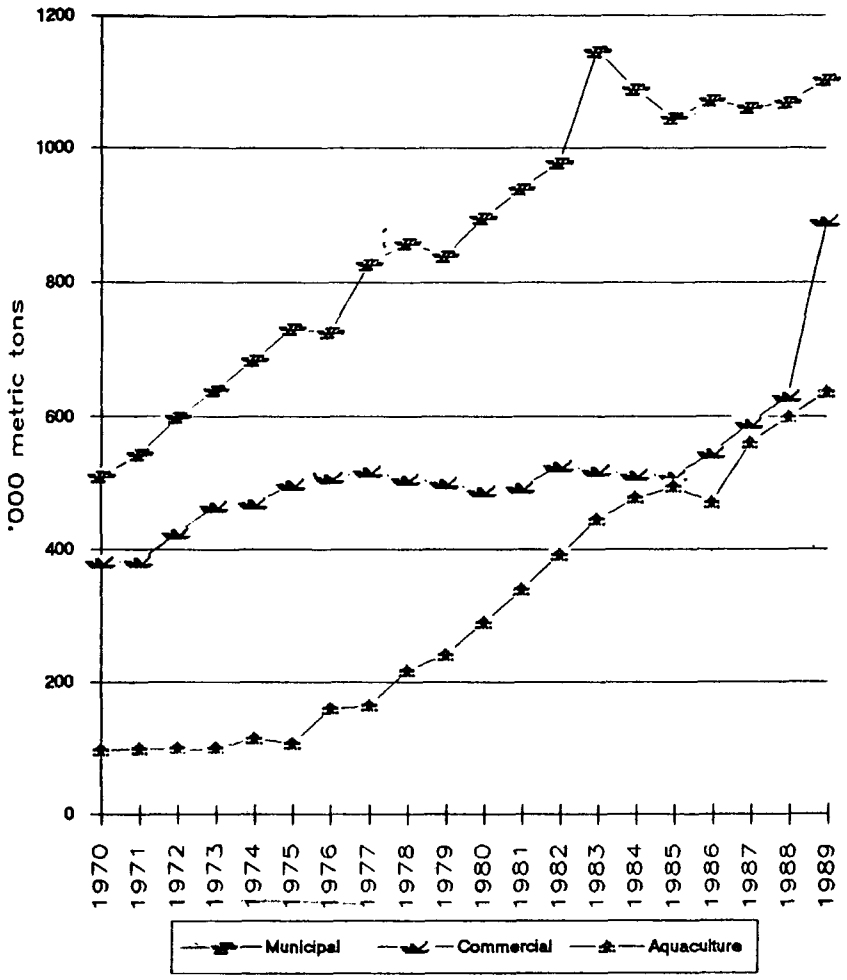
[41]*Id.*, at 36.
[42]*Id.*, at 37.
[43]*Id.*, at 36.
[44]E. FERRER, LEARNING AND WORKING TOWARDS A COMMUNITY-BASED COASTAL RESOURCES MANAGEMENT 2-3 (undated).
[45]PHIL ENVIRONMENT , *supra* note 19, at 42.

since 1983 (**Figure 4**); the expansion in output has chiefly been borne by the commercial and aquaculture sectors. In 1989, the largest contribution to the record yield was attributed to the aquaculture sector.[46]

Figure 4. Comparison of Production per Sector , 1970 to 1989



Source: Phil. Statistical Yearbook, 1989; Data for 1989- BFAR.

The levelling off of the fisheries catch is generally attributed to the concentration of fishing effort by both commercial and municipal fishermen in the traditional fishing grounds near the coasts. Marine fishing activities are divided into a commercial sector -- which

[46]Animal Journal, *supra* note 29.

includes exploitation of offshore resources insofar as it involves vessels of over 3 gross tons ---and a municipal sector, which involves the use of vessels of 3 gross tons or less, as well as fishing activities which do not require the use of watercraft. Due to the antiquated condition and generally small size of most commercial vessels, as well as inadequate equipment, commercial fishermen tend to concentrate on the coastal areas inside the 100-m mark,[47] and are most intense at depths of only 7 - 50 fathoms.[48] As a result, some 16 traditional fishing grounds are now over-exploited.[49]

Overfishing is categorized into two: growth overfishing and recruitment overfishing. The former refers to the catch of young fish before they are large enough to reproduce, while the latter pertains to the capture of too many adult fish leaving too few to reproduce or maintain the fish stocks.[50] Overfishing may loosely be defined as the indiscriminate capture of fish in the seas; either way, the fish stocks are not given an opportunity to adequately regenerate. With the increased fishing activities of both commercial and municipal fishermen concentrated in few traditional grounds, it is inevitable that the fish population would eventually dwindle below sustainable levels.

The lack of reliable statistics impedes the safe assessment of the utilization and exploitation of the resource at the present time, which is the reason why data-collection on fisheries yields is among the current concerns of both government and non-government agencies. However, there is a consensus among Philippine fisheries scientists that the limits of exploitation have already been reached or exceeded in recent years. In 1980, it was estimated that while the actual marine catch per annum was around 1.3 million tons, the total potential catch of the fishing zones was only about 1.45 to 1.85 million tons.[51]

Other causes which contribute to overfishing include the incidental taking, or the accidental capture and killing of creatures not intended to be caught in the course of fishing,[52] pollution and siltation in specific areas which depress natural levels of basic productivity,[53] and destructive fishing methods. The latter two, though problems in themselves, also tend to contribute to overfishing by driving fish from relatively safe nearshore habitats to active fishing areas.

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[47]MUNICIPAL FISHERIES , *supra* note 35, at 11.

[48]PREPF REPORT , *supra* note 26, at 112.

[49]*A Fishy Predicament*, IBON Facts & Figures, August 15 1989, p. 3.

[50]TAMBUYOG DEVELOPMENT CENTER, A GENERAL STUDY OF FISH AGGREGATING DEVICES (FADS) 1 (undated).

[51]PHIL. ENVIRONMENT , *supra* note 19, at 45.

[52]G. Trono, *supra* note 16, at 18-19.

[53]PHIL. ENVIRONMENT , *supra* note 19, at 45.

Destruction of mangroves

The reduction in area has been attributed to the harvesting of mangroves for charcoal or fuelwood production, followed by forest clearing for fishpond establishment. About ninety-five per cent (95%) of the present fishpond area of 205,000 hectares was derived from mangroves, according to a SPOT satellite survey in 1988. Fishpond conversion remains unhampered by government authorities, who have been more concerned with increasing fish production.[54]

Overharvesting and lack of replanting is also an initial source of degradation.[55] Mangroves have been exploited as a rich source of various products such as timber, firewood, charcoal, nipa shingles, palm fruit, and medicinal plants.[56] Harvesting often concentrates on the most marketable species, leaving low-value species that are not as biologically-suited to maintaining the ecosystem, while fuelwood demands lead to a continuous cutting of branches and results in stunted shrubby trees. Over-cutting also contributes to soil erosion and may produce changes in soil composition, which leads to a drop in growth and a poor environment for regeneration.[57] The remaining mangrove stands then stop growing and are eventually depleted.

Coral reef degradation

As of 1985, Philippine coral resources had already suffered considerable degradation, with as much as 32% having only 0-24% live coral cover.[58] (**Figure 5**) Reef destruction results from both natural and man-made causes; natural causes include damage induced by other organisms in the water, uncommon siltation levels, excessive rainfall, and tropical storms. However, man-made causes, which include soil erosion, coral mining, and destructive fishing methods, are by far more severe sources of degradation.[59]

The MSC has estimated that "nearly 75% or 3/4 of the country's coral resources have been destroyed --- and only about 10 to 15% of the destruction may be attributed to natural causes."[60] It has also been

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[54]PHIL. ENVIRONMENT , *supra* note 19, at 34-35.

[55]*Id.*, at 35.

[56]P. Sajise, *supra* note 18, at 29.

[57]PHIL. ENVIRONMENT, *supra* note 19, at 35.

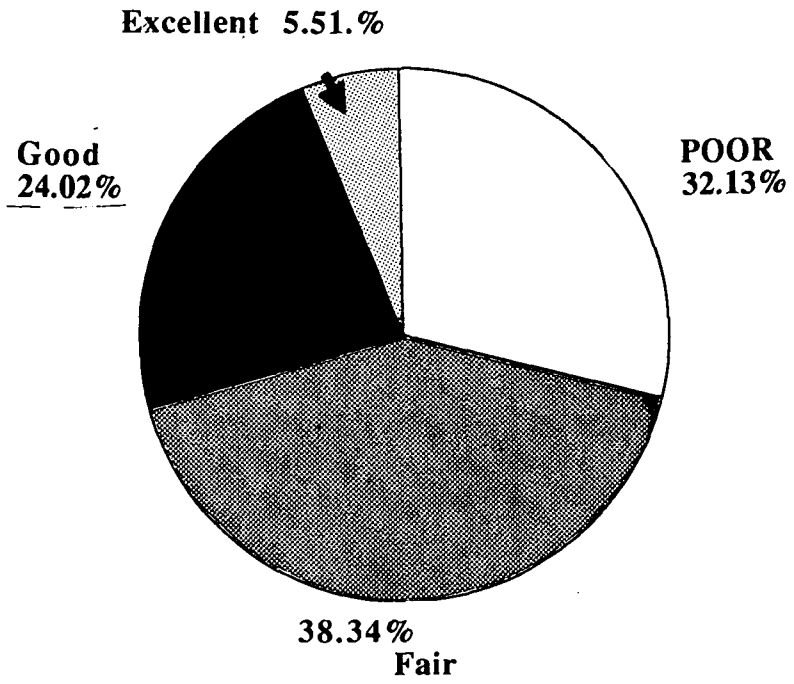
[58]E. Gomez, *Coral Reef Resources and the ASEAN/US Coastal Resources Management Project*, in COASTAL ZONE 17, 24.

[59]PHIL. ENVIRONMENT, *supra* note 19, at 38.

[60]Bulletin Today, March 21, 1979, cited in MUNICIPAL FISHERIES, *supra* note 35, at 22.

estimated that it would take thirty (30) years of non-interference with the reef environment for the reefs to recover even partially.[61]

Fig. 5. Status of Philippine Coral Reefs as of 1985



Source: World Bank, Philippines: Environment and Natural Resources Management Study (1989).

Illegal harvesting of coral also persists in Cebu, Zamboanga, Sulu, and Batangas.[62] Coral is "mined" for use in construction and ornamental shell trade.[63] The illegal coral trade caters to both local consumers and foreigner importers; of the foreign market, the United States is the biggest customer (56% of coral imports), followed by Europe (33%), Japan (8%) and the rest of Asia (3%).[64]

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[61] PHIL. ENVIRONMENT, *supra* note 19, at 2.
[62] MUNICIPAL FISHERIES , *supra* note 35, at 22.
[63] PHIL. ENVIRONMENT , *supra* note 19, at 44.
[64] HARIBON FOUNDATION, INC., TRADE OF CORALS 1 (undated).

Destructive fishing methods

Three forms of fishing, blast fishing, cyanide-poisoning, and "muro-ami"fishing, are known to destroy both fish and fish habitats such as coral reefs, and are thus seen to cause coral reef degradation as well as overfishing.

Blast fishing

Also known as dynamite fishing, it is a major cause of damage to coral reefs, second only to "muro-ami" fishing. It is used extensively by fishermen, because it produces a more respectable catch with less labor,[65] about 21.32 kilogrammes per boat per day.[66] However, for each batch of fish collected, every explosion kills a circle of coral 1 to 3 metres in diameter, from 2 to 6 times each hour.[67]

Although known to be illegal, fisherfolk resort to blast-fishing due to the need for more catch, pressed on by extreme poverty.[68] Studies in the Lingayen Gulf area show that users mistakenly believe that blast fishing is environmentally acceptable, as affecting only the small area where the dynamite is thrown; trawl fishing is thought to be more destructive as it scours the seabed and kills smaller fish.[69] It was also found that blast fishing is not limited to those without other fishing gear; almost all types of fishermen engage in blast fishing because nearly all live at the subsistence level,[70] and use the same to supplement normal fishing methods.

Cyanide fishing

Cyanide fishing is employed by tropical fish collectors. The tropical fish aquarium industry is relatively new, and is one of the least known; presently, there are about 18 exporters of exotic fish exporting some 273 species of marine fishes and 66 species of invertebrates, operating out of the main trading areas of Pagbilao, Quezon; Bolinao,

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[65]PHIL. ENVIRONMENT, *supra* note 19, at 39.

[66]A. Calud, et.al., *Preliminary Results of a Study on the Municipal Fisheries in Lingayen Gulf*, TOWARDS SUSTAINABLE DEVELOPMENT OF THE COASTAL RESOURCES OF LINGAYEN GULF 3, 9 (1989) [The latter work hereinafter cited as LINGAYEN GULF].

[67]PHIL. ENVIRONMENT, *supra* note 19, at 39.

[68]R. Galvez, et. al., *Socio-cultural Dynamics of Blast Fishing and Sodium Cyanide Fishing in Two Fishing Villages in the Lingayen Gulf Area*, LINGAYEN GULF, *supra* note 66, at 43, 50.

[69]*Id.*, at 48.

[70]R. Galvez, et. al., *Socio-cultural Dynamics of Blast Fishing and Sodium Cyanide Fishing in Two Fishing Villages in the Lingayen Gulf Area*, LINGAYEN GULF, *supra* note 66, at 43, 50.

Pangasinan; and Lapu-lapu City, Cebu.[71] Degradation results from the method commonly employed by collectors, which is by diving in shallow waters with coralline habitats and squirting sodium cyanide poison at passing fish directly or onto coral crevices; once affected, the fish are immobilized and then scooped by hand.[72] Cyanide fishing kills most hard and soft corals within only 3 months of repeated application.[73]

The majority of fishermen who do not use the method perceive cyanide fishing to be truly destructive of corals, causing fish to migrate and keep away from the areas where they are used. Cyanide users, however, maintain the opposite view, as they believe that the small amounts of chemicals mix with the seawater and are carried away by the currents. They also maintain that cyanide only stuns and does not kill the fish.[74] Typically, the effects on live coral polyps are overlooked.

Muro-ami fishing

"Muro-ami" fishing, and its modified form "Kayakas", are Japanese fishing methods, wherein scare-lines with heavy weights, arranged into a moving "wall", are dragged along the ocean floor to herd fish into waiting nets.[75] The fragile coral is easily destroyed by the impact of the weights. This method is used because of its high catch per unit yield, as high as 142 kilograms for each hour spent, compared to 2.8 kg. using a gill net.[76] The nets also indiscriminately capture juvenile and other fish species.[77]

Siltation and sedimentation

Forest denudation, road construction, mangrove destruction, mine tailings and industrial wastes increase the turbidity of the water, reducing the penetration of sunlight into the depths. This prevents the photosynthesis processes of plankton, sea-grasses, algae, coral polyps, and other minute organisms which form the first link in the marine

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[71]BUREAU OF FISHERIES AND AQUATIC RESOURCES, ET. AL., CONFERENCE TASK FORCE REPORTS, TECHNICAL AND POLICY FORMULATION SESSION REPORTS, AND CONFERENCE RESOLUTIONS OF THE NATIONAL CONFERENCE ON FISHERIES POLICY AND PLANNING 81 (1987) [hereinafter cited as 2 CONFERENCE].

[72]LINGAYEN GULF, *supra* note 66, at 51-53.

[73]PHIL. ENVIRONMENT , *supra* note 19, at 40.

[74]LINGAYEN GULF, *supra* note 66, at 58.

[75]For visual representations of Muro-Ami and various other fishing methods, *see* MUNICIPAL FISHERIES, *supra* note 35, at 20-21, citing BUREAU OF FISHERIES AND AQUATIC RESOURCES; *Id.*, 29-40, citing A. UMALI, GUIDE TO CLASSIFICATION OF FISHING GEAR IN THE PHILIPPINES (1950).

[76]PHIL. ENVIRONMENT , *supra* note 19, at 40.

[77]*Id.*

food-chain. Sediments have also been observed to settle on coastal coral stands, smothering and at times entirely burying large areas of coral habitats.[78] Some 284 square kilometers of coastal areas are known to be heavily eroded, silted and sedimented.[79]

Mining activities in or near coastal areas also cause large-scale siltation. Beaches are often mined for their magnetite sands or chromite, and the quarrying for sand and gravel also causes severe erosion of river banks. Aside from pollution, production of copper results in the dumping of millions of tons of tailings into waterways.[80] All major methods of upland mining likewise involve the dumping of tailings into the rivers, which eventually empty out into the seas.

The rate of siltation in Philippine waters is estimated to be sixty million (60,000,000) tons a year, and is largely the result of soil erosion due to poor upland agricultural practices and inadequate watershed management. Annual sedimentation rates for Philippine rivers are reported to be extremely high, observed to be as much as 44.6 tons per hectare per year for the Agno River and 11.4 tons per hectare per year for the Pampanga River.[81] Two other major river systems in Luzon (the Bicol River and the Magat River) are already threatening to dry up.[82] Soil erosion alone, resulting from loss of forest cover and watershed degradation, dumps topsoil one meter thick into the sea at the rate of 100,000 hectares each year.[83] Thirteen provinces have between 51% to 87% of their land areas under severe soil erosion, and an additional twelve provinces have between 40% to 50% under various degrees of soil erosion.[84]

Pollution

Philippine freshwaters are composed of 384 major river systems and 59 lakes.[85] Most of these inland waters, especially the rivers, suffer from extensive pollution. It has been reported that 362 rivers all over the country are presently polluted in varying degrees.[86] A total of 40

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[78]Sajise, *supra* note 18, at 34.

[79]*Signs of Strain*, IBON Facts & Figures, August 15, 1989, p. 2, col. 2.

[80]F. Factoran, *Silent Victories for Development*, 1990 FOOKIEN TIMES YEARBOOK 301 (1990).

[81]K. Ruddle, *Pollution in the Marine Coastal Environment of ASEAN Countries*, SOUTHEAST ASIAN SEAS 144-145 (1981) citing NATIONAL ENVIRONMENT PROTECTION COUNCIL, PHILIPPINE ENVIRONMENTAL QUALITY: FIRST ANNUAL REPORT (1977).

[82]C. Hermoso, *Soil erosion continues*, Bulletin Today, February 15, 1991, p. 12.

[83]*Id.*

[84]Sajise, *supra* note 18, at 12; *see also* NATIONAL ENVIRONMENTAL PROTECTION COUNCIL, THE PHILIPPINE ENVIRONMENT 78 (1982).

[85]*Signs of Strain*, IBON Facts & Figures, August 15, 1989, p. 2, col. 2.

[86]FERRER, *supra* note 44, at 6.

rivers are considered biologically dead, including all the rivers of Metro Manila.[87] The chief pollutants are mine tailings, toxic substances from industries, fertilizers, pesticides, and domestic wastes.

The waterways have always been seen as the most convenient garbage dump for domestic, agricultural, and industrial wastes. Pollution creates massive imbalances in the delicate marine ecosystem in a variety of ways; it reduces sunlight and oxygen required by marine plant life,[88] increases nutrient loads which encourage red tide outbreaks,[89] obliterates entire species of fish, causes mass-migration of fishes, and eventually destroys the whole marine ecosystem, rendering it uninhabitable.

The mining industry is a major ecologically-disruptive activity due to the great amount of pollution it generates and discharges into the waterways and coasts. Tailings and effluents from twenty large mines all over the country heavily pollute seven river systems and add to the general sediment load entering coastal waters.[90] Some examples include those dumped in Taft River of Samar by the Philippine Pyrite Corporation, and in Cebu's fishing grounds by the Atlas Consolidated Mining Corporation,[91] and others such as the Marcopper Mining Company in Calancan Bay and the Atlas Mines in Tanon Strait. Calancan Bay receives more than 24,000 tons of tailings daily, while Tanon Strait gets about 110,000 tons a day.[92] In 1987, the mining industry generated more than 63 million tons of tailings; and produced more than 27 million tons of other mine wastes which could include dangerous chemicals such as acids, cyanides, alkalis, and heavy metals. Most of these are dumped into the ocean.[93]

Since most industrial plants also discharge their effluents directly into rivers, significant pollution is expected, particularly in the urban centers of Metro Manila, Cebu, Iloilo, and Davao. The waters of Manila Bay probably have high levels of metallic pollution, especially at the mouths of the Pasig, San Juan, and Marikina rivers.[94] Its eastern

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[87]*Signs of Strain*, IBON Facts & Figures, August 15, 1989, p. 2, col. 2.

[88]E. Coronel, *Laguna Lake: Lake of Ignorance*, 6 ENVIROSCOPE 1 no. 1 & 2, at 3 (Jan-Jun 86).

[89]7 *More Bays Endangered*, 3 TAO-KALIKASAN 4, no. 4, (1988); *Out of Control*, IBON Facts and Figures, 15 August 1989, p. 4, at 7.

[90]K. Ruddle, *Pollution in the Marine Coastal Environment of ASEAN Countries*, SOUTHEAST ASIAN SEAS 144-145 (1981) citing NATIONAL ENVIRONMENT PROTECTION COUNCIL, PHILIPPINE ENVIRONMENTAL QUALITY: FIRST ANNUAL REPORT (1977).

[91]*Out of Control*, IBON Facts & Figures, 15 August 1989, p. 4, at 7.

[92]Factoran, *supra* note 80, at 331.

[93]*Id.*

[94]Ruddle, *supra* note 81, at 153-154.

portions are also saturated with shipping discharges or effluents of the petroleum-based industries.[95] No published data is available on heavy metal pollution in Philippine rivers, though it is currently under study by the EMB.[96]

Domestic wastes from cities and urban settlements are prominent pollutants. Garbage disposal is a perennial problem in many large cities. No city has a complete sewerage system. In Manila, only 10-12% of the city has access to sewerage.[97] An estimated 55% of the total organic load of the Pasig River, the main tributary which empties into Manila Bay, is also derived from domestic sewage. The inshore waters are unsafe for swimming and unfit for exploitation of fin or shell-fish. Elsewhere in the country, 40 sugar refineries and liquor distilleries, which pollute 19 major river systems mostly in the Visayan region, are principal industrial sources of organic pollution.[98] Furthermore, it is an unfortunate common practice among the population to use rivers as garbage dumping areas.

Organic and chemical wastes from agricultural activities, such as pesticides, nutrients, and drugs from farming and livestock-raising, also have great impact. Aquaculture is affected by the deterioration of the quality of pond water, contamination or tainting of fish which thereby becomes unmarketable, and decrease in the fry population. Inshore fisheries suffer from poor catches resulting from fish kills as well as the economic loss of marketable fish. The tourist industry suffers since recreational beaches are affected by pollutants.[99] Little is yet known on the extent of pollution produced by these activities.

Other identified sources of pollution include oil slicks and domestic wastes from ports, heavy metals from chemical and industrial sites, solid and domestic wastes from beach resorts, high suspended solids from sand mining, nutrients and organic matter from fish farms, alteration of coastal hydrology caused by discharges from reservoirs, pesticides and organic matter from fishfarms, high suspended solids in mollusc farms and cage farms.[100] But again, none of these activities have been adequately documented.

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[95]*Id.*, at 160.

[96]A. Tolentino, *The Environment Report*, 1989 FOOKIEN TIMES YEARBOOK 160, 335 (1989).

[97]PHIL ENVIRONMENT , *supra* note 19, at 3.

[98]Ruddle, *supra* note 81, at 148.

[99]*Id.*, at 146-147.

[100]C. Thia-Eng, et. al., *supra* note 37, at 64.

Lack of political will

Policies are good only as long as the administration is determined to implement and enforce them. In spite of initiatives by the EMB and the DENR, seen in the adoption of efforts to promote a sustainable development strategy, the first obstacle that must be hurdled is the government's low priority for environmental management and conservation.

Government agencies themselves have been reported to be among the most stubborn violators of anti-pollution laws. On the other hand, the legislature has passed only one out of twenty-five (25) environmental bills filed. These indicate the government's general lack of interest in the environment.[101]

Many view the current policy of promoting foreign investments as having direct impact upon the surroundings. Projects implemented according to this policy have been criticized as being oblivious to environmental costs. Concerned groups cite the $70.9 million dollar Philippine Sinter Corporation, formerly the Kawasaki Sintering Plant, in Mindanao, and the naptha-based petrochemical plant that figured in what is now known as the Petroscam. Sintering is the phase in steel-making that creates the most pollution, while the petrochemical industry is known for environmentally hazardous processes. But anticipated revenues and jobs overshadow interest in trees, plants, waters, animals, and people.[102]

The absence of regard for the environment by government planners was exposed when the Country Program submitted by Filipino negotiators to the Philippine Assistance Program was found by donor countries to contain only one or two hastily scribbled paragraphs on the subject, done only after the World Bank representatives specifically pointed out the need to include the environment as a concern in order to attract pledges.[103]

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[101]A. Ho, *Political will plagues pollution control*, The Philippine Collegian, February 27, 1991, p. 3, col. 1.

[102]*See generally Out of Control*, IBON Facts and Figures, August 15, 1989, p. 4-7.

[103]L. Reyes, *Redirecting government strategy*, IBON Facts And Figures, August 15, 1989, p. 8, at 9-10.

Lack of an effective and integrated coastal zone management program

Philippine coastal zone management has been characterized as (1) coastal specific in focus, that is, there is not one agency with broad functional responsibilities tasked specifically with the management of coastal resources; (2) having a weak national structure and little centralized control, with high levels of regional or local control; and (3) economically oriented, meaning it is primarily directed towards reaching economic development goals (translated into GNP quotas) with minimal hazards, as opposed to prioritizing environmental conservation and preservation.[104] These characteristics are manifested basically in legislation which deal directly and incidentally with the coastal zone, the aggregate of government agencies with conflicting jurisdiction over specific coastal resources, and the disparate environmental policies presently implemented by the government.

Numerous but incongruous legislation

A prominent scholar of environmental law in the Philippines once stated that a review of Philippine laws on marine resources would include laws on tourism, utilization of forest resources, fishery, mining. land use, reclamation, energy, and all laws that have bearing on coastal zone development and conservation or are vital to marine resources protection.[105] But rather than indicate the presence of adequate legislation bearing on the coastal zone and the resources within it, such a broad statement actually reflects the total absence of an integral and coherent program and policy for management of coastal resources.

The smattering of laws affecting the coasts creates policy issues and conflicts in any given area. Laguna Lake, one of the most important and productive inland fishery areas in Luzon, may be taken as an example. The regulation of water quality in Laguna Lake is lodged in the Laguna Lake Development Authority (LLDA);[106] however, maintenance of water quality is a function of pollution control, which falls under the jurisdiction of the National Environmental Protection Commission, now the EMB.[107] Obviously, a conflict is created over which agency has effective and enforceable jurisdiction over the Lake's water quality. Inter-agency agreements are often used to resolve these types of

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[104]INSTI. ARRANGEMENTS, *supra* note 15, at 95-96.

[105]A. Tolentino, *Review of Environmental Legislation and Administration and its Application in Selected DMCs*, ENVIRONMENTAL PLANNING AND MANAGEMENT 47, 74 (1986).

[106]Pres. Decree No. 813 (1975), sec. 2.

[107]Pres. Decree No. 1151 (1977), secs. 14 and 19.

conflicts to achieve some form of coordination, but these agreements have no true permanency by nature and are effective only as long as the agencies are minded to honor them.

In some cases, the laws or agencies implementing them promote directly contradictory objectives, to the detriment of the waters. Plans have been made by the Metropolitan Waterworks and Sewerage Authority to turn Laguna Lake into a potable water source for Metro Manila, while the National Irrigation Administration (NIA) intends to draw upon the Lake to irrigate farmlands in the adjoining provinces of Cavite and Rizal. Both plans directly contradict the LLDA's mandate to preserve the already overtaxed but delicate lake ecosystem. Added to the fact that the LLDA has failed to carry out its mandate of protection (indicated by the steady decline of productivity over the past years), the Lake is not likely to be able to withstand the environmental strain placed upon it by these simultaneous activities.[108]

Presently, there are over fifty (50) pieces of legislation which affect coastal resources. Some are of general application, such as the Marine Pollution Control Law,[109] the ban on dynamite fishing,[110] and the laws on coral resources;[111] others are intended to regulate activities in the utilization and exploitation of resources, like the mandated rehabilitation of affected areas by corporations engaged in exploitation of natural resources[112] and the Water Code;[113] while others are specific statutes designed exclusively for specific areas.[114] These laws commonly overlap in subject matter and delegate various types of authority and responsibility over the marine environment to numerous government agencies, which leads to another problem of lack of coordination. No attempt has been made to harmonize, much less codify, these laws; it is doubtful if any real research has been made in connection with them.

Uncoordinated government agencies

One of the inherent problems of integrated coastal resources management is the large number of activities which directly or indirectly affect the coastal zone, coastal users, resources, and

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[108]*See generally* R. Ybanez, *CALABAR: A Mirage of Progress*, Lundayan, Apr-Jun 1990, pp. 4-9.

[109]Pres. Decree No. 600 (1974).

[110]Pres. Decree No. 1058 (1976).

[111]Pres. Decree No. 1219 (1977); Pres. Decree No. 1698 (1980).

[112]Pres. Decree No. 1198 (1977).

[113]Pres. Decree No. 1067 (1976).

[114]*E.g.*, Pres. Decree No. 354 (1973),which reserves part of Puerto Galera for research, and Rep. Act No. 4850, which created the Laguna Lake Development Authority.

environments. Overlapping and conflicting jurisdictions of agencies and regulatory efforts eventually lead to inefficiency and ineffectual government policies and undertakings, not due to the lack of implementors, but rather to such factors as default (*i.e.*, involved instrumentalities would rather defer to others when called upon to act), disparate goals and objectives, uncoordinated projects, and rivalry in the exercise of administrative powers.

The various laws mentioned above grant general and special jurisdiction over resource management and preservation to several subdivisions of government. A corresponding number of government bureaucracies are inevitably created in order to regulate all activities, which include utilization of fisheries, administration of natural area protection systems, water supply, recreation development, tourism development, port development, energy development, water pollution control, industrial siting, agricultural development, and aquaculture development.[115]

For example, the responsibility of preventing and abating air, water, and other types of pollution is now lodged in the Environmental Management Bureau of the DENR, which took over the functions of the National Pollution Control Commission.[116] Pres. Decree No. 600, the Marine Pollution Decree, makes the Philippine Coast Guard responsible for preventing and controlling pollution of seas and bodies of water within the territorial jurisdiction. Pres. Decree No. 813 gave the Laguna Lake Development Authority the responsibility of management of the water quality of the lake and the preservation of its ecological balance. Pres. Decree No. 463 assigned the Bureau of Mines the function of regulating the disposal of mine tailings resulting from exploitation of mineral resources. The Ministry of Health by virtue of Pres. Decree No. 586 exercises functions over the protection of public health as may be effected or brought about by pollution. The National Water Resources Council under Pres. Decree No. 1607 regulates the utilization of all water resources of the country, but nevertheless leans heavily on the basic pollution control law of the country. Finally, other agencies such as the Fertilizer and Pesticide Authority and the Metropolitan Water and Sewerage System have provisions in their respective charters and enabling legislation for the protection of the environment from pollution.[117]

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[115]INSTI. ARRANGEMENTS, *supra* note 15, at 37.

[116]F. Factoran, *Towards Sustainable Development*, 1989 FOOKIEN TIMES YEARBOOK 330 (1989).

[117]Tolentino, supra note 105, at 63-64.

Such a mass of agencies concerned with pollution alone already puts into question which one is responsible for the simple task of, say, maintaining the cleanliness of a tributary connected with Laguna Lake. Unfortunately, it appears that even the agencies themselves do not know, as can be seen from the fact that inspite of all these regulatory laws and mandates, pollution of major river systems has continued unabated. Until the slightly more active exercise of the EMB in recent years of the powers and prerogatives formerly held by the NPCC and NEPC, efforts to control pollution have been minimal. However, the fact that the EMB has officially taken control of implementing anti-pollution laws in general appears to be more due to deference by other government agencies rather than by a harmonization of their mandates under legislation presently in force. The above example does not even take into account responsibility for initiating and implementing projects, enforcing laws, and administration of services related to the scope of the powers of each agency. Environmental management is still not within the clear competence of any one agency of government, nationally or otherwise, since the EMB's functions in particular areas are duplicated or overlap with those of other instrumentalities.

Unfortunately, such structural bureaucratic entanglements have resulted in none of the legally-mandated agencies actually carrying out their duties or functions, due to competition in jurisdiction or separate pursuits of their own projects or initiatives. Inter-agency rivalries result in none being able to fulfill its functions for as long as interference is made by the other. Pursuing projects and other initiatives separately under their own limited budgets leads to each effort being of necessarily small or local scale only. Combined with the acknowledged lack of human and fiscal resources common to all agencies concerned with the environment, this has resulted in each agency being spread too thinly to be of any effect. Ironically, the saturation of laws has manifested itself not in the active presence of multitudes of government agencies implementing environmental management, but rather in their total absence.

Non-enforcement of laws

Pollution has continued unabated in spite of legislation due to the inability of the government to enforce such laws. The DENR has admitted that efforts to stop coastal pollution have succeeded only minimally. This is attributed to the lack of equipment and manpower due to the financially strapped condition of the national and local

governments, uncaring public officials, as well as general apathy of the people.[118]

Financial needs and personal perceptions are not the only reasons for non-enforcement. It is also ascribed to the lack of political will to enforce laws against big business interests whose undertakings have the greatest impact on the environment, manifested in the low priority government gives to environmental protection and affinity for enormous capital investments. This is indicated by the hesitation of the administration to regulate the dumping of mine tailings in rivers,[119] and its continued policy of promoting foreign investments regardless of environmental costs.[120]

Limited environmental policies

Philippine environmental policy in general has always been of limited and shortsighted formulation, stemming from the use-oriented character of laws and policies dealing with natural resources.[121] The fact that such policy is fragmented is seen in the plethora of laws that have been enacted regarding the coastal zone which do not take into account laws already in force, thus producing overlapping mandates and conflicting authorities. An example is the policy against the use of destructive fishing methods: there is already sufficient legislative authority vested by Pres. Decree No. 704 and Pres. Decree No. 1058 upon the BFAR to plan and implement measures for marine conservation, and yet Adm. Order No. 114 (1989)[122] was still issued in order to constitute a committee exercising the same functions. The patent redundancy leads to the conclusion that the government enacts environmental measures only as a reaction to specific issues which happen to catch public attention from time to time.

While the new policy thrust of the present DENR seems laudable, it is merely a department subject to the more general policy guidelines produced by higher levels of executive policymaking. Thus,

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[118]*Pollution killing shellfish sector*, Philippine Daily Inquirer, January 24, 1991.

[119]*Low Fees on Mine Tailings Backed*, 3 TAO-KALIKASAN 7 no. 4 (1988).

[120]*Repormang Pampangisdaan: Sagot sa Karaingan ng mga Mangingisda*, 4 Philippine Currents 29 no. 10 (1989) .

[121]This means that legislation is directed towards maximum exploitation and development of natural resources, equated with optimal production of goods, with environmental impact relegated to a secondary or incidental attention. It is contrasted with "resource-oriented" policymaking, which is designed for rational management and conservation of natural resources in order to prevent their depletion and degradation. *See generally* A. Tolentino, *supra* note 105.

[122]Constituting the Presidential Committee on Illegal Fishing and Marine Conservation.

the department can operate only within a limited field allowed to it by its superiors, and is easily subject to change. Without the latter's support, it is unlikely that the DENR can realize its own policy goals. Mere replacement of the DENR Secretary is sufficient to effectively derail whatever progress has been made by the incumbent.

Logistical inadequacy

Government capability for managing natural resources in general is commonly criticized for being sorely inadequate. Financial resources required to support field operations essential for managing the resource base are insufficient. The regulatory agencies are commonly without vehicles, fuel, communications, or daily and travel allowances.[123] Without assurance of mobility and communications, staff and personnel are unwilling to undertake field work, especially in areas where personal safety or security are believed to be uncertain. Lack of support services and adequate allowances provide no incentives for resource management staff to venture into their areas of responsibility.[124] This situation is seen to exist in both the DENR and the Department of Agriculture (DA).

III. FATHOMS BELOW

Municipal Fishery Resources

The waters wherein municipal fishing[125] activities take place include not only streams, lakes, and tidal waters within a municipality, but also marine waters within 3 nautical miles of the municipal coastline; as guaranteed by law, these municipal waters cover a total of about 97,207 sq. km., which was increased to 118,471 sq. km. under LOI 1328.[126] However, due to motorization, municipal fishing vessels registered in municipalities operate well beyond this limit,[127] in farther marine waters occupied by slightly larger commercial boats.

Historically, municipal fisheries contribute the greater part to annual fish production. It is estimated to have maintained an approximate 55-60% share of total catch over the 1960's to the 1970's.[128] From 1973 to 1986, of the aggregate annual fisheries production growth

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[123]PHIL. ENVIRONMENT, *supra* note 19, at 40.

[124]*Id.*

[125]*Municipal fishing* or *municipal fisheries* is an economic sector which engages in fishing activities that utilize boats of 3 gross tons or less, or fishing gear not requiring the use of boats. Pres. Decree No. 704 (1975), sec. 3[o].

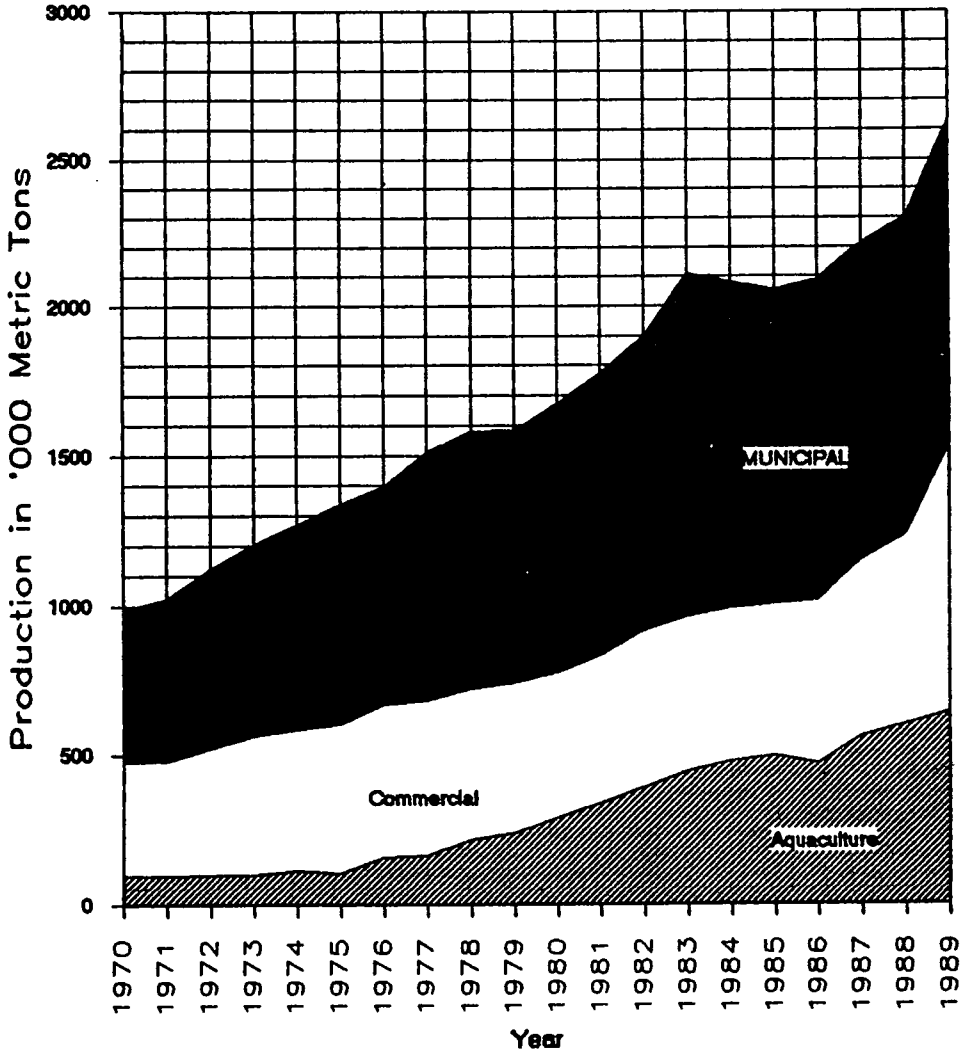
[126]1 CONFERENCE , *supra* note 25, at 24.

[127]MUNICIPAL FISHERIES , *supra* note 35, at 3.

[128]*Id.*

from 1,205,000 tons to 2,089,000 tons, the municipal fisheries sector was responsible for about half by expanding from 640,000 tons to 1,072,000 tons.[129] (**Figure 6**) It was once estimated that with improved fisheries technology and adequate support from the government, the annual fish production could reach double its rate in 1970-1975 - a total of 3,145,993 metric tons.[130]

Fig. 6. Fisheries Production by Sector, 1970 to 1989



Source: Phil. Statistical Yearbook, 1989; Data for 1989 - BFAR

[129]PHIL. ENVIRONMENT, *supra* note 19, at 42.
[130]PREPF REPORT , *supra* note 26, at 111.

Marine waters subject to municipal fisheries

Philippine waters contain considerable areas suitable for fishing, which have been identified by both government and non-government agencies through the years (See Figure 2). Almost 50% of both the commercial and municipal catch of the Philippines at present comes from Visayan and Sibuyan Seas in the Central Philippines. On the western side of the archipelago, the Sulu Sea, Bohol Sea, and the Moro Gulf are said to be still at less than full exploitation. Because of its depth, however, the Sulu Sea is not particularly productive, and is more suited for large scale commercial fishing[131] activities. The Pacific or east coast includes resources from Dapitan Bay in the North to the Sarangani Islands off the southern tip of Mindanao. Of all the east coast fisheries, only the fin fisheries of San Miguel Bay and Lamon Bay have been judged to be fully exploited, although there is a general lack of data on utilization of the east coast.[132]

Fishing is presently concentrated in traditional fishing grounds now recognized by the BFAR as overfished. It is acknowledged that a pattern of overcapitalization in the industry and concommitant overfishing has emerged, with regard to demersal, the small pelagics, and the tuna fisheries. As previously stated, both municipal and commercial fishing ventures take place within traditional fishing grounds. Effort in the fisheries sector as a whole is two or three times in excess of optimal exploitation rates. This has resulted in net decrease in fish catches during the last five to ten years.[133] Thus, the 3-million-metric-ton yield previously forecasted for municipal fisheries may never be achieved.

Municipal fisheries, in particular, restricted as they are to the shallower coastal areas, have most probably reached, if not surpassed, their maximum sustainable yield. Only the coastal fisheries of Palawan and Tawi-Tawi do not appear to be similarly declining.[134] Since coastal waters and shallow continental shelf areas are historically the first areas to have been fished, the effects of overfishing in these waters by municipal fishermen[135] are undoubtedly

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[131]*Commercial fishing* refers to fishing for commercial purposes in waters more than seven (7) fathoms deep with the use of fishing boats of more than three (3) gross tons. Pres. Decree No. 704 (1975), sec. 3[c] .

[132]MUNICIPAL FISHERIES,*supra* note 35, at 15-17.

[133]D. Pauly, *supra* note 23, at 5.

[134]MUNICIPAL FISHERIES , *supra* note 35, at 14.

[135]*Municipal fishermen* or *small-scale fisherfolk* are equivalent to the terms artisanal or traditional fishermen. By law, municipal fishermen are those engaged in municipal fishing. All other fishermen are considered commercial fishermen. Municipal fishermen fish in both marine and inland waters. MUNICIPAL FISHERIES, *supra*

greater than in deeper waters beyond the continental shelf.[136] Municipal fishermen rely on traditional fishing areas and rarely venture beyond its confines. Living as they do on a subsistence level, they suffer the brunt of the degradation of the resource.

Municipal fisheries also derive great advantage from the presence and condition of coral reefs. Approximately 75% of fish identified with reef habitats are caught by the municipal fisheries sector,[137] and it has been estimated that coral reefs contribute as much as 20% of the production of municipal fisheries.[138] This is sufficient to consider coral reefs as an important part of municipal fishery areas, as they are part and parcel of the environment that sustains the creatures inhabiting these areas.

The small-scale fisherfolk

For the purposes of this paper, the term small-scale fisherfolk shall be used instead of municipal fishermen. The latter term is a classification stemming from the use of boats of 3 gross tons or less, or fishing gear which do not require the use of boats, under P.D. 705. Small-scale fisherfolk is a more comprehensive term, as it may cover even those only indirectly involved in the municipal fishing activity, such as commercial fishworkers and those employed in the aquaculture sector, whose areas of operation are also located within the coastal zone.

There are no reliable statistics on fisherfolk numbers. It is thought that, as a whole, the fishing industry directly employs some 1 million fishermen and fish farmers.[139] In 1985, the estimated primary employment figure for the fisheries sector was about 3-4% of the national labor force, although this is quite dubious as regards the municipal and aquaculture sectors.[140] Aside from direct involvement in the fishing occupation, municipal fishing provides employment

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note 35, at 2. For the purposes of this paper, they include "subsistence fishermen", who are directly dependent on the fishing activity for daily living, but should not be construed to pertain only to the poorest fishermen who are on the edge of existence day to day and who will perish if they do not fish for one day. R. P. Lotilla, *Developing the Law on Fisheries and Living Aquatic Resources*, 10 PHIL. L. GAZ. 1,8 (1989) *citing* excerpts of the deliberations of the Constitutional Commission on the constitutional provisions for subsistence fisherfolk.

[136]MUNICIPAL FISHERIES, *supra* note 35, at 15.

[137]E. FERRER, *supra* note 44, at 2.

[138]MUNICIPAL FISHERIES, *supra* note 35, at 22.

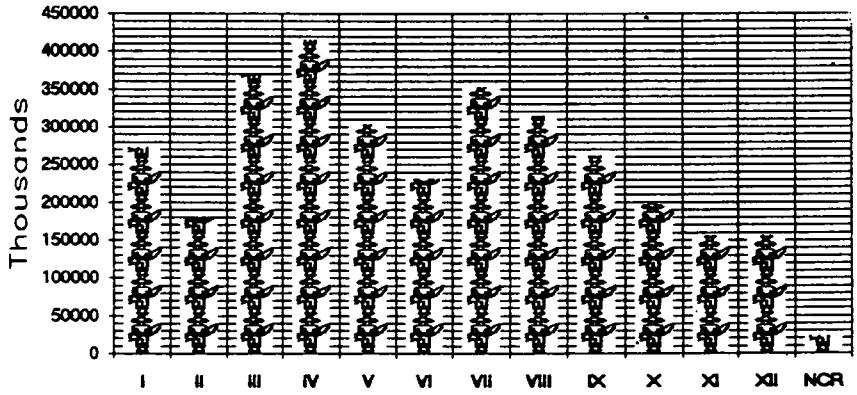
[139]PHIL. YEARBOOK , *supra* note 24, at 354.

[140]PHIL. ENVIRONMENT, *supra* note 19, at 42.

indirectly through fish marketing and distribution, fish processing, net making, and boat construction.[141]

Projections of actual municipal fisherfolk population vary greatly due to lack of reliable statistics. The municipal fisheries sector is officially estimated to directly employ as many as 770,000[142] full time and part-time fishermen who live in more than 10,000 fishing barangays scattered in coastal villages throughout the country.[143] However, the latest census of fishermen, done in 1980, indicate that these statistics are questionable, as an examination thereof reveals that the above-stated figures apparently approximate the aggregate of fishing households, and thus, could actually refer to the number of household heads engaged in fishing rather than the total fisherfolk population. In addition, large numbers of families who gather molluscs or fish for their immediate household consumption are probably not included in official statistics.[144] At present, the major regions where municipal fishermen are located are the Southern Tagalog (Region IV), Central Luzon (Region III), Bicol (Region V), Central Visayas (Region VII), and Eastern Visayas (Region VIII) regions. (**Figure 7**)[145]

Fig. 7. Fisherfolk Population, 1980



[141]A. Librero, et. al., *Socio-economic Conditions of Small-Scale Fishermen and Fish Farmers in the Philippines*, in SMALL-SCALE FISHERIES IN ASIA: SOCIO-ECONOMIC ANALYSIS AND POLICY 36 (1985) [The latter work hereinafter cited as SMALL-SCALE FISHERIES]

[142]2 CONFERENCE , *supra* note 71, at 19.

[143]PHIL. ENVIRONMENT, *supra* note 19, at 42.

[144]MUNICIPAL FISHERIES, *supra* note 35, at 3.

[145]NATIONAL CENSUS AND STATISTICS OFFICE, 1980 CENSUS OF FISHERIES.

The other fisherfolk covered by the term "small-scale", such as commercial fisherworkers, who work for commercial fishing businesses, number about 50,000; there are also aquaculture fishworkers employed in fishponds, fishpens, and seafarms, estimated at 220,000.[146] Treating these classes of persons distinctly will only make research difficult since it is not uncommon for fisherfolk to engage in other occupations, such as selling and processing, to augment their incomes. Based on a 1977 inventory of municipal fishing units, 54% of fishermen in the country engaged in full-time fishing activities, 30% were part-time, and 16% fished occasionally. About 80% of municipal fishermen studied were boat owners, 6% were boat renters, and 14% were fish laborers or shareworkers.[147]

The average age of a small-scale fisherman is forty (40), with the youngest coming from the Southern Tagalog and Western Visayas and the oldest from Ilocos. On the average, fishermen spend half their lifetime fishing, much of which is usually done at night. The average educational attainment is 5.3 years in school.[148]

Many fishing families apparently supplement their income with non-fishing, chiefly agricultural and service, activities. The primary reason for undertaking non-fishing work is to supplement household income during the monsoon season, when rough seas make fishing very difficult, if not impossible.[149] However, for many, fishing activities are a more important source of income than either agricultural or non-agricultural activities.[150]

There seems little doubt that municipal fishermen are among the poorest of the nation. In 1978, average per capita income levels for municipal fisherfolk were approximately one-half of that required to maintain a six-member household.[151] For the country as a whole, the standard of living of municipal fishermen, as measured by their net average household incomes, was considerably lower than the rural average and the national average.[152]

One of the causes of low income levels appears to be the low productivity of the fishing activity. BFAR studies in 1976-1977 show productivity to be uniformly low, averaging about 1.33 metric tons per

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[146]IBON Facts & Figures, August 31, 1989, p. 2.
[147]SMALL-SCALE FISHERIES, *supra* note 141, at 38.
[148]*Id.*
[149]MUNICIPAL FISHERIES , *supra* note 35, at 49.
[150]*Id.*, at 6.
[151]*Id.*, at 4.
[152]SMALL-SCALE FISHERIES, *supra* note 141, at 42.

fisherman annually.[153] This is attributed to the relatively inefficient technology employed by small-scale fisherfolk; but the more important reason may be the intense competition and overfishing that exists within traditional fishing grounds.

Relatively low prices are also received by fishermen for their catch, which is composed primarily of lower grade species, hence the corresponding low prices. Even if higher-grade fish are caught, still the prices received for them are relatively low. Inflation of basic commodities such as food and clothing, as well as costs of transport, further contributes to the low standard of living of municipal fishermen. It is unlikely that the prices received by fishermen for their catch increase along with the prices for these commodities.[154]

Technology of municipal fisherfolk

Municipal fishermen are known to use very traditional fishing methods at present, leading to production figures per fishing banca or per fisherman much lower than that possible with the application of modern technology.[155] Common fishing methods require more labor than capital, and cheaper native materials are more commonly used. This is due to the lack of sufficient capital to build and use improved technologies; fishermen use whatever commodities are available in the locality to make their own fishing equipment.

The typical municipal fisherman operates a small, light, reinforced dug-out craft (*banca*) of not more than 3 gross tons, and also other gear, such as corrals, not requiring the use of boats but still widely used within municipal waters. Originally, bancas were propelled with paddle or sail; in recent years, motorization has gained increasing acceptance. Even the motorized banca, however, is unsuitable for marine operation far from shore.[156]

Fishing gear are generally classified into the following categories:[157]

> 1. Hand instruments - devices not made of textiles and operated by a single man
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> 2. Barriers and traps - all types of gear not made of textiles, which are either temporarily or permanently fixed to the bottom,

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[153]MUNICIPAL FISHERIES , *supra* note 35, at 4.
[154]*Id.*, at 6.
[155]*Id.*, at 27.
[156]*Id.*, at 27, 43.
[157]*Id.*

> and in which fish are caught in an area they have entered after being led, enticed, or attracted to it
>
> 3. Lines devices consisting of baited hooks attached to a line or lines and in which fish fall victims to baits
>
> 4. Nets - all fishing gear principally made of woven or knitted fabrics with uniform mesh size

The predominance of certain types of gear varies from region to region, with baby trawl, longline, and bag nets providing significant proportions of the catch in Regions II, IV, IV-A, and IX. Gill nets and hook & line are most widely used and estimated to provide slightly more than half the municipal fisheries catch.[158]

Each municipal fisherman is usually limited to a single type of fishing gear operation. Effective operation on the average is limited to from five to eight (5-8) hours a day, usually taking place at nighttime, and requires hard manual labor in the coldness of the open seas. Fishing is done for approximately twenty (20) days each month, with a peak season of six (6) months each year. This is mainly due to the seasonality and availability of certain species of fish during any specific period of time. Year-round, full time fishing is very difficult for fishermen to engage in.[159] Climatic conditions also prevent continuous fishing activity, especially along the east coast. Extended periods of bad weather occur between July and November each year, affecting both marine and inland municipal fishermen.[160] The northeast monsoon severely restricts fishing in the eastern areas between December and March. Due to this, the effective fishing season lasts only about six months annually.[161] The rest of the year, fisherfolk must turn to other sources of income.

Production and marketing of catch

As stated, fishing activity for municipal fishermen is seasonal in nature, and fishermen themselves are only part-time workers. A large number of them, probably a majority, do not own fishing craft, and usually resort to renting from fishermen who own more than one banca, or from non-fishermen owners. Others fish with their family members and other relatives, or work as laborers in larger municipal craft, or depend

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[158] *Id.*
[159] *Id.*, at 43.
[160] *Id.*, at 49.
[161] *Id.*, at 16.

upon the generosity of better-off relatives and *kumpares* (compadres), including boat owners and middlemen.[162]

Aside from borrowing boats, many fishermen also borrow gear, often from individuals who are not fishermen, since the latter are the ones who can afford three or more types of fishing gear. As there are many non-fishermen who see gear and boat rentals as a profitable venture in the coastal municipalities and barangays, it is not uncommon to find a complete separation of capital ownership (i.e., of vessels and gear) from labor. Rentals commonly take the form of a share in the catch given to the boat or gear owner, which varies depending on the strength of the family or social relationship between the fisherman and the owner, and upon the level of the catch.[163]

A catch sharing system has also evolved in order to accommodate fisherfolk with neither vessels nor gear. More fortunate fishermen are often obliged to share their catch with those not so lucky, either as compensation for aid rendered on fishing ventures, or in the simple spirit of community solidarity. Fisherfolk communities have been noted to develop more of these concrete ties of interdependence and mutual concern for each other's welfare.[164] A strong sense of being in the same boat, literally and figuratively, is firmly rooted in the local culture.

Municipal fisheries catch are disposed of wholesale at fish landing areas, either sold fresh to consumers, consumed fresh or processed by the household, or sold to local processors.[165] But since fisherfolk fish primarily to sell their catch, fishing for household consumption is merely a secondary consideration. It is not infrequent for them to sell their first or second class fish and then buy third class fish for their own consumption,[166] since fishermen earn needed cash only through sales. They do not usually have control over where or to whom their catch is marketed, as the desire to transform the catch into monetary income is more pressing.

A central factor in the livelihood of municipal fisherfolk is the *suki* relationship between seller and buyer.[167] The *suki* system is one of patronage in which a customer regularly buys from the same seller and

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[162]*Id.*, at 49.

[163]MUNICIPAL FISHERIES , *supra* note 35, at 49-50.

[164]F. JOCANO AND C. VELORO, SAN ANTONIO: A CASE STUDY OF ADAPTATION AND FOLK LIFE IN A FISHING COMMUNITY, Quezon City, UP-NSDB Integrated Approach Program (1976) cited in *id.*, at 51.

[165]MUNICIPAL FISHERIES , *supra* note 35, at 3.

[166]*Id.*, at 52.

[167]*Id.*, at 50.

receives special favors from him or her in return.[168] The *suki* assures the fisherman with a more or less stable source of income. These major buyers of catch are middlemen[169] who market the fish in the inner cities and municipalities. The middlemen are often supplied by a number of fishermen-suppliers (*ka-isda*). They use their capital to finance both fishermen and market vendors, buying fish wholesale, bringing them to market and either distributing them to various vendors (*tinderas*) themselves, or remaining wholesale buyers (*mamamakyaw*).[170] As to the vendors, unlike fishermen who depend primarily on a single broker, they may establish *suki* ties with several brokers, thus assuring themselves of steady supply and variety of fish.[171] On the other hand, those who loan capital (*mamumuhunan*) are likely motivated not only by the profit from the debt, but also from the assured supply that the indebtedness of the fishermen guarantees.[172] They are not so much interested in collecting the debt, because for as long as it is outstanding, they are assured of ongoing trade and will continue to make a sizable largess from the catch that their *ka-isda* delivers.[173] More profit is gained by the *mamumuhunan* in the long-term when their loans are not paid off by the indebted fisherfolk.

The presence of middlemen in the market structure is, as is common in the agricultural sector, encouraged by the lack of access to the town markets where the fish are sold. For instance, in the Laguna de Bay area, middlemen link deeply indebted small-scale fishermen to the markets of Manila and outlying provinces.[174] Without middlemen, the fishermen are unable to market their catch, and thus their incomes depend directly upon the prices that the middlemen would care to give them for their catch.

Moneylenders also play an important part in the market structure. The "*paluwagan*", as it is locally known, provides easy and quick cash on credit without need for collateral or any other formalities as required by legitimate banking or credit-extension practices. Although the interest can be be as high as 20% a month (a practice called "5-6", referring to the agreement that each five-pesos should be paid back as six pesos) or more, it is attractive to needy fisherfolk because of the ease with which credit can be obtained. If credit was not

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[168]*Id.*, at 51.

[169]Oftentimes called "rigaton".

[170]*Id.*, at 51.

[171]*Id.* ,at 53.

[172]*Id.*, at 51.

[173]F. JOCANO AND C. VELORO, SAN ANTONIO: A CASE STUDY OF ADAPTATION AND FOLK LIFE IN A FISHING COMMUNITY, Quezon City, UP-NSDB Integrated Approach Program (1976) cited in *id.*, at 51.

[174]*Id.*

required for the vessel or the gear used, fisherfolk still turned to moneylenders for operating expenses such as food, gasoline, and bait, especially during the off-season where no income is earned for extended periods.[175] Thus, ownership of boat and gear does not prevent fisherfolk from remaining perpetually in debt.

Studies have hinted that fishermen would prefer an alternative market structure that allows them to directly market the catch and thus have a greater role in determining the price. In Panquil Bay, Mindanao, it was found that where the fisherman and the buyer could not agree on a price, the fisherman would, if he had easy access to the town markets, frequently market his catch on his own; a study of fishermen in Pasil, Cebu found that some who have banded together deliver their combined catch directly to market without the services of any dealer.[176] The preference would be a logical alternative, since the middlemen, *mamumuhunan*, and moneylenders are presently in control of the price received for fish, and indirectly of the income earned by the fisherfolk. In times of high demand and low supply, fishermen cannot take advantage of the high prices exacted by the sellers, as the percentages of the middlemen and others in the marketing chain detract from their earnings. Direct marketing of the catch would allow the fisherfolk to actually reap the benefits of the law of supply and demand.

An alternative selling method common in many parts of the Philippines involves sale by "whisper bidding" or *bulungan*, a silent auction. *Bulungan* is a common selling method at the point of first sale, literally at the beach, wharf, or port where the fisherman lands his catch. The fisherman is offered a price by prospective buyers whispering their bids to him. But the *suki* also plays an important part in *bulungan*, since he can enjoy either a preference by the seller, or may know the best price to bid.[177] By its nature, *bulungan* does not spur prices on in the manner that open competition can.

The market structure described above makes it possible for the sellers (producers and brokers) to have their own pricing policies.[178] They can choose the method of sale which may be through (1) auction in open/secret bidding; (2) a pre-arranged contract for a steady supply of

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[175]M. HOPKINS AND E. MCCOY, MARKETING OF FISHERIES PRODUCTS BY MUNICIPAL FISHERMEN IN PANGUIL BAY, Auburn, Alabama, Auburn University Research and Development Studies (1976), cited in MUNICIPAL FISHERIES , *supra* note 35, at 52.

[176]N. CUYOS AND A. SPOEHR, THE FISH SUPPLY OF CEBU CITY: A STUDY OF TWO WHOLESALE MARKETS, Cebu City, 4 Philippine Quarterly of Culture and Society 160 no. 3 (1976), cited in *Id.*, 52-53.

[177]MUNICIPAL FISHERIES , *supra* note 35,at 51.

[178]A. Librero, *Marketing System for Fish in the Philippines*, SMALL-SCALE FISHERIES , *supra* note 141, at 197, 202.

fish; or (3) first-come first-served basis.[179] However, many small-scale fishermen operating in coastal barangays far from large municipal centers, lacking the experiential and educational background necessary for equal dealing with middlemen, and pressured by the ever-present need for cash, commonly resort to traditional systems of *bulungan* and *suki*. Thus, other more profitable modes of sale are more likely to be used by middlemen instead.

Issues Confronting the Fisherfolk

Problems confronted by small-scale fisherfolk range from immediate difficulties with the resources upon which they depend, to more abstract obstacles such as government policies. These issues include the direct effects of the present status of the larger coastal environment.

Degradation of fishery resources

Though there are various reasons for the depletion of the fish supply, most fishermen perceive overfishing as the prime factor. This is most felt in traditional fishing grounds. There appears to be more evidence of overfishing of nearshore species, the implication being that municipal fishermen are more likely to be affected by overfishing than commercial fishermen who can fish for demersal and pelagic stocks farther off-shore.[180]

National municipal fisheries catch is levelling off, probably approaching if not surpassing maximum sustainable yield levels.[181] This is largely due to the concentration of fishing effort within municipal fisheries. The coastal and inland fisheries exploited by municipal fishermen are "open-access" in nature, that is, the resource belongs to the fisherman who harvests the catch.[182] When entry into fishing grounds is not restricted or controlled, it is inevitable that over-exploitation of the resource and over-capitalization of the fishing industry will occur.[183] Aside from increased effort by municipal fishermen attempting to obtain higher catches, there is also competition from commercial vessels operating within the same grounds. It has been observed that competition between commercial fisheries and small-scale fisheries is severe, even in near-shore areas.[184] The ban on trawlers, fine mesh nets,

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[179] *Id.*, at 200.
[180] 1 CONFERENCE, *supra* note 25, at 25.
[181] MUNICIPAL FISHERIES , *supra* note 35, at 14, 73.
[182] 1 CONFERENCE , *supra* note 25, at 4.
[183] *Id.*, at 3.
[184] PHIL. ENVIRONMENT , *supra* note 19, at xi.

and destructive fishing practices such as blast fishing also lead to higher fish catch and fish kills.

As stated, pollution has greatly affected fishery production in nearshore areas. Coastal seafarmers raising oysters and mussels are most affected by pollutants.[185] Diminishing fish catch is also attributed by fisherfolk to destructive fishing methods, growth overfishing, mangrove depletion, and siltation.

Low levels of technology

Development of technology in the municipal fishery sector occurs at a much slower rate than in the aquaculture and marine commercial sectors of the fishing industry.[186] Technology research for the municipal fisheries sector has been quite minimal and insufficient to solve the problems of vessel, gear, and engine limitations.[187] On the fishermen's part, upgrading of implements is impeded by such causes as lack of fishing grounds and of adequate capital to answer to the high prices of vessels, fishing equipment and inputs, especially fuel.

The present size of most municipal fishing outfits limits their operation to areas near the coastline. With many traditional areas overfished, the result is overcrowding and low average productivity. In addition to the limited range of operation, the size and design of the bancas hinder effective fishing operation, do not allow for adequate fish storage after catch, and preclude installation of better engines and sophisticated fishing equipment. Moreover, for lack of shelter on board, fishermen are not protected from unfavorable weather, making them unable to operate in exposed conditions in the seas for a long period of time.[188]

On the other hand, provision of improved fishing technology for increased efficiency is not the answer to this problem. Increased motorization of bancas operating in traditional fishing grounds would increase the catch of some fishermen, possibly at the expense of others, but certainly of overall sustainable fish catch. Motorization and improved efficiency would not help fishermen cope with a limited and dwindling resource. Where fishing grounds already suffer from intense competition, any additional effort would only depress the catch per

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[185]*Pollution killing shellfish sector*, Philippine Daily Inquirer, January 24, 1991, p. 12.

[186]MUNICIPAL FISHERIES , *supra* note 35, at 43.

[187]*Id.*

[188]*Id.*

fisherman.[189] Furthermore, although motorization does lead to larger catches and larger gross receipts, some findings suggest that non-motorized boats yield a greater net income than motorized boats. This is explained by the higher costs, particularly fuel, and higher depreciation of motorized boats.[190] It may be that the costs of maintaining a motorized banca and advanced gear are not worth any increase in income that may result.

Since fishermen are usually limited to only one type of gear, another solution commonly offered is for fishermen to engage in multi-gear operation. However, the application of this kind of method faces two major constraints. Firstly, the use of two or more types of gear requires higher capital investment which most fishermen today cannot afford. Secondly, it is difficult to redesign a small banca to fit two or more types of gear.[191] The ultimate result would only be an increase in efficiency in catching fish; but as stated above, this is not necessarily helpful to the fisherman.

In some instances, existing labor-intensive fishing systems are preferable to technologically more effective systems which may cause an increase in local unemployment and create more social problems, outweighing the anticipated economic efficiency in the human misery they would bring and the welfare programs they entail.[192] It has been found that project-supplied new technology, more costly than the old, is frequently affordable only by the wealthy fishermen or others who are already well-off. This new technology provides them with considerable advantage over the poorer fishermen, thus bringing about greater social and economic stratification, with its potentially destructive social effects.[193] The poor would only become poorer while the rich get richer, as the saying goes.

Inadequate market structure

Fisherfolk derive their livelihood mainly from the marketing of the fish catch. Problems faced by them include lack of infrastructure and the unequal distribution of benefits.

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[189]The Philippines: Fisheries sector study. Report of the USAID/Philippine Fisheries Mission, 1-31 August, 1977, cited in MUNICIPAL FISHERIES, *supra* note 35, at 13.

[190]A. Librero, et. al., *Mechanization: Its Impact on the Productivity, Cost Structure, and Profitability of the Philippine Municipal Fishery*, in SMALL-SCALE FISHERIES 151, 161 (1985).

[191]PHIL. ENVIRONMENT , *supra* note 19, at xi.

[192]R. POLLNAC, SOCIO-CULTURAL ASPECTS OF DEVELOPING SMALL-SCALE FISHERIES: DELIVERY OF SERVICES TO THE POOR i (1981).

[193]*Id.*, at ii.

Fisherfolk complain of the shortage of fish landing areas or port facilities, which are diminishing in size due to competing shore-based activities such as resort-building and industrial siting. A dispersed fish marketing situation still prevails in the municipal fishing sector where catch is landed in fishing villages. On designated landing areas, facilities such as ports, ice plants, and cold storage areas are inadequate.[194]

Inefficient collection and distribution of fish, which result in areas of surplus (Southern Luzon, Visayas) and deficits (Northern Luzon, Mindanao) and consequent price differentials, also result from deficiencies in infrastructure.[195] For instance, the eastern seaboard of Northern Luzon, Samar, and Eastern Mindanao suffers from relatively undeveloped roads and ports that might facilitate marketing of an expanded fish catch.[196] A twenty per cent (20%) loss in production (*i.e.*, 20% of the fish caught and landed deteriorate and never reach the markets in consumable state) is not atypical in many areas, without which perhaps as much as 300,000 metric tons of fish could be available to consumers.[197]

Even under-exploited areas, such as Palawan and Sulu, will produce low returns for fishermen if they are so geographically isolated that the catch cannot readily be transported to markets.[198] Frequent gluts cause low prices.[199] Too few fish plants and collection centers with cold storage facilities, and absence of refrigerated transport systems to link surplus and deficit areas[200] make preserving the catch difficult and cut fisherfolk off from the inland markets. Since the resource is open-access in nature, the extreme perishability of the catch creates a situation where fisherman incomes are likely to be low; if the catch is spoiled, the buyer can readily turn to other available sources.[201] And where supply is plentiful, prices tend to be cheap.

As explained above, the *bulungan* results in secrecy of prices and puts the fisherman at a significant disadvantage.[202] An unequal distribution of benefits also inevitably results from the involvement of a

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[194]A. Librero, *Marketing System for Fish in the Philippines*, in SMALL-SCALE FISHERIES 197, 203 (1985).

[195]*Id.*

[196]MUNICIPAL FISHERIES , *supra* note 35, at 16.

[197]*Id.*, at 25-26.

[198]*Id.*, at 4.

[199]*Id.*, at 52.

[200]R. POLLNAC, SOCIO-CULTURAL ASPECTS OF DEVELOPING SMALL-SCALE FISHERIES: DELIVERY OF SERVICES TO THE POOR i (1981).

[201]MUNICIPAL FISHERIES , *supra* note 35, at 16.

[202]2 CONFERENCE , *supra* note 71, at 107.

long chain of middlemen in the fishing industry. Although middlemen might be necessary, they tend to inflate the marketing costs. A study of the Philippine Fish Marketing Authority (PFMA) showed that fish is traded at least 4 times before it reaches the consumer. In the process, prices increase by as much as 200%. The quality of the fish also suffers because of the long marketing chain.[203]

Fishermen themselves very rarely have any contact with the final consumer of the catch.[204] This contributes to the uncertainty of their prices, as they receive little or no information on supply and prices from nearby markets, and fish prices are easily subject to control by middlemen. The latter also tend to prevent fishermen from taking advantage of higher prices in times of low supply.[205] The *ka-isda* and *mamumuhunan* system prevent competitive market forces from bringing prices in the various locales into line with the supply and demand conditions and costs of transporting fish between market centers.[206]

Institutional constraints

It has been noted that for a country which obtains more than sixty per cent (60%) of animal protein food supply from fish, it is quite surprising to find the very limited appreciation and understanding of fisheries in government which led to the unprecedented proliferation of institutions involved in fisheries.[207] There is duplication and overlapping of mandates of too many fisheries institutions, distribution of functions among different agencies, and logistical inabilities emanating from the inefficient or wasteful allocation of government resources.

Overlapping mandates

The problem of overlapping mandates has been shown in the discussion of the same with coastal resources. In the area of fisheries, it has caused the weakening of the national fisheries institution (BFAR) on account of the proliferation of offices and agencies involved in fisheries and fisheries-related activities. While there are increased government expenditures in manpower, equipment, and operation, the resulting programs are fragmented, uncoordinated, and the impact on the industry dissipated, particularly for poor small-scale fishermen.[208] The

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[203]R. POLLNAC, SOCIO-CULTURAL ASPECTS OF DEVELOPING SMALL-SCALE FISHERIES: DELIVERY OF SERVICES TO THE POOR i (1981).

[204]SMALL-SCALE FISHERIES, *supra* note 141, at 51.

[205]*Id.*, at 52.

[206]*Id.*

[207]1 CONFERENCE , *supra* note 25, at 30.

[208]1 CONFERENCE , *supra* note 25, at 18.

BFAR virtually competes for administration of the fishery areas with other agencies of the DENR, which have been given respective mandates to enforce the rules and laws they administer over areas properly belonging to the coastal zone. For example, the Environmental Management Bureau has the power to enforce water pollution standards; the Forestry Management Bureau exercises administrative jurisdiction over mangrove areas as long as they are classified as forest lands; the Mines and Geosciences Bureau oversees the effects of mining activities on nearby bodies of water; and the Protected Areas and Wildlife Bureau controls marine areas regarded as protected habitat. The BFAR will also have to contend with the Department of Tourism, and other arms of the Department of Agriculture, to name a few; to say nothing of local entities that have been created for specific areas (*e.g.*, the LLDA). Thus the BFAR is unable to adequately respond to what is required of it by the sector it administers.

The most apparent conflict is in jurisdiction and administration, existing between the DENR and the BFAR under the DA. While the DENR is committed to management and conservation of fisheries resources, the DA is more concerned with fish production and increased output.[209] This is causing dismemberment of fisheries as an economic sector, and is seen by government and non-government organizations as clear proof that the government does not recognize fisheries as an important economic sector.[210]

As to active governmental functions, there has arisen a question as to whether the BFAR is still empowered to carry any protective resource management activities. Apparently, the BFAR has been relegated to planning, research, and extension service functions;[211] no mention was made of the conservation and management of fishery resources which is an important aspect of development, nor of any authority for rule-making and law enforcement.[212] The former functions are presumed to be within the general powers of the DA,[213] while there appears to be a void in the law as to the latter. House Bill No. 106, which seeks to create a Department of Fisheries, was proposed with the intent to remedy this situation.

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[209]Exec. Order No. 116 (1987), sec. 1.

[210]A. Librero, *Marketing System for Fish in the Philippines*, in SMALL-SCALE FISHERIES 197, 203 (1985).

[211]Exec. Order No. 116 (1987), sec. 13 (e).

[212]SMALL-SCALE FISHERIES, *supra* note 194.

[213]*Id.*, at 51.

Dismembered functions of major institutions

The enforcement of fishery laws, rules, and regulations is not indicated in Exec. Order No. 116 as a function of the BFAR, though it is presumed that it continues to exercise its former administrative and quasi-judicial powers under Pres. Decree No. 704. Officials concerned with fishery resource management believe this development to be detrimental to the effectiveness of the Bureau. This is because it would be impossible for two departments (DA and DENR) to effect rational fisheries development, management, and conservation since fishery administration cannot be dismembered from its natural environment.[214]

Distinct aspects of governing the coastal zone in which fisheries thrive are under different government agencies. For example, marine fisheries fall within the BFAR's jurisdiction, existing mangroves are subject to the Forest Management Bureau, vessels are regulated by the Coast Guard, marine parks and fish reserves belong to the Parks and Wildlife Bureau, and pollution is the concern of the Environmental Management Bureau. But none of the agencies which are mandated to manage the resource have any real presence in their respective areas.[215] All are spread out too thinly and inefficiently.

At the regional, provincial, and barangay levels, no fisheries specialization remains as such. E.O. 116 makes no explicit mention of other functions of the BFAR such as licensing, regulatory, and quasi-judicial powers. BFAR formerly had direct supervision of field offices, but is now integrated into the Production Group headed by an Assistant Secretary of Agriculture. Their direct lines to field personnel have been cut and made staff.[216] It is not clear how the present functions, powers, and personnel of the BFAR at the head office and in the field are integrated with the development services of the DA,[217] apparently leaving the matter to the discretion of the Department Head in accordance with his general supervisory powers.

Logistical inabilities

Similar to problems with forest resources, the line agencies concerned with fisheries also suffer from extreme limitations in assets necessary to perform their functions. They lack the type of personnel, skill, and levels of skills required by both the resource and the people

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[214]1 CONFERENCE , *supra* note 25, at 18.
[215]PHIL. ENVIRONMENT , *supra* note 19, at 34-35.
[216]1 CONFERENCE , *supra* note 25, at 30.
[217]*Id.*.

using them.[218] Fisherfolk require specific services in community-organizing, provision of credit, fishing technologies, law enforcement, educational assistance, and other related services to improve their livelihood.[219] As the fisheries establishment has been relegated to a relatively subordinate rank under the dominant agricultural sector, it can only partake of limited portions of the budgetary allocations of the DA. Considering that the waters of the Philippines probably cover a much larger area than the land mass, this discrepancy between the resource administered and the administrator's reach is obviously one major cause of the BFAR's difficulties.

Policy inadequacies

Current directives in fishery resource management constitute a major obstacle to proper regulation of resource utilization. In the absence of a relevant administration policy, the viability of fishery resources unavoidably declines.

Lack of a clear fishery policy

Fisheries institutions both in and outside of government agree that the conduct of this government in managing fishery resources has been marked with ambivalence.[220] On one hand, there are policies which seek to increase exploitation; on the other, there are those which emphasize conservation and preservation. This is exemplified by the apportionment of different tasks and jurisdictions between the DA and DENR, and the transfer of jurisdiction over BFAR during the past few decades.[221]

Perhaps most indicative of the neglect of government for the fishery sector in general, the Medium-Term Philippine Development Plan for 1987-1992 submitted by the NEDA gave scant attention to fisheries. It is ironic that an archipelago boasting of extensive waters and coasts would not even consider fisheries in its economic development planning.[222]

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[218]SMALL-SCALE FISHERIES, *supra* note 194.

[219]*Id.*, at 57.

[220]1 CONFERENCE , *supra* note 25, at 17.

[221]*See generally* R. Sagun, *The Law on Fisheries and Aquatic Resources* (Compilation of Papers of the National Conference on Fisheries Policy and Planning, Baguio City, March 16-20, 1987, pp. 29-30) [the latter work hereinafter cited as 3 CONFERENCE].

[222]The said plan, approved and adopted in Proc. No. 51 (1986) contains only four items for fisheries, for the continuation of two ongoing programs, and two proposed projects. And those items were only parts of a table; no extended discussion of

It has been noted that there is no apparent integrated approach to regulating and managing municipal capture fisheries. Municipal capture fisheries can only be sustained through the definition of ground rules and substantial enforcement assistance from the central government. Presently, the BFAR and local governments have very little to offer municipal fisheries with respect to controlling access to the resources, securing tenure for those with access, assisting fishery community organization, or providing appropriate technologies and credit.[223]

Questionable policy goals

Previous government polices promoted an essentially production-oriented fisheries development strategy which stressed higher yields and intensive capital investment. Although presumably undertaken with good intentions, the programs benefitted mostly private sector investors in commercial fishing and aquaculture, to the detriment of small fisherfolk communities in coastal and inland waters.[224] This was an inevitable result of policy formulation which emphasized greater production and not promotion of the welfare of dependent small-scale fisherfolk. Thus, Pres. Decree No. 704 has been severely criticized by fisherfolk organizations for encouraging the participation of private business interests, allocating fisheries as a preferred area for local capitalists and foreign investors, and orienting the industry towards exports.[225] Unfortunately, no substantial changes have been made to this production-oriented strategy. As always, meeting GNP targets on paper apparently is of a higher priority than addressing the actual needs of the population.

Administrative Order No. 114, creating a special committee on marine conservation, has been berated even by the United States Agency for International Development (USAID) as a negligible response to the environmental issues for which it was made. It was noted that no new powers nor funds were granted to the eight-man committee, which only continued the "words for deeds" pattern in the handling of natural resources.[226] While official criticism should not be considered as proof of the flaws imputed, it would seem that the external assessment of the

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economic policy for fisheries can be found in the text. *See generally* MEDIUM-TERM PHILIPPINE DEVELOPMENT PLAN (1987-1992) 102-108 (1986).

[223]PHIL. ENVIRONMENT , *supra* note 19, at 96.

[224]1 CONFERENCE , *supra* note 25, at 22.

[225]C. Biruin and A. Pascua, *Philippine Fisheries: What's the Catch?*, Philippine Currents, October 1989, p. 6-9.

[226]*US AID report cites continuing neglect ensuring RP fisheries collapse*, Animal Husbandry and Agricultural Journal, Mar 1990, p. 71.

existing program is that certain policies are enacted more for show than for effect.

The current fisheries development program which the World Bank has recommended to the government has been criticized as aimed toward an export-oriented and import-dependent fishing industry. It seeks to improve only the commercial fisheries and aquaculture, divert the small-scale fishermen from their present livelihood, and encourage their absorption into the traditional agricultural crop sector or industries, thus turning them into small wage-earners. It is feared that fishing areas might be placed under the control of big local and foreign capitalists.[227] This is consistent with the "more jobs, more income" attitude which permeates government development thinking. Although employment may be generated, there is no assurance that the employees will earn a living wage. Promotion of foreign investment in the Philippines, using cheap cost of labor as incentive, combined with an oversupply of labor which keeps wages down, is diametrically opposed to the benefits implted from this policy assumption. Turning the fisherfolk into underpaid workers will certainly not contribute to their upliftment.

High import-dependence is evident in the fact that fish imports have increased considerably, in order to compensate for dwindling fish production. Since import liberalization was implemented in 1986, the fish import bill has more than doubled, while exports remained more or less constant.[228] (Figure 8) Deregulation of importation of fishery products, also an item of World Bank recommendations for import liberalization, has resulted in low-priced frozen fish flooding the market, prompting complaints from local commercial fishing boat operators and small-scale fishermen. Unrestrained importation may lead to substantial dependence on imported fish which could very well threaten the viability of domestic commercial and municipal fishing operations. Free access to foreign fishery products would result in further fall of fish prices, rendering the local fishing operations uncompetitive and unprofitable. [229]

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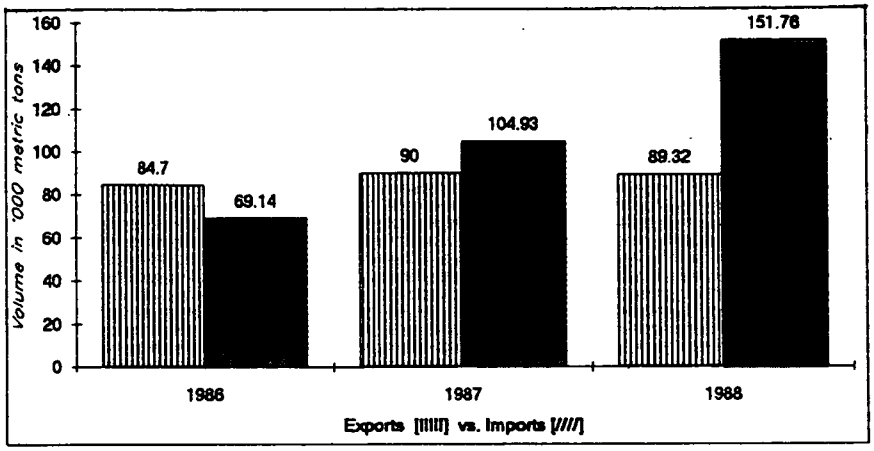
[227]Del Castillo, et. al., *Pagbibigay Tinig sa mga Maliliit na Mangingisda*, Lundayan, Apr-Jun 1990, p. 14-17.

[228]*Big Fish*, IBON Facts and Figures, 31 August 1989, p. 8.

[229]1 CONFERENCE , *supra* note 25, at 29.

Fig. 8. Fisheries Trade, 1986 to 1988



Source: IBON Facts and Figures, Aug. 31, 1989.

Another central policy issue is the propriety of the RP-Japan Treaty of Amity, Commerce, and Navigation, which allows the Japanese fishing industry access to Philippine marine fishing grounds.[230] Thus, to acquire an adequate catch, fisherfolk have to compete not only with their own people, but with foreigners as well. As it stands, no protection can be afforded by the Philippine government against illegal foreign incursions into Philippine fisheries; how much more legalized foreign exploitation by a technologically advanced and more efficient fishing fleet?

Some quarters also criticize the government's willingness to sacrifice fishery resources and the subsistence fisherfolk they support in favor of industrialization and foreign-funded projects. The Cavite-Laguna-Batangas-Rizal (CALABAR) Industrial Zone plan, funded by the Japanese International Cooperation Agency through the Philippine Aid Plan, is viewed by concerned environmental organizations and lake fisherfolk as entailing displacement of the latter in favor of turning the lake into a potable water or industrial and agricultural water source for Metro Manila.[231] It shows the propensity of government for ignoring the concerns of small fisherfolk where large capital investments are involved.

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[230]3 CONFERENCE , *supra* note 221, at 6-9.

[231]*See generally* R. Ybanez, *CALABAR: A Mirage of Progress*, Lundayan, Apr-Jun 1990, p. 4-9.

Non-enforcement of laws

Severe problems are encountered in enforcement of laws, because of vagueness of some laws and insufficient allocation of funds to enforcement agencies.

The Philippine Coast Guard (PCG) has inadequate fishery enforcement facilities and there is a lack of a documentation system for fishermen and other seagoing individuals. The PCG is in need of more personnel and watercraft to enhance mobility and presence in the country's maritime areas.[232] It is useful to note that this archipelagic country has never seriously pursued the protection and regulation of its own territorial seas, whether through the Coast Guard or the Navy. The Philippines has been reported to have the worst navy in all of South East Asia, comprised of only 22 patrol ships, 21 transport vessels, 85 small craft, and 14 light aircraft; the largest of these are admittedly hand-me-downs from the US Navy; some are even said to date back to World War Two. Philippine sailors police the waters with wooden outriggers, and occasionally have to borrow private boats to conduct operations against pirates and smugglers.[233] Coast Guard vessels are nearly non-existent, and the "Bantay Dagat" program was probably adopted by the government not for its value in promoting active democratic participation of fisherfolk communities in resource management, but for its recognition of this appalling deficiency.

Decisive steps to check harmful fishing methods have not been taken, and a conservation and protection program is yet to be pursued by fishery law enforcement agencies at a sustained level of intensity and effectiveness.[234] Prosecution of violators has played a negligible role in effectively deterring illegal fishing, as those caught are easily able to pay the fines.[235]

The ban on commercial fishing within seven kilometers of the shore has never been seriously enforced since government agencies are incapable of monitoring and limiting the movement of ships. The prohibition against the use of trawlers and fine-mesh nets in sensitive areas is easily evaded by the use of "baby-trawlers" and the lack of regulation. Philippine Navy and Coast Guard units have virtually no naval interdiction capabilities essential in enforcing these restrictions.

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[232] 2 CONFERENCE , *supra* note 71, at 78.

[233] *RP has South Asia's worst navy*, Philippine Daily Inquirer, December 30, 1990.

[234] 2 CONFERENCE , *supra* note 71, at 77.

[235] *Catching Fishermen is Never Fun*, Banagbanag, March 1989, p. 16.

Some organizations have documented instances wherein politics and local politicos deliberately impeded proper law enforcement. Experiences of non-government organizations show that local politics plays a role in the decline of coastal resources, especially when politicians seek to take advantage either of the fisherfolk or the fisheries for their own limited political ends.[236]

Insensitive financial policy.

Credit allocations have historically been in favor of large-scale fishery and aquaculture projects because of their greater "bankability" as compared to municipal fisheries. The latter involves greater risks and administrative costs, yet fishermen have few assets to offer as collateral and so could not qualify to borrow from commercial banks.[237] Thus the emergence of the *paluwagan* as the only alternative for fisherfolk.

Prior to 1987, a total of 12 fisheries credit programs were implemented by some nine government agencies. There was no single government entity coordinating authority over these various programs. The operating procedures and focus of these programs varied widely. Dual responsibilities involving BFAR and implementing agencies such as the Central Bank, or disjointed activities of the different agencies, resulted in difficulties in successful planning, initiation, management, monitoring, and conclusion of credit programs. There was also slow availment of credit facilities due to high interest rates and stringent loan requirements and procedures.[238]

The credit programs thus far implemented in the country do not appear to have made any major impact on the catch or income of fishermen, as the volume of fish caught and income remained practically the same.[239] This outcome is attributed by fishermen to a number of factors like the increase in population, inflation, competition from trawlers, and fish scarcity due to pollution.[240]

Financial assistance in fisheries has become the province mainly of the DA, which is logical because the BFAR is now a part of it.

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[236]A. White, *Two Community-Based Marine Reserves: Lessons for Coastal Management* , COASTAL ZONE 85, 88-89 (1989); also MARINE PARKS AND RESERVES: MANAGEMENT FOR COASTAL ENVIRONMENTS IN SOUTH EAST ASIA 26-27 (1990).

[237]A. Librero and R. Latella, *Impact of Credit on Small-scale Fisheries in the Philippines*, in SMALL-SCALE FISHERIES 223 (1985).

[238]1 CONFERENCE , *supra* note 25, at 19.

[239]*RP has South Asia's worst navy*, Philippine Daily Inquirer, December 30, 1990, pp. 223-234.

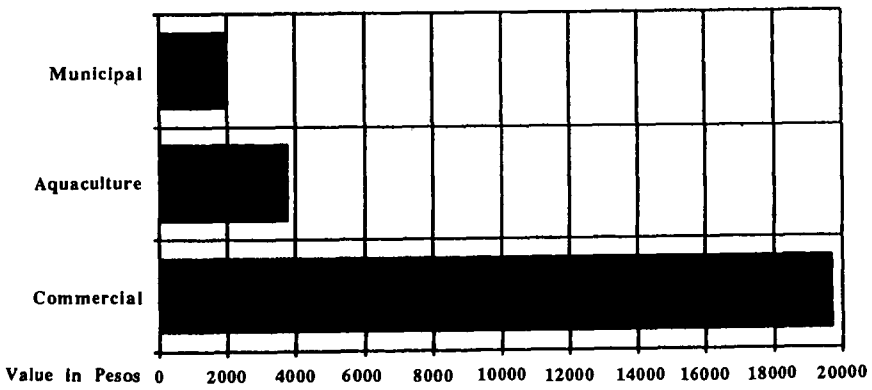
[240]*Id.*, at 224.

But it, in turn, can only provide such assistance out of the general funding for agricultural assistance programs. This severely limits the available capital and assets necessary for an extensive fishery aid program.

Researchers agree that reef destruction and overfishing are symptomatic of more than simple shortsightedness of the fisherfolk community. Degradation and depletion of resources result largely from activities of local, impoverished populations driven onto marginal areas due to their constant struggle for livelihood opportunities.[241] It reflects the compulsions brought about by extreme poverty; municipal fishermen who face daily the possibility of not being able to adequately feed their families cannot be expected to take a long-term, conservative view of resource use. It is the poverty of many fishermen that jeopardizes the very resources upon which they depend.[242]

Further, Philippine fisheries, as a whole, are presently characterized by an extremely uneven distribution of benefits from fishing. Large scale operators using large boats and updated technology catch and earn hundreds, even thousands of times, more than small-scale fishermen operating in their wake with only traditional materials and techniques.[243] (**Figure 9**) This is an inevitable result of the entry of big business into the fishing activity, which until now has turned in ever-increasing profits.

Fig. 9. Average Gross Monthly Income by Sector



Source: IBON Facts and Figures, Aug. 31, 1989.

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[241]PHIL. ENVIRONMENT , *supra* note 19, at 85.
[242]MUNICIPAL FISHERIES , *supra* note 35, at 22.
[243]D. Pauly, *supra* note 23, at 5 .

Many operators need not even invest in large boats and improved techonlogies to avail of enormous profits. The abundance of the fish had been more or less consistent even with the employment of relatively less capital utilizing minimal techonologies; all one need invest in is traditional equipment and gear to be used by municipal fisherfolk, and he can thereby effortlessly partake of the large volumes of municipal catch. The same effect is achieved by becoming a moneylender or a *mamumuhunan*.

Local politics and the dominance of local elites are also a prevalent problem. These elites take advantage of their capital resources to invest in large-scale fishing activities, competing with small-scale fisherfolk and outbidding the latter for exclusive fishery privileges, or influence local government officials to grant an advantage in the form of special privileges and use rights.[244]

Problems of unemployment and underemployment, and the lack of alternative sources of income, keep the fisherfolk dependent upon small-scale fishing activities which barely provide for their subsistence. Combined with the continuing growth in the population of the country as a whole, which pushes more and more people into the marginal areas of the coasts, fisherfolk communities cannot escape the effects of increasing stress on their resources.

The Limits of Policy for the Fisherfolk

Municipal fisheries policy is defined by the legislation presently in force. The most important are the provisions of the Constitution and the Fisheries Decree of 1975.

The Constitution

The fundamental law affecting municipal fisheries and fishery resources in general is the 1987 Constitution, which contains express provisions directly concerned with fisheries and marine resources. The two main provisions are Section 2, Article XII on the National Economy and Patrimony, and Section 7, Article XIII on Social Justice and Human Rights.

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[244]The fishpen operators of Laguna de Bay represent the prime example of how rich elites can "capture" productive fishery resources. See generally *Philippine Fisheries: What's the Catch?*, Philippine Currents, October 1989, p. 7-8; *Laguna Lake for Whom?*, *id.*, p. 37-38; *Laguna Lake: Lake of Ignorance*, Enviroscope, Jan-June 1986, p. 4.

Under the mandate of the first cited provision, the ownership of all natural resources, including fisheries and living aquatic resources, are vested in the State, in accordance with the Regalian Doctrine. As such, these resources are considered inalienable and not subject to private appropriation. The State has full control and supervision over fisheries and living aquatic resources; their exploitation, development and utilization may be undertaken in three (3) different ways, either singly or simultaneously, to wit:[245]

> 1) the State may directly undertake these activities;
>
> 2) the State may enter into co-production, joint venture, or production sharing agreements with Filipino citizens, or corporations or associations at least 60% of whose capital is owned by such citizens;
>
> 3) Congress may by law allow small-scale utilization by Filipino citizens, as well as cooperative fish farming.

The direct utilization of fisheries and living aquatic resources is possible only under the third mode, *i.e.* the small-scale utilization scheme for Filipino citizens and cooperative fish farming,[246] possibly through a type of licensing or permit system that regulates access to these resources. This was inserted by the Constitutional Commissioners in recognition of the plight of marginal fishermen, forest dwellers, and others similarly situated who exploit natural resources for their daily sustenance and survival.[247]

The provisions of the Constitution establish a preference in favor of marginalized subsistence fishermen, whether or not belonging to the local community, to use of rivers, lakes, bays, and lagoons, offshore, marine, and other fishing resources. This is conferred by Section 7, Article XIII especially on local communities for the exploitation of the communal marine and fishing resources, both inland and offshore. However, no law has yet been passed manifesting this preference for marginalized fishermen. After subsistence fishermen, exploitation may be done directly by the State, or through joint ventures between the state and citizens or corporations, or finally, by Filipino citizens who are not subsistence fishermen nor fishworkers engaged in the small-scale utilization of these resources.[248]

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[245]R. P. Lotilla, *Developing the Law on Fisheries and Living Aquatic Resources*, 10 PHIL. L. GAZ. 1 no. 3, at 2 (1987).

[246]*Id.*, at 4.

[247]*Id.*

[248]*Id.*, at 7-8.

General legislation

Presidential Decree No. 704 (1975), otherwise known as the Fisheries Decree of 1975, is an attempt to consolidate all laws and decrees affecting fishing and fisheries.[249] Its salient features include 1) the mandate for the acceleration and development of the fishery industry and resources to optimum productive conditions through proper conservation and protection; 2) promotion of organization and assistance to integrate the activities of persons and entities in the industry for maximum economic utilization of the resources; 3) encouragement of the exportation of fish; 4) the banning of bangus fry exportation except those of other species after satisfaction of fishing industry needs; 5) allowance to Filipino persons or entities to enter into contracts, lease, or lease-purchase agreements with any foreign person or entity, for financial,technical, and other assistance; and 6) financing of small-scale or municipal fishing.[250]

General jurisdiction over all marine waters forming part of Philippine waters beyond the boundaries of municipal waters is granted to the Bureau of Fisheries and Aquatic Resources (BFAR), which is responsible for the management, conservation, development, protection, utilization, and disposition of all fishery and aquatic resources.[251]

The operation of fishing sectors under section 35 of P.D. No. 704 was subsequently amended by P. D. No. 1015. The latter bans commercial fishing within seven (7) km. from the shoreline if public interest requires or the marine resources are impaired. Boats 3 gross tons or less are not limited in operation to municipal waters, while trawlers in general are not allowed to be operated in waters seven (7) fathoms deep or less; baby trawls using boats of 3 gross tons or less may operate in areas four (4) fathoms deep or more if authorized by the Secretary.[252]

Regulation and prohibition of unsound or potentially damaging fishing practices and activities were further strengthened by P.D. No. 1058, which increased penalties for dynamite fishing and dealing with dynamited fish; P.D. Nos. 1219 and 1698, which are intended for the protection of coral resources;[253] and LOI No. 1328, which banned the use of commercial trawl and purse seines in marine water areas within 7 km. of shoreline.[254] Other related laws include P.D. Nos. 979 (The Marine

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[249]Id., at 9.
[250]1 CONFERENCE , *supra* note 25, at 15.
[251]Pres. Decree No. 704 (1975), sec. 7.
[252]3 CONFERENCE, *supra* note 221.
[253]*Id.*
[254]Cited in R. LOTILLA, *supra* note 245, at 12.

Pollution Decree), 1067 (The Water Code), 1151 (The Philippine Environmental Policy), and 1152 (The Environment Code).[255]

Fisheries institutions

There are numerous agencies, both governmental and non-governmental, involved directly and incidentally with fisheries and aquatic resources. A Food and Agriculture Organization (FAO) High Level EEZ Mission in 1983 noted 22 national, 2 regional, and 2 international institutions directly or indirectly involved with fisheries affairs.[256]

The most important of these agencies is the BFAR, which under Executive Order 967 (1984) was organized as a staff bureau of the then Ministry of Agriculture. This arrangement was retained when the Ministry was reorganized in 1987.[257] Despite its low stature in the administrative hierarchy, it is still a regulatory agency performing administrative and quasi-judicial functions in accordance with P.D. No. 704, making it equal to a line agency.[258]

Under P.D. No. 704, BFAR is responsible for the management, conservation, protection, utilization, and disposition of all fishery and aquatic resources, with authority to regulate and supervise the production and gathering of fish and other aquatic products. It is charged with the enforcement of all laws directly affecting fisheries, as well as coordination with other branches of government enforcing other laws, such as the Environment Code, Marine Pollution Decree, and Omnibus Investments Code.[259]

The BFAR's specific powers include licensing, supervision and regulation, and investigation and adjudication. Licensing refers to the issuance of permits to engage in municipal or commercial fishing, and aquaculture. Supervision and regulation includes the enforcement of the laws mentioned above, as well as rendering of interpretative and advisory assistance to persons and entities engaged in the fishing industry. Investigative powers involve inspection and monitoring of fishery-related activities, and collaboration in the prosecution of violators of fishery laws. Adjudicative or quasi-judicial powers are granted to the BFAR over all cases involving fishponds, fishing boats, and other miscellaneous fishery products.[260]

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[255] 1 CONFERENCE, *supra* note 25, at 33-35.
[256] *Id.*, at 23.
[257] Exec. Order No. 116 (1987), sec. 13(e).
[258] 1 CONFERENCE, *supra* note 25, at 41.
[259] *Id.*, at 37-41
[260] *Id.*

The other higher level government agencies include the Philippine Fisheries Development Authority (PFDA), the Fishing Industry Development Council (FIDC), and the Department of Environment and Natural Resources (DENR). Regional institutions refer to the Laguna Lake Development Authority (LLDA), other local development authorities such as those in Cagayan and Mindanao, and the Integrated Area Development projects. International organizations, such as ICLARM and the Southeast Asian Fisheries Development Center (SEAFDEC), are also involved.[261]

In addition, the municipal or city governments, subject to certain limitations, have jurisdiction and responsibility over the management, conservation, utilization, and disposition of all fishery and aquatic resources found in municipal waters. This is, however, subject to approval by the Secretary of the Department of Agriculture upon recommendation of the BFAR Director, as implied from sections 4 and 30 of P.D. No. 704, as amended by Exec. Order No. 116.[262] It indicates the degree of centralization in the national government as to the management of coastal resources.

The Department of National Defense (DND) also extends law enforcement assistance through the Philippine Coast Guard, the Philippine Constabulary/Integrated National Police, the barangay and fishermen's association officials and other qualified individuals designated Deputy Fish Wardens to help in the enforcement of fishery laws, rules, and regulations.[263]

Specific policies

The present general policy on fisheries is articulated in the provisions of P.D. No. 704. It is the avowed purpose of the government to accelerate and promote the integrated development of the fishery industry and keep fishery resources in optimum productive condition through proper conservation and protection.[264] This was reiterated in more recent legislation reorganizing the Department of Agriculture.[265] The thrust is to enhance the productive capacities of Philippine fishery resources to the maximum, in support of the general developmental thrust of the economy.

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[261]F. Thomas, *The Need for High Level Institutional Reform of the Fisheries Sector*, 3 CONFERENCE, *supra* note 221, at 3-4.

[262]SMALL-SCALE FISHERIES, *supra* note 178, at 11.

[263]1 CONFERENCE , *supra* note 25, at 27.

[264]Pres. Decree No. 704 (1975), sec.2.

[265]Exec. Order No. 116 (1987), sec.1.

Administrative

The trend in fishery resource management policy on the administrative level seems to be limited to the enforcement of current laws, maximization of production, and mitigation of damage to resources rather than management for sustained use. This tends to concentrate efforts only on specific aspects and activities, such as fishing regulations, promotion of fishing techniques, and implementation of particular laws.

In the administrative field, few innovations have been made upon existing legislation on fishery resources, and implementation of existing projects has only been augmented. Among the more recent programs initiated by the government is the "Bantay Dagat" program launched in 1989, a nationwide program intended to check the enormous destruction of the country's aquatic resources, utilizing communities for surveillance purposes.[266]

Major proposals for fisheries policy thus far appear to emanate not from the executive branch which is traditionally tasked with policy-making and design, but from external agencies such as local non-government or international organizations. The most that executive initiative has produced is probably the creation of the Presidential Committee on Illegal Fishing and Marine Conservation;[267] however, it appears to be only a recommendatory body for marine conservation policies. The most important policy formulation initiative in recent years was a cooperative effort between the BFAR, DA, FAO, and the United Nations Development Program (UNEP) in 1986 to identify critical policy and implementation issues, formulate policy recommendations, and propose institutional reforms. Largely as a result of this conference, a bill seeking to create a Department of Fisheries was filed in Congress and as of this writing, had been calendared for second reading.[268] The new office proposes to take over all the current functions of the Department of Agriculture related to aquatic resources management.

Also notable are two regional development projects on coastal zone management, sponsored by foreign fishery resource agencies. These refer to the ASEAN-US Coastal Resources Management Program which is presently engaged in the study and management for sustainable development of Lingayen Gulf,[269] and the Central Visayas Regional

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[266]IBON Facts & Figures, August 31, 1989, p. 10.
[267]Adm. O. No. 114 (1989).
[268]H. Bill No. 106, submitted May 5, 1988.
[269]See generally LINGAYEN GULF, *supra* note 66.

Project-I.[270] These regional programs have produced a mass of useful data which may be translated into viable policy strategies; however, they do not appear to have gained sufficient attention from policy-makers.

Finance

The government is reportedly relying mainly on foreign institutions to "develop" the fishing industry. Foremost among these are the World Bank (WB), the Asian Development Bank (ADB), and the Japanese OECF. ADB has earmarked $70M in loans for the rehabilitation of the country's depleted fisheries.[271]

The DA has also instituted the Comprehensive Agricultural Loan Fund (CALF) under Executive Order No. 113 (1986). The CALF is a pool of funds from the integration of some 39 separate loan funds for various commodity programs, including fisheries, previously implemented by the DA. It encourages lending by private banks to agricultural projects by assuming, through guarantees, a maximum of 85% of the risks which lead to default. However, the DA is not engaged in direct lending; accredited banks have to allocate their own funds first for lending to small fishermen before they can apply for CALF guarantees.[272]

The DA has also released an initial four million pesos to finance income-generating projects and sustainable fishing methods under the Livelihood Enhancement for Agricultural Development (LEAD) program. Some 30 LEAD projects have been funded and implemented in at least 12 towns along Panguil Bay, assisting their beneficiaries in engaging in such sustainable and profitable projects as fish corrals, crab fattening, set and drift gill net fishing, nipa making, stationary bag net fishing, and construction or operation of fishing boats.[273]

Extension services

Extension services refer to the provision of livelihood facilities and assistance to fisherfolk communities and individuals. Prior to 1980, government programs for provision of extension services centered on formation of cooperatives (*Samahang Nayon*) for fishermen suppliers, provision of price information through market information services, construction of additional ice-cold storage and transport facilities, and

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[270]See generally J. Alix, *Community-Based Resource Management: The Experience of the Central Visayas Regional Project-I*, in COASTAL ZONE 185 (1989).

[271]IBON Facts & Figures, Aug. 31, 1989.

[272]1 CONFERENCE , *supra* note 25, at 19-20.

[273]*Sanggab nets in Mindanao demolished*, Aggie Trends, July 1990, p. 6, col. 5.

centralization of wholesale markets to reduce marketing costs.[274] With the failure of the *Samahang Nayon* program, the administration has concentrated more on infrastructure, research, and livelihood assistance, as well as continued implementation of previous conservation programs.

Among the major infrastructure projects pursued are the construction of new fishport complexes, three of which were completed in Iloilo, Zamboanga, and Pangasinan, while two more are under construction in Lucena and Camilingan.[275] To enhance fishermen's access to markets, the PFDA operated three commercial and four municipal fish ports. Some 255,900 metric tons of fish were unloaded in these ports in 1989, representing 11% of the country's fishery production that year. PFDA leased out 17 of its ice plants and cold storage facilities to the private sector but continued to operate four others which produced 26,900 metric tons of ice. About 500 metric tons of fish were traded by 4,800 DA-assisted fishermen.[276]

The DA implements fishery resource conservation measures to sustain the productive capacity of the country's coastal areas. Together with fishing communities, the DA continued the Artificial Reef Development Project launched in 1985 by the BFAR-DA. To date, it has established 5,000 artificial reefs and repaired 1,600 others, in some 8,000 hectares of fishing grounds. These served some 600 fishermen's associations or about 12,000 individual subsistence fishermen.[277]

The DA and SEAFDEC have also embarked on a three year pilot seafarming and searanching center, to develop marine hatchery-nursery systems of selected species for the culture and release of juvenile fish.[278] This is part of a continuing search for alternative productive uses of coastal resources.

Current government initiatives

The latest major executive action related to coastal resources was taken in 1989 with the creation of a Presidential Committee on Illegal Fishing and Marine Conservation.[279] This cabinet committee is tasked with the review, planning, coordination, and implementation of marine and coastal resource conservation measures. It was created in

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[274]MUNICIPAL FISHERIES , *supra* note 35, at 54.

[275]*Pangasinan Fishport to Spur Regional Development*, Aggie Trends, June 1990, p. 1, col. 3.

[276]S. Bacani, *The Agriculture Sector's Performance*, 1990 FOOKIEN TIMES YEARBOOK 303-304 (1990).

[277]*Id.*

[278]*Seafarming and searanching*, Aggie Trends, November 1990, p. 3, col. 1.

[279]Adm. O. No. 114 (1989).

response to the continuing destruction of the country's marine resources, threatening a primary source of protein and future food supplies. Its avowed purpose is to coordinate the efforts of government and non-government sectors to stop the destructive trend, manage fishery resources, and maintain their productivity.[280]

In 1988, some notable projects on the departmental level involving the coastal zone were initiated. Among them is the Rivers Revival Program, starting with the Navotas-Malabon-Tenejeros-Tullahan River Project and the Pasig River System Rehabilitation Project, which aims to restore and rehabilitate heavily polluted rivers and control water quality within them.[281] The former is said to have resulted in the return of fish to the river system, while the latter project is still in its initial data gathering stages.[282]

That same year, the Philippine Strategy for Sustainable Development (PSSD) was formulated in a national workshop conducted by the EMB pursuant to Sec. 16(a) of Executive Order No. 192.[283] Although only a small part of the strategy formulated addressed issues on inland and marine resources,[284] an action program was developed that prioritized sites for environmental projects over the next decade. Workshop participants subsequently passed a resolution, forwarded to the President and Congress, recommending the adoption of the PSSD as a national mandate; proposed legislation pursuant thereto was drafted.[285]

The Environmental Management Bureau (EMB) has embarked upon several other coastal zone-related projects. The Seagrass Habitat Restoration Project was begun in three experimental sites as a development project for a low-cost, maintainable and locally acceptable aeration system and waste water treatment facility for urban housing. A data-gathering survey of mercury and other heavy metal levels in fishes and other aquatic life was also started, as well as a study on the concentration levels of agricultural pesticide residues in marine and

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[280]*Id.*., second and fourth WHEREAS clauses.

[281]A. Tolentino, *The Environment Report*, 1989 FOOKIEN TIMES YEARBOOK 160 (1989).

[282]F. Factoran, *Silent Victories for Development*, 1990 FOOKIEN TIMES YEARBOOK 301 (1990).

[283]PSSD, *supra* note 3, at 1.

[284]*Id.*, at 8. This is likely due to the fact that there is little research data on the present status and condition on those resources. There is a marked deficiency in the PSSD on the subject of coastal and marine ecosystems, though it concentrates on forests, agriculture, and population problems.

[285]A. Tolentino, *The Environment Report*, 1989 FOOKIEN TIMES YEARBOOK 160, at 335 (1989).

freshwater fishes. The EMB is also participating in a regional East Asian project to assess levels and effects of pollutants on the marine environment.[286]

On the legislative front, the enactment of R.A. 7160, or the Local Government Code of 1991, has enhanced the executive prerogatives and legislative powers of the local government units by specific provisions relating to the environment, including the marine ecosystem. A general mandate is granted to each local government unit to adopt such measures as may be necessary to protect, safeguard, and conserve the natural environment.[287] These powers extend to the penalization of acts which endanger it.[288] With the avowed objective of decentralization, R.A. 7160 is expected to reduce the role of the national government agencies from active policy creation and execution to general guideline formulation. The transition phase of preparatory to actual implementation of the Code is expected to be completed in the fourth quarter of 1992.

IV. STRATEGY

Coastal Zone Management

Having described the coastal zone and the problems it and its inhabitants now face, we proceed with a brief explanation of the concept of coastal zone management. The term *coastal management* refers to any governmental program established for the purpose of utilizing or conserving a coastal resource or environment, which has been specified as a geographic zone separate from, but lodged between, the oceanic domain and the terrestrial domain. It may address just one type of resource (*e.g.* coastal fisheries) or one type of environment (*e.g.* mangroves) but it is more common for such programs to include several types of resources and environments.[289]

Coastal zone management (CZM) refers to the integrated management of two or more coastal resources and sectors within a defined region or zone; generally, it is a deliberate, self-conscious effort to direct or control the conditions and activities within the zone, in order to resolve conflicts among many coastal uses and determine the most appropriate and effective utilization of coastal resources. The phrase

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[286]*Id.*, at 334-337.

[287]See Sec. 444 (3[vii]), Sec. 447 (5[i]), Sec. 465 (3[5]), and Sec. 468 (4[i]), of Rep. Act. 7160 (1991), otherwise known as The Local Government Code (hereinafter cited as LOCAL GOVT. CODE]

[288]*Id.*, Sec. 447 (1[vi]) and Sec. 468 (1[vi]).

[289]INSTI.. ARRANGEMENTS, *supra* note 15, at 5.

denotes the policies and programs employed by a state in the regulation of coastal resources, without considering, however, the effectiveness of such policies.[290]

> CZM programs, at present, have six attributes:[291]
>
> 1) It is initiated by government in response to very evident degradation of a resource and the conflicts or problems brought by its multiple uses.
>
> 2) It is not a one-time project with a specific duration; it is a continuing undertaking, in response to a legislative or executive mandate.
>
> 3) Its geographical jurisdiction is specified, that is, limited to the coastal zone and bound by inland and ocean borders, with the exception of small islands which usually have only an oceanward boundary. However, it is not only an ocean management program, as it must have components that address shore and landward concerns.
>
> 4) A specific set of objectives or issues should be addressed or resolved by the program.
>
> 5) It has institutional identity; it is identifiable as either an independent organization, with its own mandate and powers, or a network of organizations linked together by functions and management strategies.
>
> 6) It is characterized by the integration of two or more sectors and institutions, based on the recognition of natural interactions and governmental systems which interconnect coastal uses and environments.

Existing Coastal Management Strategies

To date, eleven distinct strategies for management of renewable coastal resources have been identified as in use in developed and developing countries. These strategies are not mutually exclusive; more than one strategy is usually employed by states with extensive coastal zones, as it is not likely that any one strategy alone can be sufficient. The difference between various coastal programs often lies in the degree of integration of activities achieved by the varied strategies and by the government or administering entities. The aggregate of coastal management strategies compose the Coastal Zone Management Program

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[290] *Id.*, at 15-16.
[291] *Id.*

of a given state. The separate coastal management strategies have been described as follows:[292]

a) national economic planning

Generally, this involves the setting of prescriptive goals for each sector of the economy, affecting allocation of labor, investment capital, and land use. The main vehicle is a long term plan of four to five years, setting production targets in those sectors of the economy which are most important. The sectors which often pertain to the coast are fisheries, ports and shipping, transportation, agriculture, tourism, and industry.[293] This strategy is employed by all states, when in the course of formulation of economic policy, attention is given to increasing productive output of those sectors.

Among the advantages of national economic planning are that it creates a degree of certainty about the industrial and commercial developments in the coast and adjacent land within a particular time frame, thus avoiding more random patterns of proposals and demands on coastal resources. It also affords more time for the integration of the sectors to achieve an integrated coastal program. However, the 4-5 year plans may be too rigid to take into account changing coastal circumstances. It may be too mechanistic and inflexible for innovation as altering it in response to every perturbation in the economy is extremely disruptive to the agencies and productive units carrying out the plan.[294] Further, since coastal management becomes incidental only to the desired productivity goals for the economic sectors, environmental and social issues are frequently neglected or foregone.

Philippine economic planning does not provide for coastal zone management, though it may set productivity targets for fisheries as a subset of agricultural production. As previously mentioned, the Medium-Term Philippine Development Plan for 1987-1992 did not provide for even the outlines of a development policy for fisheries, much less the country's other coastal resources.

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[292]These strategies are considered in depth in INSTI. ARRANGEMENTS, *supra* note 15, which is in the nature of a manual for coastal zone management in the United States of America. The study surveyed and integrated all known and published data on the planning, formulation, and implementation of a comprehensive coastal zone management program.

[293]INSTI. ARRANGEMENTS, *supra* note 15, at 43-44.

[294]*Id.*

b) broad scope sectoral planning

The second combines forecasting and implementation of capital investment, land use planning, and infrastructure needs for specific sectors of the national economy. It shares several characteristics with national economic planning, but emphasizes response to issues rather than production of economic goods.[295]

The sectors with the greatest economic relevance to coastal management are port planning, fisheries, and tourism. Planning for the fisheries sector must take into account the maintenance of sustainable yields and ensure that fishing activities do not interfere with other marine resources. Port construction and maintenance involves the impact and effects of such activities on marshlands and adjacent coasts, access to the shore areas, pollution of waters, destruction of shallow underwater habitats, and competition with public recreation facilities or fishing. The tourism industry is interested in access to a relatively unspoiled environment.[296]

Broad scope sectoral planning takes place in the Philippines in the form of departmental policy guidelines, programs of action, and goals. Though it is by nature subject to executive prerogative, it is not a centralized activity of the upper echelons of the Executive Branch; however, participation of the Legislature is limited to formulation of general legislative policy for each sector. This follows the pattern in most other states which implement national economic planning strategies, *i.e.*, sectoral planning usually takes place in response to the stated goals of the larger policy framework.

Problems frequently emerge when sectoral planning is not integrated, and each sector formulates and pursues its own ideas of coastal management without considering the other sectors. This results in disputes among the administering agencies and organizations as to which programs and policies are to be prioritized, or which agency is granted general responsibility and management for a particular resource. Ultimately, it impedes effective coastal management.[297] Philippine planning in this respect suffers from this flaw, as manifested in the overlapping mandates of government agencies.

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[295] *Id.*, at 44-46.
[296] *Id.*
[297] *Id.*

c) nation-wide or substantial land use planning and regulation

The term can be summed up in one word: zoning. Nation-wide or substantial land use planning and regulation is aimed at specifying the type, intensity, and rate of development in a particular area, primarily the land adjacent to the coast. Properly implemented, it provides clear guidance and certainty about future development, pinpointing the precise location of prospective infrastructure and specifying the types of uses allowed in designated areas. It also provides an opportunity to deal with many different conflicting uses in a consistent manner.[298]

However, the method has been criticized as being somewhat speculative, being only as effective as the zoning ordinances and use restrictions that implement the plan, and guided by the integrity or political will of the government agencies responsible for its administration. In developing countries, customs and traditions in the use of land for subsistence, combined with uncertain land tenure, complicate efforts to implement this strategy, as it is most likely that the people would disregard any kind of restrictions on the utilization of the land in favor of making a living. Finally, it does not provide a strong mechanism to cope with issues at the interface of the land and water (*e.g.* protection of mangroves, coral reefs, submerged grass beds, fisheries), as the mere designation of acceptable activities for particular parts of the coast do not require the taking of any type of conservation or maintenance measures for those sites.[299]

In this country, zoning powers have largely been decentralized; the municipal or city governments are charged with actual implementation of comprehensive land use plans formulated on the provincial level.[300]

d) special area plans or regional programs

These refer to programs for land use regulation, economic development of resources or environmental management, or a combination of both. It is mandated by a legislative body or responsible ministry of a nation or state. Such plans usually have two purposes: first, to "capture" national resource or economic development issues that cross the boundaries of states or local governments (*e.g.* watershed management, protection of sensitive habitats); and second, to cover a

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[298] *Id.*, at 49-53.
[299] *Id.*
[300] LOCAL GOVT. CODE, sec. 447 (2[vii, ix]).

significant natural resource (*e.g.* a bay, river basin, estuary, or mangrove).[301]

The enabling law of the Laguna Lake Development Authority[302] is a prime example of this type of strategy. The said law is intended to promote and accelerate the growth and development of the Laguna Lake area and the surrounding provinces which derive benefits from its use.

e) shoreland exclusion or restriction

These pertain to regulatory programs which specifically prohibit or significantly limit certain uses within a targetted area in the coastal zone. In developing nations, this strategy commonly arises from three concerns: (1) blockage of public access; (2) degradation of views; and (3) erosion of shorelines. Residential and tourism development appear to be the primary interests of shoreline exclusion. It differs from the strategy of critical area management in that they are coast-wide, and do not carry a special designation declaring the uniqueness of particular types of areas.[303] The main function of this strategy is to preserve the external condition of the shoreline, possibly for aesthetic or utilitarian value. This strategy would likely fall within the zoning powers of Philippine local government units.

f) critical area protection or exclusion

Critical area protection or exclusion is primarily intended for conservation or preservation of particular types of sensitive environments or natural areas (*e.g.* mangroves, wetlands, barrier reefs). It may also preclude development of selected eroding coasts, or restrict development on watersheds and waterways. This strategy has several distinct features: (1) the program has a formal designation, as a result of the inventory of resources and screening of sites; (2) it is not implemented on a coast-wide basis; and (3) it addresses concerns of more than one sector, serving the purposes of wildlife protection, hazard area management, parks, and research.[304]

In the Philippines, the power to subject specific water areas to this scheme is presently with the Secretary of Agriculture who, upon recommendation of the BFAR Director, is authorized to designate fishery reservations, refuges and sanctuaries for the exclusive use of the government, inhabitants of a municipality, or for the culture of fish and

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[301]INSTI. ARRANGEMENTS, *supra* note 15, at 53-56.
[302]Rep. Act No. 4850 (1966), as amended by Pres. Decree No. 813 (1975).
[303]INSTI. ARRANGEMENTS, *supra* note 15, 56-60.
[304]*Id.*, at 60-61.

other aquatic animals for education, research, and scientific purposes.[305] However, the Local Government Code has likewise granted city, municipal, and provincial executives the power to adopt measures which serve the same purpose.[306]

Critical area protection presently takes the form of marine parks and reserves, of which the Philippines has only a few, notably the Hundred Islands, Sumilon Island Marine Park, Tubbataha Reefs, and the St. Paul Subterranean River National Park. These areas are usually brought under the scope of protection for their value as tourist and recreation spots; few are for the sole purpose of maintaining specific environmental conditions in any given area.[307]

g) environmental impact assessment

Environmental impact assessment may be viewed as both a governmental process and an analytical tool. As the former, it is directed towards disclosure of environmental effects, coordination of aspects of planning, and submission of project proposals for review. As an analytical method, it is used to predict the effects of a project or program. It includes the assessment of the proposed project's potential effects on the sustained use of renewable coastal resources, as well as on the quality of the human environment.[308]

Among its advantages, it is simple to execute, and not too costly to administer. It offers a way to make changes in project design and location, thus avoiding the most serious use conflicts without undermining the attractiveness of a project in economic and social terms. Its disadvantage is that it is only an information reporting system; it is only as good as the available data base. It also obstructs timely project completion, and there is great difficulty in assessing the cumulative effects of environmental alteration.[309]

Environmental impact assessment in the Philippines is mandated under P.D. Nos. 1151 (1976) and 1586 (1978), and administered by the EMB.[310]

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[305]Pres. Decree No. 704 (1975), sec. 31.

[306]LOCAL GOVT. CODE, sec. 444 (3[vii]) and sec. 465 (3[v]).

[307]Among the latter type is Apo Island Marine Reserve south of Negros province. It was conceived specifically as a marine sanctuary rather than a recreational park, which seems to be the main interest of government in maintaining these reserves. *See* generally A. WHITE, MARINE PARKS AND RESERVES: MANAGEMENT FOR COASTAL ENVIRONMENTS IN SOUTHEAST ASIA (1990).

[308]INSTI. ARRANGEMENTS, *supra* note 15, at 61-65.

[309]*Id.*

[310]Exec. Order No. 192 (1987), sec. 16 [d].

h) advisory guidelines

Guidelines formulated by government agencies serve a valuable education function and offer general direction for project design and construction. They at least raise the level of awareness and understanding among agency and government staff, and serves as a vehicle for inter-governmental communication and a forum for government agencies and interest groups. Guidelines can alert planners and policymakers in different sectoral or functional divisions to issues and provide foreknowledge of government policy and concerns regarding the impact the proposal may generate.[311]

Advisory (as well as mandatory) guidelines for fisheries and coastal resources are currently issued by the BFAR in the form of Fishery Administrative Orders (FAOs), under the executive powers exercised according to P.D. No. 704.

i) acquisition programs

This involves the expropriation of specific sites in order to bring them under the control and management of the state.[312] However, it is obviously a costly strategy involving expropriation of private lands; developing nations strapped for resources and confronted with multiple social needs are not likely to be financially capable of engaging in this endeavor. Even if all coastal resources were part of the public domain administered by the developing state, it is unlikely that the latter will be able to employ this method on a large scale.

j) coastal atlas and data bank

This involves the systematic compilation, interpretation, and display of information linked to a specific set of coastal issues, organized for an entire nation.[313] Rather than directly regulate resources, it serves the purpose of providing updated information through which policy may be drawn and governmental action may be guided. It is in this field that Philippine coastal zone resources are known to be sorely deficient, and several data-gathering projects are promptly being implemented today by several concerned agencies.

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[311]INSTI. ARRANGEMENTS, *supra* note 15, at 65-67.
[312]*Id.*, at 67-69.
[313]*Id.*, at 69-70.

k) regional seas

This concerns the cooperative efforts of more than one state with coastal resources. Regional seas strategies involve transboundary issues between states, such as marine pollution, fisheries protection, and oceanographic research. Multi-national interests also include tourism, mangrove conservation, and protection of migratory mammals and birds.[314]

The American Model of Coastal Zone Management

The above strategies are drawn chiefly from American experiences. Concern for the coastal zone in the US was impelled by issues regarding conflicting uses of the shoreline and the pollution of the seas, estuaries, and inland waters. Federal legislation aimed at coastal activities dates back to 1899, but evolved as haphazardly as other marine statutes. Prior to 1969, only Massachusetts, Florida, and New Hampshire had started to even control drainage and filling of wetlands, and especially to require permits for alterations to private coastal property. No single federal body had jurisdiction coinciding with boundaries of the coastal zone, since responsibility for the varied functions and activities performed there (*e.g.* water-quality research, waste management, control of beaches) devolved upon some 22 individual agencies.[315]

Pollution of American coasts attained levels that slowly caught the attention of the public. Huge amounts of municipal sewage from the cities carried a flood of inorganic compounds, pathogens, suspended solids, and decomposing organic matter into the waters, while some 200,000 industrial plants added their load of wastes; other refuse was being barged across the coastal zone and dumped at sea, some in designated disposal sites in open coastal waters less than 100 meters deep.[316] Headlines of massive oilspills, damaged beaches, and destroyed marine life galvanized increasing sectors of the American people into the acceptance of developing principles of environmental stewardship in the late sixties.[317]

A Marine Sciences Council was formed on July 27, 1967. It was the first political initiative that drew attention to the neglect of the

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[314] *Id.*, at 47-49.
[315] E. WENK, THE POLITICS OF THE OCEAN 182-184 (1972).
[316] *Id.*, at 175.
[317] *Id.*, at 168.

shoreline regions as a whole and their intimate relationship with human activity.[318] It was also the first federal agency having a broad enough mandate and inclination to endeavor to deal with the aggregate of coastal environments and activities. It sought to establish an integrated policy-level approach to counter the fragmented programs responding to separate and individual interests in coastal resources, and to enunciate a concept of comprehensive stewardship of the coasts.[319] By 1970, the need for a tougher policy to manage coastal resources as a public trust became widely recognized, as was the need for corrective measures.[320]

The National Environmental Policy Act of 1969 was a political expression of heightened national awareness that the planet cannot indefinitely absorb the consequences of changes introduced by man on the environment.[321] Among others, this policy stressed a multiple-use concept for water resource development and more recent awareness of the effects and issues generated by such varied uses in the coastal zone.[322] The National Environmental Protection Act served as an important influence upon the developing policy on the coastal zone, as many of the conflicts which arose from its implementation occured at the shorelines, involving oil and industrial effluent discharge into the waters.[323]

In 1972, a Coastal Zone Management Act[324] was passed by the US Congress. It recognizes the conflicts that arose out of various uses the shores were subjected to, the importance of maintaining and preserving the resource while at the same time deriving optimum benefits therefrom, and the need for a broad, integrated management policy for planning and regulation.[325] It is a national environmental protection program characterized by broad legislative goals and the delegation of substantial authority to state and local governments to develop specific objectives and the means to achieve those objectives.[326] Chiefly, it is a system for allocation of grants and incentives to coastal states engaging in coastal zone management, subjecting the latter to supervision and integration with federal and other states' planning thrusts.

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[318] *Id.*
[319] *Id.*, at 187.
[320] *Id.*, at 168.
[321] *Id.*, at 207.
[322] *Id.*
[323] *Id.*, at 209.
[324] 16 U.S.C.S., secs. 1451-1464.
[325] *Id.*, sec. 1451.
[326] K. Lowry, *Coastal Area Management: A Hawaii Case Study*, in COASTAL ZONE 103, at 104 (1989).

The Coastal Zone Management Act of 1972 sought to establish a "cooperative" relationship between the federal government and the states. Participation by states in the program is voluntary, although there are substantial planning and implementation grants for states that participate. The states develop their own management programs and policies, consistent with general national legislative goals and administrative guidelines. The law and guidelines further require states to identify specific inland and seaward areas subject to the management program, develop sufficient legal authority to insure compliance with the program and encourage public participation. Twenty-nine states bordering the Atlantic, the Pacific, the Gulf of Mexico and the Great Lakes presently participate in the program.[327]

American CZM is considered a great success, achieving more than it set out to accomplish, and leaving American coasts cleaner than they were 25 years ago.[328]

Coastal Zone Management for the Philippines

It would be an easy task to simply import the American coastal zone management act, as well as the programs implemented under it, and adapt them to Philippine government structures. However, this is completely unacceptable due to great physical and contextual differences between American coastal zones and those of Southeast Asian countries, especially the Philippines.

Differences in environment

Tropical areas have unique biophysical features not present in Western countries which require special attention in the management of coastal activities. High annual temperature, high relative humidity, and concentration of high annual rainfall into definite wet seasons produce deep weathering of soils and varied seasonal flow patterns of rivers. Tropical rainforests in upland areas are thought to modify nutrient supplies in coastal areas through hydrologic influences and the control of sediment loads carried by rivers. Increases in seasonality of rainflows are taking place due to clearance of rainforests in upland areas; sedimentation and alluviation are increasing, disturbing

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[327] *Id.*

[328] K. Lowry, *Transferring Implementable Coastal Resources Management: The University of Rhode Island's Experience*, in COASTAL ZONE 211, at 212 (1989).

mangrove systems and fishing grounds. Tropical aquatic ecosystems are noted as being particularly susceptible to thermal pollution.[329]

Two unique features in many tropical coastal zones are the presence of mangrove swamp forests and coral reefs. Mangroves form the dominant land type in Southeast Asian coastal zones. They provide food and shelter for a large variety of fish and shellfish, many of which are of commercial importance, act as a buffer between land and shallow seaward communities such as coral reefs and sea grass beds, and ameliorate the impact of the sea on land. Removal of mangroves can lead to the reduction of primary productivity and coastal instability, and the acceleration of offshore sedimentation.[330]

Coral reefs are complete and distinctive ecosystems found in tropical waters. The value of these resources can be very large for small-scale fishermen in specific locations. They are affected by siltation and turbidity, freshwater run-off, domestic sewage, agricultural chemicals, industrial and processing wastes, oil pollution, thermal pollution, over-fishing, and natural events such as storms.[331]

American programs usually do not need to contend with the foregoing issues and problems due to a great difference in geography, which protects entirely different environments. There exists a closer and more sensitive interdependence of the land-locked and marine ecosystems in an archipelago than in a continent. An additional difficulty with the Philippines is its geographical structure. Comprised of more than seven thousand islands and boasting a coastline longer than that of the United States, it poses an enormous problem in terms of administration, logistics, implementation, and maintenance of any management program.

Contextual differences

Population growth ot approximately 2.8% throughout Southeast Asia is thought to contribute to stress within coastal areas and inland areas, thus creating pressure upon coastal land and water systems. Differences in job opportunities, remuneration, job mobility, poverty levels, and increasing rural to urban migration lead to the slow development of the rural population base. It also creates stress in the form of conflicts between private capital-intensive, technologically

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[329]P. Burbridge and S. Koesoebiono, *Coastal Zone Management in Southeast Asia*, in SOUTHEAST ASIAN SEAS: FRONTIERS FOR DEVELOPMENT 110-113 [The latter work hereinafter cited as SOUTHEAST ASIAN SEAS].

[330]*Id.*

[331]*Id.*, at 114.

sophisticated, profit-oriented systems and traditional local systems intended merely for subsistence.[332]

The state of the national economy of the Philippines alone warrants an entirely dissimilar coastal zone management program, due to the presence of other pressing development needs and requirements of the different economic and social sectors. The government, with its cash-strapped national budget and scarce resources, simply does not have the fiscal capability to mount a national, centralized CZM program.

The motivation for Coastal Zone Management in the Philippines is not merely a matter of pollution and the desire for clean, uncluttered coasts. Survival of the poverty-stricken sectors of society is as much a concern. At the same time, it is one of the causes of the degeneration that has necessitated its formulation. Considering both environmental and contextual differences, a different approach is warranted.

Focus on Municipal Fisherfolk

Municipal fisherfolk are the human elements forming part and parcel of the coastal ecosystem. They are the most affected by changes in resources and the environment. Special attention must be paid to their small-scale and traditionally organized livelihood activities, which characterize the main preoccupation of populations dependent on the coastal zone. Poorly conceived management strategies directly or indirectly affecting those fishermen could have a calamitous effect upon the stability of their subsistence.[333] Without detailed management strategies to maintain the integrity of the resource base and to upgrade the livelihood of traditional fishermen, the latter cannot avail of the potential benefits of enhanced development[334] and will only suffer more adversity as the resource degenerates and they are left without alternatives. Since such adversity is precisely what forced small-scale fisherfolk to engage in detrimental activities, it is logical to address this issue concurrently with preservation of their environment.

Furthermore, without the cooperation and participation of the people actually living in the targetted resources and environment, any management program will certainly be doomed to fail. The constraints under which the Philippine government operate precludes the latter from carrying out any coastal management strategies on its own. The people's active cooperation is necessary to achieve a successful program.

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[332] *Id.*, at 115-116.
[333] *Id.*, at 116-117.
[334] *Id.*

V. THE LEGISLATIVE AGENDA

One of the major concerns of the legal profession today should be assisting Congress and the several legislative bodies to draft legislation concerning natural resources and the environment that is ecologically sophisticated, environmentally responsible, socially relevant, and politically feasible.

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The coastal environment and the resources within it are undergoing massive degradation and destruction due to the failure of past and present administrations to lay down and enforce an effective policy for their protection, management, conservation, and utilization. If no effort is made to have this policy modified or replaced, it can be expected that the breakdown of the coastal environment will continue at an increasing rate, and soon the country will lose more of its scarce resources to shortsightedness.

The legislature is now presented with three options to remedy this situation. The first option is to allow existing legislation to remain in force, but take measures to strengthen implementation. This may be done by enacting appropriation measures that respond to the logistical and administrative needs of the various government agencies which enforce the law. Offices may also be reorganized to rationalize implementation of projects and programs and to arrive at efficiency in the enforcement of environmental laws.

This option appears to be the one being exercised by the present administration. However, this approach will be inadequate to respond to the issues of unclear or misguided policy goals under existing legislation, and institutional issues such as overlapping mandates or inadequate institutional support. The latter issues are the more important ones that need to be addressed, as it is the general absence of policy that leads to disjointed and disparate government machineries. No amount of government reorganization and increased efficiency in enforcement can be successful if the goals sought to be achieved are inherently inappropriate for sustainable development objectives.

The second option is legislative reform, by which present legislation is harmonized and overlapping mandates and conflicts between agencies eliminated. Government capabilities are strengthened to carry out the present laws and policies. Thus, the Fisheries Code of 1975 may be revised and updated, and other fishery-related legislation integrated thereto. Reorganization once again plays a key role as the scattered mandates and powers under present laws are consolidated into fewer government entities. Agencies which play a major role in resource

management, such as the BFAR and EMB, may be elevated in status and given broader powers and functions.

This approach is being considered by the legislature as can be gleaned from the type and content of bills pending deliberation. But it will not be successful if it cannot address the deeper policy issues which have created resource management issues and problems. Among these policy issues are the continuing concern with production instead of people, the low priority given to maintenance of the environment, and traditional "top-down" management techniques which invariably result in project failure due to lack of support from the people. Neither will it be able to address broader issues which have a bearing on the degradation of resources through the people who utilize them, such as population pressures, poverty, and socio-economic stratification. Legislative reform will be merely superficial, as more basic and fundamental sources of degradation tend to be ignored.

The third option is to institute broad and sweeping changes in both policy and government. Just as environmental issues and sustainable development programs require multi-disciplinary approaches, the legislative agenda for the coastal zone requires more than just enforceable laws or more efficient government. A viable coastal zone management strategy necessitates fundamental changes in government policies, objectives, institutions, and techniques. It must begin with a general overhaul of environmental laws and policies as well as reorganization of government machinery and resources to conform to the needs and purposes of those policies. It is based on the recognition of the interdependence of varied factors and aspects of our ecosystem.

It is this third option that is most responsive to the contemporary conditions and needs of our coastal zone and fisherfolk. Fundamental changes are required in the areas of management, fishery policy, and coastal zone policy. Current program objectives and implementation need to be supplanted with those more reponsive and appropriate to the demands of the present.

Fisherfolk Community Management

Rationale

Fisherfolk community management is the most relevant and appropriate means of protecting our coastal fishery resources and the coastal zone in general, and addressing the various issues facing them. For the following reasons, granting the fisherfolk populace a key role in a new fishery policy and coastal zone management program will directly contribute to their success.

a) the communities' dependence on the zone

Management of coastal resources largely involves the distribution of limited resources among competing groups in society. Any measures for coastal zone development would necessarily embrace the allocation of coastal resources. Thus, fisherfolk communities which are most affected must have some degree of participation in the planning and implementation of CZM programs.[335] This is an assurance that the benefits of the program will accrue to those for whom they are intended. Their dependence on the resource likewise ensures that, in the interest of their own survival, proper protection, management, and sustainable utilization will be carried out.

b) inadequacy of traditional systems of centralized government management

Most agencies, academic and research institutions engaged in environmental projects studies normally view the development and conservation of natural resources as their primary goals. However, they also disregard the possible role of the people these resources affect.[336] This is an inevitable consequence of the centralized government outlook, wherein direct administration and control by the state is seen as the only mode of controlling the use of resources. However, this perspective is based on the premise of an effective government machinery that possesses the assets to implement its programs. Where government is unable to respond to the needs of managing its resources, its programs and policies inevitably fail.

Several factors make direct management of the coasts by the government impossible. Among them are the archipelagic character of the Philippine territory and its vast coastal and marine area, the competing needs of development in other sectors such as industry and agriculture, the multitude of regular government functions providing basic services, and the country's limited revenue, finances, and existing administrative capabilities.

However, the mere decentralization of government powers is not enough. Studies show that participatory development would seem to be particularly appropriate for developing nations given their limitations in government resources and personnel. This increasing concern for

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[335]E. Ferrer, *People's Participation in Coastal Area Management*, in COASTAL ZONE 117, at 118 (1989).

[336]E. FERRER, LEARNING AND WORKING TOWARD A COMMUNITY-BASED RESOURCES MANAGEMENT 13.

participation in development is the result of the failure of previous development plans to alleviate the conditions of poverty and inequality, since they generally assigned a passive role to the people they were intended to benefit.[337]

Further, the need for involvement of the beneficiaries in development projects and programs has been universally recognized; unless the beneficiaries are organized to receive, make protective use of, and maintain the facilities and services, programs rarely achieve the intended economic benefits.[338]

c) greater efficiency in planning and implementation

The community-based approach is cognizant not only of the long years of experience of the masses but is also appreciative of the values, knowledge, skills and attitudes that the farmers of the land and sea have imbibed in their struggle with nature. The main principle is to begin with what the people already know, and to build on this knowledge to create a new consciousness.[339] Planners can then take advantage of a readily available data-base.

In situations wherein development proceeds with the active involvement of the masses, the management system and structures that evolve are more likely to be compatible with and thus more acceptable to the participants.[340] This eliminates the need for endless experiments with various management methods, and reduces the chances of failure due to administrative inadequacies.

Since enforcement in the seas is probably the greatest obstacle faced by logistically deficient government techniques, close community involvement is also recognized as a more efficient approach. It may be possible to directly tie individual livelihoods to resource preservation, and thus create an incentive for cooperation.[341]

d) democratization of access to resources

Present management policies have resulted in denying the basic communities the benefits of the use of the marine wealth. Having been

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[337]J. Okamura, *Popular Participation in Development in the Philippines*, PARTICIPATORY APPROACHES TO DEVELOPMENT: EXPERIENCES IN THE PHILIPPINES 1, at 8 (1986).

[338]Ferrer, *supra* note 335, at 125.

[339]FERRER, *supra* note 336.

[340]R. POLLNAC, SOCIO-CULTURAL ASPECTS OF DEVELOPING SMALL-SCALE FISHERIES: DELIVERY OF SERVICES TO THE POOR 38 (1981).

[341]PHIL. ENVIRONMENT , *supra* note 19, at 79.

edged out in terms of production, fisherfolk communities are continually marginalized and driven into acute poverty. The resultant economic and social stratification leads to the enhancement of the power of local political and economic elites. These elites then take further advantage of their positions to gain exclusive access to the resources, and thus entrench themselves in their predominant positions in society.

A community-based coastal resource management, on the other hand, can work towards greater economic and social equality, better access to services for all, greater participation in decision-making, and deeper involvement in the empowerment of the people.[342] By taking part in resource management, the communities can improve their economic and social conditions.

e) more prospects for success

When local communities are granted decision-making powers and their active participation in program implementation is permitted, the probability for success is increased considerably.[343] Local enthusiasm is easily maintained, total cooperation readily achieved, and the continuity of the program even without government assistance and staff is ensured. Considering that coastal resource management programs must necessarily be a continuing program, community management offers the best method of assuring success. CZM cannot remain a mere program of only one administration; it must be sustained beyond all such political limitations.

f) failure of previous cooperative strategies

Prior government programs promoting the formation of cooperatives (*Samahang Nayon*) followed the trend of failure in most Southeast Asian countries, with associations becoming inactive upon withdrawal of government interest in pursuing the programs;[344] they were established by government to foster its policies and facilitate its control over markets instead of being community-initiated efforts to enhance livelihood.[345] Many times membership in these government-organized cooperatives were compulsory or even coerced, resulting in little or no enthusiasm or input.[346] Programs of the cooperatives and their objectives were also set without considering the ability or willingness of the people to respond to them. Often, the community

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[342]FERRER, *supra* note 336.
[343]Okamura, *supra* note 337, at 37.
[344]FERRER, *supra* note 336, at 8; *cf.* MUNICIPAL FISHERIES , *supra* note 35, at 67.
[345]FERRER, *supra* note 336, at 8.
[346]*Id.*

worker found himself directing the project without community participation.[347] This is in contrast to many successful fishermen's cooperatives generated by the fishermen from below rather than by the government or some external agency, as in Belize, Italy, Malaysia, and the United States.[348]

Further, little effort was given to developing community controlled associations capable of solving local problems and making demands on the larger political system for the benefit of the community.[349] One of the notable failures was the acceptance of existing political structures with no attempt to change them. It often resulted in the stronger position of the traditional elites who monopolized the programs' benefits as community workers aligned themselves with these elites.[350]

Precepts

A policy promoting community-based management of fishery resources must be based upon a clear philosophy in order to be feasible and effective. Ground rules establish the parameters around which present approaches must be modified, and through which subsequent or concurrent programs may be molded.

1. The fisherfolk community is in the best position to improve the conditions of their environment.

Community-based management starts from the basic premise that people have the capacity to improve the quality of their lives and confront their problems with some support from government and non-government agencies; the people are both the ends of development, and the instruments of their own progress.[351] Having lived all their lives by the sea, their familiarity and experience are the best tools for building an environmental management program. Their reliance and dependence on the water, and their collective interest in maintaining a viable environment, assures their adherence to a program that ultimately benefits them. Recognizing the need of fisherfolk communities for these resources is the first step to devising a feasible management program.

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[347] *Id.*
[348] Pollnac, *supra* note 340, at 37-38.
[349] FERRER, *supra* note 336, at 8.
[350] *Id.*
[351] *Id.*, at 12.

2. Empowerment of the fisherfolk is the key to the program's continuity and success.

Community organizations should be established and controlled by the fisherfolk to ensure that they foster the interests of the community, not the vested interests of a few. By serving as a means for community participation in project activities, such organizations can promote the development of organizational, leadership, and technical skills that can enable the people to assume responsibility for resource distribution and management even without specially trained staff.[352] The community as a whole should be able to mobilize itself and take action as one unit in project implementation.[353] Granting the community the power to set its own agenda to meet the goal of development will prompt the devotion of all efforts towards that end.

Empowerment may be accomplished by granting the community certain legal rights over resources and allowing it to decide key questions in project activities from planning to evaluation. Formal structures of authority and bureaucratic organization, concentrating decision-making power in some superior, should be discouraged.[354] The community must be given a greater role in decision-making and a proportionate share of controlling management activities. Extensive consultations with and actual participation of the fisherfolk in planning must be standardized as an operating procedure. Community organizations can serve as deputies of enforcement agencies in the areas of law enforcement, pollution control, ocean surveillance, and marine reserve management.

At this point, it must be added that the existing mode of participation by fisherfolk communities permitted under existing law[355] does not comply with this principle of empowerment. Community organizers out in the field commonly find that working with barangay leaders is not very useful in conducting project activities; under their leadership, cooperation in the community is difficult to obtain.[356] The problem is attributed to barangay leaders who have a strong tendency to work primarily for their own benefit, as they consider their position a source of political power as well as of economic benefits, and are therefore protective of their rights and prerogatives.[357] Since the positions of barangay captain or councilman are elective, interference for

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[352]Okamura, *supra* note 337, at 225, 230.

[353]*Id.*

[354]*Id.*, at 231-232.

[355]Pres. Decree No. 1160 (1977) empowers Barangay Captains, Councilmen, and Zone Chairmen to enforce pollution and environmental control laws.

[356]Okamura, *supra* note 337, at 224.

[357]*Id.*

political reasons and considerations is not likely to contribute to the empowerment of the people.

3. Government must be reorganized to encourage, promote, recognize, and support fisherfolk community organizations.

Since the participatory approach to developing fisheries departs from the usual "top-down" approach, the government must be reorganized to adapt its administrative structure and operations to the increased participation of the community. This way, the community's participation is not merely illusory or artificial. Government support personnel and agencies must accept the fisherfolk as their active associates and co-workers in development, and should orient themselves to the objective of promoting the community's capacity for self-management of resources.[358] In one sense, the Local Government Code moves towards this end by decentralizing national authority, allowing local government units freedom to determine their own local development agendas. But whether this actually raises community participation or merely replaces the previous national structure with local bureaucracies and local political elites remains to be seen.

Reformulating Philippine Fisheries Policy

A new fishery development policy under present conditions embodies purposes different from previous plans. Fisheries policy is inseparable from the general environmental policy of coastal zone management. Conservation and maintenance of fishery resources must take priority over GNP growth targets. Policymakers must discard the misconception that increasing production figures are the indicia of improvement.

A production-oriented solution will only succeed if the resources exist to support the increased fishing intensity that improvements will bring; but if unrestricted entry into common "open-access" resources continues, such as what exists today, resulting in over-exploitation and over-capitalization, fishermen's gains will become short-lived,[359] and the average productivity of municipal fisheries will continue to decline. As already discussed, coastal resources are already being destroyed by various activities in the zone, and municipal fisheries in particular already suffers from the effects of over-exploitation. Increasing production will only tend to further degrade the resource, and thus accelerate the deterioration of fisheries.

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[358]Ferrer, *supra* note 335, at 126-127.

[359]MUNICIPAL FISHERIES , *supra* note 35, at 50.

Continuing the present policy of promoting growth is therefore unacceptable, the problem with fisheries having less to do with development for higher yields and more with management of present levels.[360] A management orientation recognizes that resources are not unlimited, and emphasizes the achievement of optimum sustainable yields, a long-term perspective that seeks not only to extract the benefits from utilization, but at the same time maintain the productive capacity of the resource.[361]

Another important aspect of a new fishery policy should be the improvement of social conditions in the fisherfolk communities. The fisherfolk sector has long been neglected in the management of the coasts, and they now bear the brunt of the degradation of coastal resources, which in turn pushes them deeper into poverty. Yet, poverty itself is the main cause of harmful methods of resource utilization. It renders the majority powerless against the detrimental uses by other sectors of society; the resulting social and economic marginalization keep them from taking action to protect the resources upon which they depend. It is logical, therefore, that to promote the sustainability of the coasts, the major root of degradation must be addressed.

Reduction of fishing effort

It is widely agreed that rehabilitation of Philippine fisheries involves massive reduction of fishing effort, by at least a factor of two.[362] It is necessary in order to respond to two overriding considerations: (1) the degradation of the fishing environment due to overfishing; and (2) the deterioration of living conditions in the fishing communities.

Overfishing is directly caused by the concentration of fishing activities in marine areas. At the very least, commercial fishing must be induced by both mandatory laws and incentives to leave traditional fishing grounds to small-scale fisherfolk, and expand to other, underfished areas.[363] Fisherfolk must retain access to the resource since they are directly dependent upon it, and it would be simply impossible to compel them to stop fishing. On the other hand, the commercial fisheries may avail of enough capital and resources to take part in other fishing ventures in other areas.

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[360]*Id.*, at 25.

[361]*Id.*, at 75.

[362]D. Pauly, *Fisheries Resources Management in Southeast Asia: Why Bother?* in COASTAL ZONE 1, 7 (1989).

[363]PHIL. ENVIRONMENT , *supra* note 19, at 103-106.

At the same time, removing competition from large-scale fishing activities will allow small-scale fisherfolk enough leeway to fish for their own subsistence. Even if the environmental conditions for marine life remain the same for some time to come, small-scale fisherfolk will be able to avail of more of the catch.

Provision of alternative livelihoods

Since fishing is mainly a seasonal activity, reduction of effort must also involve the provision of alternatives to the fishing activity. Fisherfolk currently engage in supplemental activities in order to augment their income from fishing. It is improbable that, as in the agricultural sector, fishermen can fish for a season and live on their earnings for the rest of the year, due to the perishability of the commodity. In view of the already degraded status of the resource, and the fact that the maximum sustainable yield has apparently been exceeded, mere improvement in efficiency of the fishing activity is not acceptable as it will be more likely to reduce the total yield and induce more poverty in the sector.

Proposed alternative coastal livelihood activities include mangrove maintenance and replanting, construction and maintenance of artificial reefs, and various forms of mariculture of seaweeds, mussels, clams, and shellfish, on a community basis,[364] as they do not add to the pressure on the resource base.[365]

Fisherfolk should also receive support from the government in terms of infrastructure and credit facilities. The prevailing market structure effectively prevents economic upliftment. The unavailability of credit and the dominance of middlemen must be addressed. The possible avenues for resolving these problems include the promotion of cooperatives, provision of incentives to banks for extending softer credit, and entry into joint ventures between local governments and fisherfolk.

Exclusive access to resources

As long as access to natural resources is relatively costless and unlimited, no one will be interested in engaging in protection and maintenance of the resource for future sustained productivity. It has been recognized that there is a need to provide resource users with some form

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[364] *Id.*

[365] *Id.*, at 77.

of tenure over the resource, to serve as an incentive for the adoption of conservation and sustainable utilization techniques.[366]

There are at present some proposals to create sea and shore instruments for identifiable groups of users in units appropriate to local circumstances and traditions.[367] Most notable of these are the Territorial Use Rights in Fisheries (TURFs) for communities, which essentially involve the grant of exclusive privileges to engage in certain activities in specific areas of the coasts.[368] TURFs have existed traditionally in the form of exclusive rights to construct fish corrals, oyster culture beds, catching of bangus fry, and laying of artificial reefs; these rights are granted through licensing. The problem with traditional TURFs is that they are little different from any other licensing scheme, and may often be availed of only by persons, other than small-scale fishermen, who have the necessary capital. Community TURFs must be based on recognition of fisherfolk's great reliance on the fishery resources for subsistence; thus, the requirement of licensing fees or other capital requirements must be kept at the minimum.

Another method of limiting access may be community stewardship contracts analogous to those employed in forestry. This technique will allow a much broader range of fishery-related activities than those involved in TURFs to be undertaken, from extraction of benefits to conservation and rehabilitation measures, in just one contract.

Fishery policy must support municipal fisherfolk communities in transforming the open-access fishery into a managed common property by segregating the near-shore fisheries for their exclusive use[369] and restricting large-scale commercial fishing to offshore areas. This can be done by giving exclusive privileges to communities and by strict enforcement of laws.

Exclusive access to resources will also address the issues of poverty and socio-economic stratification indirectly, as it will prevent big businesses and those with more capital from taking advantage of their wealth to "secure" resource utilization to the exclusion of others.

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[366] *See generally* proposals for granting tenure to upland communities in order to encourage sustainable management techniques, in PHIL. ENVIRONMENT, *supra* note 19, at 81; also E. Ferrer, *Prospects for Territorial Use Rights in Fisheries in Lingayen Gulf*, LINGAYEN GULF, *supra* note 66, at 157 (1989); G. Bernacsek, *A Guide to Discussion of Principal Fisheries Development Policy Issues for the Five-Year Plan of the Philippines (1987-1992)*, 3 CONFERENCE , *supra* note 221.

[367] PHIL. ENVIRONMENT, *supra* note 19, at 96-97.

[368] See generally E. Ferrer, *Prospects for Territorial Use Rights in Fisheries in the Lingayen Gulf Area*, LINGAYEN GULF , *supra* note 66, at 157.

[369] PHIL. ENVIRONMENT , *supra* note 19, at 97.

This is most felt in the traditional fishing areas where commercial fishing vessels are perceived to haul most of the catch, leaving little to municipal fishermen using limited fishing methods.

Enforcement of laws

Law enforcement is a prerequisite to effective management. A corpus of legislation presently exists which may be responsive to specific needs of the fishery sector, yet remain dormant and ineffectual. More active participation of BFAR field staff, with support of law enforcement agencies, in municipal waters,[370] more active protection by DENR and local governments in pollution control,[371] and enforcement of regulatory and prohibitory laws[372] will serve as proper initial responses to slow the decline of fisheries. This can be facilitated by substantial appropriations for better equipment, facilities, and employment of personnel in the concerned institutions. Enforcement agencies in the coasts such as the Coast Guard and Navy must receive more allocations for the purchase and maintenance of boats and equipment, while active participation of the fisherfolk must be encouraged in law enforcement. The latter endeavor is necessary due to the basic impossibility of overseeing the vast coastline.

Rehabilitation of resources

The alleviation of the condition of fisherfolk communities calls for a general improvement of the environment in which they operate.[373] Habitat restoration is an essential activity for sustained use of coastal fisheries. The reduction of fishing effort will not help in restoring fishery resources if fish have no places to spend their life-cycles. Conversion of mangroves must be prohibited, and replanting actively promoted.[374] The need to protect coral reefs must be impressed upon fisherfolk and enforcement agencies.[375]

The construction of artificial reefs (ARs) must be pursued. Aside from providing fish habitats, they also serve as a means of excluding destructive trawlers from nearshore fishing grounds. This is because ARs destroy nets, tend to limit the numbers of users to the coastal fishermen who maintain them, and help increase productivity in areas where they are placed.[376] However, it must be regulated or subjected to

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[370]*Id.*
[371]*Id.*
[372]*Id.*, at 103-106.
[373]SMALL-SCALE FISHERIES, *supra* note 141, at 45.
[374]PHIL. ENVIRONMENT, *supra* note 19, at 103-106.
[375]*Id.*, at 96-97.
[376]*Id.*

licensing, as ARs increase fish productivity by attracting fish, and thus may also contribute to overfishing.[377]

Integration of fishery institutions

There is a clear need to consolidate government powers and resources in one specialized agency that will be concerned with developing fishery as an economic sector, strengthening institutional capabilities for undertaking effective planning, management, and conservation of fisheries, and directing research, infrastructure development and management, training, and extension.[378] Centralizing management functions in one agency with broad powers and capabilities has been recognized as the best means of administering management programs.[379] This eliminates the problems of overlapping mandates, and conflicting jurisdictions, projects and proposals. The same institution must also be granted adequate funds, staff, and equipment to execute its functions.

House Bill No. 106 represents the current effort at integrating fisheries institutions in one Department of Fisheries. Now scheduled for Second Reading, the proposal is to create a full department for marine resources with extensive administrative and quasi-judicial powers corresponding to the area of its responsibility. However, it must still undergo amendment prior to passage as law, in order to correct certain deficiencies, particularly with respect to its policy objectives and environmental management powers and functions. For instance, the bill perpetuates the current prioritization of production instead of management of coastal resources.[380] Moreover, it merely transfers the existing powers and jurisdiction of the BFAR into a department[381] but does not harmonize the original jurisdictional conflict between the DA and the DENR over aquatic resources; in fact, it creates an even bigger conflict as jurisdiction and responsibility over marine resources is granted to the proposed department without considering the DENR's plenary responsibility over environmental concerns. It apparently only streamlines the government bureaucracy on fisheries by transfering agencies involved in the fishery sector (such as the LLDA, FIDC, BFAR) or subordinate offices (such as the Fishery Research Division under the Philippine Council for Agricultural Research) into a Department of

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[377] *Id.*, at 78.

[378] 1 CONFERENCE , *supra* note 25, at 31.

[379] K. Lowry, *Issues in Designing a Coastal Management Program*, in COASTAL ZONE 191, 201 (1989).

[380] H. Bill No. 106, sec. 2 contains an almost verbatim reproduction of the declaration of policy under Pres. Decree No. 704 (1975).

[381] H. Bill No. 106, secs. 4 and 13.

Fisheries.[382] Finally, it does not address underlying policy issues (such as the absence of integrated management policies and doubtful policy goals), logistical inadequacies, and enforcement problems.

Decentralization of authority

Municipal fisheries are so diverse, disparate, and localized, and municipal fishermen operate on such a small scale, that formal external regulation through centralized government is virtually impossible. Municipal fisheries policy must therefore involve a considerable degree of self-management under local control.[383] The creation, participation, or strengthening of local organizations and municipal or barangay resource users in the control of access to and management of the resources must be actively promoted.[384] Local governments need legislative powers to regulate access to municipal fisheries and formulate their own local management policies, with associations of user groups serving as advisers.[385] The Local Government Code responds to this need to a certain extent.

On this note, House Bill No. 106 significantly provides that jurisdiction over management, conservation, development, utilization, and disposition of municipal waters shall be with the local governments. There is a potential problem in this area, as although jurisdiction in general is delegated to local governments, there is no provision on how this grant harmonizes with the rest of the powers of the proposed Department of Fisheries which necessarily covers municipal waters. Only in the area of research for local fishery use rights and formulation of local development measures, and in local policy planning in the context of national planning is the relation between the two spelled out.[386] While the recognition of municipal governments' authority over the resources within their territorial jurisdictions is in line with decentralization, care must be taken that delegation will not create more conflicts between the national and local entities. Their relationships must be clearly defined.

Education

There must be a comprehensive educational campaign for municipal fishery users, the various local government officials, and enforcement agencies on the habitats, life cycles, and ecological system

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[382]*Id.*, sec. 13-17.
[383]PHIL. ENVIRONMENT, *supra* note 19, at 96-97.
[384]*Id.*
[385]*Id.*
[386]H. Bill No. 106, sec. 4(k).

interactions of the fishery resource. This will equip them to take more appropriate action in their own interests,[387] and emphasize the importance of following program rules and guidelines. Knowledge of the resource, the purposes of management, and the benefits to be derived are indispensable for the people's active involvement and cooperation.

Toward An Alternative Coastal Zone Management Program

The Philippine coastal zone harbors some of the world's richest ecosystems, capable of providing enormous economic benefits to the people who inhabit it and the country in general. These benefits of the seas can be realized only through a comprehensive CZM program that responds to the grave issues confronting the coastal environment today. There is a need for an alternative CZM policy that discards the previous one of maximum production and exploitation, prioritizing sustainable resource management and responding to the continuing needs of fisherfolk communities. This CZM program must be devised in accordance with certain guidelines which are critical to ensuring its relevance and success.

a) Integration with broad-based national environmental management policy

Any strategy for sustainable development of natural resources will founder if it does not simultaneously address the broader issues of population growth, poverty and unequal access, and the absorption of labor into other employment opportunities.[388] The latter social issues all contribute to the careless use of resources by the people. An alternative CZM program must therefore be part and parcel of a broader, national environmental strategy of sustainable development, that addresses issues outside of the coastal zone, but which have some impact on coastal users and uses. The coastal zone is only one of several ecosystems upon which the continued viability of the country's environment depends. It cannot be planned or carried out without a greater policy of environmental maintenance and improvement.

The coastal zone policy must be integrated with a new environmental policy of Sustainable Development. This policy is new in the sense that it should no longer be concerned merely with mitigation of impact of activities on the surroundings, as is the general thrust at present.[389] A Sustainable Development policy must address more than protection of the natural environment, but deal with alleviation of

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[387]PHIL. ENVIRONMENT, *supra* note 19, at 97.
[388]*Id.*, at 85.
[389]Pres. Decree No. 1151 (1977), third WHEREAS clause.

poverty and promotion of social equity as well. Thus, the legislature should turn its efforts to adopting a Philippine Strategy for Sustainable Development as a major environmental policy. The current proposal of the EMB merits further consideration, though care must be taken that the coastal and marine resources be further elaborated upon.

The legislature must at the same time embark on the task of codifying and redefining existing laws on the environment into a national environment code containing all pertinent legislation, and providing for its enforcement. The present Philippine Environment Code[390] has to be replaced, as at most it only establishes standards for various environmental concerns. Codification will serve to harmonize the multitude of conflicting and overlapping laws now dormant in the statute books due to administrative confusion. It will also serve the purpose of redefining the functions of the assorted agencies of government related thereto.

b) Emphasis on sustainable use of coastal resources

The Philippines is presently experiencing the folly of policies emphasizing the maximum productivity of coastal resources, manifesting itself in declining fish catch, degraded habitats, and extensive pollution. The government is more interested in deriving maximum productivity from the coasts, and only incidentally concerned with conservation; however, production cannot continue without conservation,[391] and therefore, unless the current generation wishes to be responsible for denying their children the benefits of a healthy ecology, the sustainable use of coastal resources must be emphasized.

c) Education of the people

Since the people are needed as active collaborators in implementing a sustainable development strategy, priority must now be given to funding and promoting a massive educational campaign utilizing multi-media and multi-sectoral approaches. More funding should be provided for the education of the people on the environment, its conditions, the importance of management, as well as how they may protect and maintain it. The campaign for environmental awareness should begin with the DENR. The public school system must be provided with a relevant curriculum on environmental concerns. Forms of broadcast communication like radio and television must be given incentives to maintain regular environmental programs. Incentives must

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[390]Pres. Decree No. 1152 (1979).

[391]D. EMMERSON, RETHINKING ARTISANAL FISHERIES DEVELOPMENT: WESTERN CONCEPTS, ASIAN EXPERIENCES iii (1980).

also be given to encourage private and non-government organizations and institutions to disseminate information on the environment.

The chances for successful implementation of a coastal resources management program can be improved by clearly spelling out the causal relationships between policy goals or rules and the protection and management of coastal resources. Often, ecological cycles, food webs, and impact networks are not well understood by lay people so the reasons for the employment of regulatory or planning strategies are not apparent. Stressing the links between resource management goals and the management strategy will greatly aid in generating enthusiasm and support for the program.[392]

d) Integration of management institutions

Presently, the coastal zone is an undefined portion of the national territory. The legislature must define this expanse; consider placing the same under the jurisdiction of one agency (e.g., the DENR); or deliberate on the creation of a sub-agency exclusively for the coastal zone, with functions and powers similar to that exercised by the DENR's Forestry Management Bureau over the forestry resources of the country. Thereafter, it must study how to subordinate all government offices concerned with coastal resources, including coastal fisheries, to this new agency.

Coastal zone management programs are complicated greatly by the multiplicity of authorities operating within specific areas or zones.[393] The present management policy of the Philippines suffers from this disintegration of management institutions, resulting in a general failure to respond to the issues affecting the coasts. The interconnection of important economic sectors dependent on the coastal zone is the main reason for integrated coastal management in developing nations; integration of management of fisheries, tourism, oil and gas development, and coastal hazards regulation, and other development needs is especially necessary because they share the same coastal zone, environmental complexes, and public service systems.[394] It is necessary to create a major institution to study and address exclusively all these issues related to the coastal zone.

The most important institutional prerequisites for successful program implementation are a clear and broad mandate, an effective

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[392]INSTI. ARRANGEMENTS, *supra* note 15, at 120-123.
[393]*Id.*, at 84.
[394]*Id.*, at 90.

government structure, and a high degree of professional competence within the institution responsible for project implementation.[395]

e) Decentralization of government authority

CZM in an archipelagic setting cannot be a centralized and uniform national program. An alternative CZM strategy must serve only as a guideline, with formulation and implementation left to the various local government units. These guidelines only ensure the consistency of the local coastal management strategies employed and assure the program's success as a whole. Local regions and provinces must be given considerable freedom to determine their own management goals and techniques, subject only to the general program laid by the national management agency. Government authority must be decentralized in the sense that maximum participation in planning, decision-making, and program implementation is assured to regional and local governments. This is required by the nature of management strategies that may be employed, and the fact that local governments are in a better position to assess their needs, resources, and responses to issues in the disparate coasts.

f) Autonomy in employment of management strategies

As stated, due to the diverse types of coastal resources and the disparate nature of the archipelago, a CZM program cannot be a uniform national plan that applies to all provinces and municipalities. Each local government unit with a manageable coastline must be able to formulate and employ its own management strategies, while the national government serves only to coordinate the different programs and agencies of each unit. This method is employed in the United States, wherein the Federal and state governments require only review and coordination of proposed local management strategies.[396]

The municipality is the most appropriate level for regulating coastal land use (zoning) in most cases. Provincial restrictions might be necessary, but the government unit responsible for regulation should be close enough to the grassroots to reflect community interests as well as to notice and punish violations.[397] Integrated coastal management programs using strategies such as regional land use planning, broad scope sectoral planning, regional programs, and environmental impact assessment may well have better chances of success if they are begun on

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[395]A. Suphapodok, and I. Baker, *Institutional Capabilities and Coordination for Coastal Area Management in Thailand*, in COASTAL ZONE 205 (1989).

[396]Lowry, *supra* note 379, at 202.

[397]PHIL. ENVIRONMENT , *supra* note 19, at 90.

a regional basis. A regional focus allows concentration on the most severe problems, enables each region to obtain specialized experience with coastal resources management, provides time to develop and recruit expertise, and presents an opportunity to make needed corrections.

Initial experiments with regional management already exist, and merit closer examination as they have met with some success.[398] These coastal management projects provide the opportunity to test the concept and the approach as a pilot effort before committing energies and political capital to a national effort. Also, the experience gained during the regional effort should increase the likelihood of success of a nationwide endeavor.[399]

On the national scale, it is imperative that priority be given to research and planning for a CZM policy. This should furnish a mechanism for the creation of regional, provincial, or municipal management programs, and a means for supervising and reviewing those individual programs to reconcile them with an integrated national program. Support services (such as research and technical) for these local governments must be provided for. This may be accomplished by adequate funding for the pertinent sub-agencies of the DENR and BFAR to allow them to engage in full-scale studies of the coastal zone.

Such studies should concentrate on the key characteristics of the Philippine coasts, together with important coastal issues,[400] which should guide the choice of coastal resources management strategies. Some of these include the economic importance of sectors dependent on the coasts, the extent of prior governmental experience with some aspect of coastal resources management, experience with the destructive consequences of coastal activities and hazards, and the revenue available for program implementation.[401]

However, this does not mean that the national government must totally abdicate resource management functions in favor of local governments. The national government should also take immediate steps to protect coastal areas in imminent danger of degradation. Shoreline

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[398]*See* generally G. SILVESTRE, ET. AL., TOWARDS SUSTAINABLE DEVELOPMENT OF THE COASTAL RESOURCES OF LINGAYEN GULF (1989); J. Alix, *Community-Based Resource Management: The Experience of the Central Visayas Regional Project-I*, in COASTAL ZONE 185 (1989).

[399]INSTI. ARRANGEMENTS , *supra* note 15, at 120-123.

[400]Of particular interest on the subject of issues are those not yet under scrutiny by the EMB, such as the impact of tourism, ports development, lack of technical personnel, agriculture activities, impact of various uses of the land (e.g. industrial, residential, agriculture), erosion, and energy development.

[401]INSTI. ARRANGEMENTS, *supra* note 15, at 120-123.

exclusion zones and critical area designations represent an appropriate first step towards integrated coastal resources management; both strategies can be implemented on a site-specific basis, commensurate with available information, staffing, and expertise.[402] This means the creation and maintenance of more marine parks and reserves, and designation and regulation of critical coastal areas. As the power to create these reserves is still lodged in the national government, the latter need not wait for local governments to take the initiative.

g) Increased participation of the people

Increased participation of the people in management is a major component of an alternative CZM program, since ultimately, it is the people who will benefit. It also helps insure the success of the program, and guarantees continuity even if the government turns its priorities to other projects. Participation is encouraged through the involvement of non-government organizations and community-based organizations.

It is generally acknowledged even by traditional development planners that the participation of non-government organizations (NGOs) is essential in coastal resource management. NGOs can be a powerful complement to government agencies or interagency councils in carrying out coastal resource management programs. Hence, they should be encouraged to be participants in coastal resources management to represent key coastal users, communicate government policies to them, serve as venues to review government proposals, and collect and organize relevant technical information. NGOs also stretch the capacity of government agencies, provide realistic insights into the possibilities for effective program implementation, and broaden the dissemination of important information.[403]

In the area of municipal fisheries particularly, the expanded use of NGOs can promote cooperation among users of municipal fisheries to protect and maintain fish habitats, assist in training resource managers at the community level, and improve their resource management capabilities.[404] More emphasis, however, should be given to community-based organizations, which, as stated, appear to be the more appropriate means to achieve effective management.

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[402]*Id.*
[403]*Id.*
[404]PHIL. ENVIRONMENT , *supra* note 19, at 96-97.

VI. CONCLUSION

Present and future generations face the threat of extreme adversity and privation due to the indifference and insensitivity of past and present administrations. In the aftermath of an ill-conceived and undirected coastal management policy, a major ecological crisis, paralleled only by the dilemma within the forestry sector, has arisen. At the same time, social inequity brought by the increasing incidence of poverty presses intensely upon the majority of our people.

It must be borne in mind that development will never be realized without a sufficient supply of natural resources that form the base of an independent and self-reliant economy. Progress cannot be achieved without the promotion of social justice and equity. If this nation is committed to achieving prosperity, then its government must reorient itself to the relevant and responsive means and objectives of sustainable development. Any other measure might again result in failure; and at the rate the environment is going, it will be fatal to this nation.