THE PHILIPPINE LEGAL FRAMEWORK ON SILVOFISHERIES

Reuben A. Ganaden
and
Annaliza A. Vitug

Bureau of Fisheries and Aquatic Resources
Department of Agriculture, Philippines

I. Introduction

Three decades ago, mangroves dominated the Philippine coastline that stretched some 17.460 kilometers. It has since joined the expanding list of the country's most exploited natural resources. In 1965, the total mangrove areas of the country covered about 4500 km^2 (Barut et al., 1997). Ten years later, the number drastically fell to approximately 2500 km^2 (Bureau of Forest Development, 1984).

To date, only 139,735 ha remain (NAMRIA), 1990), accounting for 2.2% of the total forest cover (BFD, 1990). The reduction represents 70% of the 1920 figures. Of the estimated remaining mangrove forests, approximately 75% are second growth and only 5% are old growth which are mostly located in Palawan, while the remaining mangroves are found mainly along the seashores or brackishwater areas of Regions IV (Southern Luzon), IX (Western Mindanao) and X (Northern Mindanao), comprising 85% of the total mangroves (Mangrove Technical Review Committee, 1994).

Statistics showed an alarming rate of mangrove denudation due to various uses. The Philippines is losing an average of 4572 ha of mangrove forests annually, the lowest depletion was from 1920 to 1950 at 2499 ha annually while the highest was from 1950 to 1972 at 6685 ha annually. The latter period coincides with the rapid growth in aquaculture that entailed large-scale conversion of mangrove areas into fishponds (Mangrove Technical Review Committee. 1994).

A SPOT survey made by the National Mapping and Resource Information Authority (NAMRIA) showed that 95% of presently existing fishponds were formerly mangrove areas developed between 1952 to 1987. Mangrove conversion to fishponds as the main cause of destruction has consistently been reported (Zamora 1990; Primavera 1991), and such conversion accounts for an estimated 60% of the total destruction. Other development causes are charcoal and firewood production, expansion of human settlements, and mangrove area conversion for commercial or industrial purposes and also for the construction of coastal roads, dikes, bridges, saltbeds, wharves, and docks.

Although optimum mangrove utilization was the "order of the day" during the period 1952 to 1987, mangrove conservation was no longer a far-fetched idea. Persons from the academe were already sounding off the alarm button and pointing to the mangrove' multifarious and vital roles, principally, as nursery and spawning grounds of various animal species, as protection for coastal zones, as repository of rich genetic resources for scientific research, and as sanctuaries for wildlife.

The low perception of the true worth of mangroves due to the fact that their most important benefit is their indirect contribution to fish growth (Francisco, 1992), and the notion that denuded mangrove areas are suitable for fishponds and other aquaculture purposes, were simply too hard to dismiss. Thus, there was much clamor for the conversion of more mangrove swamplands into fishponds (Guerrero III, 1977). At one point, it had been the unwritten policy that mangrove swamps were far less productive when left alone than when exploited.

Heightened global environmental awareness, the aftermath of Agenda 21 of the United Nations Conference on Environment and Development (UNCED) and the 1992 Rio Declaration, was translated to policy shifts at the domestic level. From optimum utilization, there was felt a compelling necessity to preserve the remaining mangrove forests and to explore alternative aquaculture systems.

Environmentally benign aquaculture technologies emerged and scientists realized that mangrove forests and other wetlands are not optimal sites for aquaculture ponds (Boyd, et al., 1998). This development and the passage of the 1998 Philippine Fisheries Code embodying some concepts in Agenda 21 such as sustainable development and sustainable aquaculture, and in other international treaties and protocols on the environment, represented the dawning of a new era in Philippine aquaculture.

II. Historical Overview of Laws, Rules and Policies on Silvofisheries

The earlier forms of regulation concerning mangroves can be traced to Republic Act. No. 4003, "An Act to Amend and Compile the Laws Relating to Fish and Other Aquatic Resources of the Philippine Islands and for Other Purposes," enacted on December 5, 1932. Section 63 in Article IX (Inland Fisheries) of the Act made available tracts of public forest land for fishpond purposes. Regulations governing the issuance of fishpond permits and/or leases on public forest lands were contained in Fisheries Order No. 60 dated June 29, 1960.

There were few restrictions on inland fisheries which included those under forestry laws that consisted mainly of reservations of strips of mangrove areas for coastal protection; and those enumerated under Section 64 of Act No. 4003 prohibiting the obstruction of free navigation of streams adjoining or flowing through the fishpond area, obstruction or interference in the passage of people along such streams or the banks thereof, and the impedance of the free flow and ebb of the tide to and from the interior of the swamps. It is obvious that these prior laws had set the stage for the massive conversion of mangroves and swamplands into fishponds.

Section 63 further specified that permits or lease entitling the holders thereof, for a certain stated period of time not to exceed twenty years, to enter upon definite tracts of a public forest land to be devoted exclusively for fishpond purposes, or to take certain fishery products or to construct fishponds within tidal, mangrove and other swamps, ponds and streams within public forest lands or established forest reserves, may be issued or executed by the Secretary of Agriculture. The issuance however, is subject to the restrictions and limitations imposed by the forest laws and regulations to such persons, associations or cooperation as are qualified to utilize or take forest products under Act. No. 3674. Renewal may be granted, however the combined period of the original lease and its renewals shall not exceed 50 years.

The concept of managing the mangroves surfaced mainly in the seventies with the issuance of Presidential Decree (PD) 389 or the Forestry Reform Code of the Philippines on February 5, 1974. Section 33 of the law mandated the Bureau of Forest Development (now the Forest Management Bureau) to develop a management plan for swamplands and mangrove forests, designed to increase public benefits in the form of developments including the establishment of fishponds. On the other hand, Section 37 (j) of the law allowed the cutting of mangroves through the issuance of mangrove timber licenses for a term of four years over an area, the size of which was left to the discretion of the Department Head. Evidently that time, management of mangroves under the law veered heavily on the side of the exploitation of the resources rather than on its conservation.

Section 33 of PD 389 specified that the Bureau, in consultation with other appropriate agencies shall jointly develop a management plan to increase the public benefits derived from swamplands and mangrove forest but in no case shall the development obstruct or impede waterflow of streams and rivers. Strips of mangrove forest bordering numerous islands protecting the shoreline, the shoreline roads and coastal barrios, from the destructive force of the sea during high winds and typhoons, must be kept free from artificial obstruction so that flood water will flow unimpeded to the sea to avoid flooding or inundation cultivated areas in the upstream. All mangrove swamps aside from coastal protection forests, shall be established as permanent forest and shall be managed under the principle of sustained yield.

The seventies however, saw the repeal or amendment of Act. No. 4003 and PD 704 or the Fisheries Decree of 1975 issued on May 16,1975, supplanted Act No. 4003, while PD 705 of the Revised Forestry Code promulgated on May 19,1975, amended PD 389. PD 705 still subsists while PD 704 has been recently repealed by the 1998 Philippine Fisheries Code.

One of the policies underlying the enactment of PD 705 or the Revised Forestry Code is the multiple use of forest lands. Multiple use is defined as the harmonized utilization of the land, soil, water, wildlife, recreation value, grass, and timber of forest lands. The law also released to and placed under the administrative jurisdiction of the Bureau of Fisheries and Aquatic Resources (BFAR), mangrove and other swamps not needed for shore protection and suitable for fishpond purposes. Those areas released to BFAR that were not utilized or which had been abandoned for five years from the date of release, were reverted to the category of forest land.

The law also segregated certain mangrove areas needed for forest purposes. As specified in the law, these are areas which even if they are not below 18% in slope, are needed for forest purposes and may not therefore be classified as alienable and disposable. This includes strips of mangrove or swamplands at least 20 m wide along shorelines facing oceans, lakes and other bodies of water: and strips of land at least 20 m wide facing lakes. The law also dictated the use of the seed tree system as the silvicultural or harvesting system for pine or mangrove forests. It maintained swamplands and mangrove forests for coastal protection, which areas cannot be alienated or subjected to clear-cutting operations.

The Fisheries Decree or PD 704, on the other hand, amplified the meager provisions of Act No. 4003 on inland fisheries. The principal policy of the law was the acceleration and promotion of the integrated development of the fishing industry and the maintenance of the optimum production of fishery resources through proper conservation and protection.

PD 704 put a stop to the sale of public lands suitable for fishpond purposes, exempting those fishpond sales patents already processed and approved as of November 9, 1972. Fishpond leases over public lands were granted for a period of 25 years, renewable for another 25 years over 50 ha in case of individuals and 500 ha for associations and corporations. In 1979, regulations governing fishpond lease agreements covering public lands were issued through Fisheries Administrative Order No. 125.

BFAR was also given the mandate to issue licenses for the operation of fishpens for a period of five years renewable for another five years over 10 ha in case of individuals and 50 ha in case of associations, partnerships, cooperatives or corporations. However, it was the municipal or city council which granted fishery privileges such as the operation of fish corrals, oyster beds, and fry gathering under a new segment on municipal fisheries.

The 70s further witnessed the adoption of a Philippine Environmental Policy through Presidential Decree No. 1151 and the Philippine Environment Code or PD No. 1152, both dated June 6, 1977. The decrees instituted specific management policies and prescribed environment quality standards. Fisheries and aquatic resources shall be rationally exploited and mangrove areas, marshes and inland waters, coral reef areas and islands serving as sanctuaries for fish and other aquatic life, shall be maintained. Finally, the 70s ended with the issuance of landmark regulations aimed at preserving certain areas of the public domain from any form of commercial exploitation, occupancy or use. Letters of Instructions No. 917 and 917-A issued on August 22, 1979, and September 7, 1979, respectively, declared certain areas including mangrove forests as wilderness areas or greenbelts. Mangrove forests designated as wilderness areas or greenbelts should not be less than 25% of the total mangrove forest areas of any given locality. LOI 917 also specified that mangrove forests essentially needed in foreshore protection, the maintenance of estuarine and marine life, including special forests which are the exclusive habitats of rare and endangered Philippine flora and fauna, are likewise declared wilderness areas.

The sale of public lands suitable for fishpond purposes was allowed under Republic Act No. 193 approved on June 16,1948. Section 1 thereof states that "Marshly lands and lands under water bordering on shores, or banks of navigable lakes or rivers which are covered by subsisting leases or leases which may hereafter by duly granted under the provision of Commonwealth Act No. 141 and are already improved and have been utilized for farming, fishpond or similar purposes for at least five years from the date of the contract of lease, may be sold to the lessees thereof, under the provisions of Chapter 5 of the said Act as soon as the President, upon the recommendation of the Secretary of Agriculture and Natural Resources, shall declare that the same are not necessary for the public service.

It will be observed that these prior laws were not specific to mangrove areas and were lumped with other forestry or fishery activities. Efforts at substantive and focused legislation, gained impetus only in the 80s. The first regulations, which specifically addressed mangrove forests, were issued in 1980. Special Order No. 178 reorganizing the Philippine National Mangrove Committee (NMC) created under Special Order No. 309, series of 1976, mandated said committee to formulate and establish a comprehensive and integrated national mangrove program that would rationalize and re-orient all planning and management procedures.

The Committee formulated guidelines to serve as basis for identifying areas to be declared as preservation and conservation areas, and recommended measures for the proper allocation and disposition of mangrove areas (National Mangrove Committee , 1986). Results of the research and survey activities undertaken by the NMC, especially with the use of modern remote sensing technology, formed the basis of Presidential Proclamation (PP) Nos. 2151 and 2152 issued in December 29, 1981. The proclamations set aside areas as mangrove forest reserves. PP 2151 declared certain areas with an aggregate area of 4326 ha as wilderness areas, which were withdrawn from entry, sale, settlement, and exploitation of whatever nature or forms of disposition subject to existing recognized and valid private rights. On the other hand, PP 2152 declared the entire province of Palawan and certain parcels of the public domain totaling 74,267 ha as Mangrove Forest Reserves, to be withdrawn from use, occupancy or other forms of disposition.

Subsequently, Proclamation No. 2409 was issued on March 28, 1985, recalling certain areas in Bohol from the scope of PP 2152. Rules to implement PP Nos. 2151 and 2152 were issued, such as Department of Environment and Natural Resources (DENR) Administrative Order No. 8, series of 1987 which indicated that the government would no longer entertain applications for licenses, leases or permits of any kind involving mangrove swamps and other parcels of the public domain designated as Mangrove Swamp Forest Reserves, whether such applications were new, renewal or extension. Thus, all pending applications falling under these areas were immediately denied.

To abate the rampant conversion of mangrove areas into fishponds, MNR Administrative Order No. 3, series of 1982 was issued prescribing a revised guideline on the classification or zonification of forest lands for fishpond purposes. The Order declassified lands of the public domain previously classified as alienable or disposable to areas merely zonified and delineated as areas suitable for fishpond development . Forest lands zonified as such were placed under the administrative jurisdiction and management of BFAR. Applications for leases can only be entertained by BFAR after the Ministry of Natural Resources (MNR) had declared the areas covered by the lease as available for fishpond development.

To enhance the protective capability of the mangroves, Department Administrative Order No. 42 was issued on September 10, 1986 expanding mangrove forest belt areas from the original 50 m to 100 m strip inward along shoreline fronting oceans, seas and other water bodies in storm surge and typhoon areas in fifteen provinces, and from 20 m strip river bank protection to 50 m on both sides of the river. For mangrove areas already converted to fishponds, the operators were obliged to affront tidal flats fronting their areas to at least 50 m. This was followed by DENR Administrative Order No. 76 or the "Buffer Zones in Coastal and Estuarine Mangrove Regulations" on November 23, 1987, establishing buffer zones in coastal and estuarine areas consisting of strips of 50 m in all mangrove or swampland areas throughout the country fronting seas, oceans and other bodies of water, and 20 m on both sides of river channels or banks. Mangrove or swamplands classified and zonified as alienable or disposable for fishpond development, whether or not covered by applications for fishpond development which were not yet developed were reverted to the category of forest lands. For areas converted into fishponds through a Fishpond Lease Agreement (FLA), lessees were required to affront the tidal flats fronting their respective areas to at least 50 m and the area along river channels or banks to at least 20 m.

The regulations issued in the 80s and PD 705 formed the nucleus of the mangrove regulations. However, there were still many aspects of mangrove regulation and management that were not covered. It was only in the 90s when policies on mangrove utilization and management finally became entrenched.

III. Existing Legal Framework on Silvofisheries

The country's fundamental law enunciates the policy that the State shall protect and advance the right of the people to a balanced ecology in accord with the rhythm and harmony of nature. It also declared that all natural resources including mangroves and swamplands are owned by the State and except for agricultural lands, all other natural resources shall not be alienated.

The different branches of government primarily through laws, rules and regulations carry out these major policies. The legislative branch enacts laws while the appropriate departments in the executive branch in exercise of the delegated legislative powers, promulgate regulations. In case of mangrove regulations, the delegated legislative power used to be centralized in one agency, which is the former Department of Agriculture and Natural Resources. This department was eventually divided the Ministry of Agriculture and Food (MAF) and MNR. Until 1984, MNR was the sole directly responsible for the overall management of the country's mangrove resources. The said ministry had supervision and control of both the Bureau of Forest and Development (BFD) and BFAR. In 1984, Executive Order No. 967 transferred BFAR to MAF and downgraded it from a line bureau to a staff bureau. BFAR however, retained its administrative jurisdiction over mangrove areas that have been classified, zonified and declared by MNR as available for fishpond development under MAF.

This has been the trend ever since, but a major reorganization effected under Executive Order No. 292 dated July 27, 1987, has indicated that the management responsibilities of the mangrove resources should continue to be shared by the Forest Management Bureau (FMB), the Ecosystems Research and Development Bureau (ERDB), and the Protected Areas and Wildlife Bureau (PAWB), all under DENR, and BFAR under DA. It was specified that FMB has jurisdiction over mangrove areas, ERDB over mangrove research and the development of ecologically sound technologies while PAWB and the Protected Areas and Wildlife Division in DENR Regional Offices have jurisdiction over mangrove areas or island proclaimed, designated, or set aside pursuant to a law, presidential decree, presidential proclamation or executive order as mangrove reserve, fish sanctuary, wilderness area or strict nature reserve and which are integral components of protected areas under Republic Act 7586 establishing the National Integrated Protected Areas System.

While the functions of FMB includes recommendation of policies and/or programs for the effective protection, development, occupancy, management, and conservation of forest lands and watersheds, including the grazing and mangrove areas, ERDB's functions include the formulation and recommendation of an integrated research program relating to Philippine ecosystems and natural resources, and the generation and development of technologies relevant to the sustainable uses of Philippine ecosystem and natural resources. ERDB practically absorbed the powers and functions of the Forest Research Institute and the National Mangrove Committee which had been abolished earlier.

On the other hand, BFAR continues to exercise management and administrative jurisdiction over areas released by DENR as available for fishpond development because PD 705 and its rules and regulations vesting such jurisdiction, have not been repealed. Its jurisdiction remained unaffected even under the 1998 Philippine Fisheries Code. In fact, the latter law further deepened the conflict in jurisdiction between DENR and BFAR.

Consequently, shared management responsibilities that included the common power to make rules and regulations on mangrove areas resulted in fragmented mangrove regulations that reflected disparate policies. However, attempts at unification or synchronization of policies by the different agencies were executed in joint administrative orders. These joint administrative orders and the administrative orders, circulars and other issuance separately issued by DENR and DA-BFAR and laws enacted by the Legislature, constituted the existing Philippine legal framework on silvofisheries.

A. *DENR rules and regulations on silvofisheries*

In 1990, DENR came up with a comprehensive mangrove regulation as the Department Administrative Order No. 15 dated February 01, 19909, establishing the rules governing the utilization, development and management of mangrove resources pursuant to PD 705. The Order incorporated three principles of mangrove management, namely, sustained yield, multiple use, and social equity.

Sustained yield management refers to the principle of continuous production of forest products to achieve an approximate balance between growth and harvest at the earliest practicable time. The resource is managed in a manner that it would provide sustainable harvest with economic returns while naturally renewing itself or with minimal assistance. Multiple use management, a concept already laid down in prior forest laws, is the management and utilization of the forest's various renewable resources so that these could best contribute to the long-term socio-economic development of the country. The scheme applies to the utilization of an area in combination with more compatible uses.

An embodiment of the multiple-use principle implemented by DENR through ERDB is the system that harmoniously combines mangrove forests with aqua-silviculture or agri-nipa silviculture. Aqua-silviculture is a multiple-use system that promotes a harmonious co-existence between fishery species and mangrove tree species in a semi-enclosed system while providing coastal protection and maintenance to the ecosystem. The area chosen for aqua-silviculture can also be optimized for aesthetic, recreational or educational purposes. While growing harvestable products such as timber and fishes, the mangrove ecosystem maintains its other ecological functions with minimal disturbance.

The social equity principle involves giving direct access of coastal families to the mangrove resource. Coastal dwellers are given the opportunity to benefit and create livelihood enterprises while protecting the mangrove forest from further degradation. The scheme encourages non-invasive sea farming of fishes, shrimps, crabs, and clams under the mangrove canopy.

Moreover, existing mangrove stands are managed by community groups through suitable management systems under tenurial schemes such as the Mangrove Stewardship Agreement (MSA), Community Forestry Management Agreement (CFMA), and Forest Land Management Agreement (FLMA) (Mangrove Technical Review Committee, 1994). It is from these three principles that silvofisheries had taken off, mainly through the technology development and research activities of ERDB. Nevertheless, not one provision on silvofisheries or aqua-silviculture can be found in the main body of the Administrative Order No. 15.

However, substantive provisions of the Order prohibited the granting or renewal of mangrove timber license or any kind of permits that authorize the cutting and/or debarking of mangrove trees for commercial purposes in areas covered by Fishpond Lease Agreement (FLA) and those outside the mangrove plantations. Cutting of trees within FLA areas is not allowed unless a permit is secured from DENR. In any case, the trees cut in these areas shall be turned over to the DENR for disposition through public bidding.

Conversion of thickly vegetated mangrove areas into fishponds was also no longer be allowed and mangrove swamps released to BFAR which are not utilized or have been abandoned for five years shall revert to the category of forest land. Estuarine mangroves which are predominantly, if not totally vegetated with shrubs shall no longer be disposed for fishpond development as such areas still contribute to the productivity of the nearby marine ecosystem, hence should be extensively rehabilitated, and applications for use of these areas shall be returned to the applicants immediately. Fishpond development was no longer allowed within mangrove forestry reserves and wilderness areas. If government opts to revert legally acquired productive fishponds within such areas, the operator would be justly compensated. Fishpond development shall only be allowed in denuded areas, which have been zonified as suited for such activity.

In lieu of fishponds, the Order prescribed several alternative modes of mangrove utilization including the establishment, development and management of Communal Mangrove Forest by community people under the concept of community-based forest management following a management plan approved by DENR. Another option is the conduct of sustainable activities indicated in an approved management plan that excludes fishpond development, saltworks and paddy cultivation under a Certificate of Stewardship Contract awarded to individuals, communities, associations or cooperatives covering mangrove areas except in wilderness areas.

Mangrove plantations are however, allowed to be established in denuded or sparsely vegetated mangrove forest lands, and alienable and disposable areas through an approved permit covering 50 ha for corporations, cooperatives and associations and 10 ha for individuals. Mangrove plantation developers may be allowed to cut the planted trees within their plantations through clear cutting by strips system for personal or commercial purposes after securing a permit from DENR. Lastly, in case of naturally grown mangrove forests, silvicultural practice that combines seed-tree method and planting is still permitted provided that in the course of harvesting, at least 40 trees per hectare, spaced regularly over the area are retained. The Order also provided for the periodic assessment of mangrove resources with the involvement of non-government organizations. Results of such assessments shall be interpreted by the National Mapping and Resource Information Authority (NAMRIA).

Memorandum Circular No. 5 dated March 8, 1990, was issued to implement the aforementioned Administrative Order and provide guidelines for the cutting of mangrove trees within FLA areas which among others required a cutting permit from DENR, a performance bond from the lessee equivalent to the estimated value of the mangrove timber gathered, and the retention of buffer zones. However, the cutting of mangrove trees was prohibited under Republic Act 7161 which became effective on October 29, 1991. Basically a revenue law that dealt with increase in forest charges and other fees levied on forest products and activities, the law became a stumbling block for the implementation of the tenurial arrangements for mangrove utilization. DENR has yet to issue a policy statement to resolve this conflict. Specifically, Section 4 of RA 7161 stated that "except for all mangrove species whose cutting shall be banned, there shall be collected forest charges on each cubic meter of firewood cut in forest lands, branches and other recoverable wood wastes of timber."

A joint DA-DENR General Memorandum Order No. 3 issued on October 31, 1991, represented an inter-agency attempt to consolidate and unify management policies on mangroves. The joint order prescribed the guidelines for the rational utilization of mangrove forest lands which have been released for fishpond development. It mandated the automatic reversion to the administration of the DENR, portions of fishpond areas that are undeveloped or vegetated with mangroves and fishpond areas found unsuitable for fishpond purposes by joint DA-DENR teams, as well as fishpond areas not covered by FLA applications within five years from release thereof to BFAR. The order also laid down the requirement of an environmental impact study and statement for fishpond operations or the application of PD 1586 and DENR DAO 34 series of 1991.

Other related rules included DAO 16 dated April 02, 1993, providing guidelines for the implementation of the Forestry Sector Project which aims to reverse the process of upland and mangrove forest denudation. In addition, DAO 23 dated April 27,1993, established the Coastal Environment Program specifying that activities related to protecting, conserving and rejuvenating coastal resources that include coastal forests or mangroves and other beach vegetation, shall be undertaken. DAO 96-29 dated October 10, 1996, integrated and unified all people-oriented forestry programs in line with Executive Order No. 263 or the Community-Based Forest Management Strategy. The order declared among its policies, respect for the rights of indigenous peoples to their ancestral domains. Active and transparent community participation and tenurial security were the key strategies adopted. Tenurial instruments under the Order which included the Community Based Forest Management Agreement (CBFMA), Certificate of Stewardship Contract (CSC), and Certificate of Ancestral Domain Claim-CBFMA, superseded all prior tenurial arrangements.

B. *1998 Philippine Fisheries Code*

Republic Act 8550 also known as the Philippine Fisheries Code of 1998 took effect on March 22, 1998. The law's underlying policies are the attainment of food security; limited access to fishery and aquatic resources; rational and sustainable development, management and conservation of Philippine fishery and aquatic resources; protection of rights of fisherfolk; support to the fishery sector; and integrated coastal area management.

The Fisheries Code also included the granting of privilege to the private sector to utilize fishery resources under the basic concept that the grantee is not only a privileged beneficiary but an active participant and partner of the government in the sustainable development, management, conservation, and protection of fishery and aquatic resources. The Fisheries Code is probably the first Philippine law that uses the term aquaculture, although it is still silent on silvofisheries.

Since it is logically inferred from the policy of sustainable development that sustainable aquaculture is also one of the objectives of the Fisheries Code, it is assumed that within the category of sustainable aquaculture falls the concept on silvofisheries. This definitely became a big improvement over PD 704 that had provisions only on fishponds and fishpens under a section on inland fisheries.

The chapter on aquaculture in the Fisheries Code, is particularly significant for its pro-environment and social justice provisions. The preferential right bestowed to qualified fisherfolk cooperatives and associations as well as small and medium enterprises on the granting of FLAs clearly exemplified the latter. In addition, the environmental provisions on aquaculture begin with the requirement on the preparation of a detailed Environmental Impact Statement (EIS) and securing of an Environmental Compliance Certificate (ECC) for any development activities or projects including fishponds.

Under the law, there is an injunction for fishpond lessees to provide facilities that will minimize environmental pollution such as settling ponds and reservoirs, and non-compliance leads to the cancellation of the lease agreement. Lessees are likewise prohibited from undertaking any construction that will obstruct any defined migration path of migratory fish species. DA through BFAR, has also been mandated to formulate incentives and distinctive for sustainable aquaculture practices.

The most relevant provision relative to silvofisheries can be found in section 47 of the Fisheries Code, instructing BFAR to formulate a code of practice for aquaculture that outlines general principles and guidelines for environmentally sound design and operation to promote the sustainable development of the industry. Environmentally sound design and operation are broad enough to include silvofisheries in its scope.

The development of the Code of Practice for Aquaculture shall be made through a consultative process with the DENR, the fishpond workers, FLA holders, fishpond owners, fisherfolk cooperatives, small-scale operators, research institutions, and other potential stakeholders. BFAR has been encouraged to consult with specialized international organizations in the formulation of the said code of practice.

It should be noted that the Philippines is a signatory to the international Code of Conduct for Responsible Fisheries which became effective on October 31, 1995. It is therefore very logical that the principles embodied therein be incorporated in the country's code of conduct for aquaculture. One of the general principles of the international code is the production and rehabilitation of all critical habitats in marine and freshwater ecosystems such as wetlands, mangroves, reefs, lagoons, nursery, and spawning areas.

The pertinent provisions of the international Code on aquaculture oblige States to promote responsible development and management of aquaculture, including an advance evaluation of the effects of aquaculture development on genetic diversity and ecosystem integrity, based on the best available scientific information. States should also produce and regularly update aquaculture development strategies and plans to ensure that aquaculture development is ecologically sustainable and to allow the rational use of resources shared by aquaculture and other activities.

The Fisheries Code also promotes the reversion of all abandoned, undeveloped or underutilized fishponds to their original mangrove state. At least 25% but no more than 40% of bays, foreshore lands, continental shelf or any fishing ground shall be set aside for the cultivation of mangroves to strengthen the habitat and the spawning grounds of fish. Within these areas, no commercial fishing should be allowed. These areas are the so-called fish refuge or sanctuaries established by the Fisheries Code in addition to all other marine fishery reserves, fish sanctuaries and mangrove swamp reservations already declared or proclaimed by the Philippine President or legislated by the Congress of the Philippines.

The Fisheries Code also provided that at least 15% of the total coastal areas in each municipality shall be identified based on the best available scientific data in consultation with BFAR. These areas shall be automatically designated as fish sanctuaries by the local government units and the concerned Fisheries Aquatic Resource Management Councils (FARMCs).

Further bolstering the protection and preservation of mangroves, section 94 of the Fisheries Code penalizes the further conversion of mangroves into fishponds or for any other purposes with imprisonment of six years and one day to twelve years and/or a fine of eighty thousand pesos and rehabilitation or restoration of the area or compensation for the restoration of the damage. This penal revision and the earlier law, RA 7161, prohibiting the cutting of mangrove trees reflected so far, the most protective policy adopted by the government concerning mangroves.

The Fisheries Code also prescribes the registration of fish hatcheries, fish breeding facilities and private fishponds with the local government units. In fact, all the provisions on aquaculture and the other requirements found elsewhere in the Fisheries Code are applicable to private fishponds. As specified, the provisions in the Code shall be enforced in all lands devoted to aquaculture, or businesses and activities relating to fishery, whether private or public lands.

The coverage of silvofisheries may be expanded to include all other fishery activities that do not entail destruction of mangroves, such as sea ranching, mariculture and construction of fish pens, traps, corrals or fish cages. These activities are now strictly regulated under the Fisheries Code. Construction shall only be undertaken within established zones designated by the local government units after the corresponding licenses have been secured. The grant of such privileges in municipal areas is exclusively for the benefit of the municipal fisherfolk and their organizations.

On the other hand, not over 10% of the suitable water surface area of all lakes and rivers shall be allotted for aquaculture purposes like fish pens, fish cages and fish traps. Stocking density and feeding requirement shall be controlled and determined by its carrying capacity. However, two years after the effectively of the Fisheries Code, or by the year 2000, fish pens or fish traps shall no longer be allowed in lakes.

IV. Conclusion

One of the factors that led to the birth of silvofisheries is the preservation of the mangrove ecosystem, one of the critically significant and vital ecosystems that characterize the country's environment. The discussion on past and present legislation and policies on mangroves and fishery resources had shown the gradual transformation of a mind-set concerning mangroves. From marshy and malodorous wastelands, mangrove are now highly regarded for their true worth, as manifested in laws and policies on rational and sustainable utilization of mangrove, fishery, and other aquatic resources. These laws and policies are constantly evolving, although there is still a need to establish a concrete and substantive law on silvofisheries. Some policies on silvofisheries may be currently in place, particularly at DENR, but these have not been rationalized so far. At BFAR for example, there is a lingering perception that silvofisheries is only for the small-scale operators therefore limiting the undertakings and activities on silvofisheries to experimental activities. However, when the Code of Practice for Aquaculture that enjoin the use of sustainable aquaculture practices and environmentally sound design and operation, becomes a reality, then silvofisheries may finally find its own anchor.

REFERENCES

Barut, N.C., M.D. Santos and L.R. Garces. 1997. Overview of Philippine marine fisheries,. In G. Silvestre and D. Pauly (eds.). Status and management of tropical fisheries in Asia. ICLARM Conf. Proc. 53, 208 p. ICLARM, Makati City, pp. 62-71.

BFAR Legal Division. Fisheries Administrative Orders (A Compilation). Bureau of Fisheries and Aquatic Resources, Department of Agriculture, 806 Quezon Avenue, Quezon City, 190 p.

Boyd, C.E., L. Massaut and L.J. Wedding. 1998. Towards reducing environmental impacts of pond aquaculture.. Infofish International Number 2/98 March/April, pp. 27-33.

CBSI Editorial Staff. 1995. The Public Land Act, Revised Forestry Code and Related Laws. Central Book Supply, Inc. 927 Quezon Avenue, Quezon City, 212 p.

CBSI Editorial Staff. 1998. Environmental Laws in the Philippines. Central Book Supply, Inc. 927 Quezon Avenue, Quezon City, 306 p.

Coastal Resources Management Committee. 1990 Compilation of Mangrove Regulations. DENR. Quezon City, 50 p.

Congress of the Philippines 1998. The Philippine Fisheries Code of 1998. Republic Act. No. 8550, 59 p.

De Sagun, R.B. and R.S. Bautista. 1982. Updated Index to Presidential Decrees on Fisheries, Bureau of Fisheries and Aquatic Resources, 860 Quezon Avenue, Quezon City, 123 p.

Francisco, H.A. 1992. Valuation of Natural Resources: the Case of Mangrove Resources,. Philippine Council for Agriculture, Forestry and Natural Resources Research and Development, Book Series No. 127, Los Baños, Laguna, pp. 92-93.

Mangrove Technical Review Committee. Fisheries Sector Program. DENR. Mangrove Regeneration and Management. Diliman, Quezon City. DENR 1994. 78 p.

Natural Resources Management Center and National Mangrove Committee. 1986. Mangroves of Asia and the Pacific: Status and Management. Technical Report of UNDP/UNESCO Research and Training Pilot Programme on mangrove Ecosystems in Asia and the Pacific.

Philippine Council for Agriculture, Forestry and Natural Resources Research and Development. 1991. The Philippines recommends for mangrove production and harvesting. Los Baños, Laguna, PCARRD, 96.p.

Planning and Policy Studies Office. 1993. A Compilation of Environment and Natural Resources Policy Issuances. DENR. Quezon City.

Planning and Policy Studies Office. 1996. A Compilation of Environment and Natural Resources Policy Issuances. DENR. Quezon City, 725 p.

Primavera, J.H. 1991. Intensive prawn farming in the Philippines: ecological, sound and economic implications. In Ambio, pp 28-31.

Zamora, P.M. 1990. Report on Mangrove Forest Component of the Master Plan for Forest Development Quezon City.