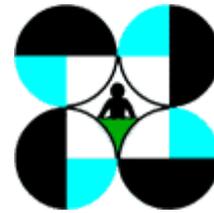


Achieving Water and Fish for All in the Philippines

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**On the Occasion of the 15th PCAMRD Anniversary
“Water and Fish” Summit
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From President Aquino to President Arroyo Macapagal, fish and other aquatic products such as *galunggong*, *bangus*, *tilapia*, *sea weed*: have become symbols of political promises for Filipino food security as well as the tools for competitive export marketing.

From blockbuster movies such as *Muro Ami* highlighting the sensitive issues of child labor exploitation and environmentally damaging fishing to world-leading examples of community managed coral reef sanctuaries, the Philippine fight to uphold its precious aquatic heritage has shown creativity and social cohesion like no other country on earth.

But despite the relative prominence of fish on the national agenda, the challenges facing fish and the aquatic realm here are still immense. National and international scientific agencies such as the Philippine Council for Aquatic and Marine Research and Development (PCAMRD) and WorldFish Center have a vital role to play in helping the people and government to meet these challenges – but to make the best contribution we must understand where we fit into the overall picture.

Today, I would like to sketch the importance of fish and water to the Philippine people, the challenges faced and then give my perceptions of how to find solutions to the challenges – solutions that must encompass appropriate human capacities, visionary directions and a commitment to follow through from plans to action. Since this Summit has a science focus, I will place emphasis on the scientists' role.

The Importance of Water and Fish for the Philippines and Filipinos

Water and fish are critical mainstays of Philippine life, nutrition, livelihood and economy. The Philippines, an archipelago with about 7,100 islands, is bordered by 17,460 km of coastline and 26.6 million ha of coastal waters. It is endowed with vast areas of inland water bodies, comprising at least 338,000 ha of swamplands, 253,000 ha of freshwater and brackishwater fishponds, and another 250 ha of lakes, rivers and reservoirs (Pabuayon 2002).

The fisheries sector contributes significantly to the economy of the Philippines. It provides employment to the coastal population, contributes to the foreign exchange and according to Laureti (1999), supplies up to 42.8% of the dietary protein requirement of the Filipino population. The fisheries sector provides employment for about one million

people, 25% of whom are engaged in aquaculture, 70% as municipal fishers and 5% as commercial fishers (Gorrez et al. 1999). This sector contributes to 2.8% of the country's Gross Domestic Product (GDP) and 3.8% at current and constant prices (<http://www.da.gov.ph/programs/fisheries/fish2.html>).

Philippine fisheries rate globally. In 2000, the Philippines ranked 12th globally in capture fisheries production, producing 1,892,832 tonnes or 2.4% of the global landings (FAO 2002a). The Philippines is also an important aquaculture producer. In 2000, it ranked 11th globally in the production of fish and shellfish totaling 328,375 tonnes and 2nd in the world in aquatic plant production estimated at 656,631 tonnes (FAO 2002b).

Philippine waters are home to a huge diversity of fish, coral and other marine and aquatic species. FishBase (www.fishbase.org) shows nearly 3,000 fish species alone.

But the Philippines faces challenges

These critical natural resources, water and fish, are stressed by heavy demands, overuse and the impacts of natural disasters and human development. These problems are further compounded by issues such as a burgeoning population, poverty and insufficient financial resources for implementation of various projects to rectify unsustainable development. The country's population growth rate at 2.36% is high relative to other countries in the Association of South East Asian Nations (ASEAN) such as Thailand - 0.9% and Indonesia - 1.5% (CP.Philippines 2002). Clark et al. (1989) warned that the natural resource base of the Philippines had become so depleted and degraded that the country could suffer serious economic decline if corrective actions were not taken. Let us stress, however, that the relationships between population and environment and population and economy are complex.

For inland waters, studies conducted by the National Pollution Control Commission (NPCC), Philippines considered 50 out of 400 rivers polluted, with 40 rivers classified as virtually dead, with four of these located in Manila (de Leon and Abiog 1983 quoted in Alabaster 1986). Pollutants included domestic liquid wastes (wastewater discharged from households including domestic sewage), solid wastes, organic wastes from pig and poultry farms, tanneries, as well as wastes from textile and pulp factories and paper mills. The Pasig River Rehabilitation Commission listed domestic liquid waste as the most serious source of river pollution (http://www.qzn.skyinet.net/~updates_waterquality.html). A report released on 30 August 2000 revealed that the quality of nearly half of the country's classified rivers falls below normal water quality standards (<http://www.acca21.org.cn/eng/2000/08/24.html>). This Report quoted the World Bank which noted that water pollution in Metro Manila is most severe where all surface waters, except the upper portions of the Marikina River can be considered biologically dead during the dry months.

Among the most polluted and threatened inland water bodies is Laguna de Bay. The lake is used for a multiple of purpose, including fishing, aquaculture, as a sink for municipal and industrial effluents, as a source of cooling water for power plants, and also as a source of drinking water. The Laguna Lake Development Authority (LLDA) reported as many as 1,481 industrial firms (mainly food processing, chemical manufacturing and metal fabrication companies) in the vicinity of the lake, and many of the companies use the lake and its tributaries as a sink for their wastewater (Bacallan 1997). Other polluted

inland water bodies include the Pasig River, Bulacan River, Palico River and the Bagbag River.

Coastal waters experience the stresses of overuse also. A World Bank Report concluded that coastal waters in recent years have deteriorated with increasing sedimentation and other forms of pollution (<http://www.acca21.org.cn/eng/2000/08/24.html>). Manila Bay is rated as one of the most polluted coastal areas in the Philippines. A study conducted by the Pasig River Rehabilitation Secretariat (http://wwwl.qzn.skyinet.net/~updates_waterquality.html) estimated the total organic matter load discharged into Manila Bay as equivalent to 250,000 tonnes of biological oxygen demand (BOD) per year, with 60% of this total originating from the Pasig River system, 32% from the Bulacan River system and 5% from the Pampanga River system. As of December 1998, the Bay has been severely impoverished of bottom fauna, and serious decline in biomass was observed since April 1997 (Pasig River Rehabilitation Commission Online). Oysters and mussels from the Bay are often contaminated with faecal coliform bacteria. At the same time, the Bay is experiencing increasing occurrences of harmful algal bloom (HAB) incidences, which aggravate oxygen depletion problems in bottom waters, and contaminate shellfish with fatal HAB toxins (Maclean 1989; Corrales and Gomez 1990; Anderson et al. 1995).

Many important aquatic habitats and resources have suffered also, with consequences for biodiversity and productivity. Habitat loss is widely regarded as the most serious threat to the loss in biodiversity (Gray 1997). Of the three main coastal aquatic habitats—mangroves, seagrass and coral reefs, mangroves suffered the earliest and greatest degradation in the Philippines because of their relative accessibility and a long history of conversion to aquaculture ponds (Primavera 2000).

Over 90% of the reefs in the Philippines are threatened and their overall health status is on the decline (Chou et al. 2002, see also www.reefbase.org). Anthropogenic causes pose the greatest threat, with over-fishing and blast and poison fishing topping the list; sedimentation, tourism-related activities and crown of thorns infestations also constitute serious problems (Chou et al. 2002). In order to manage reef and coastal resources, the Philippines has established at least 110 marine protected areas (MPAs) to date (Burke et al. 2002). Management of the MPAs is still a challenge, and only 14 of the MPAs in the Philippines have been rated as effectively managed. Worldwide, however, MPAs are relatively new tools for natural resource management and the Philippines is at the forefront in the use of community-based management of MPAs. Community based MPA management has been found to enhance stakeholders' cooperation and to reduce user conflicts. Many other countries have been unable to establish MPAs because of conflicts between users and managers.

Seagrass beds in the Philippines were estimated to be 5 million ha by Thorhaug (1987), albeit without any scientific basis (Fortes 1995). Seagrass beds are threatened by loss of mangroves, coastal development and mining (Lean et al. 1990). In the last 15 years or so, a 20-60% decrease in seagrass areas in the ASEAN region has occurred; minimal efforts are being taken in the region to conserve seagrass and Fortes (1995) stressed that more urgent measures should be given to their conservation.

Mangrove habitats in the Philippines originally occupied an area of 500,000 ha (Calumpong 1994). Present estimate of the total mangrove forest cover is 120,500 ha (Primavera 2000). Pond conversion for aquaculture was attributed to be the main

reason for mangrove loss (Calumpong 1994; Primavera 2000). Other reasons for the decline include overexploitation by coastal dwellers, conversion for agriculture, salt ponds, industry and settlements (Primavera 2000).

Habitat degradation such as that outlined above has contributed to the threats to fisheries resource production, as has overharvesting. The capture marine fisheries landings in the Philippines appears to have reached an asymptote of about 1.9 million tonnes and are unlikely to increase further. Landings from both the municipal and commercial fisheries appear to have stabilized. Both the commercial and artisanal sectors produce around 900,000 tonnes or 33% each of the total fisheries production (http://www.worldfishcenter.org/demandsupply/inception_reportapr02/table2.1_6.1.htm). Statistics for inland capture fisheries in the Philippines over a five-year period from 1993 to 1997 declined steadily from 210,775 tonnes in 1993 to 159,739 tonnes in 1997 (Coates 2002). However, Coates (2002) quoted from a few sources that these figures may be unreliable.

For aquaculture, in terms of volume, aquatic plant production ranked highest in the Philippines, followed by diadromous fish, with freshwater fish and crustaceans in the third and fourth position respectively. In 2000, diadromous fish (milkfish or *bangus* - *Chanos chanos*) production was 204,204 tonnes; freshwater fish production was 105,362 tonnes, with the tilapia comprising more than 83% of the production. Statistics from the Fish and Agriculture Organization of the United Nations (FAO 2002b) showed that culture of the giant tiger prawn (*Penaeus monodon*), which peaked in the mid 1990s at around 80,000-90,000 tonnes has since stabilized at around 40,000 tonnes after mass outbreaks of white spot disease which resulted in high mortality on many farms

What are the solutions?

How can water and fish be assured for every Filipino now and in the future? I argue that three elements are critical to assure water and fish for all. The first is effective human and science capacity and institutions; the second is the strategic vision and direction for the sustainable management of water and fisheries; and the third is the follow through in implementing the plans and policies of the vision. This talk will stress that the Philippines has great strengths in each of the element but that the toughest to get right is the third element – implementation. I also focus on the role of science in each element of the solution.

Human and Science Capacity

Professionals dedicated to using their skills to help the people and the country are the first requirement. The Philippines has 157 scientists and engineers per million population engaged in Research and Development (UNESCO 1999). This number appears low when compared to those from developed countries, but it ranks above that in Thailand and Malaysia with 103 and 93 scientists and engineers per million people respectively. Although the number of scientists are significantly lower than those from developed countries, the Philippines is well endowed with science capacity, and many renowned Filipino scientists are producing world-class science, especially in the field of marine and aquatic science. Vigorous collaboration should be encouraged among the various research institutions so as to promote research development for fisheries using a multi-disciplinary, inter-agency and systems approach. With PCAMRD, Bureau of Fisheries and Aquatic Resources (BFAR), Bureau of Agricultural Research (BAR), National Fisheries Research and Development Institute (NFRDI), Southeast Asia Fisheries

Development Center (SEAFDEC) - Aquaculture Department, WorldFish Center and the various universities (University of the Philippines in the Visayas, Iloilo; the University of the Philippines Marine Science Institute, Quezon City; Central Luzon State University, Munoz; Silliman University, Dumaguete City; Bicol State University etc), the country has impressive coverage of fields of research expertise and impressive geographic coverage to match its dispersed archipelagic nature. In addition, the research and development networks such as those led by PCAMRD (mandated to coordinate research of the National Aquatic Resources Research and Development- NARRDS) and BAR (mandated to coordinate agricultural research undertaken by the Department of Agriculture including those from the regional offices and line agencies) are a precious institutional resource for priority setting and coordinating work at regional, national and local levels. The inclusion of many key stakeholders such as fisheries managers (e.g. BFAR, municipal level officials), fisherfolk, commercial fishers and conservationists in the network governance and advisory bodies is also a critical element to maximize the relevance of the science. The famous Filipino strength of creating harmony and consensus of purpose and action is also an incalculable asset.

Forging strong science partnership enables the creation of detailed understanding of the fisheries sector, helps identify problems, resolve conflicts among users, and create options and solutions. Science partnerships will be effective in developing integrated solutions to many of the fisheries problems facing the country. They can better ensure the matching of complementary skills, participatory priority setting and research relevance for development.

Equal opportunity for women's participation in fisheries research and development is almost a non-issue in the Philippines compared to many other parts of the world (e.g. see Siason, et al. 2002 for comparative Asian figures). Women bring with them different perspectives and can contribute significantly to providing solutions to complex problems.

Vision, Goals and Directions

The second requirement is a strong and clear sense of direction and purpose for the water and fish sectors. The Philippines has done well in setting her goals and directions for water and fish sustainability, and the country is a regional and, in some areas, even a world leader. The Philippines has well defined policies and laws related to environmental and natural resources management, and the Philippine Agenda 21 provides the overall direction and serves as an enabling environment in achieving sustainable development (Pagdilao1999). Fabres (2002) listed the impressive Philippine national legal instruments developed to address issues raised at the Rio Conference (Annex. 1).

Before I outline the chief visionary and direction setting instruments relevant here, let me assert that such a rich set of instruments would not have been possible or so exemplary without the wealth of knowledge among Filipino scientists and other experts. At all stages experts have been called upon or have become the bureaucrats that led the drafting and consultative processes. WorldFish Center's own experience in the Philippines is to often be asked to provide feedback as one of the consulted parties when various codes or acts were being drafted.

The 2002 Country Profile for the Philippines (CP. Philippines 2002) listed several actions taken by the government to implement Agenda 21 at the national level. Other relevant acts, such as the Agricultural Fisheries Modernization Act (AFMA) and the Indigenous

Peoples Rights Act (IPRA) were enacted mainly for poverty eradication. It is heartening that the Philippines is giving high priority to address problems associated with the poor, since water and fish security cannot be addressed without giving attention to poverty eradication. The former Act was targeted at improving the incomes and productivity of farmers and fisherfolk, and the latter lays down the basic policies to the indigenous people's rights to their ancestral domains. The Social Reform Agenda, which was launched in 1995, enables people in the 20 poorest provinces to have access to opportunities for sustainable livelihoods.

Fisheries programs implemented under Chapter 14 of Agenda 21 (promoting sustainable agriculture and rural development) include the program of assistance to Local Government Units to prevent further environmental degradation by the following actions:

- Prohibiting further destruction of the mangrove ecosystem and reconverting abandoned, foreclosed, or unproductive fish ponds into mangrove farms;
- Establishing and maintaining fish sanctuaries and marine parks in municipal waters;
- Restoring productivity and ecological balance of exploited inland waters by prohibiting the use of destructive fishing methods and gears and by dispersing fingerling;
- Providing support for programs which promote community participation in environmental conservation – ex. the Bantay Dagat Program, which encourages local communities to actively participate in the protection of their fishing grounds.

Actions taken to implement Chapter 17 (protection of the oceans, all kinds of seas, including enclosed and semi-enclosed seas, and coastal areas and the protection, rational use and development of their living resources) include the drafting of the National Coastal Management Policy (which is a component of the national Marine Policy), the enactment of the Philippine Fisheries Code and the implementation of the Coastal Environment Program, now the more established Coastal and Marine Management Office (CMMO). The CMMO, which is managed by the Department of Environment and Natural Resources (DENR) and which integrates programs, projects and initiatives related to or concerning coastal environments, has the potential to develop into a national coordinating and policy unit supporting integrated coastal management throughout the Philippines (CP. Philippines 2002). The Fisheries Resource Management Project represents the most significant effort by the government to improve coastal resource management in the country. Its objective is to reverse the trend of fisheries depletion in a total of 18 bays in the Philippines (CP. Philippines 2002).

The Philippine government has also given top priority to water resource management (Chapter 18) and has adopted the river basin approach as the direction for future water resources planning and investment. The Metropolitan Waterworks and Sewerage System have been prioritized. The concessionaires were commissioned to provide clean and safe drinking water to 98% of the population in Metro Manila by the year 2001, to source and treat raw water, and to develop wastewater programs.

Compared to Agenda 21, the World Summit on Sustainable Development (WSSD) Plan of Implementation has given more urgency to the accomplishment of tasks, and has set targets and time frame for meeting various objectives. It has given stronger focus to poverty eradication compared to Agenda 21. WSSD was also very explicit on the

targets for water and fish sustainability. To achieve these targets is a major undertaking for countries. The Philippines will need to re-examine and realign her Agenda 21 programs with the new WSSD goals, and need to strive to achieve the targets outlined in the WSSD within the suggested time frame (see Table 1).

Table 1: Major Goals Relevant to Fish and Water (Source: WorldFish Center 2002)

Year	Goals	Reference
2004	Deter and eliminate illegal, unreported and unregulated fishing by 2004. Establish effective monitoring, reporting and enforcement, and control of fishing vessels, including by flag States, to further the international plan of action to prevent, deter and eliminate illegal, unreported and unregulated fishing	30 (d)
2004	Establish by 2004 a regular process under the United Nations for global reporting and assessment of the state of the marine environment, including socio-economic aspects, both current and foreseeable, building on existing regional assessments	34 (b)
2004	Effectively reduce, prevent and control waste and pollution and their health-related impacts by undertaking by 2004 initiatives aimed at implementing the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities in small island developing States	52 (e)
2005	Urgently develop and implement national and, where appropriate, regional plans of action, to put into effect the FAO international plans of action, in particular the international plan of action for the management of fishing capacity by 2005	30 (d)
2005	Develop integrated water resources management and water efficiency plans by 2005, with support to developing countries	25
2006	Make every effort to achieve substantial progress by the next Global Programme of Action conference in 2006 to protect the marine environment from land-based activities	32 (d)
2010	A more efficient and coherent implementation of the three objectives of the Convention on Biological Diversity and the achievement by 2010 of a significant reduction in the current rate of loss of biological diversity will require the provision of new and additional financial and technical resources to developing countries.	42
2012	Develop and facilitate the use of diverse approaches and tools, including the ecosystem approach, the elimination of destructive fishing practices, the establishment of marine protected areas consistent with international law and based on scientific information, including representative networks by 2012 and time/area closures for the protection of nursery grounds and periods, proper coastal land use; and watershed planning and the integration of marine and coastal areas management into key sectors	31 (c)
2015	Achieve the Millennium Declaration target to halve by the year 2015 the proportion of the world's people who suffer from hunger and realize the right to a standard of living adequate for the health and well-being of themselves and their families, including food, including by promoting food security and fighting hunger in combination with measures which address poverty, consistent with the outcome of the World Food Summit and , for	38 (a)

	States Parties, with their obligations under article 11 of the International Covenant on Economic, Social and Cultural Rights	
Not later than 2015 if possible	Maintain or restore (fisheries) stocks to levels that can produce the maximum sustainable yield with the aim of achieving these goals for depleted stocks on an urgent basis and where possible not later than 2015	30 (a)

The Fish for All initiative was launched during the 25th anniversary celebration of WorldFish Center in November 2002. Its aim is to complement the efforts of WSSD and is designed to be a credible, global science and policy dialogue, capable of instilling urgency into the issues identified in the WSSD through the active participation of senior policy makers, opinion leaders and researchers at various levels of the community. Recommendations and solutions forged through a series of meetings and brain-storming sessions by members of the Fish for All global steering committee and through policy-science-stakeholder workshops and fora, over a span of 5-10 years are anticipated to help address most of the fish related issues identified in the WSSD. We are honored to have an eminent Filipino, Senator Leticia Ramos Shahani as a very active member of the Global Steering Committee. WorldFish Center and her partners in the Philippines should strengthen their collaboration and work towards achieving the goals of the WSSD.

Implementation

Implementation is the third and most difficult of the three components and it requires leadership, strong political will, commitment, perseverance and the ability to persuade and convince stakeholders that the policies will benefit them if the country is water and fish secure. Awareness-building to increase the level of environmental understanding among stakeholders is essential. Due to the importance of fish and water in the Philippines, awareness building is not a major hurdle.

Eventually through the awareness-building programs, the communities and governments must realize their commitment and become proactive, and industries should voluntarily assume greater environmental responsibility, e.g. by examining their own practices, by accreditation through the implementation of environmental programs such as ISO 14000 series to protect the environment. In the Philippines, as elsewhere, some factors attributed to the failures in arresting environmental degradation include inadequate national funding, declining overseas development aid, unacceptable poverty levels, rural/urban migrations and lack of political commitment to change. Success in implementation hence depends not just on science alone but also on solutions to social and economic problems.

Donors should also ensure adequate funding for the Philippines to implement the Philippine Agenda 21 and the WSSD projects. Funding for water and fish initiatives may be difficult to attract because of the world economic situation, and despite the prominence given to these two areas by WSSD. Donors are seeking to place scarce development assistance funds in loans and projects that are most likely to succeed and more and more, to ensure continued funding by donors, effective management of projects and stakeholders and greater transparency are required, so that the expected results can be achieved.

Whether locally, nationally or internationally funded, good science information and the right kind of science are often critical to embed in natural resource management

programs such as those for fish and water. Basic data on water and fisheries need to be collected scientifically and accurately. Inaccurate and incomplete data can jeopardize the planning and policy formulation process.

Another key factor in water and fish management is the integral nature of these resources in the environment and the economic fabric. For too long every country has considered them more in sectoral isolation than as parts of environment and economy. More integrated management approaches are urgently needed. In the implementation of coastal zone management plans, the good news is that the Philippines has made considerable progress and is a world leader in some aspects in this field. But even the Philippines will have to strengthen its performance here and spread the 'mountains to the sea' approach to all catchments as quickly as possible to really achieve water and fish security. The upgrading of institutional capacity in science and management is critical to the success of coastal zone management whose concepts are often complex and difficult to implement (Hinrichsen 1995). Again, the decentralized science and management capacity of the Philippines will be an asset to the spread of integrated management in practice.

Integrated farming approaches are also being encouraged in the Philippines to help the farmer make more, financially, from the land and to aid sustainability.

A great urgency and effectiveness in executing all manner of actions from local projects to regional management plans to national codes will have to be the prevailing culture of this century if the Philippines is to ensure fish and water for all.

Conclusion

Water and fish are like the lifeblood of the Philippines and Filipinos. Politically and culturally this country has always believed in making these precious resources available and accessible to all as well as powerhouses of national economic competitiveness. Indeed, Presidents have used the price of common fish or the success of fish commodities in international trading as the barometer of success. Despite the high profiles of water and fish, achieving water security and fish for all in the Philippines faces many challenges from rising human impacts and natural disasters. To meet these challenges requires efforts in three main components, namely in the further development and deployment of human and science capacity, in refining the national vision and direction in light of the new urgency and targets for sustainability agreed to at the 2002 Johannesburg World Summit for Sustainable Development and, perhaps the greatest challenge, a deep commitment to and integrated implementation of the necessary actions and plans. Although the number of scientists per million population, is low by world standards, the level of science achieved by Filipino scientists in some endeavours is of world class. The vision and direction of Philippines Agenda 21 are highly commendable and serve as good examples for other developing countries to emulate. More efforts and perseverance, coupled with accurate and sound science are needed to see these programs through and to achieve full implementation, which would contribute significantly to water security and fish for all. It remains for all of us as scientists and professionals with a humanitarian and environmental commitment to work together with each other and with the stakeholders to do our part to ensure water and fish for all.

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Annex. 1: The Philippine national legal instruments developed to address issues raised at the Rio Conference (compiled by Fabres 2002).

1993

- Proclamation proclaiming Lingayen Gulf as an environmentally critical area
- Executive Order establishing an Inter Agency Task Force for Coastal Environmental Protection
- Executive Order creating the Mt. Makiling Reserve Area and Laguna de Bay Commission

1994

- Executive Order creating Lingayen Gulf Coastal Area Management Commission

1995

- Executive Order creating Fisheries and Aquatic Resources Management Councils (FARMCs) in barangays, cities, and municipalities, their compositions and functions
- Executive Order adopting Community-based Forest Management as the National Strategy to ensure the Sustainable Development of the country's forestlands resources and providing mechanisms for its implementation
- Executive Order No. 263. Adopts Community-based Forest Management as the National Strategy to ensure the Sustainable Development of the country's forestlands
- DENR Administrative Order No. 3, Series of 1995. Procedural and/or Documentary Requirements, Guideline and/or Criteria to be observed and/or followed in the Selection of Local Government Units (LGUs), Non-Government Organizations (NGOs) and People's Organizations (Pos) to the Protected Area Management Board (PAMB)

1996

- Executive Order establishing National Maritime Safety Coordinating Council
- Administrative Order implementing Rules and Regulations on the Prospecting of Biological and Genetic Resources
- Executive Order creating the Presidential Task Force on Water Resources Development and Management
- Administrative Order for Guidelines on the Management of Certified Ancestral Domain Claims

1997

- Proclamation declaring the entire Sulu and Celebes Sea as an integrated Conservation and Development Zone, creating a Presidential Commission for the integrated conservation and development of the area and providing funds thereof
- Agriculture and Fisheries Modernization Act (#8435)

1998

- Executive Order creating The Pasig River Rehabilitation Commission
- Administrative Order establishing the Forest Resource Securitization Strategy for Mobilization of Private Capital to support Sustainable Forestry in the Philippines

- The Philippines Fisheries Code of 1998 Act (#8550)
 - Administrative Order: Guidelines on the Establishment and Management of Community-based Forest Management (CBFM) projects within mangrove areas
 - Executive Order creating the Presidential Air Quality Commission
 - Republic Act No. 6657. The Comprehensive Agrarian Reform law of 1998
- 1999
- Philippine Clean Air Act of 1999
- 2000
- Ecological Solid Management Act
 - DENR Administrative Order No. 2000-44. Amending certain provisions of DAO 96-29 and providing specific guidelines for the Establishment and Management of Community-based Projects within Protected Areas
- 2001
- DENR Administrative Order No. 2001-17. Guidelines for Delineating /Delimiting Municipal Waters