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Coastal Zone Management in the Fisheries Sector Program

The problems which affect our coastal areas are daunting and urgent. The number of municipal fisherfolk has increased by an estimated 50% over the last ten years. This does not consider the fact that most Philippine cities are coastal, and that there has been unprecedented migration, over the same period, into these areas. Immense pressure is, therefore, put on coastal resources and areas to support these concentrations of population.

In addition, environmental damage from overpopulation, pollution, and illegal fishing activities has been widespread and intensive. About 70% of the country's coral reefs has been impaired. Of the original mangrove cover believed to have existed during the 1920s, only 35% remain. And of the Philippines' 400 major rivers, 50 are heavily polluted and 10 are virtually dead. As a result, pelagic and nearshore demersal fish stocks have dramatically declined. Fishermen's catches in four of the country's regions have decreased by an average of 42% over a ten-year period.

Of grave concern is the fact that about 80% of municipal fishing families live below the poverty line. To address this, the Department (of Agriculture) has launched the Fisheries Sector Program (FSP) for 1990-1994. This is a comprehensive and integrated program for managing marine resources and sustaining long-term development in the fisheries sector. Its objectives are: (1) conservation and regeneration of aquatic resources; (2) protection and rehabilitation of the coastal zone environment, including marine habitats; (3) alleviation of poverty among municipal fishermen, particularly through diversification of their sources of livelihood; (4) intensification of aquaculture, but within ecological boundaries; and (5) inducement of commercial fishing away from overfished nearshore waters and into the 200-mile exclusive economic zone.

To establish a framework for the program, the government is undertaking several institutional and policy reforms. On the local government level, community-based initiatives are encouraged to rehabilitate and manage the coastal zone and to diversify livelihood for small-scale fishermen. Steps to decentralize the management and regulation of nearshore fisheries will ensure preferential use of municipal waters by small fishermen. In addition, policy is being readied to prevent mangrove areas from being converted to fish and prawn farms.

Under the FSP, a total of US\$200 million will be invested in the next five years. Of particular interest would be the investment of \$33 million in coastal zone management (CZM); \$15 million in resource and ecological assessment; and \$25 million for research and extension.

The rehabilitation of coastal environments and livelihood diversification for fishermen are the two main and reciprocal goals of CZM. Component funds will be used for the: (1) establishment of fish sanctuaries and marine reserves; (2) construction of 500 km of artificial reefs and transplantation of corals; and (3) reforestation of 30,000 ha of mangrove areas. It is envisioned that fishermen will be recruited for these rehabilitation efforts, thereby providing them with an additional source of income. NGOs will be contracted to organize and train fishermen for this purpose. Likewise, alternative livelihood projects will be developed to draw fishermen into other economic activities, thus easing pressure on already overfished coastal waters.

Resource and ecological assessments will be undertaken to determine the viability of coastal areas. Under the research and extension component of the program, specific studies shall be conducted on such priorities as sea ranching and fish farming, artificial reefs, the red tide, and tuna and cephalopod exploratory fishing. A comprehensive national fisheries research program will be handled by a network of upgraded research facilities.

The present program extensively covers 12 priority bays in 17 provinces. However, a 1988

study has identified at least eight other bays and ten other coastal areas equally in need of rehabilitation and management. Another \$200 million may be needed for these areas.

While it is difficult to quantify the benefits that would accrue to the areas targeted by the program, experiences in similar projects may provide some indications. In Lamon Bay, for example, where a comparable fisheries program was implemented, small-scale fishermen have reported a 75% increase—from P2,000 to P3,500—in their monthly incomes. This was accomplished without overfishing and without causing trauma to the environment. The Department hopes that the FSP for 1990-1994 will produce similarly happy results.

Source: Excerpts from speech of Dept. of Agriculture Secretary Senen C. Bacani at the Closing Ceremonies of the ASEAN/US CRMP Policy Conference on **MANAGING ASEAN'S COASTAL RESOURCES FOR SUSTAINABLE DEVELOPMENT** on 6 March 1990 in Baguio City, Philippines.

THIRD-WORLD AQUACULTURE SYSTEMS

Environmental Impact and Benefits for Producers

Extensive systems are defined as having no feed or fertilizer inputs; semi-intensive systems as having some feed and/or fertilizer inputs; and intensive systems as being mainly reliant on external feed inputs. The possible consequences of exotic breed transfers apply to all systems listed here.

System	Environmental impact	Benefits
EXTENSIVE		
1. Seaweed culture	May occupy formerly pristine reefs; rough weather losses; market competition; conflicts/failures, social disruption	Income; employment; foreign exchange
2. Coastal bivalve culture (mussels, oysters, clams, cockles)	Public health risks and consumer resistance (microbial diseases, red tides, industrial pollution); rough weather losses; seed shortages; market competition especially for export produce; failures, social disruption	Income; employment; foreign exchange, improve nutrition
3. Coastal fishponds (mullets, milkfish, shrimps, tilapias)	Destruction of ecosystems, especially mangroves; increasingly non-competitive with more intensive systems; nonsustainable with high population growth; conflicts/failures, social disruption	Income, employment; foreign exchange (shrimps); directly improve nutrition
4. Pen and cage culture in eutrophic and/or rich benthos (carps, catfish, milkfish, tilapias)	Exclusion of traditional fishermen; navigational hazards; conflicts, social disruption; management difficulties; wood consumption	Income; employment; directly improve nutrition