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ENVIRONMENTAL ASPECTS OF INDUSTRIAL FISHERIES DEVELOPMENT IN AMERICAN SAMOA: A CASE STUDY IN TRAINING NEEDS

by

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American Samoa is an unincorporated territory of the United States located in the mid-South Pacific Ocean. The largest island in the Territory, Tutuila, is a mountainous volcanic crest 32 km long but no more than 9.6 km wide, with the highest mountain reaching 654 m. in elevation. The population has increased from the traditional level of approximately 5,000 to 31,500 to-day.

The development project and its site

The Territory was a logical choice for industrial fisheries development. It has an excellent port in Pago Pago Harbour, and as an American territory, its exports of fisheries products to the United States are exempt from the import controls which regulate access to the U.S. market. Two US-owned canneries were therefore established in 1956 to process the catch of foreign fishing fleets, primarily from Japan and Korea. The canneries employ a large local labour force which makes them the major economic activity in the Territory after the government. At their peak in the early 1970's, approximately 300 fishing boats were supplying the two canneries.

The large deep-water Pago Pago Harbour nearly bisects the island and is surrounded by high mountains. It probably originated as a collapsed volcanic crater, and is boot-shaped, with a width of approximately 1 km near the entrance, expanding

to 2 km further in. The harbour is approximately 5 km long with a right angle turn roughly half way up the harbour. While it is quite deep (up to 70 m), it has moderately poor circulation because of its form and some rocks partly blocking the entrance. Water flows into the harbour at the surface and out at the bottom. The canneries and the main docks are located near the inner end of the harbour.

The harbour was originally lined with coral reefs for nearly its full length, but some areas have now been dredged or filled in. The reefs and corals were fortunately described in great detail, including quantitative surveys, by scientific teams from the Carnegie Institution in 1917 to 1920. There is thus good information on the undisturbed state of the harbour. The reefs had a high and diverse coral cover, and the water was sufficiently clear to permit the identification from the surface of corals more than 20 m deep on the bottom. Unfortunately there is no subsequent data on the environmental conditions in the harbour between 1920 and 1970.

Environmental resources required

While the fisheries industry in American Samoa is based on tuna resources caught throughout the Central Pacific Ocean, it does use certain important local resources, in particular the land and waters of the harbour, and fresh water supplies. The land requirement has been reasonably limited because of intensive development of the cannery sites. The harbour has been the principal waste disposal site. The water requirements of the canneries are large and have taxed the capacity of island water supplies. The canneries are a typical example of a development project launched without environmental considerations, and for which repairing the damage done has been a long and costly process.

Initially two principal groups were involved in the establishment of the project, the Territorial Government, and the two principal canning companies. The

original agreements included no provisions for environmental controls, and required the government to supply all the water required for canning operations.

The result was extensive pollution of the harbour by organic waste from the canneries, and occasionally by oil from the fishing boats and other shipping, and intermittent water shortages during which water supplies to the population had to be rationed in order to keep the canneries operating.

Natural resource management

The first step to deal with the environmental problems of American Samoa was taken in 1969 when the then Governor John M. Haydon requested the help of the Smithsonian Institution in evaluating environmental problems and recommending solutions. As a result a network of monitoring transects were established on coral reefs in the harbour and elsewhere, and general reports and recommendations on the environmental situation were provided to the government during the period 1970 to 1973. These recommendations were extensively implemented by the Government of American Samoa. At the same time the increasing application of United States environmental legislation to American Samoa and the associated availability of funds for environmental programs further accelerated action. An ecologist was named to staff in the Governor's Office, and an Environmental Quality Commission was established. Requirements for waste treatment were placed on the canneries, and several million dollars worth of treatment equipment was installed. The Government also constructed a network of sewage collection and treatment facilities for the urban areas around the harbour.

As a result of these actions there has been some improvement in the environmental quality of Pago Pago harbour. A re-survey of the 1917 coral reef transects in 1973 (Dahl and Lamberts, 1977) showed that while the reefs in the inner harbour were largely dead, reefs near the mouth of the harbour were covered with reasonably large numbers of small corals, suggesting that some recovery was

taking place. However there were significant changes in species composition and abundance. These monitoring surveys are to be repeated by the South Pacific Commission in 1980.

To solve the water problem, wells have been drilled and water piped from several kilometres down the island to the main urban area and the canneries. However water resources will continue to limit development in the future. A project for a third cannery may have been shelved partly for this reason.

There are some continuing environmental problems associated with the fisheries industry in Samoa. In spite of strict legislation, there are occasional accidental oil spills in the harbour, either from fuelling operations, or from accidents occurring to fishing boats. Fishing boats have sunk in the harvour on at least two occasions and at least one boat has also been wrecked on the reef near the harbour entrance, detracting from the scenic tourist vista.

There have also been problems with the management of the tuna resource which are beyond the control of the Territory. Catches have declined, and at one point there were large numbers of fishing boats mothballed in the harbour.

It has taken at least 20 years for the small territory of American Samoa to resolve some of the major environmental problems associated with fish processing. That progress has been made is due in large part to the Territory's access to American finance and experience.

The small island case

This case study does illustrate several aspects of the special situation of very small island countries. Even though Government is the largest employer in the Territory, the manpower available is limited. Thus a single officer must handle a broad range of responsibilities. The amount of time that can be devoted to environmental problems is often limited. Since it is not possible to have all types of expertise

available locally, small islands must make greater recourse to outside sources of assistance. Fortunately such assistance is readily available. Some countries and territories maintain ties with a metropolitan power, or have strong continuing bilateral aid links. The Pacific islands have two major regional organisations, including the South Pacific Commission which has a significant environmental program component. Aid is also available for some countries from United Nations and its Specialized Agencies and from the European Economic Community. A major problem is the ability of small island countries to absorb and utilize the aid that is available. Too often technical reports cannot be implemented for lack of manpower, and a single overworked officer may find much of his time taken up with meeting visiting delegations.

There are also some problems particular to the small American territories. There is sometimes more money available than there is the means to spend it. More importantly, many United States environmental regulations have been extended wholesale to the Pacific island territories, imposing complex and often inappropriate requirements that are not easily met on a small scale.

Training requirements

It is clear in this case study that the natural resource management skills required in a small island country may well be different from those needed in other developing countries. Certainly all policy makers need to have a general sensitivity to environmental issues. In fact, since environmental limits are often much closer on islands, they may need to be more sensitive than in larger continental areas. The government staff of planners and economists may be too small to warrant even one full-time environmental planner. Existing planning staff therefore need to be trained to understand the environmental dimension of the planning process and the fundamentals of ecological interactions. Then they will at least know what questions to ask, and when it is necessary to seek expert advice. Beyond that most environmental expertise can probably be brought in on a short-term basis, whether it be

to develop a physical plan, or to design or evaluate a development project. There is a need for lower level government personnel able to undertake environmental data collection and monitoring. Since most small countries have no scientific establishment or universities and are far from existing centers of research, basic scientific information and baseline environmental data are often lacking, yet even the smallest governments need some information on the state of their natural resources in order to manage them wisely. Monitoring techniques that can be used by unskilled or semi-skilled local personnel are needed. This is an area where much more work needs to be done in developing countries, both in conceptual development and in training. Since small countries depend more on regional or international assistance, there is also a need to train experts capable of meeting the wide variety of short-term requirements in such areas. Such experts should have a strong scientific and technical background, sufficient training as a generalist to be able to relate their specialty to the broad economic and social issues of developing countries, and an ability to quickly understand and communicate with people with very different cultural backgrounds and perspectives.

There are at present very few training materials appropriate to the small Pacific island countries. Most environmental materials emphasize urban or industrial problems that are minimal or do not exist at all in the islands. The South Pacific Commission is in the process of producing a number of training aids, but they can only be produced very slowly, and are far from meeting the requirements of the region. The existing or projected materials include a set of environmental education curriculum materials for upper primary and lower secondary school use, a film on basic island environmental management for adult education, especially in rural areas, a film on the island environment for school use, a simple handbook on coral reef monitoring, and eventually a handbook on environmental planning and assessment to be used in training workshops at the country and regional level. These materials will be made freely available to all Island Governments as they are produced, and where

necessary training courses will be organized around them.

Reference cited

Dahl, Arthur L., and Austin E. Lamberts. 1977 Environmental impact on a Samoan Coral Reef: a resurvey of Mayor's 1917 transect. Pacific Science 31(3):309-319