Country Report for UNCED

Republic of the Marshall Islands

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REPUBLIC OF THE MARSHALL ISLANDS

UNITED NATIONS CONFERENCE ON ENVIRONMENT AND DEVELOPMENT

NATIONAL REPORT

JULY 1991

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PREFACE

The Republic of the Marshall Islands is pleased and honored to be a part of the United Nations Conference on Environment and Development. The Marshall Islands like all nations, particularly developing nations, are facing the many challenges of sustainable economic development. The following document integrates the issues of economic development and environmental and resource issues faced by the Marshall Islands. The integration of these issues has been formally recognized by the RMI Presidential Task Force on Environmental Management and Sustainable Development (EMSD)/United Nations Conference on Environment and Development (UNCED). In preparing this report, the RMI has used the term sustainable development to mean maintenance of natural resources and environmental quality at a level sufficient to maintain the desired degree of economic development.

This National Report was prepared by the EMSD/UNCED Task Force and Ms. Nancy Convard, an international consultant who was graciously provided to the Marshall Islands by the South Pacific Environmental Program(SPREP), the National Report represents an impressive effort on the part of all who participated in its preparation.

As an island nation we are especially cognizant of the fragility of our environment and the limitations of our natural resources. We are also keenly aware of our need for economic development. The RMI UNCED National Report reflects the EMSD Task Force's present understanding and views of the issues of environment and sustainable development faced by the Marshall Islands. The opportunities and constraints to achieving sustainable development are both numerous. We are confident, that while the issues of environment and development and the means to addressing them are dynamic, and new priorities may arise, that UNCED and RETA programs will assist the Marshall islands in appropriately addressing these critical issues.

It was indeed challenging and exciting to be a part of the preparation process. The process has given the EMSD Task Force a deepened respect for the challenges and opportunities we face in developing our National Environmental Management Strategy. I would like to thank all the task force members for their valuable contributions in preparing this document. The task force members are identified in Attachment A of this report. The EMSD/UNCED Task Force particularly recognizes the excellent efforts of Ms. Convard. Ms. Convard was responsible for incorporating the thoughts and concerns of all individuals contributing to the report and drafting of the final report. The Republic of the Marshall Islands gratefully acknowledges and sincerely expresses it gratitude to SPREP for its kind assistance.

Finally, all those involved in the preparation of this report wish the UNCED success as it undertakes this momentous challenge.

Respectfully,

Jiba Kabua, Chairman
Republic of the Marshall Islands
Presidential Task Force on Environmental Management
and Sustainable Development

26 July 1991
Date

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I. EXECUTIVE SUMMARY

This report was prepared for the **United Nations Conference on Environment and Development** (UNCED). The report reviews the state of the environment and development in the Republic of Marshall Islands (RMI) and the constraints and opportunities for sustainable development. In preparing this report, the RMI has used the term sustainable development to mean maintenance of natural resources and environmental quality at a level sufficient to maintain the desired degree of economic development. This level of development would maintain the quality of life appropriate for the culture of the Marshallese people while minimizing the dependence on external resources.

The RMI is a young independent nation. It was a United Nations Trust Territory administered by the United States until the two nations signed the Compact of Free Association (Compact) on October 21, 1986. This treaty established a special relationship between the United States and the RMI. It provides for economic support to the RMI for a period of 15 years. The Trusteeship was formally terminated by the United Nations in December, 1991. Though the RMI is a sovereign nation, its economic stability presently relies heavily on financial assistance available through the Compact. U.S. aid amounts to some 70 percent of the RMI's revenues.

The natural environment, with its diversity of habitats and species, has always had a profound influence on the Marshallese people and their culture. Until the relatively recent advent of a cash economy (early this century),the Marshallese people relied entirely on the environment and its natural resources for their daily sustenance. Today, that is still true on several of the outer islands and atolls.

Marine resources include fisheries (pelagic, reef, and lagoon), pristine reefs, and unspoiled coastal areas. These resources provide opportunities for sustainable economic development through commercial fisheries, mariculture operations, and tourism.

Pelagic fish resources and related operations provide the greatest potential for export expansion. Reef fishery development must be more carefully evaluated due to the existing cases of stock depletion and the potential for non-recoverable depletion of this resource. Reef fishery development should primarily stress subsistence use and import substitution activities. Mariculture development is possible with a number of species. Given the existing stresses on the environment and the fragility of the atoll environment, low-impact and nature-based tourism should be preferred over more intrusive tourism development.

Although land resources are limited, they do offer considerable contributions to the RMI's economic base. These resources can contribute to both the export economy and to import substitution. Coconut plantations can be re-vitalized to support the traditional copra industry, as well as the manufacture of other coconut products, such as soaps, shampoo, oils, etc. Banana, taro, breadfruit, and vegetable production can be increased to support subsistence use as well as provide a cash crop. Processed foods from these crops, such as banana and taro chips, may also have market potential.

Demographic trends of the Marshall Islands have a significant impact on the environmental and social situation as well as economic development. Population growth in the RMI has been increasing at a rate of approximately 4 percent per annum. Its population is among the youngest in the world with 51 percent of the population less than 15 years of age. Population densities of its two

urban centers, Majuro (Dalap-Uliga-Djarrit area) and Ebeye, are 28,724 and 59,437 persons per square mile, respectively.

The reliance on U.S. and other foreign funding has resulted in disparities between the monetary and subsistence economic sectors. Certain aspects of developed country lifestyle have emerged but this change in lifestyle has not been matched by local productive capacity. This has resulted in consumptive patterns reliant on imports and disparities between urban and rural living standards. In 1988 the ratio of exports to imports was approximately 16:1.

The labor force in the RMI has grown to approximately 11,488 persons, with little expansion in employment opportunities. Though the labor population is large, it lacks the applicable vocational and technical skills needed for service and production activities.

Natural resource and environmental issues center around the high population densities and continuing population growth. The effects are particularly obvious in the urban areas, but also clearly impact the outer islands as well. The atoll setting does not have the capacity to continue to support the existing urban populations with an adequate supply of safe water or locally produced food stuffs. Major environmental issues include: overpopulation/overcrowding, safe drinking water supply, marine water quality, solid and hazardous waste disposal, and domestic and commercial waste water disposal. These are primarily issues of public health, compounded by depletion of land and marine resources. Resource depletion through the unsustainable development of reef and lagoon fishery resources is also of concern. There is qualitative evidence of significant depletion of reef fish stocks and shellfish in certain areas. Land resources are also stressed. Coastal degradation, resulting from the urban pressures and inappropriate coastal developments, is increasingly evident.

The root causes of these issues are evidenced by the described demographic and economic trends. The root constraints to addressing these issues lay in a number of areas, including: the lack of communication and coordination among government agencies and between government and the private sector; lack of trained human resources; and a lack of education and awareness about environment and resource issues, especially cumulative and long term effects. There has been an emphasis on capital economic development projects and less emphasis on human resource development issues. A growing perception of the Marshallese that anything modern is good and conversely that anything traditional is also among the root constraints. Finally, the land tenure system complicates development and resists control of land use through modern planning and environmental management systems. The land tenure system requires a consensus agreement on land use.

These same constraints limit economic development. In addition, the lack of private sector capabilities, status of physical infrastructure, high population growth, and natural constraints also hinder sustainable development. Natural constraints include the geographical dispersion of the islands, their distance from export market centers, and associated difficulties and costs of transportation.

The environmental issues have resulted in classic public health concerns of both developing countries and developed countries. Malnutrition, skin diseases, and diseases associated with poor drinking water quality and a lack of sanitation facilities are among the classic public health concerns. Chronic diseases such as diabetes and heart disease are among the so-called modern health problems

affecting the Marshallese. Natural resource and environmental issues of depletion and degradation of environmental quality are those associated with industrialized, developed countries.

The responses that have arisen from these issues are primarily in the government sector. The government has recognized the fragility of the nation's island environment and the importance of its natural resources to its people, culture, and economic development. The institutional infrastructure necessary to address issues of environmental protection and resource management is well developed. The RMI Environmental Protection Authority has broad powers to protect the environment. The Marine Resources Authority (MIMRA) has the authority to provide for the exploration, exploitation and utilization of marine resources. A historic preservation act, which will establish a historical preservation office, has recently been passed. The enforcement of regulations and procedures developed by these authorities is potentially hampered by the land tenure system and other cultural systems. The consensus building process required by the traditional land tenure system also can have a beneficial influence on the modern management systems.

The government also established a National Population Policy that addresses the implications of population growth on varied aspects of socio-economic development and environmental quality. The policy stresses a general policy of spatially integrated development and development of human resources. Spatially integrated development refers to development that incorporates physical planning techniques and encourages rural and urban development.

Community groups, such as women's groups, also contribute toward addressing environment and resource issues. Still, the need for further involvement of the community is evident.

To encourage economic development and improve the efficiency of certain government operations, the government created state-owned enterprises for several of the infrastructure operations. Water, sewer, power, and capital improvement project management are now state-owned enterprises. Privatization of telecommunications services is scheduled to begin this year.

Government economic development policies have focused on large-scale projects, including: the purchase of purse seiners to establish a local tuna fleet, the construction and operation of a fish base, and the establishment of long-line fishing operations, and commercial reef fishing. All of these projects are joint venture operations. The government has also founded a national airlines.

Opportunities to move toward sustainable development are available to the Marshall Islands. The transition from a public sector dominated economy to a productive self-sustaining economy depends on multi-disciplinary program planning and implementation. Recognition and inclusion of the cultural heritage in development planning is essential. The economic development and the provision of social services needs for the rural and urban sectors must be individually and jointly addressed.

To achieve sustainable development and address the umbrella issue of overpopulation, and its associated environmental and social issues, policy adjustments must be made. A shift to support of the development of human resources provides a foundation to support economic development. The necessary policy adjustments are found in two major areas: direct support of human resource programs, e.g., health and education and indirect programs, through the support of development projects that provide training opportunities.

Development of small-scale agriculture, mariculture, and fisheries projects can compliment the larger-scale projects. The small-scale projects provide opportunities to address the development cash products and contribute to the immediate need for import substitution of food products.

A policy of increased communication among the government departments, agencies, and authorities can improve the planning process. Greater communication and joint planning can improve a potential project's success.

The RMI desires technical assistance for its efforts in improving its resource management and environmental protection programs. The RMI EPA, particularly requests assistance in developing its coastal zone management plan, and for the provision of an environmental engineer for its solid and hazardous waste management program. The RMI MIMRA requests technical assistance in their endeavors to further the development of its program. Financial assistance is needed to support these requests for technical assistance.

Cooperation and exchange of information and technical assistance on a regional level assists in the promotion of individual country development as well as regional development. Regional resource assessments are needed. This is especially true for migrant species, such as tuna.

Regional trade and marketing agreements can strengthen the region's position in the world economy. These agreements can also improve trade among the region's governments.

The Marshall Islands are obviously extremely concerned about the potential for devastating impacts resulting from climatic change, especially its global warming and sea level rise components. A continued strong regional stance on this issue is strongly supported to ensure that the concerns of small Pacific Island Countries are not lost in the international discussions of this global issue.

This report is provided both in preparation for the United Nations Conference on Environment and Development and as the first output to the RMI Cabinet established National Task Force on Environmental Management and Sustainable Development. The issues, concerns, and opportunities raised in the report will be addressed in detail by the EMSD Task Force as they prepare RETA project papers and ultimately a **National Environmental Management Strategy.**

II. DEVELOPMENT TRENDS AND ENVIRONMENTAL IMPACTS

The RMI is one of four Pacific island nations consisting entirely of low coral islands and atoll reefs. It consists of 34 coral atolls and islands with an average height above sea level of between 2 and 3 meters. The RMI's total land area is approximately 180 square kilometers (70 square miles). Its marine area totals over 750,000 square kilometers. As a result, the RMI is endowed with abundant and varied marine resources. It has, however, limited land-based resources and limited storage of freshwater. The resource and environmental issues affecting sustainable development are those that are common to developing atoll nations.

The Marshall Islands form two parallel chains, the Ratak Chain to the east and the Ralik Chain to the west. Majuro is the prime atoll of the Ratak chain and Kwajalein the prime atoll of the Ralik Chain. Majuro and Ebeye, Kwajalein are the two urban centers of the RMI with more than 75 percent of the population. Figure 2 shows the two chains and the major atolls of the Marshall Islands.

The RMI is a young independent nation. It was a United Nations Trust Territory administered by the United States until the two nations signed the Compact of Free Association (Compact) on October 21, 1986. This treaty established a special relationship between the United States and the RMI. It provides for economic support to the RMI for a period of 15 years. The Trusteeship was formally terminated by the United Nations in December, 1991. The status of the RMI is significant. Though, the RMI is a sovereign nation its economic stability relies heavily on financial assistance available through the Compact.

The natural environment, with its diversity of habitats and species, has always had a profound influence on the Marshallese people and its culture. Until the relatively recent advent of a cash economy, the Marshallese people relied entirely on the environment and it natural resources for its daily sustenance. Today, that is still true on several of the outer islands and atolls. The cash economy was introduced to the Marshall Islands early in this century and was strengthen by the Japanese and American administrations.

The demands of a cash economy, modern transportation, technologically superior equipment, and a rapidly growing population have placed great pressures on the natural environment. The urban centers have been the most affected to date, but outer atolls and islands which were once difficult to reach also face increasing pressures. The ability to rapidly harvest food resources has severely depleted key resource populations and habitats in some areas and threatens many other areas.

In both the traditional subsistence economy and the cash economy, the environment and its natural resources are essential to the physical and cultural sustenance of the Marshallese people. Thus, the linkage between environmental management and economic development must be at the forefront of all aspects of development planning.

The following sections will describe in detail the setting for sustainable development through a discussion of the natural resource endowment, patterns of economic growth, demographic trends, and natural resource and environmental issues.

Figure 1. General Location of the Republic of the Marshall Islands

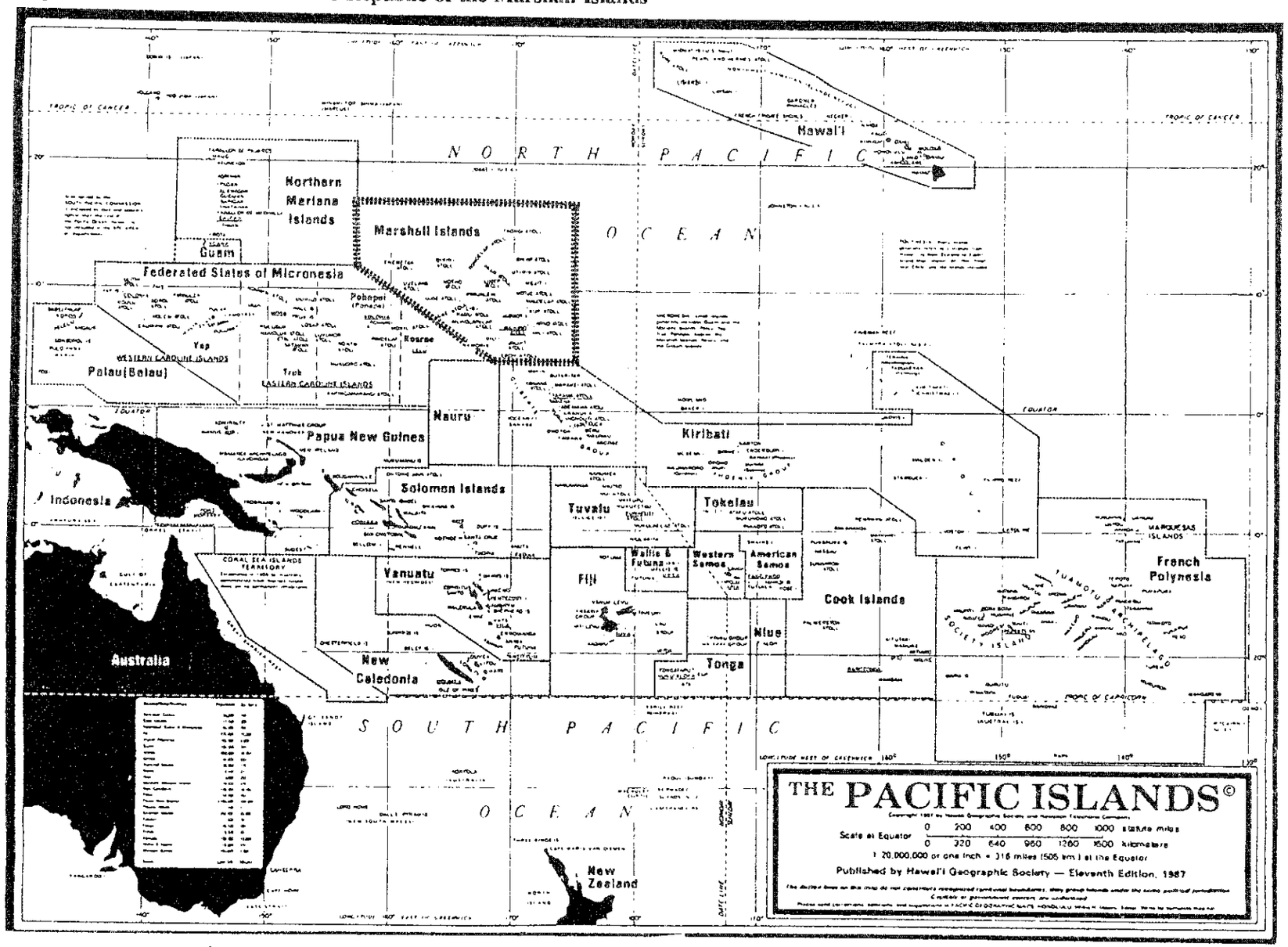
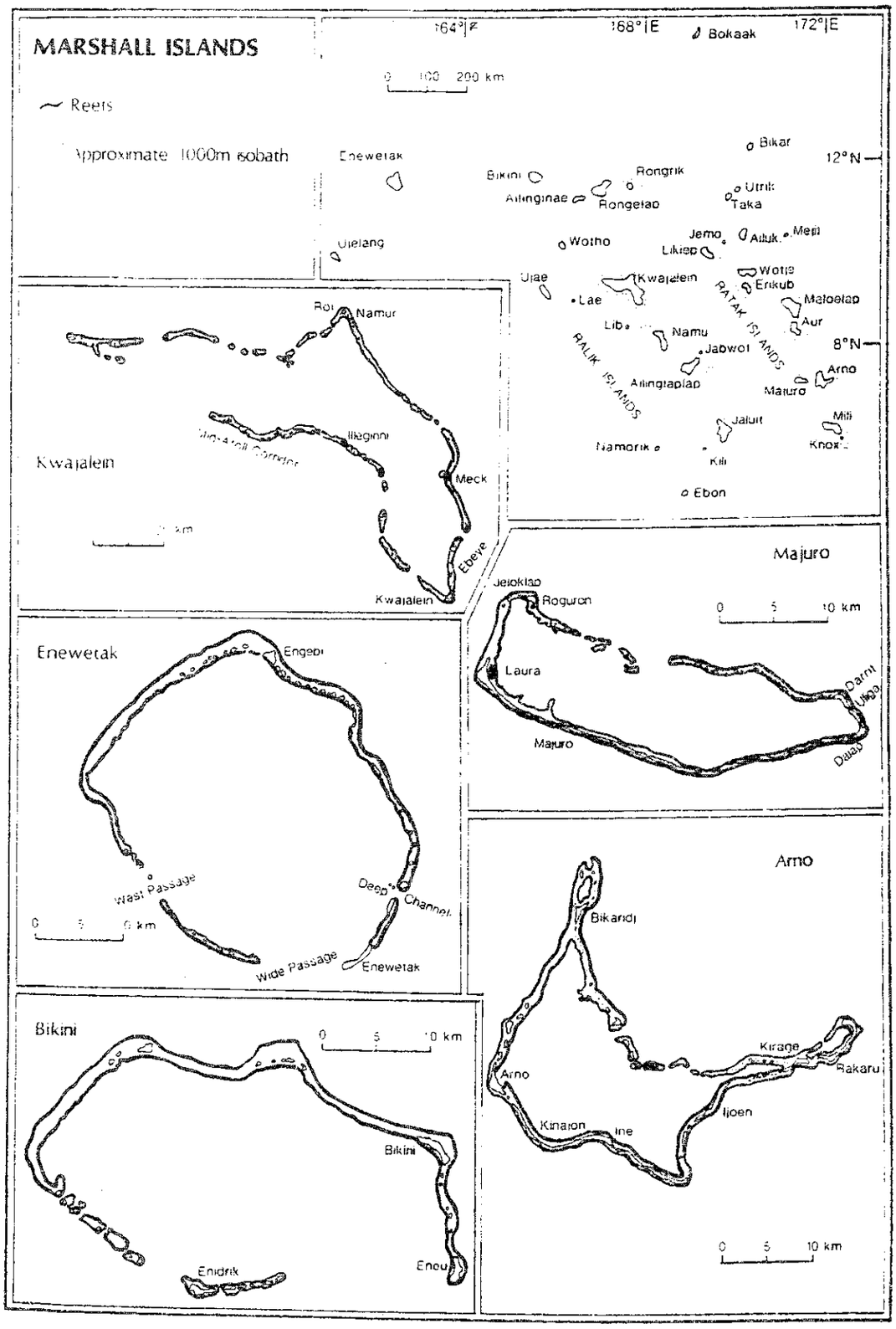


Figure 2. The Republic of the Marshall Islands



A. Natural Resource Endowment

The Marshall Islands are endowed with abundant marine resources. These include pristine reefs, fisheries (pelagic, reef, and lagoon) and unspoiled coastal areas. These marine resources provide opportunities for sustainable economic development through commercial fisheries, mariculture development, and low-impact ocean-related and nature-based tourism.

Large-scale commercial utilization of land resources are essentially limited to copra, or perhaps other uses of coconut production. Other land resources have potential for subsistence use and small-scale commercial operation, including: banana, taro, breadfruit, local vegetables, and coconut crabs. The coconut crabs, which flourish in areas planted with coconuts, may have some export value. Coconut crab populations are rapidly being depleted by over harvesting in some areas. (SPREP, 1989)

Deep sea cobalt-rich manganese crust deposits and possible phosphate deposits in the lagoon may be important future options for the Marshall Islands. However, no commercial grade phosphate has been discovered to date and manganese crusts are probably years away from commercial mining.

Land Ownership

The Marshallese society is matrilineal; land and property rights descend from the clan (bwij) to which the individual's mother belongs. For each parcel of land (weto) the following level of land rights exist. The Dri-jerbals have the right to work the land; the Alap, as head of the lineage, serves as managers of the land and intermediate spokespersons; and, the Iroj have senior rights to the land. The final decision regarding land use must be reached by consensus. The Iroj can sometimes make a final decision regarding land uses to resolve disputes. Ownership of land is restricted to citizens, however, noncitizens may lease land for up to 75 year periods.

The traditional land ownership system is strong in the Marshall Islands. Private investment schemes, particularly foreign, may also be complicated by ownership and use questions, which may require time consuming consensus building to resolve. Thus it is important to encourage strong local participation and public education in all schemes for economic development and environment and resource management.

Fisheries

Fishery resources including both reef fish and pelagic species, such as tuna, are leading natural resources for the Marshall Islands. Average annual pelagic fish catch within the Exclusive Economic Zone (EEZ) is estimated at 40,000 tons. No data is available on reef fish catch. Fisheries are vital both for artisanal fishing and major commercial operations. The fisheries sector shows the greatest potential as a major component of the country's economic base. The RMI government has appropriately placed a high priority on this sector's development in order to continue to stimulate the export economy.

Fishery resources also have tremendous importance to the healthy sustenance and the cultural heritage of the Marshallese. Traditional foods, such as fish, are more nutritious than many of the increasingly popular imported foods. An increasing number of health problems are due to a growing preference and dependence on imported foods.

The coral reef environment is important to the way of life for the Marshallese. Reef fish are an important food source for the Marshallese, especially on the outer islands. Population pressures Reef stocks around Majuro, especially the D.U.D. area, are largely exhausted due to population pressures. Other areas near large populations have also been severely depleted. This is evidenced by fish catch, subjective observation, and changes to the species diversification of the reefs. As such, development of fisheries projects for this area should be carefully planned and monitored to avoid over-fishing to non-recoverable levels. Severe depletion of reef fish is detrimental to the overall health of the coral reef environment. A damaged coral reef environment limits its value for other uses, such as recreation and tourism.

There is little quantitative information on fish stocks and rates of change for these stocks. This is an area that must be further studied so that the resource can be properly sustained and managed. Fish stocks need to be maintained for the sustainable development of both the subsistence economy and the cash economy.

Shellfish/Mariculture

The pristine reefs, shallow passes, and lagoons in the Marshall Islands provide an excellent opportunity for mariculture development. Mariculture opportunities that might be developed for both the local and export market include: giant clam (Tridacnidae), small clams species, sea sponge (sp. Spongia *offinalis* ssp *mollisima*), seaweed, black-lipped pearl oyster, and trochus. Other options for mariculture such as mullet, sea shrimp, and lobster may have potential but their feasibility for development in the Marshall Islands has yet be studied. To date, giant clam, sea sponge, seaweed, and black-lipped coral, and trochus have been experimented with.

Natural populations of giant clam, Tridacnidae, and small clam species are declining. The rates of decline are related to the proximity of human settlements (SPREP, 1989). They are rare near the urban areas of Ebeye and Majuro and more common on the isolated uninhabited outer atolls.

Giant clams are a historically important traditional seafood in the Asia-Pacific area. The popularity of giant clams have led to their biological and economic extinction in many areas. Severe depletion has occurred in heavily populated areas of the Philippines, Japan, and Indonesia. Some parts of Micronesia are also becoming severely depleted. Parts of the Marshall Islands have also seen a reduction of giant clam populations. (SPREP, 1989) A market for the juvenile clams has also developed from the U.S. and European zoos, aquariums, and private owners who want seeds for their aquariums. The cultivation of giant clams on the Marshall Islands' coral reefs provides an opportunity to replenish marine resources as well as develop a local industry to meet a potentially lucrative export market.

Giant clam cultivation has already been undertaken by joint venture of the RMI government and a local private business. In addition, one local private business has initiated a mariculture enterprise.

These ventures have been conducted as farms or hatcheries. Another approach may be to introduce mariculture in the form of sea ranching. In this way the desired mariculture species is planted on the reef flat and may serve as both a contribution to the subsistence lifestyle of the community and as a cash crop.

Copra

There are approximately 20,000 hectares of coconut plantations, of which approximately 16,000 hectares are productive. Copra processing by the government subsidized Tobolar Corporation is the only manufacturing currently operating in the Marshall Islands. Copra production is a traditional source of income, however, income from this sector has declined as the result of falling world prices and low production. The copra plantations have aged and are inadequately maintained. Many of the coconut trees need to be replaced by younger trees.

The low production results from several factors, including: low prices, lack of storage facilities, improper drying, and lack of adequate transportation facilities. The low world price is particularly influential as it creates a disincentive to increase production.

The development of other products from the coconut plantations is a viable option. Soap manufacturing, for example, is presently under consideration by Tobolar. Coconut is also an important traditional food resource.

Agriculture

Other agriculture resources, such as breadfruit, taro, banana, pandanus, and papaya might be also be exploited. Existing crop tree plantations may need to be re-vitalized through new tree planting and improved soil management. These resources would be an important contribution to the economy as a cash crop and a means of increasing import substitution. They would also increase local supplies of nutritional foods.

Special Natural Areas

In 1988, at the request of the RMI, a multi-disciplinary team of scientists and planners conducted a field survey of the biological diversity and ecosystems of six atolls and one island in the northern Marshall Islands. The study identified two pristine northern atolls, Bikar and Bokaak (Taongi), as potential national preservation areas. Bikar and Bokaak are both uninhabited. Bokaak is a rare and perhaps only example of a completely natural, unaltered, semi-arid atoll ecosystem remaining in the world (SPREP, 1988). The atoll is a rookery for at least 20 species of sea and migratory shorebirds. As a breeding ground for many of these species, Bokaak is a rookery of national, regional and international significance. Nesting sea turtles are also found at Bokaak. Bikar is noted as an important breeding ground for Green Turtles and seabirds. The study team recommended that both Bokaak and Bikar be considered for nomination as World Heritage sites.

The pristine reef areas combined with the historical and cultural resources of the outer island provide the Marshall Islands with a valuable basis for upscale marine and nature-based tourism. The 1988 biological diversity study also identified Taka and Wotho atolls as potential National Park sites. Under national park Status the atolls can be managed so as to yield an economic base while sustaining natural resources. The Wotho local government has expressed an interest in this type of development.

Mineral Resources

Mineral resources contained in the cobalt-rich manganese crust beneath the ocean waters of the RMI may be a source of potential long term economic development. Researchers from the University of Hawaii and the East West Center conducted a study on the feasibility of cobalt-manganese crust exploration in 1989. They concluded that the development potential of the cobalt-manganese crust in the Marshall Islands was among the three highest rated areas in the Pacific and perhaps the world. No ocean extraction of these minerals, however, is considered likely before the year 2000. Questions of mineral rights ownership will need to be resolved if private exploitation of the resource is to be expected. (Callies, Johnson, 1989)

Cultural/Historical Resources

The cultural and historical resources are numerous and varied. These resources include historic and pre-historic resources found on the land, in inter-tidal areas, and submarine sites. Archaeological and historical sites of indigenous people and other sites, up to and including World War II, are all recognized by the RMI as important resources to the Marshall Islands.

Sustainable development is an integral aspect of the cultural heritage of the Marshall Islands. Traditional fishing and resource management practices often recognize ecological patterns and adjust utilization of resources accordingly. Traditional fishing methods are generally less costly to practice than modern methods. These practices can be combined with modern fisheries and mariculture practices to lay a foundation for sustainable development. For example, many food resources might be obtained through subsistence harvesting of certain resources and other resources reserved as cash for purchase of material goods.

B. Patterns of Economic Growth

The RMI under the U.S. administered United Nations Trusteeship received complete funding for all government activities. The Trust Territory (T.T.) Administration was responsible for enhancing the living standards in the RMI. The T.T. Administration made some improvements in health care, public utilities, education, and transportation. However, the T.T. administration did little to promote locally based economic development. This, in conjunction with a declining copra industry and low revenues, has left the Marshallese people dependent on government jobs and subsidies.

Compact Assistance

Presently, the RMI relies on U.S. aid obtained through Compact funds. The Compact funds are structured into specific grant categories. The grants accrue to the National Government, Kwajalein Atoll Development Authority (KADA), and Kwajalein landowners. In fiscal year 1990 the RMI government received U.S. revenues totalling approximately $56 million dollars. Domestic revenues amounted to approximately $24 million. This U.S. aid therefore amounts to approximately 70 percent of the revenues of RMI.

The purpose of the Compact grant assistance is to provide funds for current operations, infrastructure development and maintenance in the capital account, achieving self-sufficiency in energy production, contributing to the operation and maintenance of the communications systems, surveillance of the maritime zone, health and medical programs, and scholarships to fund post-secondary education. Program assistance provides the Marshall Islands with a continuation of a variety of federal services and programs as well as technical assistance.

The term of the Compact is 15 years and is re-negotiable at that time. Funding to the primary block grant will be reduced by approximately $4 million in the second five years of the Compact agreement. It will be reduced an additional $4 million in the final five years of the agreement. Aid through continuing programs, program specific grants, and project specific technical assistance provides additional assistance to the RMI government.

The RMI government employs approximately 34 percent of the working population.

Economic Imbalances

The reliance on U.S. aid and other foreign funding has created disparities between the monetary and subsistence sectors. Certain aspects of developed country lifestyle have emerged. This lifestyle has not been matched by local productive capacity. This has resulted in consumptive patterns reliant on imports and in disparities between urban and rural income and living standards.

The ratio of the value of imports to export is high, about 16:1. There exists a heavy dependence on the import of consumer goods, raw materials, and capital goods. In 1988, imports exceeded exports by $31.7 million.

Foreign debt has been incurred from several small loans for a variety of development projects. The current debt is approximately $85 million, with debt service payments between approximately $13 and $14 million. There is presently no balance of payments problem due to the Compact assistance.

Labor Trends

The supply and demand for labor has been adversely affected by the high population growth, government transfers and the reliance on the public sector as the main economic catalyst. Between 1973 and 1988 the labor force grew from 7,558 to 11, 488. This growth along with increase employment in the social welfare-oriented public sector has resulted in a low level service-oriented labor population. This has drawn labor away from traditional productive occupations, such as fishing and agriculture. It has also contributed to the lack of entrepreneurial skills and development of applicable vocational/technical skills needed for service and production activities.

The total employed population of 10,056 is fairly evenly split between the private, 33.5 percent and public sectors, 33.8 percent and 24.7 percent self-employed. About two-thirds of the employed population are found in the two urban centers of Majuro and Ebeye. The employed population represents 87.5 percent of the labor force.

Table 1: Employment by Sector

Year	Public	Private	Subsistence	Self-Employed
1973	1,500	1,834	2,269	NA
1988	3,392	3,369	2,882	2,484

Source: 1988 Population and Housing Census, Marshall Islands, 1988

Note: NA means that Data was not available.

Public sector workers are employed by the three main branches of government, agencies, and statutory authorities. Occupations are in the areas of community, social and personal services, construction, transport, communications, and electricity and water.

A number of small businesses also provide employment. Private sector employment is in areas such as wholesale and retail (including trade, hotels, and restaurants); finance, business services, construction, and insurance.

Self-employed and subsistence workers are employed in agriculture (primarily copra), and the fishing sectors, handicrafts, wholesale/retail, and construction.

Unemployment has been on the increase since 1980. It is expected to rise further if economic structural inefficiencies are not corrected and new investment is not attracted to RMI. In 1988 the total unemployment rate was 12.5 percent compared to 9.7 percent in 1980. More than 70 percent of the unemployed were men and most of these men were between the ages of 15 and 29. The unemployment rate is higher in the urban areas, reaching 17 percent for Majuro and 14.6 percent for Ebeye.

SECTORAL ANALYSIS

The economic sectors of significance to the RMI are discussed below.

Fisheries/Mariculture

The government has taken on the responsibility of investing in this sector by participating in joint ventures and has undertaken feasibility studies to assess the future possibilities for tuna processing, transshipment, and canning. Joint venture operations have included: fish base and long-line fishing operations, purse seiner fishing operations, and reef fishing. The long line and purse seiner and long-line operations are considered to be in a start-up phase with some operational difficulties. They are expected to provide long-term economic benefits.

Recently conducted feasibility studies endorse the development of pelagic fish processing activities. The government is studying opportunities for a joint venture tuna cannery in Majuro. The proposed cannery provides an opportunity for multi-disciplinary planning and the potential integration of agriculture development projects. Timely communication and planning among the concerned government agencies can mitigate the impact of such a project on other economic sectors, such as tourism, and on environmental quality. Environmental quality concerns could be degradation of water quality through poorly located, or inadequately treated, waste water discharge, and offensive odors. The solid waste from the cannery operation has potential to be used in the agriculture sector as meal. Employment of the local labor force and training needs and opportunities can also be identified in the planning process.

Mariculture development has also been undertaken by the government in the form of joint ventures and the promotion of sea ranching. Giant clam and trochus are the primary products under development. These are young projects and though a very small number of exports for the aquarium market have been recognized, exports for food markets are further down the road. There is also a private giant clam venture underway.

A pilot project at Callalin Atoll by researchers at the College of the Marshall Islands is studying the economic potential of seaweed production in the Marshall Islands. The species used, *Eucheuma*, yields an additive used in the food and pharmaceutical industries, among other commercial applications. Early results are very encouraging. The seaweed has been successfully cultivated in large quantities and with a quality suitable for export. World prices for the product are high, $1000 per ton, and are expected to remain high.

Copra

This industry has been in decline for the last several years, primarily as the result of falling world copra prices. The industry will continue to provide an economic base to the Marshall Islands, but unless world markets improve, it is not expected to be a major force in economic growth. Presently the purchase price is subsidized and the government undertakes coconut replanting.

Other Agriculture

There is presently little activity, except some subsistence activities, in the agriculture sector. The sector's greatest potential is to fulfill the need for import substitution activities. There is a general lack of awareness of the potential of small-scale agriculture in the Marshall Islands. There are a small farm in Laura and several home gardens. The Resource and Development Department does employ approximately 20 extension agents, mostly assigned to the outer islands. These agents are not yet used to their full potential.

The processing of breadfruit and taro into chips is one development project under consideration. Other agricultural products such as bananas, papayas, and pandanus might be exploited. The pandanus in the Marshall Islands is well regarded for its flavor. Pandanus is not edible in many other parts of the world.

Increased use of composting to enhance soils and hydroponic agriculture techniques have potential application in the Marshall Islands. Composting is an attractive option because it has the added benefit of using wastes that would otherwise be landfilled.

A pilot poultry project, was recently established on Majuro to determine the economic feasibility of sustainable egg production for Majuro. The project will utilize local feed sources, such as fish meal and copra, to supplement expensive corn meal and wheat.

Tourism

Though the Marshall Islands has the cultural and natural resources to attract tourism, there has been little activity in this sector. Given the current lack of facilities, transportation difficulties, trained human resources, and lack of recognition by the overseas tourism industry, this has been appropriate. Properly planned, low-impact tourism has the potential to improve the economic base with a minimum negative of impacts, as such further development of this sector is expected. Private investment in this sector has not yet reached expectations. In order to encourage low-impact tourism, the RMI government is considering a demonstration project on one of the outer islands.

C. Demographic Trends

During the first half of this century the population levels in the Marshall Islands were relatively stable. The first recorded census in 1920 enumerated the population at 9,800. The population has steadily and dramatically increased since the end of World War II to 43,380 (1988 census). This represents an average annual increase of about 4 percent. The increases are attributed to improved health care, higher fertility rate and lower infant mortality, a lack of war, as well as other factors. At the present rate of population increase the population will double by the year 2005, or in approximately 17 years. The demographic data used in this report is from the 1988 Census Report.

The country's total population lives in its two urban centers of Majuro (19,964) and Ebeye (8,324). This represents 65 percent of the total population. Both urban centers have very high population densities. Ebeye's population density is among the highest in the world at 59,437 persons/square mile. Majuro population density on the entire atoll is 5,244 persons per square mile, but 28,724 persons per square mile in the Dalap-Uliga-Djarrit (D.U.D.) area.

Table 2: Population and Average Annual Growth

Census Year	Population	Average Annual Growth (Percentage)
1920	9,800	---
1925	9,644	-0.3
1930	10,412	1.5
1935	10,446	0.1
1958	13,928	1.3
1967	18,925	3.4
1973	24,135	4.1
1980	30,873	3.5
1988	43,380	4.2

Source: 1988 Population and Housing Census, Marshall Islands.

The high urban populations are the result of both high fertility rates and internal migration. The urban centers particularly appeal to the younger population (19-24). The population of the Marshall Islands is among the youngest in the world; 51 percent of the population is less than 15 years of age. In most developing countries the population under the age of 15 years is around 40 percent. In developed countries it is between 20 and 30 percent. With an over 65 population of 2.9 percent this leaves a working population of just 46.1 percent.

The RMI population has demonstrated a considerable level of mobility. On average, one in four Marshallese moved between islands/atolls during 1980-1988. Migration to the urban areas from the outer islands is evident, however, net migration accounts for only 7 percent of Majuro's population increase. The migration into Majuro is assumed to be motivated by a number of factors including: economic factors (the search for cash employment), social factors (access to health care, education, housing), and socio-cultural factors (youth dissatisfied with rural opportunities for recreation). Out migration from Majuro back to the outer islands may be the result of dissatisfaction with lack of employment opportunities, desired social benefits for which they went to Majuro (e.g. health care) have been received and are no longer needed, and frustration of sustaining an urban life.

In migration to Ebeye seems to have stabilized, perhaps indicating a recognition of the population limit of the island. During 1980-1988 net migration to Kwajalein atoll was 187.

The Compact agreement allows for free immigration of Marshallese into the United States. Data on migration to the United States is not yet available, however, the free access to the United States can have significant implications for the RMI.

Table 3: Urban and Rural Population Densities

Area	1980		1988	
	Land (square miles)	Population (square mile)	Land (square miles)	Population (square mile)
Urban				
Majuro	3.75	3,331	3.75	5,244
-D.U.D.	0.51	16,825	0.51	28,724
-Remaining	3.24	990	3.24	1,548
Kwajalein Ebeye	0.12	54,408	0.14	59,457
Total Urban	3.87	4,641	3.89	7,195
Rural	66.18	195	66.18	233
RMI	70.05	441	70.07	619

Source: 1988 Population and Housing Census, Marshall Islands, 1988

The described demographic trends have a significant impact on the environmental and social situation as well as economic development. The large number of children under 15 places a great burden on the working age population and the already stressed educational system. The overcrowding due to the rapidly growing population has resulted in classic public health problems associated with developing countries and overpopulation.

The large urban populations stress limited supplies of safe water and availability of sanitation facilities. Communicable diseases associated with poor water and sanitation are among the leading causes of childhood morbidity. The leading causes of childhood morbidity include: infectious and parasitic disease, skin disease, gastrointestinal diseases, diseases of the respiratory system, and nutritional diseases. Diseases of the respiratory system are also related to population conditions as they are often associated with overcrowding. Nutritional diseases can also be associated with poor economic status associated with large under and unemployment populations. This is also strongly associated with a growing preference for imported foods over healthier local foods.

Finally, the local economy cannot support the economically active population. The growing young population is critically adding to the already severe employment problems.

D. Natural Resource and Environmental Issues

Natural resource and environmental issues center around the high population densities and continuing population growth. The effects are particularly obvious in the urban areas, but are also clearly visible in the outer islands as well. The atoll setting does not have the capacity to continue to support the existing urban populations with an adequate supply of safe water or locally produced food stuffs. Some outer islands face localized population pressures in the village centers, even when the entire atoll may not be stressed. Also, some outer islands may be affected by population migrations with the young productive age group migrating to urban areas leaving the remaining community with weakened capabilities for the subsistence lifestyle. Major environmental issues include: overpopulation/overcrowding, safe drinking water supply, marine water quality, solid and hazardous waste disposal, domestic and commercial waste water disposal. These are primarily issues of public health, compounded by depletion of land and marine resources. Resource depletion through the unsustainable development of fishery resources is also of concern. There is qualitative evidence of significant depletion of reef fish stocks and shellfish in certain areas. Land resources are also being stressed.

Coastal degradation resulting from urban pressures and inappropriate coastal developments is increasingly evident. The limited land area along with inadequate planning mechanisms have encouraged inappropriate development and allowed the urban pressures to go unmitigated. The lack of a coastal zone management plan and inadequate consideration of environmental impacts in development planning will exacerbate the impacts from future projects. The small land area and complex coastal processes require analysis of island-wide impacts. Lagoon water quality near large populations has also been degraded from poor sanitation and uncontrolled discharges of wastewater. Coastal degradation affects living and non-living resources. Loss of land through erosion, sedimentation of coral reefs, degradation of coastal water quality, and the loss of biodiversity are all closely related.

The negative impacts of development adversely affect the health of the society through potential exposure to contaminated water and a decrease in the available quantity of local foods. Long term economic development is hampered by the depletion of renewable natural resources.

The root causes of these issues are evidenced by the above described demographic and economic trends. Environmental quality will continue to be impacted by population growth. This will occur in three ways: direct pressure on the resources of overpopulated atolls (including land and water resources), and pollution from some types of economic development, destruction of resources to complete development projects (dredging of construction materials, filling of marine areas). Resources will be impacted from overpopulation and economic development due to over-exploitation of food resources, overuse of water supplies, and contamination of marine and fresh water.

The transition to a cash economy, increasing population, and lowered environmental quality (including indiscriminate solid waste disposal, water supply and sanitation facilities) have had a direct, adverse impact on the health status of the population, particularly of mothers and children. Infant mortality is 63 per 1000 as an average for the population. This is the second highest rate in the Pacific, in contrast to developed country rates of 8 to 12 per 1000. Malnutrition is increasing among children, accounting for 11 percent of pediatric admissions to the hospital during the period between

1987 and 1989. Malnutrition was accountable for 17 percent of childhood mortality for children under 5. The leading cause of infant mortality is prematurity, which is associated with maternal health and the level of pre-natal care. Pneumonia and diarrheal diseases are also among the leading causes of infant mortality. These causes are easily related to environmental and nutritional conditions. A decline in breastfeeding has been observed along with an increase in improper and inadequate bottle feeding. Communicable diseases associated with poor water and sanitation are among the leading causes of childhood morbidity. The leading causes of childhood morbidity include: infectious and parasitic disease, skin disease, gastrointestinal diseases, diseases of the respiratory system, and nutritional diseases. Diseases of the respiratory system are also related to population conditions as they are often associated with overcrowding.

In the adult population increased incidences of respiratory ailments, including tuberculosis, have also been observed. The prevalence of diabetes is also increasing rapidly. Estimates from the 1988 census indicate 25 to 30 percent of the population suffer from diabetes. The rate is much higher for the population over 55, approaching 65 percent. These health problems result from the environmental conditions and the socio-economic conditions that have led to an increased preference and reliance on imported foods. There is a lack of understanding, and in some cases a lack of financial resources, to select a nutritional diet from imported foods and available local foods.

Socio-cultural impacts of the growing population and urban population which have been occurring rapidly in the recent past, are impacting traditional family systems and the goals of the young population. Limited resources in the cash economy places stress on the extended family. The traditional roles of the young men and women do not apply easily to the urban environment, resulting in new social problems, including: alcoholism, juvenile delinquency, child and spouse neglect, and students dropping out of school.

The increasingly large youth population places increasing stress on the educational system. Limited human resources, equipment, and supplies have constrained the education field. The educational environment is adversely affected by the lack of water and sanitation facilities. The poor physical environment is not conducive to optimum learning opportunities. Poor nutrition levels are known to adversely affect academic achievement. The impact of the nutritional status of the Marshallese child on academic achievement is currently being studied.

The costs of addressing the needs of the health and the education sectors are growing rapidly while the funds available are decreasing. Population pressures on these sectors continue to increase. There is an evident need to increase education, health services, and the general living environment if the country is going to be able to improve its economic condition.

Environmental quality and resource issues have impacted economic development in three principal ways: (1) low environmental quality in Majuro has created a bad first impression (especially affecting tourism potential); (2) unreliability of basic water supplies; (3) lack of adequate waste disposal facilities. Fresh water supplies have been unreliable, even though the southern Marshall Islands receives approximately 120 inches of rain per year. There is a definite north-south gradient of rainfall in the Marshall Islands with increasing rainfall to the south. At Bikini, in the northern Marshall Islands, rainfall averages approximately 53 inches of rain per year. System deficiencies, catchment area not keeping up with supply needs, and limited storage capacity hinder improvements to the water supply situation.

These environment and resource issues have had adverse impacts on the health and education sectors and also impacts the economic sector. Without a healthy educated population, human resources, economic development cannot be sustained.

Economic development also has a positive impact on the environment through the improvement of the basic infrastructure. Water and sanitation improvements are obvious examples. Properly planned and managed development projects in the fisheries/mariculture and agriculture sectors that also replenish natural resources depleted by over-exploitation are other examples.

Climatic Change

The climatic change issue is addressed separately to emphasize its importance and to note its external root causes. Its global warming and sea level rise components are of particular concern. This issue potentially threatens the ocean resources, and indeed the very existence, of the Marshall Islands. While the root causes of climatic change lay outside of the Marshall Islands, the RMI must consider it in its development planning. On an internal basis, the implementation of a complete environmental management strategy is the most appropriate response.

III. RESPONSES TO DEVELOPMENT/ENVIRONMENTAL ISSUES

The responses to development and environmental issues have come from various levels of government, College of the Marshall Islands (the local college), and the private sector. These responses endeavor to address economic development, public health issues, social issues, environmental management, resource protection, and preservation of the country's cultural heritage.

The government has encouraged private sector development of certain sectors, including public utilities, commercial fisheries development, and mineral resource development.

A. Government Policies, Legislation, and other Developments

The RMI government has recognized the fragility of the nation's island environment and the importance of its environment natural resources to its people and culture. They also recognize the importance of its natural resources and environmental quality to its continued economic development. It has dedicated resources to the maintenance and improvement of the public health and the environment. Several policies address the natural resource and environmental issues. The First Five Year Development Plan (1986-1991) expressed the government's intention to make preservation of the environment and the natural beauty of the Islands a major national objective. The development plan identified four categories of development strategies as follows:

- economic development
- manpower and employment
- population and social development
- regional development
- preservation of cultural and environmental heritage

To encourage economic development, and as an attempt to improve efficiency of certain government operations, the RMI created state-owned enterprises in a number of public utility areas, these include: the water and sewer operations (Majuro Water and Sewer); power production (Majuro Energy Corporation), Capital Improvement Project Management, and telecommunications. The utility companies, though still heavily subsidized, are improving services at a lesser cost to the government.

The RMI is also a member country of regional and international organizations committed to addressing environmental protection and resource management issues. The RMI is a member of the South Pacific Regional Environmental Program, World Health Organization, and the Alliance of Small Island States (an organization formed to address climatic change issues). The are signatories to the SPREP Convention and SPREP Dumping Protocol. They are also members of the South Pacific Commission and the Asian Development Bank.

National Population Policy

A national task force recently developed a national population policy, which has received Nitijela endorsement. The task force was convened as a result of the 1988 Census and growing government recognition of the implications of the rapid population growth on the society and economic development of the Marshall Islands. As such this policy addresses the varied aspects of socio-economic development and not simply population control. The Cabinet endorsed policy was extensive and included 27 major policy recommendations.

Briefly summarized, these policy recommendations addressed population policy as it relates to: economic development environmental protection, health issues, education, and other social programs. The policy stressed a general policy of spatially integrated development. Spatially integrated development refers to development that incorporates physical planning techniques and encourages economic development in rural and urban areas. A number of policy recommendations gave priority to human resource development.

Specific recommendations were made for population control. Among these are the establishment by law of an age of consent of 16 years and a minimum legal age of marriage of 18.

Environmental Legislation

The Nitijela, RMI National Legislative body, has enacted significant legislation regarding natural resources and the environment. Until recently, legislative efforts focused largely on public health and environmental safety concerns. More recent legislation and regulations have focussed on overall environmental quality and resource management. Through this legislation, the routine management and conservation of the environment has been placed under two Government funded statutory authorities: The RMI Environmental Protection Authority (RMIEPA) and the Marshall Islands Marine Resources Authority (MIMRA). Much of the information regarding the status of environmental legislation was obtained from an internal RMIEPA legal report.

The National Environment Protection Act (NEPA), enacted in 1984, established the independent Environmental Protection Authority and set out the objectives, policies, functions, and duties of the Authority. The objectives are broad and include: (1) the study of the impact of human activities on the natural resources; (2) the prevention of the degradation or impairment of the environment, (3) the regulation of individual and collective activity in such a manner as to ensure the people safe, healthful, aesthetically and culturally pleasing surroundings; and (4) the preservation of important historical, cultural, and natural aspects of the nation's heritage, maintaining at the same time an environment which supports multiplicity and variety of individual choice. The EPA was given broad powers to promulgate and enforce regulations to fulfill these objectives. NEPA also requires the preparation of environmental impacts for every governmental action significantly affecting the human environment. NEPA also retained Trust Territory environmental regulations until they are revoked or modified as appropriate for the Marshall Islands.

RMIEPA programs include: water quality, monitoring of public water supplies, pesticides, solid and hazardous waste management, toilet facility, village environmental health, inspections sewage disposal, earthmoving, and public education. Regulations specific to some program areas have been promulgated, including: Earthmoving, Solid Waste Regulations, Toilet Facilities and

Sewage Disposal, and Draft Pesticide regulations and are in effect. Draft Water Quality Regulations have been drafted and approved by the RMIEPA Board. The water quality regulations include provisions for the oil spill control and discharge of wastes into marine waters. Draft Air Quality Regulations have also been proposed. These regulations are expected to continue through the promulgation process and to be presented to Cabinet by December, 1991. A permitting system has been established for each of the regulations.

The RMI has placed a special emphasis on the area of solid and hazardous waste management and earthmoving activities. Earthmoving activities in coastal areas is of particular concern.

The RMIEPA's effectiveness may come into conflict with the traditional land tenure system which resists government control of land through environmental regulations. Public understanding of the environmental consequences of unplanned development and uncontrolled increases in population and infrastructure is limited. Consequently, public education is an important, high profile activity of the RMIEPA.

The Nitijela passed the Coast Conservation Act (CCA) in late 1988. The act provides for: (1) a survey of the coastal zone; (2) preparation of a coastal zone management plan that regulates and controls development activities within the coastal zone (within 3 years of the enactment of the act); and (3) formulation and execution of schemes to coast conservation. The CCA also provides for a director who may also establish a permit and environmental impact system consistent with the Coastal Zone Management Plan. At the present time, the RMIEPA General Manager is the designated Director. The Act is just two years old and has yet to be implemented.

The RMIEPA has will continue to develop regulations pursuant to NEPA and CCA in the coming years. Trust Territory regulations, that are now in force under NEPA, still to be revised and adapted specifically for the Marshall Islands are the Public Water Supply Systems Regulations and Freshwater and Groundwater Regulations.

New regulations for environmental impact assessment, categories of development within coastal zones, and foreshore use control and restrictions will be developed pursuant to CCA.

MIMRA was established by the Marshall Islands Marine Resources Authority Act in 1988 to provide for the exploration, exploitation, regulation and management of marine resources. MIMRA has power and duty to: (1) conserve manage and control marine resources, (2) establish an exclusive economic zone management program, (3) issue fishing licenses and issue licenses for the exploitation of the seabed and subsoil of fishery waters, and (4) negotiate foreign fishing agreements with the approval of cabinet.

Other RMI legislation related to management and conservation of the environment are: (1) The Marine Resources Act which is based in Trust Territory Code of the 1960s and 1970s; (2) The Marine Resources(trochus Act) of 1983; and (3) the Adopted Trust Territory Endangered Species Act of 1975. The Marine Resources Act provides for the control of destructive fishing methods, prohibits killing of marine turtles on land or the taking of their eggs, and sets seasonal and size limits on their capture at sea, etc. It also limits the harvesting of cultivated sponges and sets size and seasonal limitations on the taking of black-lipped mother-of-pearl oysters. The Endangered Species Act prohibits, with certain exceptions, the taking of, engaging in commercial activities with, possession of, or exporting of any endangered or threatened species. The Trust Territory list of endangered

species was adopted by regulation in 1976. These Acts have limited effectiveness due to their source in Trust Territory Code.

The Marshall Islands Historic Preservation Act was just passed in the recent Nitijela session. This Act provides for a Historical Preservation Council which will have the authority to establish regulations for activities affecting historical and cultural preservation and a Historical Preservation Office to enforce those regulations. The Office is administratively connected to the Ministry of Interior and Outer Island Affairs. The Office is not yet functional. Museum staff are currently developing appropriate procedures and regulations for the Office.

A Marshall Islands Protected Areas/Species Conservation Bill has been proposed to strengthen the government's role in resource conservation. The bill would provide for a variety of protective levels. The legislation would seek to balance resource use and protection. A Conservation Areas Unit within the Ministry of Resource and Development will be proposed as a part of this bill.

B. Institutional Development

Many of the institutional developments have already been discussed in the previous section. The establishment of the RMIEPA and MIMRA have provided a strong foundation for the management and conservation of the environment. The establishment of the proposed Conservation Areas Unit and the development of the Coastal Zone Management Plan will further strengthen the environmental management capabilities of the country.

The recently established Historical Preservation Office provides the foundation for preservation of the cultural and historical identity of the Marshall Islands.

A Tourism Commission was established in 1990. This Commission has been relatively inactive.

Implementation of major development projects has been assigned to the Marshall Islands Development Authority, MIDA. MIDA has the responsibility of overseeing and coordinating economic and infrastructure development. Infrastructure development activities include the capital improvement projects (CIP), water and sewer, and electrical generation.

The Kwajalein Atoll Development Authority is specifically assigned to manage development on Kwajalein Atoll through U.S. lease payments.

C. Specific Programs and Projects

The government is currently soliciting input from its ministries and departments for the development of the next five year development plan.

The RMIEPA has a number of special projects in various phases of development. Areas covered include: solid waste management, hazardous waste management, water quality, nature conservation, coastal erosion, public education, and staff development.

Water quality projects underway include development of the water monitoring program and a Rainwater Catchment Workshop, funded by the U.S. Department of Interior. A "Rainwater Catchment Planning, Construction, and Maintenance" pamphlet project has been funded by SPREP. These projects provide both technical assistance, public education, and staff development. SPREP has also funded a project request for environmental education readers. The RMI EPA encourages aluminum can recycling in the community and schools. A can crusher was recently donated by Steinlager Company and delivered by Greenpeace to facilitate this project.

Other projects in the concept paper, or proposal stage, range from a plan for central composting for Majuro, a study comparing impacts of traditional and modern fishing methods, to a request for an environmental engineer to operate the hazardous waste management program (ADB).

The Alele museum conducts a number of educational and public awareness projects. The education television station sponsored by the museum provides a valuable means for cultural, historical, and environmental education.

The museum is collecting and archiving available literature on all aspects of Marshallese life, resources, and history. This collection will provide a valuable resource for planning activities.

The Historic Preservation Office maintains a site register of all historic sites in the Republic. This office also maintains background files on all atolls in the Marshall Islands.

D. Training, Education, and Public Awareness

RMIEPA places a high priority on public education and awareness programs. They stress these areas in their Five Year Plan. Public education and public awareness projects of the RMIEPA utilize the local newspaper, the Alele Museum educational television station, school programs, special EPA sponsored events, and a variety of printed materials.

The College of the Marshall Islands (CMI) provides academic training to the youth of the Marshall Islands. The CMI also conducts research and other studies applicable to development planning. Students have the opportunity to gain hands on experience by participating in these studies.

E. Private Sector Initiatives

Community based groups are essential to the successful management of environment and sustainable development issues. Women's groups in the Marshall Islands have taken a leading role in

this area. Thirteen Women's groups in Ebeye have joined forces and formed a coordinating organization. The objective of the organization is to defend the Marshallese lifestyle and environment. Its activities include the coordination and conduct of community clean-up and educational activities.

The number of private business sector initiatives to enhance sustainable development has been disappointing. The previously described private giant clam farm and an aquarium fish business are among the few private sector initiatives that correspond to government small-scale development strategies.

IV. PLANNING FOR SUSTAINABLE DEVELOPMENT

Sustainable development for the Marshall Islands needs to be considered in a broad sense. The population of the Marshall Islands has long exceeded its indigenous carrying capacity. It is also recognized that there will be negative and positive environmental impacts with continued economic development. The RMI government policy should focus on the minimization of negative impacts and the realization of some positive impacts. The need for self-sustained economic growth has become critical as its economy, dependent on government transfers, experiences Compact funding reductions. Stresses of population growth and threat of resource depletions require that economic development be appropriate and well-planned with a regard for environmental and resource limitations. It is only this way, that the economy will truly be sustained and the environmental and cultural heritage of the Marshall Islands retained for future generations.

A. Prioritizing Sustainability Issues

Overpopulation is the single most critical issue related to sustainable development. This broad issue actually encompasses several other issues that may be addressed in an immediate and concrete manner. The umbrella issue of overpopulation has been addressed in the recent "National Population Policy Paper." The critical environmental issues associated with overpopulation are solid waste management, safe water supply and sewage disposal. Social issues critical to the achievement of sustainability also are closely linked to overpopulation. These issues include human resource development and health maintenance. Earthmoving activities affecting water quality and coastal processes are also of critical concern as many development activities involve some degree of earthmoving. The continued availability of food resources is also a critical issue. These resources are essential both to the country's economic base and its health status.

Given the present public health situation, environmental issues of water supply and sanitation must be given a high priority. Safe water is delivered to the Majuro population by the public water supply system when the raw water supply is constant. Due to the lack of adequate water catchment and storage, water hours are a frequent occurrence in Majuro. Rainwater is a common supplementary water source. Unfortunately, catchment systems are often inadequately maintained and often deliver contaminated water. Solid waste management is included in the sanitation classification because management of personal wastes is basic to tackling the overall community solid waste problem. To address these public health issues there must be a sincere dedication of financial resources to the physical management of wastes and to the health and education sectors. The government, private sector, and general population at all levels must gain a higher level of awareness of these issues. This requires the conduct of both short- and long-term educational projects. Coordinated education efforts among government departments and agencies enhances the successful implementation of such programs.

The development of health and educational status of the population requires policy adjustments emphasizing these areas to at least the same degree as capital projects. These areas are important to the sustained success of economic development projects. A trained local labor force will eliminate unnecessary importation of goods and labor. Policy adjustments that give increased priority to small

scale agricultural and fishery projects that increase local food resources and provide alternative cash commodities are necessary.

The issue of coastal degradation is also of high priority. This issue can be addressed without detracting from the priority given to the public health-related issues. The limited land area and the critical importance of the coastal areas to the economic and social viability of the Marshall Islands requires that this issue be addressed concurrently with the other priority issues.

Finally the issue of climatic change must be continually considered and addressed both locally and through international efforts.

Negative environmental and social impacts of development projects are minimized when these issues are considered early in the planning process. Policies requiring timely coordination of planning efforts among relevant government agencies and departments should be established.

B. Constraints to the Sustainable Use of Resources and the Environment

Human resource capabilities, government structure, private sector capabilities, physical infrastructure status, and natural constraints are the major constraints to the sustainable use of resources and the environment. Rapid population growth is considered both as an issue to be addressed and as a constraint to sustainable development. As such, economic development planning needs to integrate population responsive and population influencing policies.

The status of human resource capabilities has already been identified as a critical social issue. The lack of trained population to service and manage economic development limits self-sustaining economic development and stresses limited natural and through importation of labor. Vocational training schemes, poor overall health status, and limited availability of education and training dampen expectations of increased human resource capabilities.

The present government structure and lack of formal policies and procedures for communication among agencies and departments hinders the communication of development planning concerns. The lack of adequate and timely communication results in inappropriately planned projects and contradictory programs. Development schemes that have the potential to negatively impact the environment and natural resources should be discussed early on with the Authorities established to manage these areas.

Development planning requires multi-disciplinary input. Communication between the government sector and the private sector is also insufficient. The private sector is limited in its capabilities by the nature of the economy. The present economy is dominated by the public sector and is highly dependent on foreign assistance. Private industry is primarily service-oriented. This is mainly due to the expenditures from government salaries and construction and infrastructure expenditures. A deficiency also exists in the number of entrepreneurs and production-oriented businesses. Improved government dialogue with the private sector is needed to create an environment which encourages entrepreneurship.

The status of physical infrastructure facilities also contributes to sustainable development constraints. Transportation facilities are the most evident constraints. The movement of goods to and from the RMI and major suppliers and markets has been a hinderance to productive sector development. The provision of goods and services to the outer islands has also been an expensive service of the government. Air and sea transportation to the outer islands is government subsidized. Communication between urban centers and some rural areas can only be accomplished by radio.

The present water supply systems in urban areas are strained to produce a year-round 24-hour supply of water. Manufacturing and productive industries generally require large supplies of fresh water. The development of skimming (horizontal wells) in Laura provides a start toward addressing this issue.

The Marshall Islands geographical location and population dispersion are also major constraints to economic development and to the provision of social services. The high costs of transporting imports and exports affect the RMI's ability to compete in world markets. The difficulties and costs of transportation within the RMI are also obvious. Lack of, or minimal, transportation facilities in the outer islands hamper outer island export product development. Limited land area discourages development in the agriculture sector, yet opportunities in this area are promising.

World market prices have their greatest influence on the copra industry. Other sectors have yet to be adversely affected by world prices. World tuna price fluctuations have the potential to significantly influence the economy of the RMI.

Coastal degradation is minimized through coordination and planning among the relevant agencies. In this way, appropriate development project selection and siting is achieved. This coordination and communication of development plans is often seen as slowing down the development process. In fact, such early communication and coordination can accelerate the process and improve the project by identifying potential problems and opportunities. Lack of awareness of these benefits by development agencies continues to constrain sustainable development planning.

Finally, sustainable development and use of resources and the environment require an improved planning, project implementation, monitoring and evaluation process. These capabilities are weak or absent in most RMI departments. No coordinated planning process is transparent. Inadequate monitoring and evaluation leads to continuation of inappropriate projects and abandonment of successful projects. Without follow-up, transfer and improvement of capability are frustrated.

C. Opportunities for Sustainable Development

Opportunities to move toward sustainable development are available to the Marshall Islands. The majority of the described constraints can be addressed with both short term and long term initiatives. The transition from a public sector dominated economy to a productive self-sustaining economy depends on multi-disciplinary program planning and implementation. The self- sustaining economy will result from spatially integrated development that emphasizes human resources.

Recognition and inclusion of the cultural heritage in development planning is essential. The subsistence economy sector employing both traditional practices and modern technology enhanced practices, can be blended with the cash economy. The economic development and provision of social services needs of the of the rural and urban sectors must be individually and jointly addressed.

Policy adjustments must be made to achieve sustainable development and address the umbrella issue of overpopulation and its associated environmental and social issues. A shift to support of the development of human resources provides a foundation to support economic development. The policy adjustments are necessary in two major areas: (1) direct support of human resource programs, eg. health and education; and (2) indirect programs through the support of development projects that provide training opportunities.

Small-scale agriculture and fishery projects, like those described in previous sections, provide opportunities to address the development of cash products and contribute to the immediate needs of for import substitution of food products.

Larger-scale development may also be considered, but, again inclusion of a training component is essential. These projects must be planned in an interdisciplinary manner so that potential environmental and social impacts can be avoided or mitigated.

Human resource capabilities can be addressed in a number of ways. In regards to technical training, vocational training should be emphasized, but managerial skills must not be neglected. Short-term improvements, development projects requiring a training component, are key to developing trained personnel. This training must be monitored and evaluated. In the medium term longer training programs and in-service education opportunities should be encouraged. The Improvement of the education system can be stimulated through teacher training, increased funding, efforts to involve communities and raise community awareness of the importance of education, and the involvement of community groups in the educational process.

The importance of the improvement of health conditions, particularly of the mother and child, must be continuously stressed. Health service programs must also include education and awareness programs to supplement direct preventive health services.

Environmental education, particularly as it relates to public health and sustainable development should be addressed in routine public awareness programs, special projects and formal education. Opportunities for public education can be incorporated into open discussion of development projects. Discussion of the potential positive and negative environmental impacts and identification of mitigation requirements creates an obviously applicable learning opportunity.

Increased and early communication among the government department agencies improves the planning effectiveness of a given project. Development arms of the government need to be made aware that communication and joint planning can improve a potentially viable project's success. They should also be aware that project implementation is not slowed by such communication and is often hastened since the environmental review process is occurring concurrently with other planning and design processes.

The RMIEPA plans to develop a coastal zone management plan and related regulations and procedures. Some of this project will be conducted in-house. RMIEPA is requesting external

funding to provide technical assistance for this endeavor. The technical assistance will both accelerate the project and improve its effectiveness. This assistance is strongly recommended due to the critical importance of the coastal areas.

Technical assistance to quantitatively assess the marine resources, particularly fisheries, is required. Present government policy assumes adequate resources to continue desired projects. Quantification of the resources would allow for more reliable and responsible harvesting. In the case of migrant species, such as tuna, region wide resources assessments should be undertaken.

Regional Strategies

The RMI recognizes the importance of regional strategies for the protection of the environment and natural resources. Regional cooperation toward improvement of the regional economy is also supported. The pressures on individual countries within the region are similar.

Resource protection strategies should build upon existing treaties and conventions as well as develop new agreements. It is particularly important to address the foreign exploitation of fisheries to ensure that fisheries exploitation adequately benefits each country's own population and that the resources will be available on a sustained basis.

The availability of technical assistance from the regional academic and research institutions should be brought to the attention of the appropriate national government agencies. Mechanisms to transfer technical assistance and resource information should be easily implemented.

Trade agreements among the region's governments to promote trade within the region have the potential to develop both the individual economies as well as the regional economies. Cooperation and coordination of exports result in a build-up of materials and encourages improved transportation of exports. The processing of natural resources within the region improves the efficiency, cost effectiveness, and provides greater returns for the region's countries. Since all nations cannot have processing capabilities, there is an opportunity for regional preferences at the processing location. For example, a cannery could give priority to fishing fleets from regional countries over fleets from outside the region.

Regional environmental protection schemes and conventions provide a strong foundation for regional environmental management. The implementation of these agreements can be enhanced through the provision of guidelines to local environmental and resource management agencies that wish to comply with regional policies.

The availability of technologies to mitigate negative environmental impacts must be continually communicated among the region's organizations and governments. Exchanges among the regions countries about experiences and technologies that are applicable to common issues should be enhanced.

Sources of support for environmentally sensitive projects also need to be identified and/or developed. Technical assistance to governments to incorporate environmental impact analysis early in the development planning and selection of alternative development schemed is needed.

Increased funding levels alone are not the key to sustainable development. Improved efficiency with available funds through proper planning, project implementation, monitoring, is the key. Human resource development through improved environmental quality, addressing of nutritional and environmental health concerns, education, and training provides the foundation for sustainable economic development.

V. REPORT PROCEDURAL MATTERS

This UNCED report was prepared in coordination with the existing Regional Environmental Technical Assistance Project (RETA) that is also sponsored by SPREP and funded by the ADB. The coordination benefitted the preparation of this report by using existing structures, particularly the valuable assistance of the RETA Environmental Management and Sustainable Development(EMSD)/UNCED Task Force. It is the first input to the RETA project and the first output of the EMSD/UNCED Task Force. It will also benefit the RETA project by raising issues for consideration by the EMSD national task force.

The report was prepared by the international consultant, Nancy S. Convard, following the guidelines prepared by SPREP and through the information and comments received from EMSD Task Force members, the local Reta consultants (Martha Crawford, Joseph Riklon), the numerous local contacts, and review of various reports during April 24 to May 8, 1991. A list of consulted agencies, groups, and individuals are identified in Attachment B. The report was reviewed by the Task Force and its RETA/UNCED National Report Subcommittee at its meeting on May 30, 1991. The International Consultant attended the May 30 Task Force Meeting and incorporated immediate comments and clarifications into the Draft Report. Ms. Convard finalized the report in Honolulu, Hawaii and Majuro, RMI, (17 to 22 July, 1991) in consultation with the local consultant. Ms. Convard also made preparations for report's national endorsement during 17 to 19 July, 1991.

The EMSD National Task Force met on 18 July to review the revised draft of the National Report on 18 July, 1991. Ms. Convard then incorporated the final clarifications and comments into the National Report. The EMSD/UNCED National Task Force officially endorsed the UNCED National Report on 19 July, 1991.

The EMSD task force was established by Cabinet Paper 074(91) and includes the following members: Secretary of Foreign Affairs, (Chairman), General Manager, Environmental Protection Authority (Vice-Chairman), Secretary of Resources and Development, Secretary of Health Services, and the Mayor of each municipality that is directly concerned with whatever activity that affects that municipality. The Task force members are identified in Attachment A. The RETA/UNCED National Task Force Sub-committee consists of the Secretary of each ministry; Director, Marshall Islands Marine Resources Authority; Deputy Director, Marshall Islands Development Authority;, Chief Executive Officer, Alele Museum; Mayor of Ebeye; Mayor of Majuro; and the Chief, Office of Planning and Statistics. The members are also identified in Attachment A.

The RMI EPA staff provided valuable logistical and administrative support to Ms. Convard during her visits to the RMI.

ATTACHMENT A
EMSD TASK FORCE MEMBERS

Presidential Task Force on Environmental Management and Sustainable Development

* Secretary of Foreign Affairs (Chairman): Mr. Jiba Kabua
* General Manager, Environmental Protection Authority(Vice-Chairman): Kasuo Helgenberger
* Secretary of Resources and Development: Mr. Donald Capelle
* Secretary of Health Services: Mr. Kinja Andrike

Mayor of each municipality that is directly concerned with whatever activity that affects that municipality.

RETA/UNCED National Task Force Sub-Committee

* Secretary of Foreign Affairs (Chairman): Mr. Jiba Kabua
* General Manager, Environmental Protection Authority (Vice-Chairman): Kasuo Helgenberger
* Secretary of Interior and Outer Island Affairs: Ms. Carmen Bigler

Secretary of Resources and Development: Mr. Donald Capelle

* Secretary of Health Services: Mr. Kinja Andrike
* Secretary of Education: Ms. Marie Maddison
* Secretary of Transportation: Mr. William Allen
* Secretary of Public Works: Mr. Rien Morris
* Director, Marshall Islands Marine Resources Authority: Mr. Danny Wase
* General Manager, Marshall Islands Development Authority: Mr. Steve Muller
* Chief Executive Officer, Alele Museum: Mr. Alfred Capelle
* Mayor of Ebeye: Mr. Alvin Jacklik

Mayor of Majuro: Ms. Amatlain Kabua

* Chief, Office of Planning and Statistics: Jewan Lemari

Local RETA Consultants:

Ms. Martha Crawford
Mr. Joseph Riklon

Notes:

* Indicates consultant met with that Task Force Member; For other Ministries and Mayors, other individuals were contacted due to Secretaries and Mayors being off-island.

ATTACHMENT B
UNCED REPORT PREPARATION CONTACTS

1. RETA/UNCED National Task Force Members

All those identified with an "*" on the previous list.

2. Other Representatives of Government Ministries Represented on the Task Force

Ministry of Resources and Development:
Mr. Gordon Benjamin,
Mr. Michael Konnelios, Assistant Secretary
Ministry of Health Services:
Ms. Jan Alfred
Alele Museum: Dirk H.R. Spennemann, Ph.D.
Ms. Carol Curtis
RMI Environmental Protection Authority:
Ms. Elizabeth Harding
Majuro Atoll Local Government:
Jurelang Zedkaia
Ministry of Interior and Outer Island Affairs:
Mr. Billy Sawej, Chief of Administration

3. Other Contacts

Capital Improvement Projects Office, Pacific Management Services Corporation:
Mr. Donald Piepgrass
College of the Marshall Islands: Larry G. Harris, Ph.D.
Ebeye Public Works Department Director
RMI Environmental Protection Authority Board
Ebeye Women's groups

Note: Many individuals provided valuable input to this report; apologies are extended if any names have been omitted from this list.

SELECTED REFERENCES

Callies D.L., Johnson, C.. *Legal, Business, and Economic Aspects of Cobalt Rich Manganese Crusts Mining and Processing in the Republic of the Marshall Islands*. East-West Center, Honolulu, HI, 1989.

International Union for Conservation of Nature and Natural Resources Conservation Monitoring Centre. *Coral Reefs of the World.* Vol. 3. *Central and Western Pacific.* Cambridge: United Nations Environment Programme, 1988.

Office of Planning and Statistics. *National Population Policy.* Majuro, Marshall Islands: Office of Planning and Statistics, Republic of the Marshall Islands, 1990.

Office of Planning and Statistics. *1988 Population and Housing Census.* Majuro, Marshall Islands: Office of Planning and Statistics, Republic of the Marshall Islands, 1989.

Office of Planning and Statistics. *First Five Year Development Plan (1986-1991).* Majuro, Marshall Islands: Office of Planning and Statistics, Republic of the Marshall Islands, 1986.

South Pacific Regional Environmental Program (SPREP). *Report of the Northern Marshall Islands Protected Areas Study, 7-24 September, 1988.* SPREP, Noumea, New Caledonia; East-West Center, Honolulu, Hawaii. March, 1989.