

Chapter 2

Introduction

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INSULAR RELATIONSHIPS TO THE FEDERAL GOVERNMENT

The U.S.-affiliated tropical islands have a wide range of relationships to the U.S. Government (table 2-1). Two are commonwealths—Puerto Rico and the Northern Mariana Islands (NMI)—having local autonomy but voluntarily associated with the United States. The U.S. Virgin Islands, American Samoa, and Guam are unincorporated territories (to which only certain provisions of the U.S. Constitution have been expressly extended) under the administration of elected Governors. Finally, the Republic of the Marshall Islands (RMI), and the Federated States of Micronesia (FSM) (which, together with the NMI and the Republic of Palau form the former Trust Territory of the Pacific Islands) have signed agreements with the United States to become Freely Associated States.¹

The peoples of Puerto Rico and the territories of Guam and the U.S. Virgin Islands are U.S. citizens, those of Palau and American Samoa are U.S. nationals. Guam, American Samoa and the USVI are represented in the U.S. Congress by nonvoting Delegates. Puerto Rico

is represented by a nonvoting Resident Commissioner. The Resident Commissioner and Delegates sit in the House of Representatives, have a voice in legislation pertaining to their islands, and can vote in Committee. While the territories are eligible for many Federal programs on the same basis as a State, the islanders do not contribute to the national treasury through Federal income taxes,

Determination of U.S. policy for the territories is within the jurisdiction of Congress. Although Congress has given the Secretary of the Interior certain authorities and responsibilities toward these territorial governments (excluding Puerto Rico), and many Federal programs are available to them, the territories are not agencies or instrumentalities of the Executive Branch of the Federal Government.

Commonwealths

A U.S. commonwealth is an autonomous government in voluntary association with the United States. It is responsible for its own welfare and has full legislative authority. Puerto Ricans were granted U.S. citizenship in 1917 and Puerto Rico's Constitution was approved by the electorate in 1952. The Northern Mariana Islands in effect became a commonwealth

¹Although Puerto Rico is a Commonwealth of the United States, it is referred to as "Estado Libre Asociado" or free associated state. This should not be confused with the legal relationship defined by free association with the Freely Associated States in the Pacific.

Table 2-1.—United States Insular Area Relationships

Insular area	Initiation of U.S. administration	Relationship to the United States
Puerto Rico	1898 (ceded to the United States)	Commonwealth
U.S. Virgin Islands	1917 (purchased from Denmark)	Unincorporated territory
American Samoa	1900 (ceded to the United States)	Unincorporated territory
Guam	1898 (ceded to the United States)	Unincorporated territory
Northern Mariana Islands	1946 (U.S. Strategic Trusteeship)	Commonwealth
Marshall Islands	1946 (U. S. Strategic Trusteeship)	Freely Associated State
Federated States of Micronesia	1946 (U.S. Strategic Trusteeship)	Freely Associated State
Palau	1946 (U.S. Strategic Trusteeship))	Strategic Trusteeship ^a

^aExpected to become Freely Associated State in 1987

SOURCE Office of Technology Assessment 1987

in 1978,² but remained officially a part of the Trust Territory of the Pacific Islands until its dissolution in 1986.

Unincorporated Territories

Unincorporated territories are not integral parts of the United States and no promise of statehood or a status approaching statehood is held out to them. Only certain parts of the U.S. Constitution apply to unincorporated territories. And, unlike States which write their own constitutions, the laws and principles that prescribe the nature, functions, and limits of a territorial government are determined by Congress (13).

Guam was annexed from Spain at the close of the Spanish-American War. Although relations between the Government of Guam and the U.S. Government also are conducted under the jurisdiction of the Department of the Interior, residents of Guam elect their own officials. Most aspects of the U.S. Constitution apply to Guam. Similar to Guam, the American Samoa Government is semiautonomous and operates under a constitution adopted in 1960. American Samoa has been administered by the United States since 1900. The U.S. Virgin Islands were sold by the Danish Government to the United States in 1917. U.S. citizenship was granted to Virgin Islanders in 1927,

Freely Associated States

The Freely Associated States, along with the Northern Mariana Islands, comprise the Trust Territory of the Pacific Islands (TTPI), the last of 11 trusteeships established under United Nations' sanction after World War II. Despite preliminary agreements, the Compact of Free Association with the Republic of Palau has not yet received 75 percent Palauan approval in a plebiscite vote and, therefore, has not been approved by the United States or the United Nations. Until the Compact with Palau is approved by the United Nations and the trusteeship is

dissolved, the United States retains its responsibility to promote the economic advancement and self-reliance of these islands.

The trusteeship was intended as a temporary arrangement under which the United States accepted the responsibility of advancing the TTPI—politically, socially, economically, and educationally—toward greater self-reliance, including undertaking obligations to:

... promote the economic advancement and self-sufficiency of the inhabitants, and to this end shall regulate the use of natural resources; encourage the development of fisheries, agriculture and industries; [and] protect the inhabitants against the loss of their lands and resources (Trusteeship Agreement for the United States Trust Territory of the Pacific Islands, Article 6(2)).

The United States also was charged with preparing the Micronesians for a political status of their own choosing.

Civilian administration of the TTPI was the responsibility of the Department of the Interior, but each administrative district was given the opportunity to determine its own form of government and degree of independence from the United States. By January 1981, each emerging entity had installed a constitutional government with democratically elected officials.

The Commonwealth of the Northern Mariana Islands was established and separated from the other existing TTPI entities in 1978, although some relations between the Northern Marianas and the U.S. Government continued under the jurisdiction of the Department of the Interior. Two of the remaining political entities—the FSM (Yap, Truk, Pohnpei, and Kosrae), and the RMI—have signed Compacts of Free Association with the United States; the FSM and RMI compacts were approved by the United States in early 1986 and put into effect at the end of the year.³

Free association allows the polities full control of internal and external affairs while de-

²The Northern Mariana Covenant (Public Law 94-241) was passed by Congress in 1976, but the major part of the Covenant did not become effective until 1978 when the Commonwealth government was installed.

³Because approval of a Compact of Free Association with the Republic of Palau is expected shortly, Palau shall be referred to as a Freely Associated State in the remainder of this assessment unless otherwise indicated.

fense and security responsibilities are delegated to the United States. They become eligible for foreign aid from international organizations, such as the Asian Development Bank. Finally, they are guaranteed a specified level of fund-

ing from the United States (15 years for the RMI and FSM and 50 years for Palau) part of which must be directed to planning long-term economic development.

THE IMPORTANCE OF U.S.-AFFILIATED ISLANDS TO U.S. NATIONAL SECURITY

The U.S.-affiliated islands are of considerable importance to national security, and the United States is committed to their defense and to maintaining lines of communication to and through them. The islands vary in strategic importance, but all represent the U.S. presence in spheres of strategic interest.

The U.S.-affiliated Caribbean islands are of special security significance to the United States, primarily because of their close proximity to Caribbean and Central American countries. Puerto Rico is of particular significance due to the presence of major naval installations there and its location astride major routes of communication. The Caribbean area has been viewed as "America's third border" and, thus, expansion of inimical forces or influence in this area is likely to be viewed with alarm (9).

Although the U.S.-affiliated Pacific islands do not play an important role in current or projected Department of Defense programs, they might likewise be viewed as the United States' fourth border. According to the Annual Report of the Secretary of Defense to Congress for fiscal year 1986, at least 30 percent of U.S. trade is conducted with the nations of East Asia, and five of our mutual security treaties link us with East Asian countries (9). Only a few islands (e.g., Guam, Kwajalein) have major U.S. bases; the U.S. Navy, however, has a keen interest in certain contingency base rights in the Northern Mariana Islands and Palau. (See app. B for a brief discussion of military installations and activities in the U.S.-affiliated islands.)

ECONOMIC DEVELOPMENT IN U.S.-AFFILIATED ISLANDS: THE PROBLEM

U.S. policy towards the insular areas is founded on common interests in the creation of close and mutually beneficial relationships between the insular governments and the U.S. Government. As such, the United States has attempted to encourage political self-determination and promote economic advancement and self-reliance in the territories while protecting its national security interests in the Pacific and the Caribbean. Thus, applicable Federal programs are extended to some or all of the territories, and their special needs are recognized in direct assistance to the territories.

Many U.S. islands are highly dependent on U.S. financial assistance for local Government

revenues. For example, the Federal portion of Micronesia government revenues ranges from 30 percent (CNMI) to 87 percent (FSM) (17). Puerto Rico is a notable exception, deriving nearly two-thirds of its annual operating budget from internal sources (10). Nearly \$5 billion are spent annually by the U.S. Government in direct financial assistance and under Federal programs to the territories (16). Much of these funds are used, in turn, to purchase food and other goods and services, primarily from the United States. Imports greatly exceed exports on many islands, and on most local food production has been declining. A combination of geographical, socioeconomic, and ecological factors hinder the sustainable management

and development of renewable resources in the U.S. territories (table z-2).

Ecological Factors

The nature of tropical land and nearshore resources constrain the applicability of resource development and management technologies which have been developed for temperate areas. The islands have considerable diversity in soil types and, although fertile soil types exist on some islands, soil fertility generally is low com-

pared to most temperate soils, and to the nutrient needs of the high-yielding crops used in intensive agriculture. For example, three-quarters of Puerto Rico is covered by relatively infertile soils (i.e., soils rated 6 or higher on a 1 to 10—best to worst—scale of soil productivity) (12).

Not only do infertile soils require greater amounts of fertilizer per acre for crop and pasture management, but they require more frequent applications. A deficiency of organic material in infertile soils hinders their ability to adsorb needed plant nutrients. Consequently, plant nutrients may be lost to leaching and erosion during heavy rains. Much of the land is not suitable for clean-cultivated crops due to erosion hazards. However, land management practices which include soil building through a good fertility program and erosion control may increase soil fertility over time.

Moreover, past poor land-use practices have degraded land resources in the U.S. Caribbean and Pacific and have resulted in significant amounts of abandoned land. Colonial histories of each of these areas contain an era of land exploitation for agricultural export which resulted in loss of vegetative cover over large areas and intensive production of only a few crops. Most of the local soils have minimal fertility. Once cleared, continued exposure to strong sunlight, heavy rainfall, and erosion reduced their marginal fertility further.

The consequences of this land degradation are widespread. Erosion rates have increased; for example, soil erosion rates in the Caribbean have reached as high as 18 times the U.S. average (14). Land clearing on many islands has resulted in turbid, erratic, and intermittent stream flow. Erratic freshwater flows and siltation from land runoff endangers coral reefs and other nearshore productive marine ecosystems.

Mangrove forests, which serve as natural filters and as breeding grounds for many aquatic species, have been overexploited for timber in many areas and some have been destroyed by impacts from development activities. The loss of mangrove forests further exposes marine ecosystems to degradation. Thus, the physical potential for local food production may be de-

Table 2-2.—General Characteristics of Islands

Ecological characteristics:

- small size,
- narrow range of natural resources,
- little natural organic biological diversity,
- distance from continents and external competition fosters species endemism,
- generally little overall climatic variability, but potential for climatic upsets,
- ecologic vulnerability, and
- tendency toward ecologic instability when isolation is breached.

Geographical characteristics:

- relative isolation;
- a completely circumferential sea frontier and EEZ, giving a high ratio of EEZ to island land mass resulting in very high importance of sea v. land resources;
- no internal land transport option to link the islands making up a polity or to link the island to other countries, only air and sea transport; and
- no interior hinterland or central terrestrial core area that is essentially distant from the sea such that coastal resource planning and management is essentially synonymous with national resource planning and management.

Socioeconomic characteristics:

- more dependent on foreign trade than large countries and having less influence on the terms in which that trade is carried on;
- a narrow range of resources and, hence, specialized economies;
- heavily dependent on one or more large foreign companies;
- dependent for key services on external institutions such as universities, regional training facilities, banking and marketing arrangements;
- a narrow range of local skills and specific difficulty in matching local skills with jobs;
- difficulty in providing some infrastructure services as there may be costly diseconomies of scale in the provision of such services; and
- a small Gross Domestic Product such that import substitution industries may face special difficulties.

SOURCE: E. Towle, *The Island Microcosm*, prepared for the U.S. National Park Service under contract to the U.S. Agency for International Development, 1983.

clining along with the incentives to undertake sustainable resource development.

Tropical ocean nutrient levels are lower than in temperate regions and primary biological production is correspondingly reduced. Conversely, the coral reef environment has high levels of biological activity made possible by organisms which increase available nitrogen and recycle nitrogen and other nutrients within the ecosystems. Despite seemingly large reef and lagoon areas, the size of the U.S. islands' productive nearshore areas is smaller than in other islands where commercial fisheries have developed (e.g., the Bahamas). The continental shelf of Puerto Rico and the U.S. Virgin Islands combined is less than 3,000 square miles, of which less than half is considered highly productive. The U.S.-affiliated Pacific islands are not associated with continental shelves, but with steeply sloping drop-offs into deep ocean. A substantial submerged reef area exists (approximately 14,287 square nautical miles) near the Pacific islands of Yap and Truk, and has been the site of a highly productive fishery in the recent past (18).

Coral reef systems and the associated seagrass beds and mangrove swamp forests are responsible for much of the islands' nearshore fisheries potential. Unlike temperate areas, nearshore tropical fish stocks tend to be diverse and diffuse, rarely aggregating in large schools or beds (for invertebrates). The multispecies nature of most tropical fishery stocks means that catches often contain a mixture of high-value and less desirable species.

Perhaps beneficial for sustained populations of nearshore species, the rugged coral reef topography makes it impossible to use towed, nonselective gear (e.g., trawls) employed in many commercial fisheries. However, these and most other tropical island ecosystems are more vulnerable to degradation than most temperate systems.

Geographical Factors

Of the U.S.-affiliated islands, only Puerto Rico contains a population significantly greater than

100,000 inhabitants. Large population centers in the U.S.-affiliated Pacific islands characteristically are 10,000 to 20,000. The Micronesia islands are scattered widely over 3 million square miles of the Pacific Ocean—an area as large as the contiguous United States, yet, their total land area is about two-thirds that of Rhode Island. Modern concepts of mass production, distribution, marketing, and competition cannot be applied on such small scales. Moreover, transportation and communications by conventional means is difficult and expensive.

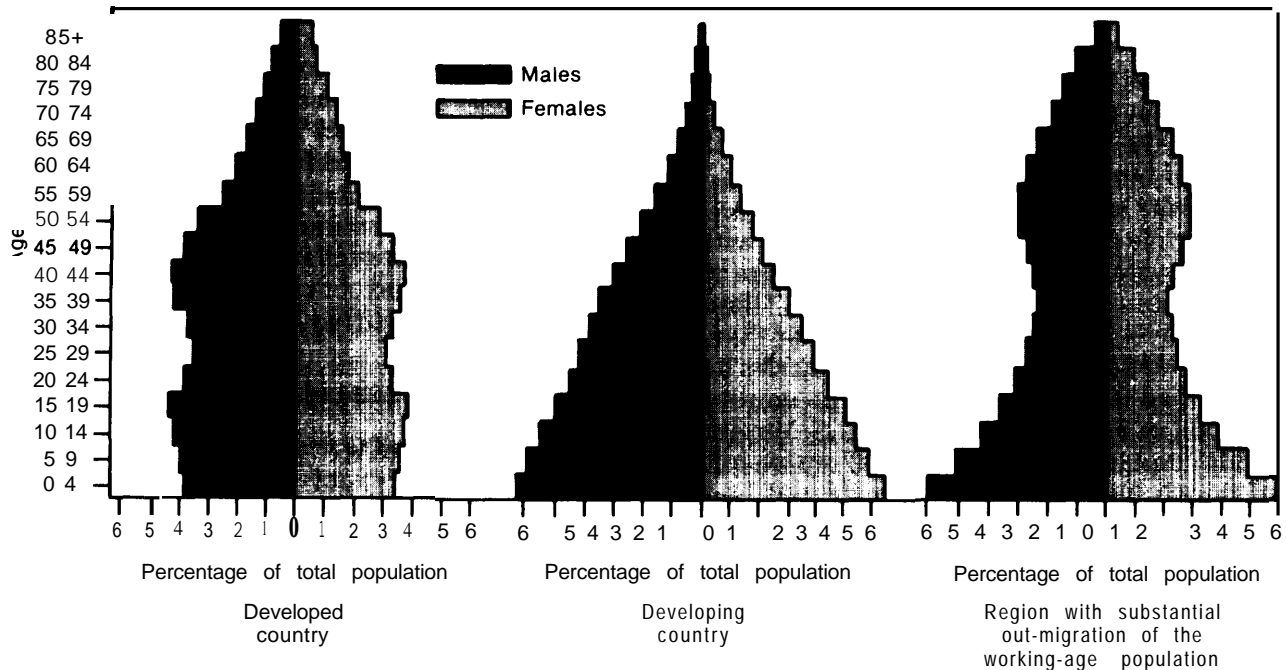
Socioeconomic Factors

All of the island territories exhibit a high ratio of imports to exports, particularly in food. The high level of imports compared to local production means that funds transferred to the territories have little impact on economic development. These funds leave the economies in payments for imports. Due to rapidly growing populations and rising aspirations, reducing consumer demand for imported products seems unlikely.

Population growth rates in the U.S.-affiliated Pacific and Caribbean islands increased considerably faster than the 4.2 percent U.S. population growth between 1980 and 1984 (8). Only Puerto Rico, with a growth rate of 2.3 percent, was below the United States for this period (8). Such population growth rates maybe supported only by readily available emigration opportunities; for example, 2 million Puerto Ricans live in the mainland United States (1) and more American Samoans live in the United States than in Samoa (7). At the same time, migration into the islands from the United States and surrounding islands is high.

Present and future human needs and labor availability are reflected, in part, by an island's overall demographic pattern. Population pyramids (figure 2-1) for many islands have a shape more like those of developing countries than developed countries. For instance, nearly 50 percent of most island populations are below 15 years of age, creating a large sector dependent on the working age population (2,3,4,5,6,7). This indicates that each year increasing num-

Figure 2-1.—Comparison of Typical Population Pyramids



SOURCE: Office of Technology Assessment, 1987.

bers will enter the work force and the demand for goods and services will increase significantly.

Such population distributions can be altered quickly either by in-or out-migration, but where the people come from or go to poses additional concerns. The major urbanized centers—most of which are on coastlines—are growing rapidly whereas the rural population is decreasing. Consequently, the choice of technologies will be influenced by the changing population characteristics in island rural and urban areas.

Sustainable renewable resource management depends not only on the capability of the ecological resources, but also on availability of skilled labor and willingness to engage in resource management and development activities. Although all of the islands have rapidly growing populations, many young adults seek education and employment in the U.S. mainland. Many of those who remain either depend on extended family relationships or social support programs to supply their needs. Most for-

mal labor is captured by local governments and services for the public sector and its employees. Wages, security, and prestige are higher in government employment. Skilled labor, training, and interest in the productive sectors of agriculture and fisheries are low on all the islands.

Land tenure systems and opportunities for acquiring land pose considerable obstacles to commercial development of renewable resources. Traditional values of Micronesians and Samoans place great prestige on land and other resource use rights. This results in increasing fragmentation of parcels over time, as ownership is retained in families that have increased in size. In addition, land often is communally held in the U.S.-affiliated Pacific islands. Acquiring land for commercial use—where the products of the property are not to be used for subsistence and sharing—may be difficult or impossible. For example, a recent U.S. District Court decision upheld an American Samoan law that communally owned land

(90 percent of the land area) can be transferred only to a person of at least 50 percent Samoan blood (11). (See app. C for a discussion of integration of modern and traditional legal systems in the U.S.-affiliated Pacific islands.)

In the more developed—and more westernized—lands of Guam, Saipan, Puerto Rico, and the U.S. Virgin Islands, fee-simple land ownership is more common. However, on these islands competing land uses, such as residential and tourism development, push land values beyond the reach of many potential entrepreneurs. The price of rural land has come to reflect scarcity rather than productivity. Second-

growth forestlands in Puerto Rico may cost \$1,000 to \$2,000 per acre and land values in the U.S. Virgin Islands have exceeded \$10,000 per acre (14).

Further, rapidly appreciating land values reduce incentives to derive productive use of lands held for speculation. Consequently, much land lies idle awaiting development. Puerto Rico maintains a law against private individuals or corporations holding more than 500 acres and, in general, the land is in small holdings. Nearly 85 percent of the land ownerships are less than 48 acres (15).

GOALS OF RENEWABLE RESOURCE MANAGEMENT AND DEVELOPMENT

Increasing the economic self-reliance of the islands is the most often stated objective of renewable resource development in the U. S.-affiliated islands. However, self-reliance should not be interpreted to mean economic independence, but rather a healthy interdependence within regional and world economies. Economic self-reliance can be defined as an economy's capacity to produce to meet as many domestic needs as is economically feasible and to gain the revenue, through exports, to pay for the imports required to support an acceptable standard of living. Even with this definition, increasing self-reliance in economies heavily dependent on outside aid and with large (in relation to resources) and growing dependent populations will be extremely difficult.⁴

A mechanism for increasing economic self-reliance is to develop a skilled and active private sector. Efforts to undertake such development reflect myriad subgoals, including:

- provision of employment, especially in rural areas,
- provision of stable incomes for commonly risk-averse producers,
- reduction in consumer food prices,
- reduction in rural or outer island to urban migration,
- development of private sector technical and managerial skills,
- stabilization of personal and national revenues through diversification of local production, and
- safeguarding valuable human and natural resources.

Thus, resource development projects and technologies that can contribute to the achievement of several of these objectives while offering acceptable yields and profitability are preferred to those designed solely to maximize yields or profits.

In addition, a number of conditions (which also can be thought of as goals) under which renewable resource and other development must be evaluated for acceptability may be derived. Generally, development policies, programs, and projects are sustainable and, thus, desirable if they:

⁴Unless resident populations are stabilized (through reduction in population growth rates or continued free emigration), substantial improvements in self-reliance are unlikely. Technologies directly related to population growth are outside the scope of this assessment but have been addressed in another OTA assessment, U.S. Congress, Office of Technology Assessment, *World Population and Fertility Planning Technologies: The Next 20 Years*, NTIS order #PB 82- (Springfield, VA: National Technical Information Service, February 1982).

- do not reduce the long-term productivity of the resources involved;
- do not degrade nearby or “downstream” environments, be they terrestrial, riverine, or marine;
- do not irrevocably reduce future development options; and
- do not unacceptably conflict with local cultures and customs.

Few forms of economic development can satisfy all of these objectives and conditions. The

decision as to which objectives will receive priority, which resources and areas will be developed, and which technologies and technology systems will be encouraged or implemented depend on far more than feasibility and profitability; they depend on the acceptability of their economic, social, political, and environmental impacts.

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