

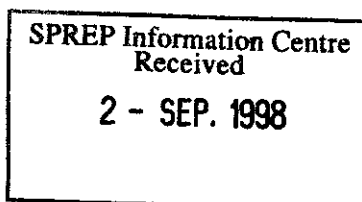
SOUTH PACIFIC REGIONAL ENVIRONMENT PROGRAMME

Noumea, New Caledonia

KINGDOM OF TONGA

COUNTRY REPORT

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Natural Resources, NUKU'ALOFA.



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SOUTH PACIFIC REGIONAL ENVIRONMENT PROGRAMME

KINGDOM OF TONGA

Country Report

INTRODUCTION

The last remaining Kingdom in the South Pacific, Tonga has a total land area of 674 square kilometers spread over a sea area of approximately 259,368 square kilometers. There are 3 major island groups with a total of 171 islands, 37 of them occupied. Three of 37 carry the bulk of the kingdom's population which is approximately 92,000. Tonga lies between latitudes 15° and 23°30' degrees south and longitudes 173° and 177° degrees west.

The Government of Tonga warmly recognizes the South Pacific Regional Environment Programme as aiming at helping the Pacific Island countries to maintain and improve the quality of life of their people, by sound management of their environment and its resources. Tonga realizes that fundamentally, such management need not block development, on the contrary, through the principals of Ecodevelopment (1), it will encourage the sustainable use of the islands environment and their marine resources. Proper management will direct the development in ways that not only fit peoples needs, but are sensitive to cultural tradition and protect the island environment and its resources as well.

1. POLICY AND IMPLEMENTATION

1.1 Policy

The Government of Tonga has for sometime been concerned with environment quality and protection. Principally, the policies under deep consideration have to do with safeguarding natural resource's through an economic development plan using the guidelines of Eco-development (2). Adoption of policy along these lines will include :

- a) The need to bring into retrospect the condition of the environment and ecology on all islands in the Kingdom.
- b) Existence of ecologically unsound and therefore detrimental practices and activities taking place on all islands demands attention and recognition of said practices.
- c) A complete narrative field analysis of all islands is imperative in order to compile an accurate working foundation of knowledge to aid in conservation as well as :
 - i. Agricultural Development
 - ii. Tourist Industry
 - iii. Nature Preservation
 - iv. Alternative products from sea and forest
 - v. Sea and Beach Protection
 - vi. Implementation of possible appropriate technology and alternative energy systems.

(1) Eco-development, Ray Dasmann

(2) Ibid

1.2 Desirability

The adoption of a comprehensive environmental policy is indeed being considered. The Government of Tonga realizes that necessary steps to safeguard the environment must be taken before the extent of environmental damage is still not serious.

1.3 Policies regarding

Economic and social planning policies have been adopted by the Government and these are listed in the Kingdom of Tonga's Five Year Development Plan. Economically, emphasis is given to the utilization of the available natural resources for the benefit of the country as a whole. Socially, there is considerable weight being given for the improvement of welfare of the population, both urban and rural. Projects exist such as improving water supplies and sewage systems, as well as land, sea and air transportation along with the betterment of hospitals clinics, media, electrical and communication systems.

1.4 Physical or Regional Planning is to a large extent being carried out by the Ministry of Lands, Surveys and Natural Resources. Policies regarding future planning involve environmental consideration of construction of agricultural, industrial and residential development with regard to the natural resources found in each area.

1.5 Design of Development projects comes under the strict auspices of the Building Regulation of 1941. This regulation stipulates that the plans and designs of buildings within the main centre of Nuku'Alofa, Neiafu and Pangai, to be examined and the site inspected first by the Department of Lands and Surveys and then by the Public Health Department before being approved. This applies to both private homes or development projects the Department of Lands and Surveys is now assessing every development project for possible environmental impacts, taking into account siting, design of building and sewage and septic tank systems.

1.6 Major Resource Areas

Since the country is pre-dominantly agricultural, the Government has gone to great extent trying to stimulate agricultural production by adopting suitable land policies. The existing land tenure system makes every Tongan male of 16 years of age entitled to an 8½ acres of bush land for agricultural purposes through a patrilineal system. The Land Act of 1927 furthers this statutory area to 12 acres in some areas, in the hope that increased agricultural out-put will extensively boost the local economy.

1.7 Rural, Urban and Outer Island Development policies are now being designed so as to minimize environmental damage done by short-range economic gains. All projects are subject to an environmental impact survey carries out in conjunction with the Office for National Parks and Reserves and the Department of Lands and Surveys.

1.8 Government Priorities are geared for sound management in so far as maintaining a sustainable resource base. Self reliance culminating to self sufficiency in food and energy productions are main points that are considered. Economic development is stressed, however, not at the cost of the natural environment.

II. LEGISLATION

2.1 Existing Legislation

Environmental legislation exists in the form of various acts passed such as the Public Health Act, concerning dangers to health and water supplies. The Garbage Act, covering solid waste disposal in Nuku'Alofa. The Land Act, with provisions for the use of tax allotments for agriculture. The Forest Act, providing for forest reserves and their establishment and management. The Minerals Act, controlling mining other than "common" materials, (but without pollution provisions), the Fisheries Regulations, prohibiting the use of damaging fishing methods. The Petroleum Act, regulating transport and storage (without pollution provisions) (1). The Petroleum Mining Act, providing for exploration licences and petroleum arrangements (no reference to accidents or liability) (2). The Pesticide Act, which should permit the effective control of pesticides, (much work is being done and will continue in this area). The Parks and Reserves Act, authorizing the establishment of parks and reserves for the purpose of preservation. The Birds and Fish Preservation Act, allowing complete protection or at least closed seasons for specific species and providing for protected areas (under consideration for sizable expansion to allow protection for many more species).

The Preservation of Objects of Archaeological Interest, which protects from harassment ancient archaeological sites. The Tourist Act, regulating the tourist industry. The Whale Industry Act, which protects whales from being caught, wounded, killed or taken. The Government is considering many more "Acts" which will further safeguard the environment and natural resources.

2.2 Traditional Legislation is concerned with preservation of historical landmarks and sites that have been identified as worthy of preserving.

2.3 Further Legislation is most certainly needed and fortunately the Government of Tonga has the foresight enough to consider what provisions must be made to protect threatened species, not yet considered endangered. Consideration is under way to vastly enlarge the extent of the Fish and Birds Preservation Act. Land areas which present a unique beauty or are of scientific interest have been set aside or are under negotiation. Example : the last remaining lowland rainforest on Tongatapu or a large undisturbed area on 'Eua.

2.4 Conferences

Tonga has participated in the 2nd South Pacific Conference on National Parks and Reserves. The Government is anxious to take part in any further conferences regarding conservation or management of resources in the region of the South Pacific.

(1) See report to rectify the situation from U.N. Marine Consultant just here.

(2) Ibid

(3) All legislation listed is taken from Dahl Report of 1979.

2.5 Future Conferences

Tonga would like to see conferences specifically dealing with alternative energy and appropriate technology for use in the South Pacific Region.

III. PLANNING

3.1 Planning

The Government of Tonga is very concerned and aware of the importance of the relationship between the environment, in terms of natural resources and economic growth. Therefore, as mentioned in subsection 1.5 under Policies Regarding, the Ministry of Lands, Surveys and Natural Resources is now assessing every development project for possible environmental impacts. Any development present or future is subject to strict scrutiny in terms of possible deleterious effects on the environment resulting in short term profit.

3.2 Resource and Land Use Surveys are being considered closely. There have been a number of ecological surveys done and presently plans are underway to begin a Cumulative Environmental Field Analysis (C.E.F.A.) (1). This report will be composed of, and proposed for all islands and ecosystems thereof, for the Kingdom of Tonga. It will consist of :

- i. Extent and condition of agricultural encroachment upon wilderness, near-like wilderness or relatively un-disturbed lands.
- ii. Survey and recognition of possible ecologically unsound and therefore detrimental agricultural, industrial, marine and subsistence oriented practices.
- iii. Survey of disturbed and undisturbed lands with field analysis in extent of :
 - a) condition of land for classification
 - b) buffer zones around undisturbed lands
 - c) number and approximate rate of invasion species
 - d) classification of species and diversity
 - e) survey lands for possible national parks
 - f) suggestion of possible implementation of appropriate technology and alternative energy to aid in ecological conservation.

This report would proceed as listed, be compiled in totality and therefore stand as a useful index of information vital to nature and resource conservation. Complete comments and recommendations would be included throughout the report.

3.3 Environmental Data now used by the Ministry of Lands, Survey and Natural Resources in the process of physical planning, consists of various cadastral maps and several other different types. However, in the future more natural resource oriented data will be used.

(1) C.E.F.A. Seth Schmerzler

3.4 Expertise

Recently, expertise has been available and environmental impact assessments have been carried out on a number of major developments. The Ministry of Lands, Surveys and Natural Resources is developing a strong environmental assessment programme to be executed primarily by Tongan nationals.

3.5 Obtaining More Help

Obtaining help, when offered, is certainly to be appreciated and taken advantage of. There is at this time an Island Biogeographer trained in environmental impact assessment, provided through the United States Peace Corps. Perhaps foremost in aid of stimulating this assessment program, materials and literature would be a great help in training Tonga Nationals to take over this job.

3.6 If Means are Available

The Government of Tonga is concerned over its environment and natural resources. Any improvement in its environmental planning would be greatly appreciated. Again, any aid in the training of personnel is perhaps the most important factor at the present.

IV. ADMINISTRATION

4.1 Creation and Implementation of environmental matters is being done through close co-operation between the Central Planning Department, Lands and Survey Department, Agriculture, Fisheries, Forestry and Department of Health. However, the main policy making body is the Ministry of Lands, Surveys and Natural Resources.

4.2 The estimation of effectiveness is somewhat hard to judge, however, since many environmental policies are relatively new then only with time can a true evaluation be made. It appears, that there is a high level of effectiveness with regards to adherence to policy. A more adequate means of enforcement is needed before a peak level of effectiveness is achieved.

4.3 Existing Expertise

It can be assumed at this time, that adequate, basic environmental assessment expertise exists. However, the Government of Tonga by no means would reject recommendations and proposals if offered.

4.4 Comprehensive Physical Planning does exist and at this time appears to be rather adequate. However, recommendations and proposals would not be rejected.

4.5 Needs

Needed are Environmental Economists and Environmental Planners.

4.6 Adequate Co-ordination exists between different departments.

V. ASSESSMENT

5.1 Major Environmental Problems : Prospects and Procedures

It is indeed an unfortunate fact that countries both developed/industrialized and emerging/agricultural have a tendency towards the "economy owning the environment" (1). Tonga has found itself in this precarious position, but fortunately, the Government had the foresight to begin analysing the situation "before the omni present threats to both environment and economy begin to rear their ugly heads here in paradise".

Before the Government of Tonga began its programme of considering and evaluating a long-term Eco-development (2) Plan, an examination into the realities we faced revealed a non-comprehension of the finiteness and uniqueness of the Tongan environment. The situation resulted from a burgeoning population never before seen on the islands. This much grown and growing still population began to exert extreme pressure on the islands environment and natural resources. The scene depicted here was further complicated by a lack of long range planning and the short range economic gains of development deleterious to the islands environment.

It is indeed fortunate that the Government began acting on this concern before it became critical. Tonga has looked to the future in its establishment of 5 marine and terrestrial reserves, as well as its investigation and proposals for various other national parks and reserves. The formation of an energy committee and the requesting and utilization of all available resources so as to protect and conserve its natural resources. The addition of an ecology unit being stressed in schools along with various other plans underway to create environmental awareness. Many laws have been passed which dealt directly with environmental degradation and species preservation. As far as economic development with environmental concern, the Government has begun exercising the goals and ideals of Eco-development (2), which stresses self reliance culminating into self sufficiency.

The immediate environmental problem we face today is that of the need to take sand for construction purposes from the beaches on Tongatapu. This situation in the past has presented many problems as far as environmental degradation and loss of aesthetics. However, steps are being taken to alleviate the need to use the sand from the beach or any other potentially deleterious locations.

Over-fishing and the use of dynamite and poisons gave great concern for the Government, the latter being outlawed. With the advent of the creation of the marine reserves, it is hoped that the areas affected will begin rebuild themselves and flourish while creating a sanctuary for breeding which will re-populate adjacent areas.

Pesticide use and abuse may be considered a potential hazard, however, the Government has implemented various controls, registrations and policies that reduce this hazard substantially.

(1) Economy owns the environment - Seth Schmerzler - Implementation of conservation guidelines for Tonga : Problems, Prospects & Procedures (not yet released).

(2) Eco-development , Ray Dasmann

Timber is needed for fuel and construction purposes and this presents itself as cutting into relatively undisturbed forests. The Government recognises this situation of finite resources and has taken steps such as proposing to create a national park with the last remaining rainforest on the island of Tongatapu or the undisturbed and unique rainforest on 'Eua. Through the Ministry of Agriculture, Forestry and Fisheries, experimental tree farms have been created in the hope of possible alleviation of the insatiable appetite for wood. Projected over the next 15 years through a careful management programme, Tonga will be self sufficient in terms of Timber Production.

Cutting of Mangrove swamps presented a serious threat to the habitats of several organisms, the Government has since then banned any cutting of mangroves.

The quarrying of coral rocks for roads and construction caused great concern and strict controls have been implemented so as to substantially reduce any further large scale degradation.

Drainage of impervious surfaces presented yet another ecological threat in terms of residues contained in the water. Following a preliminary ecological survey by Dahl in 1978, another study was ordered centering primarily on the ecology of the lagoon. Findings from that report indicated that serious environmental degradation would occur if drainage is allowed to enter the lagoon. Studies are being conducted at present and action is pending.

Septic tanks and sewage systems, treatment and storage is becoming a major concern which is being studied at the present by an engineer from the World Health Organization. Percolation through highly porous rocks from large amounts of rain water and insufficient or in-appropriate septic facilities can result in pollution to the fresh water lens under Tongatapu.

5.2 Research and Monitoring

Surveillance in the form of monitoring ground-water and rain water is being conducted by an engineer from the World Health Organization. The Water Board also monitors groundwater for salinity increases.

Fisheries Department conducts surveys on the catches all boats selling to the Government Fish Market in addition to ongoing surveillance of fishing activities and fish populations.

The Office of National Parks and Reserves monitors any activities which may prove deleterious to the environment in the long run.

Extensive whale surveys are also being conducted both by air and sea surveillance.

Suspected problems which need further attentions are pressures exerted on reefs both on-shore and off-shore from subsistence oriented practices. Effluent discharges onto still productive and fished reefs. Classification of species considered endangered but not yet protected (both flora and fauna).

Changes in environmental conditions which are being recognised are under surveillance. However, if resources were made available much more could be accomplished with a much better rate of efficiency and quality.

Resources are very limited.

VI. MANAGEMENT

With regard to the Status and requirements for management :

Soils

Tonga is fortunate to have rich soils, which with little coaxing, produce fine crops. Soil studies and classification has been done by a geologist team from New Zealand. Department of Lands, Surveys and Natural Resources in conjunction with the Ministry of Agriculture are well aware of the problems faced in soil management of tropical climates. Soil conservation, crop rotation, fallow periods and erosion controls are all under close inspection.

Water

Water and problems associated with keeping the quality high enough for drinking purposes, is under inspection by the Ministry of Health and the Water Board. There is a study now being done by a sanitary engineer from the World Health Organization. Primarily, the problems being studied are that of bacteriological and chemical pollution from septic and sewage systems. Pesticide residues must be kept very much under control because of the high porosity of the soil and vast amount of rainfall received. Increase in salinity must also be closely monitored. Tonga needs resources in which to carry out essential testing for water quality, i.e. equipment and expertise.

Crops

Local crops are capable of high yields under traditional methods of cultivation. The Department of Agriculture, has on-going programmes to aid local farmers in caring for their land. The Government has an experimental farm in which new and better crops are planted as well as other valuable techniques under review. The use of pesticides, herbicides and fertilizers is kept under very close watch so as to check any deleterious environmental effects.

Animal Husbandry

Animal husbandry was originally geared for traditional stock and domestic consumption, i.e, piggeries, poultry and cattle. The livestock industry in Tonga is growing and assuming a majority position in providing food for local consumption. Technical know how as well as veterinary services are available to keep production high and animal malady low. Self-sufficiency with regard to food production from livestock is the desired goal of the Government, however, not at the cost of the natural environment.

Forests

Although primary forests have been cleared on most islands due to subsistence cultivation, the Government recognises the need to preserve what original forests are left. Steps are being taken to bring into the jurisdiction of the Office of National Parks and Reserves, the last remaining rainforest on Tongatapu and a large relatively undisturbed forest on the island of 'Eua.

The Department of Forestry has experimental tree farms and is studying the possibility of using different species of wood in the hopes of meeting an increasing need for timber. As it stands now in the next 15 years, Tonga should become self-sufficient in terms of timber production.

Studies are being done on the few endangered species that exist in order to protect them. Re-forestation programmes in the recent past are meeting with great success. The Government is very much aware and concerned with its responsibility to the future of Tonga in conservation of one of its more valuable natural resources.

Mangroves

Mangroves are protected by law in Tonga because of their ecological importance, as so , are not included in land allocation. Development around mangrove areas is carefully surveyed so as not to conflict with mangrove conservation.

Reefs and Lagoons

There has been several reports and surveys of the ecological condition and extent of any deleterious encroachments upon the reefs and lagoons. Department of Fisheries keeps a fairly close watch on the condition of the reefs, while the Office of Parks and Reserves maintains strict surveillance on all reefs under their jurisdiction as well as the many that are not. Effluents are prohibited from being dumped in the lagoon and an effort is made to keep in check any practices that might prove harmful in the long run. Recommendations from the reports done on the ecological condition of both reefs and lagoons are adhered to as closely as possible. There has been extensive over-fishing on some onshore and offshore reefs resulting in a greatly diminished yield with greater work. With the establishment of 5 marine reserves, hopefully, there will be a re-population of over-fished areas.

Fisheries

The Department of Fisheries has an on-going research programme which keeps records on all "major" fishing done in Tonga. They also have various methods for surveying fish populations and migrations. The fisheries are now being developed for both domestic consumption and export. Programmes are underway to stimulate a fishing co-operative in the hopes that this will enhance and increase not only catching fish but storage and marketing as well. Many plans are underway and results will be realized in the near future.

Conservation, Parks and Reserves

The Government of Tonga is greatly concerned with Conservation and thus has established various measures to ensure a positive result such as : The Whaling Act of 1978, which prohibits capturing, killing or otherwise - The restriction of foreign fishing vessels from fishing in territorial waters - Provision for the Establishment and Preservation and Administration of Parks and Reserves - legislation regarding petroleum mining - Various fisheries

regulations - various bird and fish preservation laws. In addition, there has been the establishment of 5 marine reserves and one terrestrial park with plans to preserve other areas of ecologic or aesthetic value.

There is concern over the increasing use of petroleum and the Government of Tonga wishes to pursue an active programme of investigation into possible implementation of both appropriate technology and alternative energy. The Government also welcomes qualified consultant in which to advise the best possible way to protect and conserve the natural resources of Tonga.

Endangered Species

There are several species of both flora and fauna which either are under full protection or partial protection (seasonal). There is also plans to make further legislation in terms of protecting species not yet classified endangered. Whales are under complete protection and intensive studies are now being done. The Government is considering creating a whale sanctuary in Tongan waters.

Through the Office of National Parks and Reserves, an on-going programme is conducted in the study of what species are to be considered endangered and thus require protection. Again, the Tongan Government welcomes qualified consultants in the matter of protection of endangered species.

Local Energy Sources

Concern over ever increasing dependance on imported fuel has prompted action on the investigation of alternative energy and appropriate technology. Assistance is needed however, for a sound decisions to be made. There are several methane converters now in the Kingdom in various states of repair along with solar water heaters. A standing committee on energy exists which is doing a lot of research in this matter. Aid is definitely needed and the Government has the foresight to realize it and begins action on the situation. Following the goals of Eco-development (1), Tonga wishes to achieve self-reliance that leads to self-sufficiency in terms of energy production.

Minerals

Exploration for economically important minerals is being done and primarily these are phosphorites, metalliferous sediments, manganese nodules and oil. Much research is needed and very strict controls in terms of pollution protection.

Human Resources

Food and water are both plentiful and inexpensive in rural and urban areas. Housing is becoming predominantly western with the traditional style mostly used for cooking or only seen on the isolated island groups.

Health services are free and readily available to everyone throughout the Kingdom.

Education is compulsory and free in the primary level with changes for everyone to obtain a secondary education locally. There are also several grants and scholarships available for overseas training.

(1) Eco-development , Ray Dasmann

Employment takes place mostly on the land, but there is a growing number of public and private enterprises.

The Kingdom of Tonga has a rich culture which is still very much maintained throughout the country.

Infrastructure

The infrastructure of Tonga, especially on the capital island of Tongatapu, can be considered very good with a metropolitan transport system that covers the entire island and is more reliable and better run than that of the bus system in Los Angeles, California. The roads, although they are mostly coral are in good repair. Services such as electricity, telephone, water, etc., are all very well run. The outer islands have not as many services of infrastructure readily available, however, their needs are also fewer. There are airports on all three major island groups as well as ship transportation available at a low cost.

VII. MAJOR DEVELOPMENT TRENDS

- 7.1 The Environmental Factors regarding creating or enlarging human settlements were not so much considered in the past. However, since populations have reached the level they have and the realization of the finiteness of the land resources has occurred, environmental factors and impacts of human settlements on the ecology of the areas are now primary points to be reckoned with. New settlements and developments are subject to approval through an environmental impact review.
- 7.2 Industrial Development in Tonga is quite limited, but before any development is made, an environment impact assessment is required and completed.
- 7.3 Agricultural Development, both commercial and subsistence is surveyed and recommended upon by the Department of Agriculture and Lands and Surveys. Pesticide use, crop fallow and erosion control are all considered and if proven deleterious to the environment are re-designed.
- 7.4 Forestry, re-forestation, water shed areas, timber and production are all looked at closely so as to ensure the safest margin of protection to the finite forests of Tonga.
- 7.5 Fisheries and Agriculture are developing rapidly through aid programmes, and utmost regard for conservation of marine resources is considered.

The Government of Tonga realizes how important its development in the future will be and is preparing now programmes which are designed to follow the goals and ideals of Eco-development.

VIII. MANAGEMENT APPROACHES

- 8.1 Coastal Zone belongs to the Government and no development can be undertaken which does not follow an integrated pattern of preservation and conservation.
- 8.2 Planning to reduce the effects of disasters is beginning to become a reality with studies being done and recommendations pending.
- 8.3 Disasters
The Government of Tonga is very much aware of the disastrous effects of oil spills on reef ecology and therefore wishes to express its sincere interest in qualified consultants' recommendations on disaster controls. There does exist at this time however, a disaster committee which was created for this very purpose.
- 8.4 Population policies and planning does exist in the form of family planning, but further studies are need relating to the islands carrying capacity. It is significant to note here that there has been a reduction in births throughout the Kingdom.
- 8.5 Land Use plans and zoning laws for both urban and rural areas are followed very closely-planting schemes regarding which crops and coconut trees are to be put where are strictly adhered to.
- 8.6 Re-habilitation
There does exist recommendations for the re-habilitation of degraded areas, however, at present the problem is rather small. Future legislation regarding this issue is being considered and is pending.

IX. REQUIREMENTS FOR NATIONAL ACTION

- 9.1 New Actions
As development reaches into relatively undisturbed lands, new governmental bodies have been created, i.e. Office for National Parks and Reserves, Standing Committee on Energy, Disaster Committee - Will need to be created : environmental protection agency.
New projects relating to a "developing economy at the expense of the environment" are needed in the form of environmental planners and environmental economists.
Preventative actions are just beginning to surface, however, much in this area needs attention.
- 9.2 Education
Environmental awareness in the form of education exists as basic ecology courses designed to acquaint the student with his environment and conservation as to its protection. This environmental science curricula first take place at the primary level and continues from there.

There are many proposals for public awareness of the environment and these are radio-programmes and tours of national forest preserves. The Office of National Parks and Reserves has a programme of "the out-of-doors as a natural classroom" and takes school children of all ages to both forest and sea for lectures on ecology and conservation.

The education system of Tonga relating to environmental awareness desperately needs trained personnel who are knowledgeable in the requirements needed to teach conservation and environmental studies. Although teachers from Tonga are being sent overseas for training in ecology, many more are needed.

9.3 Personnel

As far as sufficiently trained man-power is available, there is at this time an island biogeographer trained in environmental assessment and education now in residence. He is provided by the United States Peace Corps. There is also 4 Tongans, a geologist trainee, an ecologist trainee and two park rangers.

Primarily, further personnel should consist of environmental planners, educators, assessors and economists. These environmentally oriented skills will enable to develop with a rational land/resource conservation programme.

Since the Government of Tonga recognizes the importance of conservation and environmental awareness propagated through education, all categories listed in "needs in training programmes and personnel" are all needed.

9.4 Facilities and Equipment

Facilities, equipment and laboratories are all required as now very little exists. They are required nationally, so a realistic and worthwhile programme can take place.

Tonga warmly extends the use for study of its 5 marine reserves and terrestrial parks.

9.5 Outside Expertise

There is the absolute need for environmental planners, environmental economists, appropriate technicians in the form of alternative energies. The Government would like to utilize any help in the form of conservation from qualified consultants.

9.6 Information

Presently, the Government is considering the implementation of a Cumulative Environmental Field Analysis (C.E.F.A.), which will in effect cover all ecosystems on all islands in the Kingdom. The report will include agricultural and industrial encroachment upon undisturbed lands, land use and classification maps, recognition of possible ecologically unsound and therefore detrimental practices and a general ecological habitat survey. The report will stand as a useful index of information vital to nature and resource conservation.

In the section concerning "Information", all questions must be marked "Yes", all are needed, and all resources available are welcome.

* * *