

**COUNTRY PROFILE  
ON  
ENVIRONMENT**

**SAMOA**

**November 1998**

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## USERS GUIDE: Contents of the Report

This report consisted of the following Chapters on environmental information of the country.

### 1. Keywords of the Environment

Various features and principal environmental issues and their related matters of the country are schematized within 1 page to easily understand the country's natural and social environmental issues on the whole.

### 2. Fact Sheet

Principal indices and natural and social environmental characteristics of the country such as economy, demographic statistics, socio-economic conditions, various important resources available in the country are described.

### 3. Institutional Context

#### 3.1 Environmental Agency

Matrix table on governmental agencies related to the environmental issues in the Chapter 4 is described to grasp the role of the agencies easily. Responsibilities and organizational structure of the principal responsible agency for the environment, and responsibilities of related agencies are explained. Main activities of the various environmental non-governmental organizations are described in the table.

#### 3.2 National Environmental Policy

Environmental policy of the country such as national environmental action plan is explained.

#### 3.3 Environmental Laws and Regulations

Environmental laws and regulations of the country including their status of applications are described.

### 4. State of the Environment

In this Chapter, status of the various environmental issues as follows are covered with information on related agencies, related standards, laws and regulations, examples of the issue are explained. In the section 4.3, other kind of considerable environmental issues in the country are described based on the report which local consultant prepared.

4.1 Air Pollution	4.7 Waste Water Management
4.2 Water Pollution	4.8 Forest Conservation/Desertification
4.3 Other Pollution	4.9 Biodiversity
4.4 Waste Management	4.10 Natural Resource Management
4.5 Energy Conservation and Alternative Energy	4.11 Natural Disaster
4.6 Water Supply	4.12 Environmental Education

### 5. International Relationship

Status of the implementation of the economic and technical assistance projects in the country are outlined. International conventions and agreements on environment which the country agreed and ratified are listed up in section 5.1, and environmental projects which are funded and/or implemented in the country by donor countries and international organization in the section 5.2. In addition, location map of the project funded and implemented by using the Official Development Assistance (ODA) of Japanese government are showed.

### 6. Sources of Information

Governmental environmental agencies related institutions and NGOs are listed with the some information such as contact address and e-mail address.

### 7. References

References used in the report are listed.



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## 1. KEYWORDS OF THE ENVIRONMENT

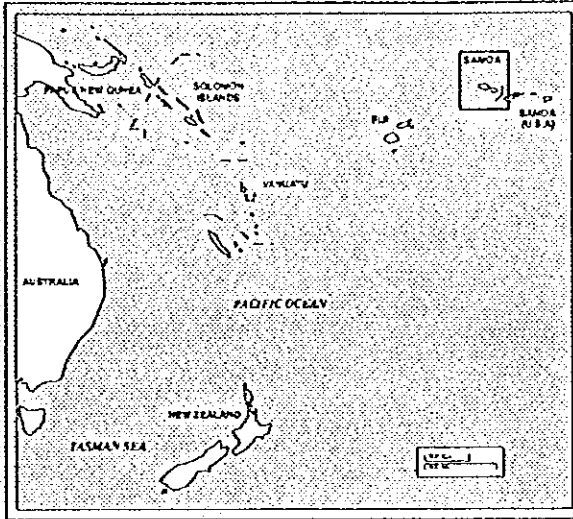
### 1.1 Features of the Country

	Related pages
<p>① <b>Gross Domestic Production(GDP)</b>                      US\$980 per capita (Japan : US\$31,490)                      Total : US\$159 million</p>	<p>· 2. Fact Sheet p.3</p>
<p>② <b>High-concentrated Population in Coastal Area</b>                      Population rate live in coastal area: 95%                      Reason: Economic activity is concentrated in the area.</p>	<p>· ·</p>

### 1.2 Keyword of Environmental Issues

	Related page
<p>① <b>Climate change and sea level rise</b>                      · Concentration of population in the coastal area</p>	<p>1.1 Feature of the country p.1</p>
<p>② <b>Waste management</b>                      · No public garbage collection system                      · No public sewerage system</p>	<p>4.4 Waste management p. 10                      4.7 Waste water management p. 13</p>
<p>③ <b>Encroachment of Biodiversity</b>                      · Pressure by Population growth                      · Deforestation by logging                      · Dependency of Marine and coastal resources</p>	<p>4.8 Forest conservation p. 14                      4.9 Biodiversity p. 15</p>
<p>④ <b>Natural disaster</b>                      · Cyclone</p>	<p>4.11 Natural Disaster p. 17</p>

# Samoa



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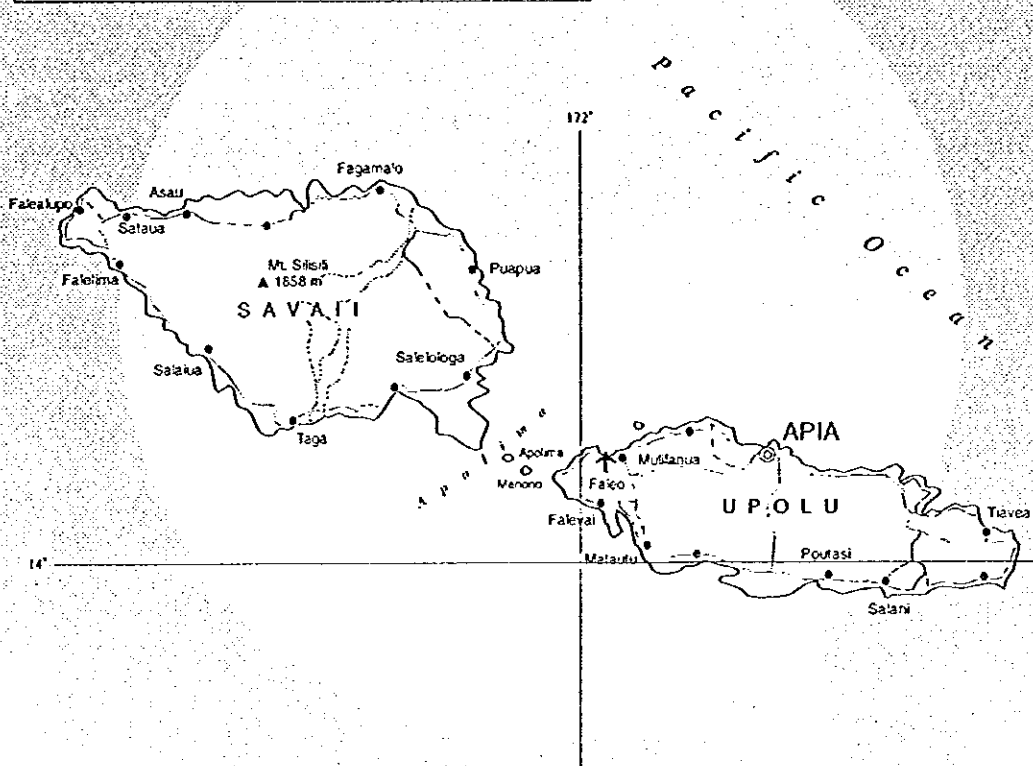


Figure 1 Location of Samoa

## 2. FACT SHEET

### 2.1 Socio-economic Index

Index	Data	Data year	Reference
Population	0.17 million (annual average incremental rate : (no information))	1993	d)
Race	Polynesian-Samoan 90%, Melanesian, European, Chinese	(no information)	d)
Religion	Christianity 100% (Catholicism, Methodist, Mormonism, etc.)	(no information)	d)
Literacy rate	(no information)		
Urban Population rate	(no information)		
Life expectancy	65	1992	d)
Under-5 mortality rate	(no information)		
GNP <sup>*1</sup>	\$159 million (\$980/person)	1993	d)
GDP <sup>*1</sup>	(no information)		
GDP structure	(no information)		
Prime industry	Agriculture, automobile parts, cocoa	1996	d)
Prime resource	Cacao, copra, coconut, banana, timber, fish	1996	d)
Safe water (% of population with access) <sup>*2</sup>	(no information)		
% of sewerage population <sup>*3</sup>	(no information)		
Human Development Index (HDI)	0.68 (World rank 96, GDP per capita rank 84 in same year)	1994	c)

\*1 : The estimated value of the GNP was exchanged and adjusted from local currency into US\$ by means of 3-year average of exchange rates. The estimated value of the GDP was presented in US\$ of 1993 based on the exchange rate.

\*2 : "Safe water" includes treated surface water, and untreated water which is pumped up from protected spring / excavated well and sanitary well.

\*3 : "Sewered population" should be met conditions that the population in urban area can use public sewerage and indoor facility such as dug hole outdoor toilet, pouring water toilet, private sewerage system, public community toilet, and similar facilities, and that the population in rural area can use dug hole outdoor toilet, pouring water toilet, or other proper treatment methods.

### 2.2 Geographical Characteristics

Area : 2,836 km <sup>2</sup> (almost same as Kanagawa prefecture in Japan: Upolu island(1,123km <sup>2</sup> ), Savaii island(1,708km <sup>2</sup> ))
Geographical features : There are six major volcanic formations. At least 2 cones in the western highlands of Savaii are still considered potentially active.
Highest place : Mt. Silisili on Savaii(1,857m)

Source: a)

### 2.3 Meteorological Characteristics

Climate: tropical
Season: wet season(October to March), dry season(April to September)
Average temperature: annual average 26.6°C, daily range 23°C-30°C
Average annual rainfall: northwest of both main islands: 2,500mm/year, upland areas: 5,500mm/year, => 75% of rain from November to January
Climatic classification: (no information)

Source: a)

### 2.4 Ecological Characteristics

Biogeographical feature: 19 types of terrestrial ecosystem based on the predominant vegetation formation
Identified animals and plants: native mammal(3 species: 2 flying foxes and 1 insectivorous bat), landbird(8 endemic out of 35 species), insects(2,500 species), terrestrial reptiles(14 species incl. 1 snake), marine fish(991 species)
Protected area:

Source: a)

### 2.5 Hydrological Characteristics

Main river: (no information)
Lakes: (no information)

Source: a)



## 3. INSTITUTIONAL CONTEXT

## 3.1 Environmental Agency

## 3.1.1 Governmental Agency

## (1) Environmental issues and Related Governmental agencies

(see "6. SOURCES OF INFORMATION" on each agencies and its contact address.)

Governmental Agency	4.1	4.2	4.3	4.4	4.5	4.6	4.7	4.8	4.9	4.10	4.11	4.12
	Air pollution	Water pollution	Other Pollution	Waste	Energy	Water Supply	Waste Water	Forest	Biodiversity	Resources	Disaster	Education
Ministry of Agriculture, Forestry, Fisheries and Meteorology (MAFFM)	—	—	—	—	—	—	—	○	○	○	—	○
Health Department (HD) (investigation)	○	—	○	○	—	—	○	—	—	—	—	○
Division of Environment and Conservation (of DLSE) (DEC)	○	—	—	—	—	—	—	○	○	—	—	○
Samoa Water Authority (SWA)	—	○	—	—	—	○	○	—	—	○	—	—
Department of Lands, Surveys and Environment (DLSE)	—	○	○	○	—	—	○	—	○	○	—	—
Watershed Management, Section Forestry Division	—	○	—	—	—	—	—	—	—	—	—	—
Apia Observatory	—	○	—	—	—	—	—	—	—	—	—	—
Electric Power Corporation (EPC)	—	—	—	—	○	—	—	—	—	—	—	—
District water committees	—	—	—	—	—	○	—	—	—	—	—	—
Electric Power Corporation	—	—	—	—	—	○	—	—	—	—	—	—
Forestry Division (FD)	—	—	—	—	—	—	—	○	—	—	—	—
National Disaster Council (NDC)	—	—	—	—	—	—	—	—	—	—	○	—
Disaster Support Organization (DSO)	—	—	—	—	—	—	—	—	—	—	○	—
Education Department	—	—	—	—	—	—	—	—	—	—	—	○
Environmental NGOs	—	—	—	—	—	—	—	—	—	—	—	○
South Pacific Regional Environment Programme (SPREP)	—	—	—	—	—	—	—	—	—	—	—	○
Others	—	—	—	—	—	—	—	—	—	—	—	○

Note:1) : ○ → related — → No relation na → no information

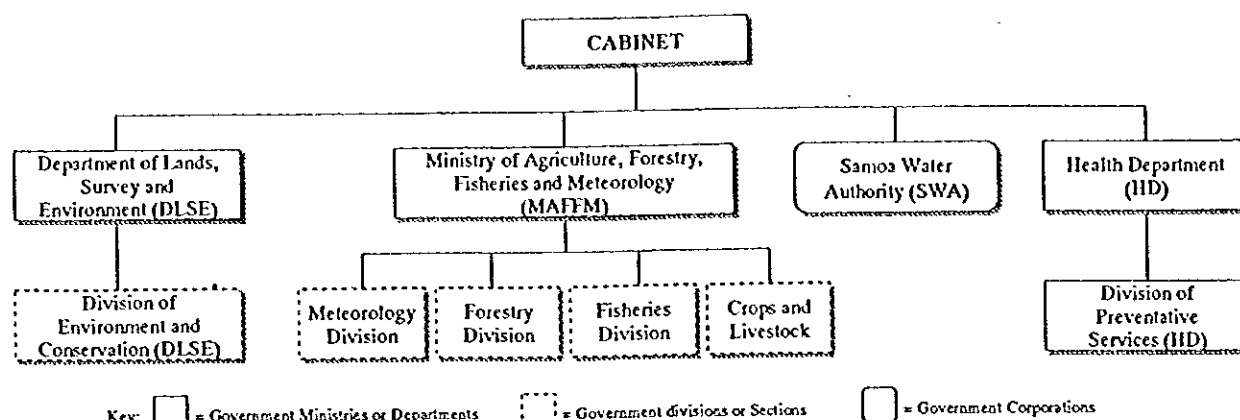
2) : 4.3 other pollutions, 4.4 Waste management,

4.5 Energy conservation and alternative energy, 4.7 Waste water management,

4.8 Forest conservation / desertification, 4.10 Natural resource management,

4.11 Natural disasters, 4.12 Environmental education

3) : Refer to each section related to other agencies when column "other" is filled by ○.



Source: a)

Organization of major government agencies involved in environmental issues

## (2) Governmental organization related to environmental issues

Organization / Outline of activities	Annual budget	Number of staff
<p>a) Department of Lands, Surveys and Environment (DLSE)</p> <p>DLSE is the pre-eminent government agency with overall responsibility for environmental management in Samoa. DLSE consists of three separate sections each with defined responsibilities (Laavasa Malua pers. com.):</p> <ul style="list-style-type: none"> <li>• Technical Services: responsible for land evaluation and surveying, mapping, and photogrammetry</li> <li>• Corporate Services: Responsible for land administration, accounts and general administration</li> <li>• Division of environment and Conservation (DEC). The DEC is responsible for the conservation and protection of the natural resources and environment of Samoa. The DEC is organized into three functional units: <ul style="list-style-type: none"> <li>- Environmental Planning Unit</li> <li>- Biodiversity Unit</li> <li>- Education and Training Unit</li> </ul> </li> </ul>	(no information)	(no information)
<p>b) Ministry of Agriculture, Forestry, Fisheries and Meteorology (MAFFM)</p> <p>The Ministry of Agriculture, Forestry, Fisheries and Meteorology (formerly a Department) is responsible, in conjunction with the Department of Lands, Surveys and Environment (DLSE), for the promotion of the conservation, production and development of natural resources especially soil, water and forest. MAFFM consists of four main sections or divisions whose main functions are as follows (source: Peteru 1993):</p> <ul style="list-style-type: none"> <li>• Agriculture: the promotion and development of the planting, agricultural, pastoral and horticultural industries of Samoa</li> <li>• Forests: the maintenance of areas of forest adequate to protect the climate, soil and water resources of the country. The Watershed Management Section is a special section of the Forestry Division responsible for the protection of key catchments serving water supply intakes</li> <li>• Fisheries: the regulation of fishing in Samoa and its territorial waters and to promote the harvest and conservation of fish and the control of any industry engaged in the processing of fish and fish products</li> <li>• Meteorology: the Mulinu Observatory is responsible for weather surveillance, mineral surveys and hydrological testing</li> </ul>	(no information)	(no information)
<p>c) Samoa Water Authority (SWA)</p> <p>The Samoa Water Authority has overall responsibility for the management of government operated water supply systems in Samoa, including the taking, storing and distribution of water throughout the country (Costin 1996). The authority will be responsible for any sewage treatment facilities, should any be built in future.</p> <p>The authority is a Government Corporation meaning that it is run along profit making lines. A water metering programme for Apia was introduced in 1996 to improve cost recovery and to promote the user-pays principle. The programme is being gradually extended (GOS 1998) with the ultimate aim of full cost recovery (Costin 1996).</p> <p>The authority has approximately 16,000 registered connections and an annual budget of about SAT\$8 million. The authority is not responsible for all water distribution networks in Samoa: some 22 water supply systems are operated independently of the authority by district water committees. The authority is managed by a Board of Directors, with the Minister of Works as Chairman and the Director of Public Works as Deputy Chairman. Other members of the board</p>	(no information)	(no information)

Organization / Outline of activities	Annual budget	Number of staff
include the Directors of the following government departments: Treasury, DLSE, MAFFM, Health, and three persons appointed by Cabinet to represent consumers (Costin 1996).		
d) Health Department (HD) The Health Department (HD) is responsible for the provision of health care through a network of one national hospital, a regional hospital on Savaii, 15 district hospitals and 22 health centres throughout the country (UNDP no date). In addition to its health care function, the HD also has a general role in public health education and in the performance of research and investigations into matters concerning public health including environmental pollution (Peteru 1993). The Division of Preventative Services is responsible for all matters related to public health and hygiene. Environmental and public health responsibilities include rubbish collection, mosquito control, hygiene of buildings, drains and toilets and the investigation of environmental health nuisances.	(no information)	(no information)

Source: a)

### 3.1.2 Non-governmental Organizations (NGO)

Name of NGO	Established year	Main activities
a) Faasao Savaii (Save Savaii's Environment)	(no information)	<ul style="list-style-type: none"> <li>Area served: specialises on Savaii, but also deals with general Samoan issues</li> <li>Areas of specialisation: Community Development, Environment, Culture</li> </ul>
b) O le Siosiomaga Society (OLSS) [Samoan Environmental Protection Society] <ul style="list-style-type: none"> <li>Environment, Education, Forestry/Fisheries</li> </ul>	(no information)	<ul style="list-style-type: none"> <li>Currently OLSS monitors a lowland rainforest on Tafua peninsula (western Savaii), a cloudforest reserve in the uplands of Savaii, a rainforest area near Uafato (eastern Upolu) and helps nearby villages to develop management plans for the sustainable use of these forests. It has a resource centre with instructional material and video tapes for the use of schools and other interested individuals. Funding is from the Swedish Society for Nature Conservation (SNF), membership dues and grants for specific activities. OLSS has a membership of 86 and is open to groups (such as villages and schools) as well as individuals. It currently (September 1998) has a staff of 4.</li> </ul>
c) Western Samoa Sustainable Farming Association (WSFA) <ul style="list-style-type: none"> <li>Agriculture, Appropriate Technology, Forestry</li> </ul>	(no information)	<ul style="list-style-type: none"> <li>Current activities include the provision of advice and the sponsorship of workshops in sustainable farming and agroforestry practices. WSFA has about 50 members and is open to anyone interested in sustainable farming</li> </ul>
d) Young Men's Christian Association of Samoa (YMCA) <ul style="list-style-type: none"> <li>Youth rural development, sports/recreation</li> </ul>	(no information)	<ul style="list-style-type: none"> <li>The YMCA offers leadership training and practical skills programs in carpentry, agriculture, gardening, and mechanics at its centres in Apia and Savaii. A new environmental program has just commenced focusing on tree planting in rural villages on Upolu. The YMCA currently has 20 groups and about 400 members.</li> </ul>

Source: a)

### 3.2 National Environmental Policy

Policy/Project Name and Contents	Funding or Implementing Agency
(no information)	

Source:

### 3.3 Environmental Laws & Regulations

Laws & Regulations	Status	Related Sections
Establishment of the Government Environmental Agency a) The Lands, surveys and Environment Act 1989 <ul style="list-style-type: none"> <li>The cornerstone environmental act constituting the Division of Environmental and Conservation (DEC) and dealing with the conservation and protection of the environment</li> </ul>	<ul style="list-style-type: none"> <li>Needs amendment to avoid interpretation difficulties</li> </ul>	(no information)
Environmental Impact Assessment None	<ul style="list-style-type: none"> <li>Draft regulations were drawn up in 1992 but have not yet been endorsed</li> </ul>	(no information)

Laws & Regulations	Status	Related Sections
<p>Environmental planning and assessment</p> <p>a) Health Ordinance 1959</p> <ul style="list-style-type: none"> <li>Health Department (HD) to promote and carry out research into matters concerning public health</li> </ul> <p>b) National Parks and Reserves Act 1974</p> <ul style="list-style-type: none"> <li>Provides for the establishment, preservation and administration of national parks and reserves on public land</li> </ul> <p>c) The Lands, Surveys and Environment Act 1989</p> <ul style="list-style-type: none"> <li>The act deals with the conservation and protection of the environment</li> </ul>	<ul style="list-style-type: none"> <li>Under this ordinance the IID has a number of environmental health responsibilities</li> <li>This legislation only applies to government land</li> <li>none</li> </ul>	<p>4.8, 4.9</p> <p>4.8, 4.9</p>
<p>Waste management</p> <p>a) Poisons Act 1968</p> <ul style="list-style-type: none"> <li>To regulate the importation, carriage custody and sale of poisons</li> </ul> <p>b) Petroleum Act 1984</p> <ul style="list-style-type: none"> <li>To make provision for the supply, transport and storage of petroleum</li> </ul> <p>c) Pesticide Regulations 1990</p> <ul style="list-style-type: none"> <li>To regulate pesticide use</li> </ul> <p>d) The Lands, Surveys and Environment Act 1989</p> <ul style="list-style-type: none"> <li>The act has provisions for the control of litter and minimization of pollution</li> </ul> <p>e) Water Authority Act 1993</p> <ul style="list-style-type: none"> <li>Contains provisions on sewerage</li> </ul>	<ul style="list-style-type: none"> <li>Administrated by the HD</li> <li>None</li> <li>Administrated by MAFFM</li> <li>none</li> <li>The SWA has responsibility for sewage treatment under this act</li> </ul>	<p>4.4</p> <p>4.7</p>
<p>Land-use practice</p> <p>a) Agriculture, Forestry and Fisheries Ordinance 1959</p> <ul style="list-style-type: none"> <li>To promote and encourage the development of agriculture, pastoral and horticultural industries of Samoa</li> </ul> <p>b) The Lands, Surveys and Environment Act 1989</p> <ul style="list-style-type: none"> <li>The act deals with the conservation and protection of the environment</li> </ul> <p>c) Watershed Protection and Management Regulations 1992</p> <ul style="list-style-type: none"> <li>Establishes a watershed management committee and a management planning process for individual watersheds</li> </ul>	<ul style="list-style-type: none"> <li>Many of the powers under this ordinance are development oriented and not particularly sensitive to environmental issues none</li> <li>none</li> <li>This legislation is being applied to e catchment on Upolu</li> </ul>	(no information)
<p>Management of Forest Resources</p> <p>a) Forests Act 1967</p> <ul style="list-style-type: none"> <li>To ensure the best use of all forest lands for the benefit of Samoa</li> </ul> <p>b) National Parks and Reserves Act 1974</p> <ul style="list-style-type: none"> <li>Preservation of flora and fauna in national parks</li> </ul> <p>c) Lands, Surveys and Environment Act 1989</p> <ul style="list-style-type: none"> <li>As previously described</li> </ul>	<ul style="list-style-type: none"> <li>Forestry legislation is considered adequate</li> <li>none</li> <li>none</li> </ul>	<p>4.8</p> <p>4.8, 4.9</p> <p>4.8, 4.9</p>
<p>Conservation of Biological Diversity</p> <p>a) National Parks and Reserves Act 1974</p> <ul style="list-style-type: none"> <li>As previously described</li> </ul> <p>b) Lands, Surveys and Environmental Act 1989</p> <ul style="list-style-type: none"> <li>As previously described</li> </ul> <p>c) Protection and Conservation of Wild Animals Regulation 1993</p> <ul style="list-style-type: none"> <li>Imposes a 5 year hunting ban on both flying fox species and 3 pigeon species and absolute protection to 30 birds and the sheath-tailed bat</li> </ul>	<ul style="list-style-type: none"> <li>This legislation only applies to public land</li> <li>This act legally allows for conservation agreements to be made with customary landowners</li> <li>This regulation is currently being reviewed to ascertain whether it should be renewed</li> </ul>	4.9
<p>Management of freshwater resources</p> <p>a) Water Act 1965</p> <ul style="list-style-type: none"> <li>Regulates the conservation of water, its supply and use</li> </ul> <p>b) Watershed Protection and Management Regulations 1992</p> <ul style="list-style-type: none"> <li>As previously described</li> </ul> <p>c) Water Authority Act 1993</p> <ul style="list-style-type: none"> <li>Establishes the Samoa Water Authority (SWA) which is responsible for managing water supplies</li> </ul>	<ul style="list-style-type: none"> <li>A powerful act giving the government the sole right to use water in all water bodies and courses</li> <li>none</li> <li>none</li> </ul>	4.6
<p>Management of marine resources</p> <p>a) Agriculture, Forestry and Fisheries Ordinance 1959</p> <ul style="list-style-type: none"> <li>To regulate fishing and any industry engaged in the processing to fish and fish products</li> </ul> <p>b) Exclusive Economic Zone Act 1977</p> <ul style="list-style-type: none"> <li>Establishes an EEZ</li> </ul> <p>c) Fisheries Act 1988</p> <ul style="list-style-type: none"> <li>To conserve, manage and develop Samoa fisheries</li> </ul>	<ul style="list-style-type: none"> <li>none</li> <li>Administered by MAFFM</li> <li>Prohibited fishing methods include dynamiting and the use of fish poisons</li> </ul>	4.9

Source: a)

## 4. STATE OF THE ENVIRONMENT

### 4.1 Air Pollution

Few data are available on levels of atmospheric pollution in Samoa. However, air pollution is not believed to be a serious issue, since the country is not highly industrialised nor urbanised (UNDP 1990). As elsewhere the main air pollutants are particulate matter (eg. Soot, and smoke) from fires, vehicle exhaust emissions (oxides of nitrogen, hydrocarbons, carbon dioxide, lead) and industrial emissions.

Despite relatively low levels of air pollution, there are concerns about the following issues (GOWS 1993b):

- the huge increase in national petroleum consumption as a result of increases in car ownership and increases in diesel generated electricity production in recent years
- the uncontrolled use of fuelwood for cooking and the burning of garden waste both of which are responsible for production of high levels of smoke and carbon dioxide.

At the current time there are no pollution limits for atmospheric discharges from domestic or industrial activities (Peteru 1993).

Source: a)

Related Agency
① Health Department (HD) (investigation)
② Division of Environment and Conservation (of DLSE) (DEC)

Source: a)

Laws and Regulations	Presence	Name of Laws or Regulations (Reference)
① Law on air pollution	?	
② Ambient air quality standard	×	
③ Emission standard (stationary and/or mobile sources)	×	
④ Environmental monitoring results	?	

Note: ○ : Issued, × : None, △ : Under planning, ? : Unknown

## 4.2 Water Pollution

There are three major scales of water pollution in Samoa. At the rural level, most water pollution is from agricultural activities in watersheds (such as sediment and agricultural chemicals), and in villages, from contamination of water by human and domestic animal waste (mainly pigs). In Apia there is pollution of water from on site sewage disposal systems and from domestic animals. Lastly there is industrial pollution from the Vaitele industrial estate (adapted from GOWS 1994c).

Few published data are available on levels of water pollution in Samoa. However, testing of water supplies performed in 1996 by the SWA showed that 92% of the samples satisfied the authorities own short-term standards, but only 61% met WHO guidelines (Costin 1996). Areas of concern include (Costin 1996, GOWS 1993b):

- high bacterial indicator counts in raw water due to human and domestic animal activity in water catchments
- pollution of streams from eroded sediments and agricultural chemicals
- borehole construction in inappropriate places leading to pollution or salinisation of water supplies
- pollution of groundwater in low lying areas of Apia and in densely populated areas along the coast by effluent from sewage disposal facilities
- evidence that discharge of contaminated groundwater into the sea has resulted in the pollution of traditional seafood supplies in the lagoons (GOWS 1993b).

Source: a)

Related Agency
① Samoa Water Authority (SWA): (quality of water in the waterworks)
② Department of Lands, Surveys and Environment (DLSE): (waste management and minimizing pollution)
③ Watershed Management, Section Forestry Division: (protection of key catchments serving water supply intakes)
④ Apia Observatory: (collection of hydrological and hydrogeological data)

Source: a)

### Land-Use in Samoa

(calculated from a map prepared by ANZDEC 1990)

Land use	Approximate Area (km <sup>2</sup> )	% of national land cover
Indigenous forest	1,587	56
Production forest	53	2
Livestock	99	3
Cropping areas	962	34
Other*	134	5
Total	2,836	100

\* The figure for other land-use includes residential areas, formerly cultivated areas now abandoned and volcanic lava flows (Savaii only)

Source: a)

Laws and Regulations	Presence	Name of Laws or Regulations (Reference)
① Law on water pollution	○	• Water Act 1965 • Watershed Protection and Management Regulations 1992 • Water Authority Act 1993
② Water quality standard	?	
③ Effluent standard	?	
④ Drinking water standard	?	
⑤ Water quality monitoring	?	
⑥ Guidelines on water quality	?	

Note: ○ : Issued, × : None, △ : Under planning, ? : Unknown

### 4.3 Other Pollution

There are very few or no data available on other types of pollution in Samoa (noise, odours, vibration, radiation) but it is believed that these types of pollution are not a serious issue. A review of available national environmental reports has not shown any reference to these types of pollution.

Source: a)

Related Agency
① Department of Lands, Surveys and Environment (DLSE)
② Health Department (HD)

Source: a)

Laws and Regulations	Presence	Name of Laws or Regulations (Reference)
① Law on noise	?	
② Standard on noise level	?	

Note: ○ : Issued, × : None, △ : Under planning, ? : Unknown

### 4.4 Waste Management

Little is known about the present pattern and nature of solid waste generation in Samoa because there is no public collection in the rural areas and collection in Apia only covers part of the urban area (GOWS 1993b). However, it is believed that the solid waste generation rate in the Apia urban area is about 0.52kg per person per day which is similar to other developing countries (Gangaiya and Wele 1994). Most of this waste consists of biodegradable material (food and garden wastes) with packaging making up less than 20% (Gangaiya and Wele 1994).

There is one solid waste disposal site in Samoa, which is located a few kilometres inland from Apia. Coverage is approximately 60-70% of Apia households (JICCA 1998). The new site is a major improvement over the previous site which was located in a mangrove forest and resulted in contamination of the adjoining bay and lagoon areas (GOWS 1993b). There are however, a number of problems related to the design and management of the site including: uncontrolled run-off of contaminated stormwater, hazards presented by current medical waste disposal practices, the lack of regular compaction and covering of waste resulting in surface water contamination and nuisance (fles and odour), and poor control over public access to the site and consequent risks to the public. (JICA 1998).

Other, more general problems related to the management of solid waste in Samoa include (Gangaiya and Wele 1994, GOWS 1993b JICA 1998):

- The problem of illegal dumping of rubbish down banks, into stream beds, mangrove forests and lagoons
- The current inadequate disposal of hazardous waste from hospitals and industry
- The tendency for waste that are not suitable pig food to be incinerated resulting in localised air pollution
- The limited number of waste minimisation activities occurring (eg. Recycling, re-use, composting etc)

Source: a)

Related Agency
① Department of Lands, Surveys and Environment (DLSE)
② Health Department (HD)

Source: a)

Laws and Regulations	Presence	Name of Laws or Regulations (Reference)
① Laws on waste	○	• Petroleum Act 1984 • Lands, Surveys and Environment Act 1989
② Laws on hazardous waste	○	• Poisons Act 1968 • Pesticide Regulations 1990

Note: ○ : Issued, × : None, △ : Under planning, ? : Unknown

#### 4.5 Energy Conservation & Alternative Energy

There are 3 main sources of energy in Samoa: biomass (including forests, coconuts and coconut trees), imported petroleum fuels and hydro-electric generation (SR 1982 cited in GOWS 1991). Biomass is the main source of energy for domestic cooking while hydro and diesel are the sources of electric power. Approximately 75% of the electric power produced on Upolu is generated by hydro power but all power produced on Savaii is diesel generated. Nationally approximately 50% of electricity is from hydro-power (GOWS 1993b). Hydro-electricity is generated partly from small 'runs of the river' plants and partly from the Afulilo hydro scheme, a large water storage scheme at the western end of Upolu (GAOWS 1993b). A feasibility study for a new hydro-electric scheme on Savaii has been completed but it has not been decided whether the scheme will go ahead (GOS 1998).

Source: a)

Related Agency
① Electric Power Corporation (EPC): (managed by a board consisting of the Ministry of Public Works and Directors of government departments)

Source: a)

Main issue related to energy
<ul style="list-style-type: none"> <li>• The rapidly increasing energy demand: electric power demand is increasing at 8% per annum (GOS 1998)</li> <li>• The high cost of imported petroleum and diesel fuel</li> <li>• Environmental costs of hydro-electric projects may be significant: for example, the Afulilo Hydro-electric project flooded an upland swamp forest – the rarest ecosystem in Samoa, and the proposed hydro-scheme on Savaii is sited in a pristine wilderness area.</li> </ul>

Source: a)

Laws and Regulations	Presence	Name of Laws or Regulations (Reference)
① Laws on energy use and conservation	?	

Note: ○ : Issued, × : None, △ : Under planning, ? : Unknown



## 4.6 Water Supply

Samoa is well served by reticulated water supplies. According to the 1991 national census (GOWS 1993a) about 90% of Samoa's population have access to a piped water supply (rural 87% and urban 98%), although these figures may be exaggeration (Costin 1996). Most of the water is from surface sources, with the rest from boreholes and rainwater catchments (GOWS 1993a). The piped supply may be from a Samoa Water Authority supply system or a community (village) based water supply system (Cosin 1996). Currently there are twenty two community water supply systems operating independently of the water authority and managed by district water committees. These independent systems are often plagued by a lack of resources and usually in a state of disrepair (Cosin 1996)

Source: a)

Related Agency
① Samoa Water Authority (SWA)
② District water committees
③ Electric Power Corporation: (taps many rivers on Upolu for hydro-electric schemes leading to conflicts with the water authority in some cases (Costin 1996).)

Source: a)

Major problems related to water supply
<ul style="list-style-type: none"> <li>• High water consumption per capita (estimated at 400 to 650 litre/person/day, compared with the average consumption of 200-250 litres per day in developed countries)</li> <li>• High leakage from water supply mains and plumbing</li> <li>• A relatively low level of service provided by the SWA because of poor water quality, intermittent supply, frequent supply interruptions and poor customer relations</li> <li>• Damage to water catchments from agricultural activities, unplanned development and cyclones</li> <li>• Conflicting demands for water between major water users especially the SWA and the EPC</li> <li>• Fragmented control, management and protection of water resources</li> <li>• Lack of community awareness and poor community involvement in water management</li> </ul>

Source: a)

Laws and Regulations	Presence	Name of Laws or Regulations (Reference)
① Laws on water resources and supply	○	<ul style="list-style-type: none"> <li>• Water Act 1965</li> <li>• Watershed Protection and Management Regulations 1992</li> <li>• Water Authority Act 1993</li> </ul>
② Laws on use of water resources	?	

Note: ○ : Issued, × : None, △ : Under planning, ? : Unknown

#### 4.7 Waste Water Management

There is no existing public sewerage system in Samoa. The majority of the population are served by on-site facilities such as pit latrines, water seal pit latrines, pour flush toilets, flush toilets with septic systems and on-site treatment at some larger premises (Gangaiya and Wele 1994). There is limited information on the relative proportions of each type of facility, but indications are that in Apia most people use pit latrines (both water seal and open pit).

The number of industries in Samoa is relatively small and the nature of the wastes produced by most industries does not make them significant pollutants (Ganyaihya and Wele 1994). However, industrial wastewater pollution is of concern because of the chemical and toxic nature of some of the waste and the fact that the cumulative effect of the discharged chemicals is unknown (SPREP 1993). The industries which are believed to have the greatest impact on pollution levels are the brewery, the oil depots, the power plants and possibly the government slaughter house (Gangaiya and Wele 1994).

There are very limited data on waste water pollution levels so the quantification of pollution sources is very difficult (SPREP 1993). However, there is evidence of contamination of the marine environment by domestic wastewater and effluent from the Vailima brewery (Gangaiya and Wele 1994).

Source: a)

Related Agency
① Samoa Water Authority (SWA)
② Department of Lands, Surveys and Environment (DLSE)
③ Health Department

Source: a)

Main issues related to waste water management
<ul style="list-style-type: none"> <li>• Septic tanks in low lying areas of Apia have ineffective soakage which is leading to groundwater and surface water pollution</li> <li>• There is limited maintenance of septic systems which is suspected to be resulting in poor performance of septic tanks and leading to contamination of groundwater</li> <li>• There is minimal follow-up of building approvals to check on sewage installations</li> <li>• There are no regulations specifying acceptable levels of industrial or domestic discharges into water bodies</li> <li>• The overall result of poor wastewater management practices is poor water quality, particularly around the Apia town area, which presents significant potential health concerns.</li> </ul>

Source: a)

Laws and Regulations	Presence	Name of Laws or Regulations (Reference)
① Laws on sewerage system	○	• Water Authority Act 1993
② Laws and regulations on industrial effluent	?	
③ Effluent standard	?	
④ Results of monitoring	?	

Note: ○ : Issued, × : None, △ : Under planning, ? : Unknown

## 4.8 Forest Conservation / Desertification

Arguably the single greatest threat to Samoan terrestrial ecosystems is from deforestation. Between the mid 1950's and the late 1980's the proportion of land area covered by forests declined from 74% to 55% with the rate of deforestation accelerating through the 1980's (Martel *et al* in prep.) According to government Forestry Division estimates, between 1978 and 1990 3,000 hectares of forest were lost every year, or 2% of the 1978 forest area per annum (GOWS 1994a). Depending on which estimates are used for comparison this rate is either similar to the estimated rate at which the world's tropical forest are being cleared – between 1 and 2% per annum, or much higher than the average annual deforestation rate measured for the ten countries with the largest extent of humid tropical forest in the world-0.6% (Martel *et al* in prep.). Recent evidence of a slowdown in deforestation as a result of the taro blight (see section 2.5) may be shortlived as the Ministry of Agriculture, Forestry, Fisheries and Meteorology (MAFFM) continues to develop new bright resident taro varieties.

While most deforestation is agriculture related, timber logging has become an important activity in recent decades, especially on Savaii. Between 1978 and 1990 20% of all forest loss in Samoa was logging related, and 97% of the logging occurred on Savaii (GOWS 1994a). In 1994 the Forestry Division estimated that at current rates of removal, all remaining merchantable forest will be gone by the end of the century (GOWS 1994a).

Source: a)

Related Agency
① Forestry Division (FD)
② Ministry of Agriculture, Forestry, Fisheries and Meteorology (MAFFM)
③ Division of Environment and Conservation (of DLSE) (DEC)

Source: a)

The major factors promoting deforestation in Samoa are (Martel <i>et al</i> in prep.)
<ul style="list-style-type: none"> <li>• Population growth, especially prior to the 190's when growth was over 3% per annum</li> <li>• Expansion of cash crop agriculture, especially coconuts and cocoa, and recently taro</li> <li>• Changes in land tenure giving individuals clearing forest land tenure over the land</li> <li>• Technological improvements such as the use of chain saws and herbicides which have allowed the faster clearance of larger areas</li> <li>• Natural catastrophes such as cyclones and fires</li> <li>• Expansion of road networks</li> <li>• Timber logging</li> </ul>

Source: a)

### Native Ecosystems in Samoa

Ecosystem Type	Approximate Area (km <sup>2</sup> )	% of national land cover
Coastal rainforest	7	0.2
Lowland rainforest	280	9.5
Montane rainforest	626	21.4
Cloud rainforest	76	2.6
Volcanic succession	92	3.1
Ridge forest	34	1.1
Secondary forest	66	2.2
Disturbed Native Vegetation	104	3.5
Other native ecosystems*	10	0.3
Non-native Ecosystem	1,541	46.1
Total	2,836	100

\* The figure for other native ecosystems is very approximate because many of these ecosystems are very small and have not been mapped accurately

Source: a)

Laws and Regulations	Presence	Name of Laws or Regulations (Reference)
① Laws on forest conservation	○	• Forest Act 1967 • Lands, Surveys and Environment Act 1989
② Laws and regulation on protection area	×	• National Parks and Reserves Act 1974
③ Laws on desertification	×	

Note: ○ : Issued, × : None, △ : Under planning, ? : Unknown

## 4.9 Biodiversity

Samoans continue to rely heavily on biological resources for subsistence and for their economic, social and cultural well-being. However, the increasing demand for natural resources from a growing population and from changing exploitation patterns is putting tremendous pressure on natural ecosystems and is threatening the survival of existing biodiversity. Samoa is particularly vulnerable to these pressures because the islands are small and isolated with limited natural resources.

### Marine and coastal resources

Traditionally Samoa's reefs and lagoons have been the prime source of subsistence protein for Samoans. However, recent evidence suggests that the maximum sustainable fisheries yield has been exceeded in many parts of Upolu, at least in the inshore fishery (Zann 1991) and that the high productivity of marine resources is being reduced by a wide range of activities (Zann 1992). Declining marine productivity has led to declining fish catches (Zann 1991).

In addition to the anthropogenic impacts, natural impacts that have had a serious impact on marine productivity and biodiversity in Samoa include cyclone damage and crown of thorns starfish (*Acanthaster planci*) outbreaks (Zann 1992). Cyclones Ofa (1990) and Val (1991) caused massive physical reef damage, especially on northern reefs while regular outbreaks of *A. planci* have also caused significant reef damage, most recently between 1983 and 1991 (Zann 1992).

Source: a)

Related Agency
① Division of Environment and Conservation (of DLSE) (DEC)
② Department of Lands, Surveys and Environment (DLSE)
③ Ministry of Agriculture, Forestry, fisheries and Meteorology (MAFFM)

Source: a)

Causes of declining marine productivity
<ul style="list-style-type: none"> <li>• the use of destructive non-selective fishing methods such as poisons and explosives</li> <li>• overfishing as a result of the use of introduced and effective fishing techniques</li> <li>• pollution of lagoons from sewage, fertilizers and biocides, toxic wastes and oil spillage</li> <li>• loss or damage to fish habitat such as mangroves through poor design or inappropriate location of development projects such as reclamations, causeways, bridges, roads and garbage dumps</li> <li>• sedimentation of reefs from agriculture, deforestation, beach mining, lagoon dredging and construction</li> <li>• harvesting of coral and marine fish for export</li> </ul>

Source: Zann 1991, SPREP 1992, Zann 1992, a)

Major Threats to Biodiversity
<ul style="list-style-type: none"> <li>• Loss of habitat from deforestation, mangrove reclamation, poorly planned developments</li> <li>• Overharvesting of biological resources: especially birds and bats</li> <li>• Use of non-selective resource harvesting practices such fish poisons and dynamite to catch fish</li> <li>• Pollutin from excessive use of agricultural chemicals, poor waste disposal etc</li> <li>• Introduction of invasive alien species. eg mile a minute vine, invasive trees such <i>Albizia</i>, <i>Funtumia</i>, Giant African Snail</li> </ul>

Source: a)

Laws and Regulations	Presence	Name of Laws or Regulations (Reference)
① Laws on protection for fauna and flora	○	• Lands, Surveys and Environment Act 1989 • Protection and Conservation of Wild Animals Regulation 1993
② Laws and regulations for protection for specific species	?	
③ Laws and regulations on hunting	?	
④ Laws and regulations on protection area	○	• National Parks and Reserves Act 1974
⑤ Listed species in the Red Data Book	?	
⑥ Others (Marine resources)	○	• Agriculture, Forestry and Fisheries Ordinance 1959 • Exclusive Economic Zone Act 1977 • Fisheries Act 1988

Note: ○ : Issued, × : None, △ : Under planning, ? : Unknown

#### 4.10 Natural Resource Management

Samoa has no mineral resources so the major natural resources are land, water, marine and biological. There is increasing evidence that current levels and patterns of utilisation of many natural resources are no longer sustainable. The strongest indication that sustainable yields have been exceeded includes evidence for declining fish catches (Zann 1991), and declining merchantable forest stocks (GOWS 1994a). Concerns have also been raised about degradation of land resources such as high rates of soil erosion and declining soil fertility (eg FAO 1990) and degradation of water resources due to pollution from domestic and industrial waste (eg Gangaiya and Wele 1994). Evidence that populations of some biological resources such as harvested birds and bats and marine turtles are in decline has led to the passage of legislation banning or restricting harvests.

Source: a)

Related Agency
① Ministry of Agriculture, Forestry, fisheries and Meteorology (MAFFM)
② Department of Lands, Surveys and Environment (DLSE)
③ Samoa Water Authority (SWA)

Source: a)

Key constraints regarding natural resource management
<ul style="list-style-type: none"> <li>• The natural resource base is extremely limited and therefore easily degraded</li> <li>• The rates of resource extraction have increased enormously as a result of population growth, technological improvements and the commercialization of the economy</li> <li>• The management of natural resources is split between a number of government departments making overall coordination difficult</li> <li>• There has been a tendency for government to favor natural resource 'development' options over 'conservation' options, making sustainable resource management difficult to achieve</li> </ul>

Source: a)

Laws and Regulations	Presence	Name of Laws or Regulations (Reference)
① Laws on conservation of natural resources	○	Lands, Surveys and Environment Act 1989
② Laws on use and conservation of mining resources	×	
③ Laws on underground resources	×	

Note: ○ : Issued, × : None, △ : Under planning, ? : Unknown

#### 4.11 Natural Disaster

Samoa is prone to a number of natural disasters including tidal waves, earthquakes, floods, fire and cyclones. Of these only fire and cyclones have had significant impact in recent history.

**Cyclones:** cyclones are the most severe natural disaster to afflict Samoa. They occur irregularly, but serious ones average about one every ten years (Whistler 1992). The two most devastating cyclones in recent history occurred this decade: Cyclone Ofa (1990) and Val (1991). These cyclones had a serious impact on the Samoan economy. For example, it is estimated that the damage caused by Cyclone Val to homes, crops and infrastructure was at least SAT\$600 million (GOWS 1992).

Cyclone damage to the natural environment, especially the impacts on coral reefs, forests and terrestrial wildlife, can also be very significant. In some places cyclone Val caused the uprooting or total defoliation of up to 90% of the trees (DEC 1994) and significant declines in bird and bat numbers were recorded following the cyclone (Lovegrove et al 1992). The Cyclone Ofa caused massive physical damage to northern leeward reefs with live corals and underlying coral rubble being heaped up to form emergent cyclone banks or islands. Up to 50km of emergent banks were formed in this way (Zann 1992). The longer term ecological impact of cyclones on resource productivity is difficult or impossible to calculate.

**Fire:** there is very little published information on the incidence and impact of fires in Samoa, but it is known that fires do not approach cyclones in overall impact. The northwestern part of Savaii is the driest part of Samoa and the most prone to drought and to fires. Many of these fires are lit deliberately by planters to clear undergrowth but then spread out of control (Talie Foliga pers. com.) The most severe fires were recorded in 1983 and again in 1998. Both fires burned large areas of secondary forest and agricultural plantations on Savaii (Talie Foliga pers. com.). However, it is believed that the 1983 fire caused more economic damage because it burned some areas of plantation forest.

Source: a)

Related Agency
① National Disaster Council (NDC)
② Disaster Support Organization (DSO)

Source: a)

Laws and Regulations	Presence	Name of Laws or Regulations (Reference)
① Laws on natural disaster	?	

Note: ○ : Issued, × : None, △ : Under planning, ? : Unknown

## 4.12 Environmental Education

Most environmental education efforts in Samoa are co-ordinated by the Division of Environment and Conservation (DEC). Activities related to education within the DEC are financed by both their own budget as well as various external sources, most notably NZODA and SPREP in recent years.

All education activities within the DEC are either coordinated or co-implemented by the Environment Education and Information Unit (EEIU), occasionally working with other units within the Division and/or with other institutions outside of the Department. The EEIU of the DEC consists of a Senior Environmental Education Officer in charge of one Environmental Information Officer.

The EEIU's responsibilities are to promote environmental issues and to raise public awareness of these issues through various means. Present areas of emphasis for this unit are:

- Working with the Curriculum Development Unit (Department of Education), integrating environmental education into the secondary-level curriculum.
- Production of pamphlets to raise public awareness (eg. composting).
- Translation of environmental education materials into the Samoan language
- Production of environmental videos
- Environmental information and networking:
  - Maintenance and improvement of the environment information library
  - Upgrading database software
- Database networking project with other national institutions
- Outreach programme: Visitors Bureau road shows- involving presentations and displays to raise environmental awareness in rural areas.
- Public Awareness Programmes: eg world biodiversity day, world environment day, world ozone day, clean up the world campaign
- National Environment Week & Tree Planning (usually first week in November)

Constraints to the successful achievement of environmental education goals include:

- delays in acquiring replacements for vacant positions within the DEC
- lack of qualified educators within the DEC (there is only one at the current time)
- the lack of 'hands-on' educational programmes reaching out to the general public have adversely limited the DEC's role in public education

Source: a)

Related Agency
① Division of Environment and Conservation (of DLSE) (DEC)
② Education Department
③ Schools
④ Churches
⑤ Youth groups
⑥ Environmental NGOs
⑦ South Pacific Regional Environment Programme (SPREP)
⑧ Ministry of Agriculture, Forestry, fisheries and Meteorology (MAFFM)
⑨ Health Department (HD)

Source: a)

Laws and Regulations	Presence	Name of Laws or Regulations (Reference)
① Laws on education	?	
② Guidelines on environmental education	?	

Note: ○ : Issued, × : None, △ : Under planning, ? : Unknown

## 5. INTERNATIONAL RELATIONSHIP

## 5.1 International Convention

Conventions and agreements on environmental issues	Year
1) Basel Convention on the control of transboundary movement of hazardous waste and their disposal	1989
2) Climate Change Convention	1992
3) Convention for the Protection of the Natural Resources and Environment of the South Pacific Region (SPREP Convention)	1986
4) London amendments to the Vienna Convention for the Protection of the Ozone Layer	1985

Source: a)

## 5.2 International Cooperation Project

Donor	Project
ADB	<ul style="list-style-type: none"> <li>• Apia Sewerage Project: currently under review by the ADB.</li> </ul>
AusAID	<ul style="list-style-type: none"> <li>• Management of Persistent Organic Pollutants (POPs) in Pacific Island Countries: a regional project managed by SPREP targeting chemical wastes and contaminated sites.</li> <li>• The Samoa Fisheries Project (2<sup>nd</sup> Phase): Provision of technical assistance to the Fisheries Division of MAFFM for the development of the fishing industry in Samoa.</li> </ul>
European Union	<ul style="list-style-type: none"> <li>• Regional Waste Education and Awareness Project (implemented by SPREP)</li> <li>• Rural Waste Supply Programme: aims to rehabilitate the rural water supply in the most populated parts of each of Samoa's two main islands</li> <li>• Microproject financing for a number of small projects including some related to fisheries and agricultural development</li> </ul>
FAO	<ul style="list-style-type: none"> <li>• Investigation and assessing pesticide use in the home</li> <li>• Honeybee Development Project: administrated by the Samoan Women in Business Foundation and is helping women' groups to develop honey production businesses.</li> </ul>
NZODA	<ul style="list-style-type: none"> <li>• Management Services Consultancy (MSC): providing substantial financial assistance to the DEC for capacity building and biodiversity activities through community organisations.</li> <li>• Private Forestry Programme: help the Forestry Division of MAFFM to create a privatised forestry industry. The project is expected to commence in late 1998 or early 1999.</li> </ul>
UNDP	<ul style="list-style-type: none"> <li>• Fruit Tree Development Project: formerly executed by FAO but funds now go directly to the MAFFM.</li> <li>• Substantial funding for a number of SPREP activities dealing with regional environmental issues (see under SPREP)</li> </ul>
UNESCO	<ul style="list-style-type: none"> <li>• Education for sustainable living: funding research by students into traditional management of coastal resources. A booklet will be produced in 1999 for wide distribution by the Education Department.</li> </ul>
WHO	<ul style="list-style-type: none"> <li>• Improved technical capability in food handling in the commercial sector and food and water monitoring: This 2 year programme has funded technical training and materials for the environmental health section of the Health Department and training in food safety and domestic waste disposal for community groups.</li> <li>• Health Promotion in schools</li> <li>• Healthy Islands Program</li> </ul>

出典：参考資料 a)



## 6. INFORMATION SOURCE

### 6.1 Governmental Agency

Name of agency	Contact address
a) Department of Lands, Surveys and Environment	• P.O. Private Bag Apia, Samoa Tel: 25670/23800, Fax: 23176
b) Ministry of Agriculture, Forestry, Fisheries and Meteorology	• P.O. Box 1874 Apia, Samoa Tel: 22561, Fax: 22565 • P.O. Box 1874 Apia, Samoa Tel: 22561, Fax: 22565 • Tel: 25407/21054, Fax: 22565 • Tel: 22624/20369, Fax: 24292 • P.O. Box 3020 Samoa Tel: 20855, Fax: 20857
c) Department of Health	• P.O. Box 1869 Apia, Samoa Tel: 21611, Fax: 21927
d) Department of Education	• P.O. Box 1869 Apia, Samoa Tel: 21911, Fax: 21917
e) Department of Public Works	• P.O. Private Bag Apia, Samoa Tel: 21611, Fax: 21927
f) Department of Trade, Commerce and Industry	• P.O. Box 862 Apia, Samoa Tel: 20471, Fax: 21646
g) Ministry of Transport	• P.O. Box 1607 Apia, Samoa Tel: 23700, Fax: 21990
h) Samoa Water Authority	• P.O. Box 245 Apia, Samoa Tel: 20409, Fax: 21298
<b>Educational Institutions/Libraries</b>	
a) National University of Samoa	• P.O. Box 5768 Apia, Samoa Tel: 25624/20072, Fax: 20938
b) Nelson Memorial Library	• P.O. Box 5768 Apia, Samoa Tel: 20188
c) University of the South Pacific-Alafua Campus	• P.O. Private Bag Alafua, Samoa Tel: 21671, Fax: 22933
d) Samoa Polytechnic	• P.O. Box 861 Apia, Samoa Tel: 25918, Fax: 25489
<b>Regional and International Institutions</b>	
a) South Pacific Regional Environment Programme (SPREP)	• P.O. Box 240 Apia, Samoa Tel: 21929, Fax: 20231
b) Food and Agriculture Organization (FAO)	• Private Mail Bag Apia, Samoa Tel: 22127, Fax: 22126
c) United Nations Development Programme (UNDO)	• Private Mail Bag Apia, Samoa Tel: 23670-2, Fax: 23555
d) United Nations Educational, Scientific and Cultural Organisation (UNESCO)	• P.O. Box 5766 Apia, Samoa Tel: 24276, 22259, Fax: 22253
e) World Health Organization (WHO)	• P.O. Box 77 Apia, Samoa Tel: 23756/7, Fax: 23765

Source: a)

### 6.2 Non-governmental Organization (NGO)

Name of organization	Contact address
<b>National</b>	
1) O Le Siosiomaga Society Inc. (OLSS)	• P.O. Box 5774 Matautu, Samoa Tel: 21993, Fax: 21993
2) Fa'asao Saai	• P.O. Private Bag Safua Hotel, Savaii Tel: 51271, Fax: 251272
3) Western Samoa Sustainable Farming Association (WSFA)	• P.O. Box 1874 Apia, Samoa Tel: 2922
4) Young Mens' Christian Association (YMCA)	• P.O. Box 2017 Apia, Samoa Tel: 23185, Fax: 23280
<b>International</b>	
1) Seacology Foundation	• P.O. Private Bag Safua Hotel, Savaii Tel: 51271, Fax: 23280

Source: a)

### 6.3 Embassy

Name of organization	Person in charge	Contact address
Embassy of New Zealand which information covers at first	no information	20-40 Kamiyama-cho, Minato-ku, Tokyo 108-0073 Tel: 03-3467-2271

Source: d)

List of Abbreviation	
DEC	Division of Environment and Conservation (of DLSE)
DLSE	Department of Lands, Surveys and Environment
DSO	Disaster Support Organization
ED	Education Department (ED)
EPC	Electric Power Corporation
FD	Forestry Division (of MAFFM)
HD	Health Department
MAFFM	Ministry of Agriculture, Forestry, Fisheries and Meteorology
NDC	National Disaster Council
SPREP	South Pacific Regional Environment Programme
SWA	Samoa Water Authority

Source: a)

## 7. FACT SHEET

## a) South Pacific Regional Environment Programme (SPREP), 1998. Country Profile Study on Environment: Samoa

Following references numbered by a-O are referred in a).

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