TONGA ENABLING ACTIVITIES FOR THE DEVELOPMENT OF
A NATIONAL IMPLEMENTATION PLAN
FOR THE STOCKHOLM CONVENTION ON
PERSISTENT ORGANIC POLLUTANTS

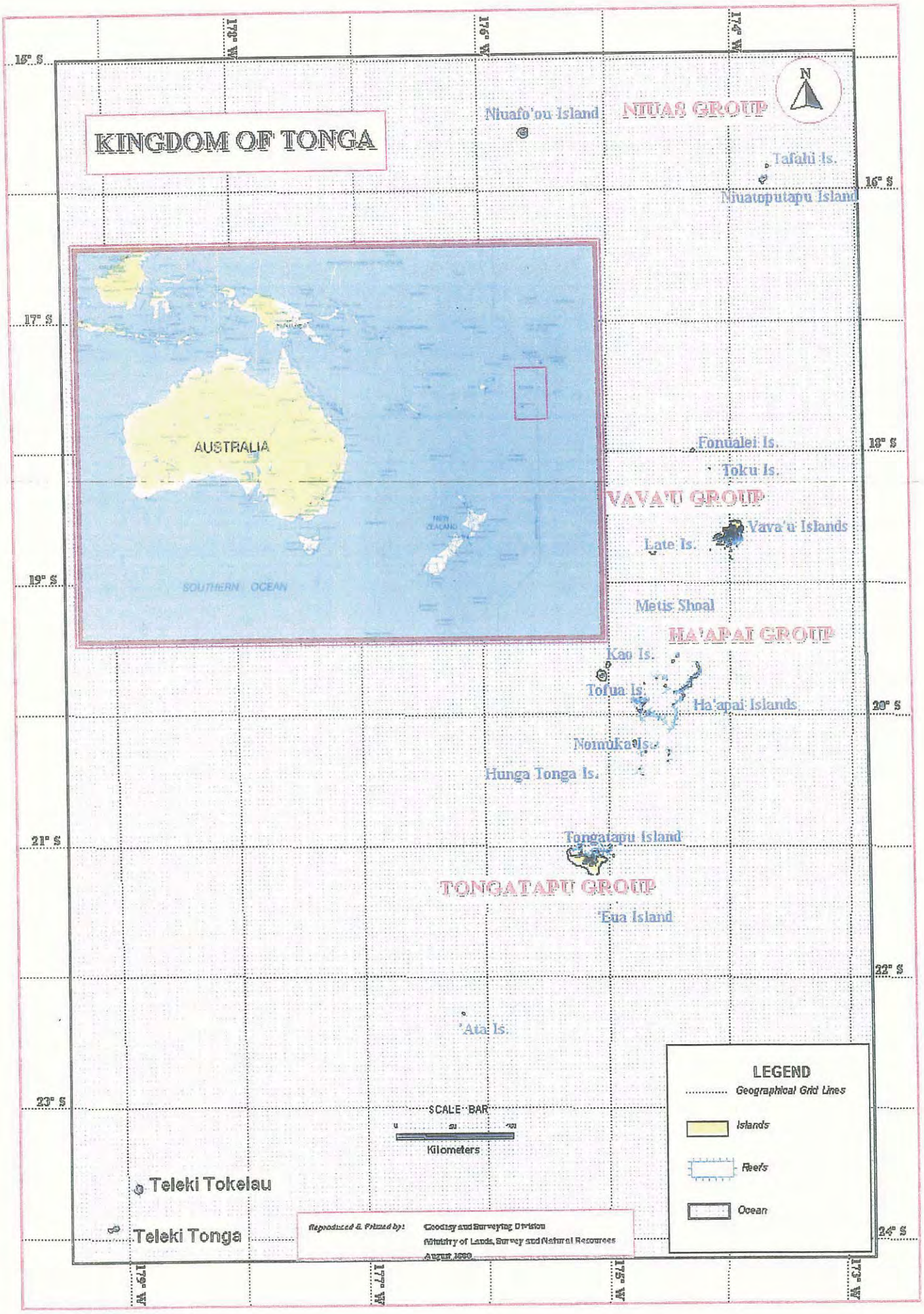
NATIONAL IMPLEMENTATION PLAN
2009

GEF

KINGDOM OF TONGA

UNEP

Ministry of Environment and Climate Change
P.O. Box 917
Nuku'alofa
TONGA


KINGDOM OF TONGA
Niuafo'ou Island
NIUAS GROUP
Tafahi Is.
Niuatoputapu Island
AUSTRALIA
SOUTHERN OCEAN
Fonualei Is.
Toku Is.
VAVA'U GROUP
Vava'u Islands
Late Is.
Metis Shoal
HA'APAI GROUP
Kao Is.
Tofua Is.
Ha'apai Islands
Nomuka Is.
Hunga Tonga Is.
Tongatapu Island
TONGATAPU GROUP
'Eua Island
'Ata Is.
Teleki Tokelau
Teleki Tonga
SCALE BAR
Kilometers
LEGEND
Geographical Grid Lines
Islands
Reefs
Ocean
Reproduced & Printed by: Geodesy and Surveying Division
Ministry of Lands, Survey and Natural Resources
August, 1999
15° S
16° S
17° S
19° S
20° S
21° S
22° S
23° S
24° S
178° W
179° W
176° W
175° W
174° W
173° W

FOREWORD

The Kingdom of Tonga is committed to protect human health and the environment from hazardous wastes and chemicals such as persistent organic pollutants (POPs) hence the signing of the Stockholm Convention (SC) in May 2002 and the proposed ratification. The National Implementation Plan (NIP) was formulated through development of appropriate strategies within the framework of the National Strategic Development Plan 8 and the Corporate Plans of relevant organization/agencies. The National Implementation Plan (NIP) is further supported by the formulation of the Hazardous Wastes and Chemicals Bill 2006 which is currently being processed for approval.

The United Nation Environment Programme/Global Environment Facility (UNEP/GEF) enabling activities for the Stockholm Convention on POPs has facilitated an up to date National Chemical Management Profile, POPs inventory including the first analysis of POPs in human milk which clearly indicated the prevalence of intentional POPs in Tonga and the formulation of the National Implementation Plan for SC on POPs.

The intentional POPs were never produced in Tonga but were imported for agricultural and industrial use in the past years. This signifies the importance that Tonga should join the global community towards POPs free environment. The release of unintentional POPs in Tonga were not as significance indicating the low level of industrial activity. However, because of potential health and environmental impact, effort should be strengthened to ensure reduction in the emission of unintentional POPs and the adoption of best available technique/best environmental practices (BAT/BEP).

The National Implementation Plan has been developed through a highly consultative process, in order to fulfilling the national obligations to the SC as well as intercepting any further release of POPs to the environment. This is in accordance with our national vision for a society in which all Tongans enjoy higher living standards and a better quality of life through good governance, equitable and environmentally sustainable private sector-led economic growth, improved education and health standards, and cultural development.

The assistance of UNEP/GEF in the development of the NIP and all the key stakeholders is greatly appreciated and is expected to continue in the implementation phase. The partnerships built during the enabling activity project is to be fostered and strengthened to ensure successful implementation of the NIP.

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Lord Ma'afu Tukui'aulahi,
Minister of Environment and Climate Change.

MINISTER FOR ENVIRONMENT & CLIMATE CHANGE

EXECUTIVE SUMMARY

Background

Tonga is made up of a group of small islands with significant low lying areas and is extremely ecologically vulnerable. The only remaining natural primary forests is 11% and can only be found in remote and inaccessible areas which is mainly due to rapid agricultural expansion.[1] Tonga has an agricultural-based economy and import of agricultural chemicals have been increasing over the years but at the same time, government is committed to protect the environment and human health from hazardous chemicals such as Persistent Organic Pollutants (POPs) .

The National Implementation Plan (NIP) represented the commitment of Tonga to implement its obligations under the Stockholm Convention (SC) on POPs. Tonga signed the SC in May 2002 and is intenting to ratify the Convention. The implementation of the Enabling Activity (EA) project for the SC commenced in 2005 and funded by UNEP/GEF. It facilitated the following: preparation of a POPs inventory, analysis of samples in overseas laboratory, access to technical advisers, building local capacities, formulation of a hazardous wastes and chemicals bill, and public awareness/consultations throughout the main island districts of Tonga.

The EA further extended the management of POPs in Tonga that was previously addressed by the POPs in Pacific Island Countries (PICs) project in 1998 funded by AusAID where polychlorinated biphenyls (PCBs) that were detected in one large waste transformer were shipped to Australia to be disposed in an environmental friendly manner in 2006.

The objective of the Stockholm Convention is to protect human health and the environment from POPs. At present, there are 12 POPs: aldrin, chlordane, DDT, dieldrin, endrin, heptachlor, mirex, toxaphene, hexachlorobenzene (HCB), PCBs , polychlorinated dibenzo-p-furans and polychlorinated dibenzofurans. The following nine chemicals have also been approved for addition to the list: pentabromodiphenylether (PBDE), chlordecone, hexabromobiphenyl, lindane, perfluorooctane sulfonate, octabromodiphnyl ether; alpha hexachlorocyclohexane, beta hexachlorocyclohexane and penta chlorobenzene. There are three chemicals that were proposed to be added to the list as is currently under review: short chained chlorinated paraffins (SCCPs), hexabromocyclododecane and endosulfan. The enabling activity project focused only on the 12 POPs. The inventory of the nine additional POPs is to be conducted during the implementation of the National Implementation Plan.

Persistent Organic Pollutants in Tonga

The result of the study of POPs in human milk in Tonga 2007 (see table below) indicated the prevalence of POPs in the environment. It was evident that DDTs and PCBs were relatively higher with dioxins and furans on the lower end of the scale.

Intentional POPs

1)DDT was imported and distributed widely throughout Tongatapu, Vava'u, Ha'apai and 'Eua to control the banana blight due to scab moth.

No	Name of POPs	Levels of POPs
1	DDTs	792 ng/g fat
2	PCBs	7.28 ng/g fat
3	HCB	5.7 ng/g fat
4	Chlordane	2.2 ng/g fat
5	Dieldrin	1.1 ng/g fat
6	PCDDs	27 pg/g fat
7	PCDFs	0.2 pg/g fat

2)PCBs were previously found in a waste transformer in Tongatapu during the 1998/99 survey under the AusAID POPs in PICs project and was shipped to Australia for disposal in 2006. The old transformers on-line and/or waste in the main island of Tongatapu, Vava'u, Ha'apai and 'Eua were screened for PCBs in 2007 and were confirmed negative. There are 10 transformers in Tongatapu and Vava'u that need to be tested for PCBs as they come off-line.

3)HCB was imported and distributed widely throughout Tongatapu, Vava'u, Ha'apai and 'Eua as a pesticide. There has been no detailed study on sources of hexachlorobenezene emissions in Tonga. The source categories for hexachlorobenzene range from waste burning, transport to agricultural.

4)Chlordane was imported and distributed widely throughout Tongatapu, Vava'u, Ha'apai and 'Eua to control the problem of rose beetles in water melons and vegetables.

5)Dieldrin was imported and distributed widely throughout Tongatapu, Vava'u, Ha'apai and 'Eua for treatment of banana seedlings.

6)Mirex was imported but was only on trial for soil sterilization at the MAFFF Research Station in Tongatapu when it was banned.

7)Aldrin, endrin, heptachlor and toxaphene were on trial for the control of stick insect in coconut blots at Kauvai, Pelehake, Niumate and MAFFF Research Station in Tongatapu when the import and use of these chemicals were banned.

Unintentional POPs

The POPs that can be produced unintentionally are the dioxins, furans, PCBs and HCB. The levels of dioxins and furans is relatively low in comparison to neighbouring countries such as Fiji and Kiribati. However, most of the emission was from uncontrolled combustion and effort is required to further reduce the emission.

Emerging POPs

It is intended that the implementation of the NIP will include an inventory of any newly approved POPs.

Wastes and Contaminated Sites

The waste transformers in Tongatapu and outer islands were tested for PCBs and all were confirmed negative. The community survey on DDT were able to locate 2 burial sites: Pangai in Ha'apai and Tokomololo in Tongatapu.

Public Participation

The public awareness programme consisting of TV/Radio programme, press releases, workshops, newsletters etc. was continuous throughout the duration of the project. The programme was integrated to other existing awareness such as school quiz competition, Miss Valentine competition, women and youth groups. Interested students join the inventory team as part of their study programme project requirement. The school science curriculum was under review to include POPs/hazardous chemicals hence the need for support and further collaboration.

Research, Development and Monitoring

The technical infrastructure for POPs monitoring and research in Tonga is very limited hence relying on overseas laboratories.

Implementation Plan

The NIP consists of specific action plans that reflect the SC on POPs at the same time addressing the POPs issues in Tonga which are as follows:

1. institutional and regulatory strengthening
2. effective control of import/export of POPs/hazardous waste
3. identification, removal, storage and disposal of PCBs and equipment containing PCBs
4. reduce releases from unintentional production and apply best available technique/ best environmental practices (BAT/BEP)
5. identification of stockpiles, articles in use and wastes
6. identification of contaminated sites
7. promote public awareness, information and education
8. effective evaluation and reporting
9. strengthen research, development and monitoring

The estimated cost of the NIP to be implemented over 5 years is USD$5,893,160 where USD$1,053,400 will be met internally and USD$4,839,760 will be met externally (details in Annex A7).

ACKNOWLEDGEMENTS

The Government of Tonga would like to make the following acknowledgements:

- UNEP/GEF for funding the capacity building and preparation of the NIP;
- All Technical Advisers from overseas who have contributed much to the work of the project;
- All laboratories that has conducted the laboratory analysis for the POPs inventory as there is no environmental laboratory;
- All local technical experts that have been engaged as local consultants; and
- The National Project Coordinator and all staff of the project management unit.

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PLAN OF IMPLEMENTATION

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LIST OF ABBREVIATIONS/ACRONYMS

AusAID	Australian Agency for International Development
BAT	Best Available Technique
BEP	Best Environmental Practices
COP	Conference of the Party
CVUA	Germany State Institute for Chemical and Veterinary Analysis of Food
DDT	Dichloro-Diphenyl-Trichloroethane
DDD	Dichloro-Diphenyl-Dichloroethane
DDE	Dichloro-Diphenyl-Dichloroethylene
EPA	Economic Partnership Agreement
EA	Enabling Activity
EIA	Environment Impact Assessment
EC	European Community
GEF	Global Environment Facility
HWC	Hazardous Wastes and Chemicals
MECC	Ministry of Environment and Climate Change
MEWAC	Ministry of Education, Women Affairs and Culture
MLCI	Ministry of Labour, Commerce & Industries
MLSNR	Ministry of Lands, Survey & Natural Resources
MOTEYS	Ministry of Training, Employment, Youth and Sport
MOW	Ministry of Works
NECC	National Environment Coordinating Committee
NIP	National Implementation Plan
PACER	Pacific Agreement for Closer Economic Relation
PICs	Pacific Island Countries
PICTA	Pacific Island Trade Agreement
POPs	Persistent Organic Pollutants
PCBs	Polychlorinated biphenyls
SPREP	South Pacific Regional Environment Programme
SPARTECA	South Pacific Regional Trade and Economic Cooperation Agreement
SC	Stockholm Convention
TEQ	Toxic Equivalent Factor
UNEP	United Nation Environment Programme
UNITAR	United Nation Institute for Training and Research
WHO	World Health Organisation
WTO	World Trade Organisation

1. INTRODUCTION

1.1 Purpose and Structure of the NIP

The purpose of the NIP is to protect the environment and human health from persistent organic pollutants (POPs) through the implementation of Tonga's obligations under the Stockholm Convention. The structure of the NIP is in accordance with the UNEP/World Bank guidance for developing a NIP.

1.2 Stockholm Convention aims and obligations

Once Tonga ratifies the Stockholm Convention, it is required (Art 7) to develop and implement a plan for implementation of its obligations under the convention which include the following:

- eliminate the use of POPs listed in Annex A: Art 3 (1) (a).
- restrict the production of POPs listed in Annex B: Art 3 (1) (b).
- control the import and export of POPs: Art 3 (2).
- regulate production and use of new pesticides and new industrial chemicals which exhibit the characteristics of POPs: Art 3 (3).
- reduce or eliminate releases of POPs from unintentional production: Art 5.
- reduce or eliminate releases of POPs from stockpiles and wastes: Art 6.
- designate a "national focal point" for the exchange of information: Art 9.
- promote awareness and education: Art 10.
- encourage research, development and monitoring: Art 11.
- report on implementation measures: Art 15.

1.3 Mechanism used to develop the NIP

In developing the NIP, the programme of work in the project document signed by the Government of Tonga and UNEP/GEF was the guideline.

1. The national profile of chemical management was updated in accordance with the UNITAR guidelines.

2. Formulation of Hazardous Waste and Chemicals Bill. The existing legislation was reviewed in the light of the chemical conventions, identifying gaps, hence the formulation of the new bill. The review was funded under the project while the drafting was funded by SPREP.

3. POPs Inventory. A Task Team was established with members representing key stakeholder groups (Environment, Health, MAFFF, Marine & Ports and Power Company) with the task of conducting the POPs inventory.

4. National Consultation. Key stakeholder consultations were conducted in Tongatapu, Vava'u, Ha'apai and 'Eua on the National Profile of Chemical Management, Hazardous Waste and Chemical Bill (both English and Tongan version) and the result of the POPs inventory.

5. Action Plan Formulation. A Task Team was established with members representing key stakeholder groups (Environment, Health, MAFFF, Marine & Ports, Power Company (Shoreline), Transport (Ministry of Works), Customs (Porter control), MLCI, Crown Law, MEWAC and MOTEY) with the task to formulate the action plan.

6. National Consultation. A key stakeholder consultation was conducted in Tongatapu, Vava'u, Ha'apai and 'Eua on the action plan formulated.

7. NIP document compilation. The NIP document was compiled together by the National Project Coordinator.

8. NIP technical review. Technical reviews were conducted by Dr B. Graham and Dr D. Piper.

9. NIP document key stakeholder consultation. A key stakeholder consultation was conducted in Tongatapu.

10. Approval. The NIP document was submitted to NECC and Cabinet for approval.

1.4 Summary of POPs issues

The POPs issues in Tonga were based on the inventories and national consultations. Tonga did the POPs in human milk study for the first time using WHO protocol in 2007 which Fiji and Kiribati also did in the same year hence the result will be compared to these 2 countries. The level of POPs in human milk is expected to decline over the year provided that action will be taken to prevent further releases of POPs to the environment hence can be used as an indicator. The issues identified were as follows:

DDT

The past use of unknown amount of DDT in Tonga during the banana growing period is reflected in the relatively high level of DDT in human milk 2007 analysis which

was 729 ng/g fat in comparison to Fiji (rural 573.5 & urban 804.3) and Kiribati (188.9). This was the first time for such analysis and this may indicate that Tonga is among the countries with the highest since Fiji was the second highest in the WHO 4th round of world survey. The use of DDT were no doubt very effective and it was a very important cash crop at the time, however, the growers were not very healthy which was probably due to lack of safety precautions. All effort are to be made to ensure safety use of all pesticides, no further import and release to the environment hence the need to tighten border control, conduct further studies and possibly removal of buried DDT in Tongatapu and Ha'apai.

Dieldrin

The unknown amount of dieldrin used previously in Tonga for treatment of banana seedlings is reflected in the human milk 2007 being relatively higher (2.2 ng/g fat) than Kiribati (1.6) and within the range for Fiji (rural 1.6 & urban 2.8). There is a need to prevent any further import and release to the environment.

Hexachlorobenzene

The hexachlorobenzene was never considered an issue for Tonga. However, the result of the human milk analysis 2007 showed a higher level (5.7 ng/g fat) in comparison to Fiji (rural 2.4 & urban 3.8) and Kiribati (3.2). There is a need to conduct detailed studies on the sources of hexachlorobenzene emissions in Tonga ranging from waste burning, transport, agriculture etc. for better management of emissions.

PCBs

The known source of PCBs in Tonga is the transformer oil. Therefore Tonga has tried to manage waste transformers in Tongatapu since 1998. The coverage was widened through the EA. There is a need to test 10 transformers (technically impossible during EA) as they come off-line to ensure PCB free. Other possible sources of PCBs are to be identified and steps should be taken to prevent any further import and release to the environment. The level of PCBs in human milk was relatively lower (7.28 ng/g fat) in comparison to Kiribati (10.1) and Fiji (rural 8.6 & urban 14.4).

Chlordane

The unknown amount of chlordane used previously in the control of rose beetle in water melon and vegetables during 1960's to 1973 throughout Tongatapu, Vava'u, Ha'apai and 'Eua was reflected in the human milk analysis 2007 which was 1.1 ng/g fat in comparison to Kiribati (1.5) and Fiji (1.7). No community study has been conducted on chlordane.

Dioxins and Furans

It was estimated that the annual release was 24.3 g TEQ/a which was mainly from uncontrolled combustion processes such as landfill fire, domestic waste burning, accidental fire, agricultural burning etc. In the human milk analysis 2007, the WHO - PCDD/F – TEQ was 2.82 pg/g fat in comparison to Fiji (urban 4.5 & rural 3.6) and Kiribati (3.7). The WHO-PCBs-TEQ was 1.27 pg/g fat in comparison to Fiji (urban

2.03 & rural 1.46) and Kiribati (3.07). There is a need to continue to minimize release to the environment.

Public Participation

There was very little awareness of POPs in Tonga, and it was not even in the school curriculum. There is a need to conduct awareness survey to gauge the level of awareness and to formulate an awareness programme for mobilizing support from the community.

Research & Monitoring

There are no existing research and monitoring programme which is vital for reporting and evaluating purposes.

Technical Assistance

It was through technical assistance that the POPs programme in Tonga was implemented. There is a need continue to foster support and collaboration with donor agencies as well as community.

2. COUNTRY BASELINE

2.1 Country Profile

2.1.1 Geography and Population

The Kingdom of Tonga is an archipelago consisting of 171 low-lying coral and volcanic islands with a land area of about 747km^2. The 36 islands that are inhabited occupy a total land area of about 650km^2 spreading over 360,000km^2 of sea. Tonga's islands lie between latitudes 15° and 213.5°S and longitudes 173° and 177°W. Active volcanoes are found in four of the islands.

The Kingdom of Tonga consists of four groups of islands (see map on page 3) extended over a N-S axis, Tongatapu and 'Eua in the South, Ha'apai in the middle, Vava'u in the North, and the small Niuas group in the far north. The capital, Nuku'alofa, is in Tongatapu, the largest island (260km^2). Many of the islands are coralline with a covering of volcanic ash, comparatively flat and often encircled by fringing reefs. Some atolls have been raised by tectonic action. There are also some islands of volcanic origin, notably in the west of the Ha'apai group. Tongan soils are fertile although they vary in type from clay to light sandy mixtures. Recent volcanic dust and ash deposits, providing fertile nutrients overlay many soils. The original forest cover is now found only in isolated areas with most of the land cleared for agricultural production.

Tongatapu Island is low, flat and intensively settled and cultivated. More than two thirds of Tonga's population live there with about half residing in the capital, Nuku'alofa, which is the seat of government and the main seaport. The head offices of the main public and private organizations and companies are located in Nuku'alofa. 'Eua Island lies to the south east of Tongatapu. The distance between 'Ohonua, the main town of 'Eua, and Nuku'alofa, is about 40km. With an area of 87km^2, 'Eua is the third largest island but has only 4% of the population. The island rises from a generally low western side to about 330m at its highest point on the steep-cliff eastern side. A small and diminishing portion of 'Eua is covered with native forest. The island also has fresh water springs and a significant cave system. The main economic activity is agriculture followed by forestry. A government sawmill, recently corporatized, is located at the village of Ha'atu'a.

The Ha'apai group, lying about midway between Tongatapu and the Vava'u group, consists of about 60 islands of which 16 are inhabited. The inhabited islands range in area from 0.38km^2 to 55.6km^2 (Tofua). The main town of the group is Pangai, on the island of Lifuka. The distance between Pangai and Nuku'alofa is about 169km. Two thirds of Ha'apai's population of about 10,000 lives in the four main islands of Lifuka, Foa, Ha'ano and 'Uiha.

The Vava'u group consists of about 70 islands of which 13 are inhabited. The main island has an area of 89km^2 and the group contains about 21% of Tonga's total inhabited land areas. Neiafu, the administrative capital of the group, is on Vava'u Island and is about 302 km from Nuku'alofa. The other 12 inhabited islands are small, ranging from 0.38 km^2 (Okoa) to 8.85 km^2 (Pangaimotu).

The Niuas group includes the island of Niuatoputapu, Niuafo'ou and Tafahi, which lie between 15° and 17°S. The northernmost island, Niuafo'ou, is about 610 km from Nuku'alofa. The Niuas comprise about 11% of Tonga's inhabited land area but only about 3% of the population live there. Niuafo'ou is a collapsed volcanic cone, rising to about 200 m at its highest point with a lake filling the volcanic crater. Niuatoputapu is generally low, rising to a central ridge of about 100 m. Tafahi is an extinct volcanic cone, about 650 m high. Hihifo is the main settlement in Niuatoputapu and 'Esia is the main village in Niuafo'ou.

The Kingdom has a tropical maritime climate. In Tongatapu, the average annual temperature is 23°C with a maximum of 32°C and a minimum of 16°C. Rainfall averages 1,755mm per year (1950-1989) and annual monthly average for 2004 was 179.3mm with a total rainfall of 1,792.5mm. There is a distinct wet season from November to April. The prevailing winds are the southeast trades which blow for about three quarters of the year. Vava'u is much wetter with an average rainfall of 2,289mm per year. The average temperature in Vava'u is 25°C with a small variation from wet to dry season. High intensity-short duration rainfall can occur at any time of the year, particularly during the cyclone season.

The population is predominantly Tongan (98 percent) and was estimated to be 101,134 in 2006[i]. This consisted of an urban population of 23,658 (23.2 percent) of total population. The projected rate of growth from 1996-2006 is estimated to be 0.4% Urban areas were identified as those not relying on agriculture as the principle source of livelihood. They are mainly bounded to these villages although the pressure of internal migration from the outer islands pushes urbanization further out from these towns: **Tongatapu** – Kolofo'ou, Kolomotu'a, Ma'ofanga and Haveluloto; **Vava'u** – Neiafu, Fungamisi and Falaleu; **Ha'apai** – Pangai; **'Eua** – 'Ohonua; **Niuatoputapu** – Hihifo; and **Niuafo'ou** – 'Esia. "Rural areas" were characterized by having agriculture as the principal source of livelihood. The remaining villages were identified as rural.

The average age of the Tongan working population is 24.8 and the population of working age inhabitants (15-65 years old) is 54,478 (1996 census). The Labour Force Participation is recorded at 58.4%. The Labour Force Survey in Tonga in 2003 indicated that income receiving labour force is at 28,151. Many Tongans emigrate for work reasons. Anecdotal evidence suggests that the number of Tongans living abroad may be as high as 100,000. Number of Tongans working overseas is estimated to be around 40,000. The larger Tongan communities are in the United States, Australia and New Zealand. It is estimated that 2,500 Tongans per year emigrate. Whilst this trend means that remittances are the single largest component of Tonga's economy, it also deprives Tonga of vital labour market skills. Unemployment remains a problem particularly youth unemployment. Youth total unemployment rate (age 15-24) is around 11.9%[ii]. The unemployment rate in Tonga is around 13.3% (1996) with percentage of women employed outside the home at 22.8%.

In terms of health the morbidity and mortality patterns in Tonga has improved significantly from those prevailing 40 years ago according to the WHO. The infant

[i] Preliminary figures from Tonga Statistics Department 2006
[ii] Labour Force Survey 2003, Statistics Department

mortality rate (IMR) has declined from about 89 per thousand in 1960 to 19 per thousand in 2002. Life expectancy at birth has increased from 58 years (mid 1970s) to about 69 years in 2002. The crude birth rate has fallen from over 50 per thousand in 1980 to 27.0 per thousand in 1996. The general health of the population is satisfactory. The Tongan language is the main language spoken throughout the Kingdom. [The adult literacy rate is 98.5% (1996 census) with around 50% literacy in English.] The primary school employment rate is close to 100% whilst the secondary school completion rate is 60%. This strong education emphasis can be partly attributed to the role of the churches in Tonga. Around 99% of the population are Christians and religion plays a major role in all aspects of their lives. Christian institutions and activities are well established and prevalent in all villages.

2.1.2 Political and economic profile

(i) Political

The government can be described as a Constitutional Monarchy consisting of the King in Privy Council, the Cabinet, the Legislative Assembly, and the Judiciary. The Privy Council assists the King in discharging his functions and is the highest executive authority. The Council is composed of the Cabinet and any others whom the King chooses to appoint. The Cabinet consists of the Prime Minister, Ministers of the Crown, and the Governors of Ha'apai and Vava'u, appointed by the King and holding office at his pleasure. Cabinet is responsible for administering government and carrying out the decisions of the Privy Council.

The Legislative Assembly consists of the Cabinet, nine elected representatives of the 33 hereditary nobles and nine elected representatives of the people. Most recently (2005) 2 elected noble representatives and 2 elected people representatives were appointed by the King as Ministers of the Crown and by-elections are held to choose their replacements. Elections are held every three years with the new reform being promised as ongoing in the future. The Assembly deliberates for about 6 months, and provides an arena for debate about political and constitutional reform. The House normally opens in the month of May and close at the beginning of November of each year.

Of the six regions, Ha'apai and Vava'u have a Governor, 'Eua, Niuatoputapu and Niuafo'ou have Government Representatives and Tongatapu is administered by the Prime Minister. The Ministry of Health is responsible for health, both nationally and regionally. National and regional environmental responsibilities are shared between the Ministry of Environment and Climate Change, Ministry of Lands, Survey and Natural Resources, Ministry of Agriculture, Food and Forestry, Ministry of Health, Ministry of Fisheries, Ministry of Civil Aviation, Ministry of Works, Ministry of Transport, and Ministry of Labour, Commerce and Industries.

There are some twenty districts in Tonga, each consisting of a number of villages. These are administered by elected district and town officers who are responsible to regional leaders. Town and district officers have, by law, a variety of administrative and other duties such as record keeping of births and deaths, submitting of monthly and quarterly reports to the Prime Minister, organizing village meetings and attending to official, traditional and ceremonial functions of government. Some districts have

health officers that are health workers trained by doctors. Health and environmental issues, however, are administered centrally by Ministries named earlier.

(ii) Economy

Tonga has an agricultural-based economy that is characterized by large trade deficits (T$175.5 million in 2004) and a heavy reliance on external development assistance and private remittances from Tongan communities overseas. Tonga's export base is very narrow. Geographic isolation and narrow resource base restrict the scope for export diversification and import substitution. Agriculture and services dominate the economy. Agriculture exports make up two-thirds of total exports. Agriculture (including fisheries and forests) accounts for 28.3% (37% in 2000) of GDP in 2004 and consists mainly of production of domestic food crops and a narrow range of cash crops (vanilla, squash, kava and watermelons) and declining tuna and fish exports.

Services account for nearly 54.3% (50% in 2000) of GDP in 2004 of which about one quarter (one third in 2000) is government activities in one form or another. Tourism as the second-largest source of hard currency earnings generated around T$22 m in 2005.

As a small open economy Tonga is vulnerable to fluctuations in world commodity prices, uncertainties over personal remittances from abroad and local weather hazards. According to a World Bank Report (1998) Tonga's GNP per capita is US$1,630 placing the country in the lower middle income group of developing countries. However, social indicators reflect living conditions similar to upper middle income countries.

After years of expansion in the early 1990s when booming squash exports largely fuelled economic growth, real GDP growth slowed considerably in 1994/95 and turned negative in the subsequent year. The sluggish performance of the economy in recent years is largely attributable to poor performance of the squash industry which has been adversely affected in recent times by productive inefficiencies, diseases, marketing problems, soil depletion, and unfavorable weather, a shortage of crop financing and growing foreign competition. The same pattern was observed during the 1990s whereby production and export prices fluctuated significantly. As in 1996/97 an export quota was reintroduced in 2004 after a disastrous season was experienced in 2003 where production went up to over 21,000 tons but growers' prices decreased below 10 cents per kg. With the enforcement of the quota in 2004, production fell to 13,088 tons and growers' prices increased to around 70 – 100 cents per kg.

Tonga's export earnings in 2004 were approximately T$31 million with agriculture and fisheries contributing the most. Squash exports to Japans generated around T$23 million in 2004 representing around 74% of total export earnings that year. Major destinations include Japan (squash), New Zealand, USA and Australia.

Tonga imports a high proportion of foodstuff from New Zealand, Australia and Fiji. Imports for 2004 totaled T$206.4 million of which food accounted for about 30%, machinery and transport equipment for 18%, manufactured goods for 14%, and petroleum products for 20%. In 2004, the main sources of imports were New Zealand (37%), Australia (21%), USA (8%), Fiji (17%) and Peoples Republic of China (8%). Remittances is Tonga's largest source of income, totaled to around T$160 million in

2002/2003. Tourism is Tonga's second largest source of earnings generating around T$22 million in 2005.

2.1.3 Profiles of Economic Sectors

(1) Land tenure

All land in the country is the property of the Crown with the provision that every Tongan male above the age of 16 is entitled to a tax allotment of 3.3 hectares of farm land (*'api tukuhau*) and a town allotment of 700m2 (*'api kolo*). This system of land tenure provides the basis for subsistence living and cash crop farming which, in turn, is the major source of livelihood and security. However, the pressure generated by population increase has led to a decrease in the population being assigned an allotment. It is, therefore, one of the main factors either pushing some people to the urban centre of Nuku'alofa in search of employment, or to emigrate.

(2) Agriculture

Apart from its land, sea, and its people, Tonga has very few natural resources. Expansion of the economy depends primarily upon growth in the agricultural sector. Over the past 10 years there has been a sharp decline in traditional commercial crops, particularly copra and bananas. High-value cash crops, such as squash and vanilla, have taken over as the main export crops, with squash accounting for nearly 45% of total export earnings in 2000 and increasing to 74% in 2004. Extensive reliance on the squash crop as dominant export commodity has left Tonga vulnerable to market and climate fluctuations, and exposure to plant disease and/or pests. Because of the high failure rate of agricultural projects in Tonga small growers are unlikely to sacrifice the security of subsistence production and commit themselves entirely to export production.

(3) Industries

In addition to agriculture the industrial sector comprises of small industries located in Nuku'alofa, Tongatapu. The light manufacturing sector accounts for only about 4% of domestic production. These industries produce manufactured items such as paints, leather garments, knitwear and wood products, but attract both local and foreign investments. These relate mainly to the productive areas such as small industries, small businesses and entrepreneurial development. Tourism has also expanded rapidly over the last decade with most tourist facilities concentrating in Tongatapu and the northern islands of Vava'u. Tourist earnings were estimated around T$22 million in 2005, representing a fair portion of foreign earnings. Government is also encouraging diversifying economic activities through regional development programs in other parts of the Kingdom to correct regional economic imbalances.

(4) Membership in Regional and Sub regional Organizations

Tonga is a member of several trade and economic cooperation at the regional and international level. This is seen as a vital pursuit of national development objectives in the quest to diversify exports, hone competitive advantages and increase market access for Tongan products in overseas markets. Tonga is party to the following bilateral regional and multilateral trade agreements. Several of which have implication and are directly related to Multilateral Environment Agreements.

(i) South Pacific Forum

Tonga is a member of the South Pacific Forum, key political grouping organization of the Pacific. It brings together at an annual meeting the 16 Heads of Government of the independent and self-governing States of the Pacific Island regions. This organization was established in 1971 to develop a collective response to regional issues. Since its inception focus have been heavily on regional trade and economic issues. Good governance and security have recently become part of the Forum's agenda. The 16 member States include Australia, Cook Islands, Fiji, New Zealand, Tonga, Western Samoa, Niue, Papua New Guinea, Kiribati, Tuvalu, Vanuatu, Solomon Islands, Republic of Marshall Islands, the Federated States of Micronesia and Palau. In 2005, Other Pacific Island territories [iii] were eligible to become Forum Observers, namely New Caledonia (admitted 1999), East Timor (2002), French Polynesia (2004) and Tokelau (2005). The same year, Leaders adopted a policy which establishes a new category of associates and memberships, and governs the admission, criteria and entitlements for associate membership and observer status. This broadening of membership seeks to facilitate regional cooperation and integration.

(ii) SPARTECA

Tonga is party to the South Pacific Regional Trade and Economic Cooperation Agreement (SPARTECA), signed in July 1980. The SPACTECA Agreement is a preferential non-reciprocal trade agreement whereby Australia and New Zealand extend duty free and unrestricted or concessional access for virtually all products originating in the forum Island Members countries. The agreement include provisions for general economic, commercial and technical co-operation and safeguard provisions against product dumping.

(iii) PICTA/PACER

Under the Pacific Island Trade Agreement (PICTA), ratified by Tonga in 2001, Tonga grant special preference to Member of PICTA. PICTA provides for the phasing out tariffs between Forum Island countries, exception of Australia and New Zealand by the year 2010, as part of a Pacific regional free trade area in goods. Tonga is also a party to the Pacific Agreement for Closer Economic Relations (PACER), the sister agreement to PACER, which entered into force on 3 October 2002. Although PACER

[iii] Territories on a clear path to achieving self-government or independence

is not a free trade agreement, it sets the timetable for regional free trade negations with Australia and New Zealand.

(iv) Tonga – Fiji Bilateral Agreement

A Bilateral Trade Agreement was signed between Tonga and Fiji in 1995, aimed at facilitating the free flow of agricultural products. The Agreement is non-reciprocal in nature, having been formulated shortly after the establishment of a bilateral quarantine protocol for 20 agricultural items imported into Fiji from Tonga.

(v) Cotonou Agreement

Tonga also signed and ratified the Cotonou Agreement between the European Communities (EC) and 70 countries in Africa, Carribbean and the Pacific (ACP) established in 1975. It provide framework for aid, financial support, to stabilize commodity prices and enhanced trade opportunities. EC extends non-reciprocal trade preferences to the ACP States. The Cotonour Agreement was signed in 2000 to replace the "aid and trade" Agreement of the Lome Convention signed in 1975. This latter agreement required the negotiations of new compatible agreements known as economic partnership agreement (EPA) with the EU. Tonga is actively involved in the negotiation of EPA at the regional level. The EPA is expected to commence in January 2008.

(vi) World Trade Organization

Tonga is a Member of the World Trade Organization. The accession process started in May 1995 and concluded in the signing of the package of accession at the Hong Kong Ministerial in November 2005. Tonga accepted the Protocol of Accession on 27 June 2007 and became the 151st Member of the WTO on 27 July 2007. The Ministry of Labour, Commerce & Industries is the focal point for WTO matters.

2.1.4 Environmental Overview

The increasing population (0.4%) in Tonga has resulted in the identification of a healthy and sustainable environment to be a top priority for the government and the people of Tonga[1] since the size and density of the population will have an impact on water and energy consumption, sewage and waste production, general infrastructure such as roads, the use of land, and the development of agriculture and marine resources. While this is yet to become a reality, the Ministry of Environment and Climate Change (MECC) continues to advocate for a healthy and sustainable environment for the people of Tonga. The MECC collaborates with the global community through signing/ratifying conventions[2] (see details in table 2.1a) and implementing EA under climate change, biodiversity and biosafety, ozone depleting substances, international waters and POPs. However, the lack of legislation has crippled the effort of MECC as it now has the Environment Impact Assessment Act and Waste Management Act but without regulations. The regulations including three environmental bills are still with the Crown Law Department to be processed for approval.

Table 2.1a Ministry of Environment and Climate Change and International Agreement

International Agreements	Date Signed	Date Acceded/Ratified	Role of the Ministry of Environment and Climate Change
Convention on Biological Diversity		19 May 1998	Implementing Agency
Cartagena Protocol on Biosafety		18 May 2003	Implementing Agency Competent Authority, Clearing House Mechanism
United Nations Convention to Combat Desertification		20 July 1998	Implementing Agency
United Nations Framework Convention on Climate Change		20 July 1998	Implementing Agency
Vienna Convention for Protection on Ozone Layer		29 July 1998	Implementing Agency
Montreal Protocol		29 July 1998	Implementing Agency
London Amendment		26 November 2003	Implementing Agency
Copenhagen Amendment		26 November 2003	Implementing Agency
Montreal Amendment		26 November 2003	Implementing Agency
Beijing Amendment		26 November 2003	Implementing Agency
Stockholm Convention on Persistent Organic Pollutants	22 May 2002		Implementing Agency
Marine Pollution Convention (MARPOL)		1 May 1996	Implementing Agency
Protocol to the Convention on the Prevention of Marine Pollution by Dumping Wastes and other Matters		18 September 2003	Implementing Agency
Waigani Convention	16 September 1995	22 May 2002	Focal Point
Agreement Establishing SPREP	15 September 1995		Focal Point

The MECC is responsible for hazardous wastes and chemicals. The signing/ratification/ accession of chemical conventions is vital for the protection of our environment and human health from hazardous chemicals. It will also enable Tonga to be part of the global effort hence benefit from ongoing capacity building, financial and technical assistance.

The Ministry of Environment and Climate Change is also the operational focal point for the Global Environment Facility (GEF), the global mechanism that funds the implementation of the GEF focal areas such as climate change, biodiversity, international water and renewable energy. Complementary to this mandate, the Department provides the technical input to the Ministry of Foreign Affairs in environmental matters/issues that are addressed by relevant agency of the United Nations (i.e. UNDP, UNEP, UN Commission on Sustainable Development (CSD)) and regional inter-governmental organisations.

As previously mentioned, Tonga has an agricultural based economy which correlates with the relatively high levels of POPs pesticide in the human milk study. There is a saying in Tonga: "*No chemical No economy*". However, the UNEP/GEF POPs project has advocated that safe/appropriate handling and use of agricultural chemicals will result in high yield at the same time the grower and the environment remain healthy. It was estimated that 4 out of 5 holdings in Tonga were not treated with any fertilizers or agricultural chemicals[3] which may indicate that most agricultural produce in Tonga were free of chemical input. The herbicides and pesticides were used by two third of the holdings that used agricultural chemicals and the remaining one third were other types or unknown. Import of agricultural chemicals has been increasing over the years and is expected to continue to increase. The import and use of POPs

pesticides were banned in 1973 but lack of appropriate legislation has resulted in 20 tonnes of DDT being imported in 1982. There is a need to ratify the SC, approve and implement the Hazardous Wastes and Chemicals Bill 2009 in order to prevent any further import of POPs and to comply with the best available technique/best environmental practices (BAT/BEP).

There is a strong correlation between POPs in the environment and bioaccumulation in organism from that environment. The study of POPs in human milk in Tonga[4] indicated that the POPs that are prevalent in our environment were as follows:

Table 2.1b Results of the Analysis of POPs in Human Milk 2007

No	Name of POPs	Levels of POPs
1	DDTs	792 ng/g fat
2	PCBs	7.28 ng/g fat
3	HCB	5.7 ng/g fat
4	Chlordane	2.2 ng/g fat
5	Dieldrin	1.1 ng/g fat
6	Mirex	<0.5 ng/g fat
7	Toxaphene	<0.5 ng/g fat
8	Aldrin	<0.5 ng/g fat
9	Endrin	<0.5 ng/g fat
10	Heptachlor	<0.5 ng/g fat
11	PCDDs	27 pg/g fat
12	PCDFs	0.2 pg/g fat

The intentional POPs are relatively higher in comparison to the unintentional POPs. Therefore, the priority should be on the prevention of any further import and use of intentional POPs as well as decreasing the release on unintentional POPs. POPs like chemicals were also detected in the POPs inventory.[4,20] As the number of POPs are increasing, the NIP was formulated to include existing POPs and any additional.

2.2 Institutional, policy and regulatory framework

Since 1999, some Acts have been enacted, which deal with the management of chemicals during the various stages of their life cycle. The current legislative framework is made up of the following sectoral legislation:

1. ***Waste Management Act 2005*** – provides for the collection and disposal of solid wastes and the management of all wastes including hazardous wastes in Tonga. The Act prohibits the importation into or the arrangement for the movement into, out of or within, Tonga of any toxic or hazardous waste.

2. ***Marine Pollution Prevention Act 2002*** – provides for the prevention of and response to marine pollution and the dumping of wastes and other matters and to give effect to international marine pollution Conventions.

3. ***Pesticides Act 2002*** – This Act establishes the Pesticides Registration Committee (section 7). The functions of the Committee include:

- issue guidelines for the storage, distribution, use and disposal of pesticides;
- promote the efficient, safe use, storage and disposal of pesticides.

Section 6 requires the Registrar to keep a Register of Pesticides; issue pesticide licences for the manufacture, import, distribution or sale of any pesticide; and to issue permits for buying, obtaining or use of any pesticide.

Section 12 enables the Registrar to list and publish in the Government Gazette any pesticide as a banned pesticide and such shall not be imported, manufactured or sold in Tong.

*4. **Public Health Act 2008*** – This Act establishes comprehensive procedures to prohibit the import or selling of adulterated food and regulate food standards, sampling and analysis of food. Strict water supply control measures are also prescribed to prevent contamination of water supplies by toxic or hazardous substances. The Minister of Health is empowered to set emission standards for vehicles and factories and to determine if such emissions are injurious to health.

The Hazardous Wastes and Chemicals Bill – The Hazardous Wastes and Chemicals Bill is the draft framework legislation that would implement the four international conventions relevant to the management of hazardous wastes and chemicals namely –

- the Stockholm Convention on Persistent Organic Pollutants, 2001 (Stockholm Convention)
- the Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade, 1998 (Rotterdam Convention)
- the Convention on the Control of Transboundary Movement of Hazardous Wastes and their Disposal, 1989 (Basel Convention)
- the Convention to Ban the Importation into Forum Island Countries of Hazardous and Radioactive Wastes and to Control the Transboundary Movement and Management of Hazardous Wastes within the South Pacific Region, 1995 (Waigani Convention)

The Bill will address the gaps found in the current legislative framework. Part II of the Bill deals specifically with Persistent Organic Pollutants. It regulates the manufacture, production, importation, exportation, use, storage and disposal of POPs. It appoints the Environment Department as the focal point for all four Conventions. It also designates the National Environment Coordinating Committee as the Competent Authority for the purposes of the Conventions. Section 7 (2) of the Bill provides for the development of a National Implementation Plan for the control and proper management of POPs in Tonga.

The Environment Department will liaise with Crown Law on the drafting of Regulations under the Bill. Section 44 of the Bill gives the Minister of Lands, Survey, Natural Resources and Environment the power to make Regulations necessary for the effective implementation of the Bill and the applicable Conventions including Regulations which provide for –

- additional or alternative "hazardous wastes" and "hazardous chemicals" to be regulated under the Bill

- planning requirements (including compliance, implementation and emergency planning) for government agencies and for companies and persons involved in the management of hazardous substances
- the implementation of relevant international standards
- the collection, evaluation and reporting of data
- monitoring the effects of hazardous substances and the status of implementation of the applicable Conventions
- responsibilities to maintain registers, and for information to be recorded in them
- additional controls over imports and exports, including the tracking of shipments and other border control activities such as customs codes and identification measures
- the imposition of requirements relating to containers, packaging and labeling for hazardous substances
- additional licensing, permit and certification systems, including permits for the collection, transportation and disposal of hazardous wastes and substances
- requirements relating to the sound management of hazardous substances, and the operation of waste management and disposal facilities
- requirements for the provision of safety equipment and procedures and for the training of employees working with hazardous substances
- specific provisions relating to managing radioactive wastes and substances in Tonga, including regulating or prohibiting the importation of equipment and materials which may generate or become radioactive wastes
- obligations to minimize pollution from wastes and substances, and to minimize the consequences of any pollution incidents
- reporting requirements in relation to pollution incidents, discharges, likely impacts on human health and the environment and other relevant matters (including protection for persons making such reports)
- all aspects of the enforcement framework by the Competent Authority and other agencies, including the promotion of inter-agency cooperation and coordination
- promoting cooperation in the taking of legal proceedings for breaches of the Bill
- additional powers by relevant agencies to obtain information
- the provision of powers and facilities to monitor and verify compliance, and to order remedial or preventive action
- the promotion and enforcement of environmentally sound management practices and encouragement of the adoption of new environmentally sound technologies
- the imposition of "user fees" and the "polluter pays" principle
- controls over the incineration and dumping of wastes and substances at sea
- regulating and rehabilitating areas and buildings contaminated by hazardous substances
- the effective involvement of community and industry representatives in planning and decision making processes
- the provision of relevant information, education and training programmes, and
- facilitating the implementation of regional and sub-regional initiatives concerning the proper management of hazardous substances.

There are some gaps in legislation pertaining to the management of various chemical classes which are as follows:

(1) Fertilisers

There are currently no legislative provisions for the management of fertilisers.

(2) Industrial Chemicals

Section 6 of the Waste Management Act 2005 enables the Waste Authority to establish, improve, maintain, iperate and manage the collection and disposal of all waste in the Kingdom, including commercial, industrial and residential waste.

(3) Lab Chemicals

There are currently no legislative provisions for the management of lab chemicals.

(4) Petroleum Products

The Petroleum Act (Cap. 135) and the Petroleum are currently no legislative provisions for the distribution, marketing, use and handling of petroleum products. However, the provisions for disposal are inadequate.

(5) Consumer Chemicals

There are currently no legislative provisions for the management of consumer chemicals.

(6) Air pollution

This is addressed in Part 8 Public Health Act 2008. The Minister of Health is empowered under section 87 of the Act to establish standards for levels of emission of harmful material into the air and also declare by regulations the substances which are noxious or offensive and may cause air pollution. The powers of the Minister under the Act also extend to requiring, motor vehicles which emit excessive or harmful exhaust smoke fumes and smoke or fumes from factories to be examined. The relevant standards are to be set by the Minister.

However no standards for emissions from motor vehicles or factories have been established.

(7) Pollution of inland waterways, marine pollution, groundwater pollution, drinking water pollution

This is addressed in Part V of the Public Health Act 2008; the Water Regulation Gazette Supplement 1963 and 1984; the Birds and Fish Preservation Act; the Fisheries Management Act 2002; the Petroleum Mining Regulations; and the Marine Pollution Prevention Act 2002.

Legislative shortcomings comprise of the absence of standards in place for the testing of or control of noxious discharges into waterways, or groundwater. Neither are there

standards for acceptable levels of such emissions or a decision made as to which constitute a nuisance or are prejudicial to human or environmental health.

A more comprehensive legal framework, addressing water pollution, needs to be established. This could take the form of a Clean Water Act or regulations in which some guidelines might be adopted.

(8) Soil Contamination

There is currently no legislation addressing soil contamination, as The Land Act of 1936 makes no provision for this. Prescriptive legislation defining pollution standards needs to be developed.

(9) Chemical Residues in Food

Part 4 of the Public Health Act 2008 specifically deals with food. Section 20 prohibits the preparation, packaging or selling of any food that has a substance which is poisonous, dangerous or otherwise injurious to health. The Minister may also declare such adulterated food dangerous or injurious. The Act also enables authorised officers to take food samples for the purposes of analysis. Offences are also provided in relation to adulterated food.

(10) Hazardous Waste Treatment and Disposal

Section 6 of the Waste Management Act 2005 empowers the Waste Authority to establish, improve, maintain, operate and manage the collection and disposal of all waste in Tonga including the provision of waste management facilities, including the identification, development and management of waste dump site areas; ensuring the sound management of waste dump site areas and approved dumping and waste storage sites that incorporate comprehensive environmental management systems; the provision of appropriate waste treatment, storage and disposal facilities.

However, there are no standards in place for testing of hazardous wastes. Standards for acceptable levels of hazardous wastes have not been set, nor a decision made as to which are prejudicial to environmental or human health.

(11) Occupational Health, Industrial Chemical Accidents

These are addressed in Part 12 of the Public Health Act 2008. However, there are no standards in place for the testing of occupationally hazardous chemicals. Standards for acceptable levels of occupationally hazardous chemicals have not been set, nor a decision made as to which are prejudicial to human health.

These issues are addressed in the draft Employment Bill, in Part IV, which deals with the health, safety and welfare of employees.

(12) Chemicals used for fishing

This is addressed in the Fisheries Management Act 2002, which prohibits the use of chemicals in fishing. If such chemicals are used in a manner contravening this Act, the

fish or fish products shall be confiscated. There is no provision for the confiscation of the chemical products to ensure that those products will not be used in future in contravention of this Act. An amendment should be proposed to the Fisheries Management Act to make provision for this.

(13) Unknown Chemical Imports, Storage/Disposal of Obsolete Chemicals, Chemical Poisoning/Suicides

There are currently no legislative provisions for the management of chemical imports and obsolete chemicals.

2.2.1 Environmental policy, sustainable development policy and general legislative framework

Tonga is currently implementing the National Strategic Development Plan 8 (SDP8) which includes the Millenium Development Goal 7 to ensure environmental sustainability. The first strategy under Goal 7 stated the need to complete and enforce the legislative framework for environmental conservation and management.

The Environment Impact Assessment (EIA) Act 2003 is the only Act of the Department that has been approved. The role of the Ministry of Environment and Climate Change is wide-ranging and demanding legal and enforcement capacities in order to achieve the goal of environmental sustainability. The Hazardous Wastes and Chemicals Bill 2009 was prepared under the UNEP/GEF POPs project as part of a harmonization of legislation required to implement four international conventions (Stockholm, Rotterdam, Basel and Waigani) relating to hazardous waste and chemical management. The Hazardous Wastes and Chemicals Bill 2009 is now being processed for approval.

2.2.2 Roles and responsibilities of ministries, agencies and other governmental institutions involved in POPs life cycles

The roles and responsibilities of ministries, agencies and other governmental institutions involved in POPs life cycles are as follows:

Ministry of Lands, Survey and Natural Resources
The responsibility for protection of the environment from hazardous chemicals is being delegated to the Ministry of Environment and Climate Change hence the drafting of the Hazardous Wastes and Chemicals Bill 2009 (under the jurisdiction of the Minister of Environment. The Hazardous Wastes and Chemicals Bill 2009 ensure compliance with chemical conventions including the Stockholm Convention on POPs.

Ministry of Agriculture, Fisheries & Forestry
The Ministry is responsible for the implementation of the Pesticides Act 2002 (PA 2002) which establishes the Pesticides Registration Committee (section 7). The functions of the Committee include:

- issue guidelines for the storage, distribution, use and disposal of pesticides;
- promote the efficient, safe use, storage and disposal of pesticides.

A Register of Pesticides is required to be kept, under section 6.

Ministry of Health
The Ministry of Health is responsible for implementing the Public Health Act 2008 which sets out comprehensive measures and procedures in relation to adulterated food, clean water supply, air pollution and health and safety at work.

Ministry of Labour Commerce & Industries
The Consumer Protection Act 2000 protects the consumer and establishes fair trade practices.

Customs Department
The Department is working together with the Environmental staff to introduce the list of hazardous chemicals including POPs as part of the prohibited or restricted exports, as the case may be, to ensure proper control and recording.

Ministry of Works
The Ministry is responsible for mechanical annual examination of vehicles road worthiness prior to issuance of annual license by the Ministry of Transport therefore vital in controlling the emissions of dioxins and furans from the transport sector.

Ministry of Police, Prison & Fire
The Fire Department is responsible for the prevention and managment of accidental fires ranging from bush fire, vehicle fires to house/building fires hence playing a vital role in the minimization of emission of dioxins and furans from accidental fires.

Ministry of Transport
The Ministry is responsible for the control of marine pollution and licencing of vehicles or any other conveyance, hence vital in controlling the emissions of dioxins and furans from disposals.

Ministry of Education, Women Affairs and Culture
The Ministry is responsible for establishment of curriculum, teaching students and Diploma of Education programme for teachers from pre-school, primary, secondary and tertiary levels. The science curriculum was under review in 2007 hence it was timely to introduce POPs in the curriculum.

Ministry of Training, Employment, Youth and Sports
Responsible for Tertiary Education and Employment, and can assist the POPs programme through the Diploma in Agriculture course where growers will be taught on the proper management of pesticides including handling and safety precautions necessary for the use of pesticides. This is vital as the health and environmental impact of pesticides are usually only evident after some years of usage. The ministry also play a vital role in training growers on proper agricultural practices and to minimize agricultural burning as it contributes to the emissions of dioxins and furans.

Tonga Power Ltd

The company is responsible for the management of transformers on-line that have not being tested for PCBs, hence the need for proper management once these transformers becomes waste and place in an appropriate storage to be tested for PCBs.

Crown Law Department

The Department is responsible for processing of the Hazardous Wastes and Chemicals Bill 2009 which covers Tonga's obligations under the Stockholm Convention on POPs for approval.

2.2.3 Relevant international commitments and obligations

Tonga has signed but not yet ratified the Stockholm Convention. However, there are other international Conventions related to chemical management (see table 2.2) that Tonga is a Party and is obligated to comply with each Convention. The MECC is working towards acceding to the Basel and Rotterdam Conventions.

Table 2.2 Chemical Conventions Relevant to Tonga

No.	Convention	Sign	Ratification
1	Stockholm Convention on POPs	22 May 2002	23 October 2009
2	Waigani Convention to Ban the importation into Forum Island Countries of Hazardous and Radioactive Wastes and to control the Transboundary Movement and Management of Hazardous Wastes within the South Pacific Region	16 Sept 1995	22 May 2002
3	United Nations Framework Convention on Climate Change		20 July 1998
4	Vienna Convention for the Protection of the Ozone Layer		29 July 1998
5	Montreal Protocol on Substances that Deplete the Ozone Layer		29 July 1998
	London Amendment		26 November 2003
	Copenhagen Amendment		26 November 2003
	Montreal Amendment		26 November 2003
	Beijing Amendment		26 November 2003
6	Basel Convention		Target date 2010
7	Rotterdam Convention		Target date 2010

Chemical management in Tonga has been neglected over the years hence the lack of appropriate legislation to protect the impact of chemicals, including POPs on the environment and human health. As a result, one of the pressing issue is hazardous chemical wastes ranging from laboratory chemicals to pharmaceuticals which lacks proper disposal processes. Therefore Tonga is considering the ratification of the chemical conventions to join the international community in the protection of the environment and human health from hazardous chemicals and to benefit from ongoing capacity building.

2.2.4 Description of existing legislation and regulations addressing POPs

Of the 12 initial POPs (the Dirty Dozen), nine are pesticides, two are industrial (and can be by-products) and two are by-products. The obligations under the Stockholm Convention include phasing off PCBs by the year 2025, and restricting the existence of those that cannot be completely eradicated.

In Tonga, "all 8 POPs Pesticides are banned from import or use". This indicates that although Tonga is not yet a full member of the Stockholm Convention, work has been underway towards compliance. That impetus needs to be maintained, and monitored continually albeit formally. The work presently undertaken under the ambit of the Pesticides Act 2002, and its predecessors, under the guidance of the Pesticides Registration Committee should be encouraged.

It is also noted that the only known POPs waste was a single large transformer containing PCBs and this was taken away to Australia in 2006 to be disposed in an environmental friendly manner. The removal for disposal was under the AusAID POPs in PICs project". This activity is also a direct compliance with obligations under the Stockholm Convention.

Despite the above activities, there are no legislations in place that directly set out the nature of the obligations under the Stockholm Convention, and as Tonga is to become a member, the enactment of such legislation is required.

2.2.5 Key approaches and procedures for POPs chemical and pesticide management

The import of POPs chemicals/pesticides were banned since 1973. However, there is a need for legal enforcement and to tighten the control at the border since DDT donated by Samoa in 1982 under charity did get through the port of entry.

The uncontrolled combustion was the highest source of emission for dioxins and furans, particularly from landfill fire and domestic waste burning. The open waste dump in the main island – Tongatapu was replaced with a proper engineered landfill in 2006 with the assistance of AusAID. However, open waste dump still exist in Vava'u, Ha'apai, 'Eua and the Niuas. The domestic waste burning is being banned in the main island under the Waste Management Act 2005 with penalty for such practices. The regulation for the enforcement of the Act is currently processing for approval.

The UNEP/GEF POPs project identified two burial areas for DDT which need further assessments and most likely will be shipped overseas for proper disposal.

2.3 Assessment of the POPs issue in Tonga

2.3.1 POPs Pesticides

The Annex A POPs are Aldrin, Chlordane, Dieldrin, Endrin, Heptachlor, Hexachlorobenzene, Mirex, Toxaphene and Polychlorinated Bipehyls (PCB). All

Party countries shall eliminate these chemicals. Tonga does not produce any of these chemicals but were imported until they were banned in 1973. Aldrin, Endrin, Heptachlor, Mirex and Toxaphene were used only in Tongatapu. Chlordane, Dieldrin, Hexachlorobenzene and PCB were distributed throughout Tongatapu, Vava'u, Ha'apai and 'Eua.

As part of the SC enabling activities, regulatory framework was developed to regulate hazardous chemicals and wastes including POPs. The Hazardous Wastes and Chemicals Bill 2006 was translated and consultations in collaboration with the Crown Law Department were conducted during 2007 in Tongatapu, Vava'u, Ha'apai and 'Eua.

Mirex, Aldrin, Endrin, Heptachlor and Toxaphene

The use of Mirex was restricted to the MAFFF Research Station as it was only on trial for soil sterilization. The other four pesticides: Aldrin, Endrin, Heptachlor and Toxaphene were on trial for the control of stick insect in coconut plots at Kauvai, Pelehake, Niumate and MAFFF Research Station. The minimal usage and restricted distribution is evident in the fact that these POPs were not detected (<0.5 ng/g fat) in human milk analysis.[4]

Chlordane

The problem of rose beetle in water melon and vegetables was controlled using chlordane during the 1960's until it was banned in 1973. Therefore this pesticide was widely distributed in Tongatapu, Vava'u, and Ha'apai. The 2007 level of chlordane in Tonga human milk[4] was 1.1 ng/g fat in comparison to Fiji (1.7) and Kiribati (1.5).

Dieldrin

The banana seedlings were treated with dieldrin in the attempt to combat the *Lemprosema* moth. Therefore it was widely distributed and used by growers throughout Tongatapu, Vava'u, Ha'apai and 'Eua until it was banned in 1973. This is further evident in the human milk survey[4] 2007 where Tonga level of dieldrin was relatively higher (2.2 ng/g fat) than Kiribati (1.6) but within the range for Fiji (rural 1.6 & urban 2.8).

Hexachlorobenzene

The source categories for hexachlorobenzene varied from waste burning, transport to agricultural. There has been no detailed studies on the sources of hexachlorobenzene emissions in Tonga. It was available throughout the country and sometimes used as solvent for agricultural pesticides in Tongatapu only until it was banned in 1973. In the study of POPs in human milk, hexachlorobenzene in Tonga is relatively high (5.7 ng/g fat)[4] in comparison to Fiji (rural 2.4 & urban 3.8) and Kiribati (3.2).

2.3.2 PCBs

As part of the POPs in PICs AusAID project, 1 large transformer containing PCBs get shipped out of Tonga to be disposed in an environmental friendly manner in Australia during 2006. This was discovered among the waste transformers dumped at 'Anana.

In 2006, under the UNEP/GEF POPs project, waste/on line transformers were screen tested[5] using (CLOR-N-OIL 50). A technical adviser was engaged to trained the

survey team that conducted the screen testing. It is stipulated in Annex A Part II that Party shall identify and remove from use equipment containing greater than 0.005 percent polychlorinated biphenyls and volumes greater than 0.05 litres. There were 63 transformers tested throughout Tongatapu, Vava'u, Ha'apai and 'Eua (see Table 2.3a below). Only transformers manufactured prior 1980 were covered in the survey since the latter ones were labeled as PCB free. However, only 67% of transformers on line were tested due to technical difficulty.

There were 3 positive from the screen testing but these were later confirmed negative (<50 ppm) in laboratory analysis. All PCB tested transformers were labeled so that they can be removed for disposal as it comes off-line. The current arrangement involve the draining of any remaining oil which is then sent for processing and the empty transformer is collected by the Recycling Company. The remaining 33% are not labeled, and as these are removed from the line, the Power Company are to store the waste transformers to be tested for PCB prior to disposal. It is recommended that screen testing of waste transformers to be conducted on a five year period as a coordinated effort between the Ministry of Environment and Climate Change and the Electrical Power Company and the result(s) be included in the report to the COP.

The public are encouraged to inform the Power Company of any leakage from transformers to reduce exposures and risks.

Table 2.3a. RESULTS OF PCBs SURVEY UNDER POPS PROJECT 2006

Is District	Tot. Transformers			No. Transformers on line < or = 1980	Transformers tested			% transformers on line < or = 1980 tested	No. of Transformers >50 ppm	No. of Transformers confirmed
	Tot	S	W		Tot	S	W	W		
Tt	281	276	5	36	38	33	5	92%	3	0
Vv	71	67	4	15	12	8	4	53%	0	0
Hp	22	21	1	5	6	5	1	100%	0	0
Eua	17	12	5	2	7	2	5	100%	0	0
Total	**391**	**376**	**15**	**58**	**63**	**48**	**15**	**83%**	**3**	**0**

Keys:Tt=Tongatapu, Vv=Vava'u, Hp=Ha'apai, S=Stockpile (transformers on line),W=Waste

There were also concerns about other PCBs containing equipment such as the ballast/capacitor of tube lights. Electrical companies in the private sector are being made aware and to avoid further imports of such equipment. There is also rising concern with PCBs in e-waste, especially that Tonga do not have a management system for e-waste.

The result of the analysis of POPs in human milk showed the level of the sum of indicator PCBs was relatively lower 7.28 ng/g fat in comparison to Kiribati (10.1) and Fiji (rural 8.6 & urban 14.4). However, Tonga should continue to ensure that there is no further release to the environment.

2.3.3 DDT

The use of DDT in Tonga was banned since 1973 hence there is no need for any specific exemption under Annex B, Part II of the Stockholm Convention. The use of DDT in Tonga during 1950-1973 was to control the *Lamprosema octosema* moth from damaging bananas. There were no quantitative records of the imported DDT but it was distributed widely to growers throughout Tongatapu, Vava'u, Ha'apai and 'Eua. Therefore, a study was conducted to find out what happened to all these DDTs that were distributed widely to the communities.[6] The ban of DDT needs legal enforcement as DDT were still imported in 1982. It was approximated that 20 tonnes were donated to Tonga after Hurricane Isaac.

It was not unexpected that the 2007 human milk analysis, the detected level of DDT was 729 ng/g fat, in comparison to Fiji (urban 804.3 and rural 573.5) and Kiribati (188.9).

The community assessment for DDT pesticides focused only on DDT distributed by MAFFF for the control of *L. octosema* and not the DDT that was used by Ministry of Health to control mosquitos (*Aedes aegypti*).[7]

2.3.4 Unintentional Production of PCDD/PCDF, HCB and PCBs

The unintentional production of PCDD/PCDF was assessed in 2006 in accordance with the Toolkit and Emission Factor 2003. The result is shown in table 2.3b below.

Table 2.3b. Estimated Emission of Dioxins and Furans in Tonga 2006

Cat.	Source Categories	Annual Releases (g TEQ/a)				
		Air	Water	Land	Products	Residue
1	Waste Incineration[8]	0.418	0.000	0.000	0.000	0.0
2	Ferrous and Non-Ferrous Metal Production[9]	0.098	0.000	0.000	0.000	0.0
3	Power Generation and Heating[10]	0.079	0.000	0.000	0.000	0.0
4	Production of Mineral Products[8]	0.005	0.000	0.000	0.000	0.0
5	Transportation[11]	0.005	0.000	0.000	0.000	0.0
6	Uncontrolled Combustion Processes[12,13]	20.452	0.000	0.033	0.000	3.2
7	Production of Chemicals and Consumer Goods[14]	0.000	0.000	0.000	0.000	0.0
8	Miscellaneous[16]	0.000	0.000	0.000	0.000	0.0
9	Disposal/Landfilling[15]	0.000	0.224	0.000	0.007	0.0
10	Identification of Potential Hot-Spots[14]	0.000	0.000			
1-9	**Total**	**21.1**	**0.2**	**0.0**	**0.0**	**3.2**
	Grand Total			24.5		

The annual releases of PCDD/PCDF was estimated to be 24.5 g TEQ/a. About 97% was due to uncontrolled combustion processes with an annual releases of 23.7 g TEQ/a. It was estimated that the uncontrolled combustion from accidental burning of the waste dump contributed to 77% (18.8 g TEQ/a) and the uncontrolled domestic waste burning contributed to 18% (4.7 g TEQ/a) of the emissions.

At present, there are two waste dumps serving urban areas: Tukutonga in Tongatapu and Kalaka in Vava'u, that occasionally suffer accidental burning. However, emission is expected to be greatly reduced in the next 5 years as the Tukutonga dump closed down at the end of 2006 as the proper engineered landfill Tapuhia was opened to serve the whole of Tongatapu.

The project has been working together with the Tonga Solid Waste Project (TSWP) on public awareness, promoting the use of the new landfill, recycling and composting instead of waste burning (See brochures in Annex A3). At present these services are available only at Tongatapu.

The human milk analysis[4] indicated that Tonga has relatively lower levels of dioxins and furans (WHO-PCDD/F-TEQ=2.82 pg/g fat) in comparison to Kiribati (3.7) and Fiji (rural 4.5 & urban 3.6) as well as PCB like dioxins (WHO-PCB-TEQ=1.27 ng/g fat) in comparison to Kiribati (3.07) and Fiji (rural 1.46 & urban 2.03).

2.3.5 Contaminated Sites

The POPs contaminated sites of interest were the DDT burial grounds: Pangai in Ha'apai and Tokomololo in Tongatapu, PCB in storage area of old transformers and old power station, PCDD/PCDF at old dump (Tukutonga).

DDT

It was estimated that 2 tonnes were buried in Pangai Ha'apai (see fig. 2.3a) during 1974 near the coastal area. It was extremely difficult to locate the exact site as the people that were involved in burying the DDT were not on the island at the time of the Task Team Visit (December 2007). As can be seen in fig. 2.3a, the DDT was buried at the old MAFFF research station along the coastal area. Therefore the local community were concerned as the adjacent reef is where they gather shellfish and fish as part of their daily activity and a source of protein for their diet. The level of DDT/DDD/DDE in the area was assessed,[18] the following samples collected (April 2008) from the highlighted area (see fig 2.3a) were collected for analysis.

Table 2.3c. Results of Samples from Ha'apai analysed for DDT

No	Samples	pp-DDT mg/kg	pp-DDD mg/kg	pp-DDE mg/kg
1	Soil	<0.01	<0.01	<0.01
2	Bivalve *"kaloa'a"* (*Anadara antiquata*)	<0.01	<0.01	<0.01
3	Fish *"'ufu"* (*Leptoscarus vaigiensis*)	<0.001	<0.001	<0.001
4	WHO/Codex Standard	1	1	1

Figure 2.3a. Map of Lifuka Ha'apai, old MAFFF and study are highlighted in red.

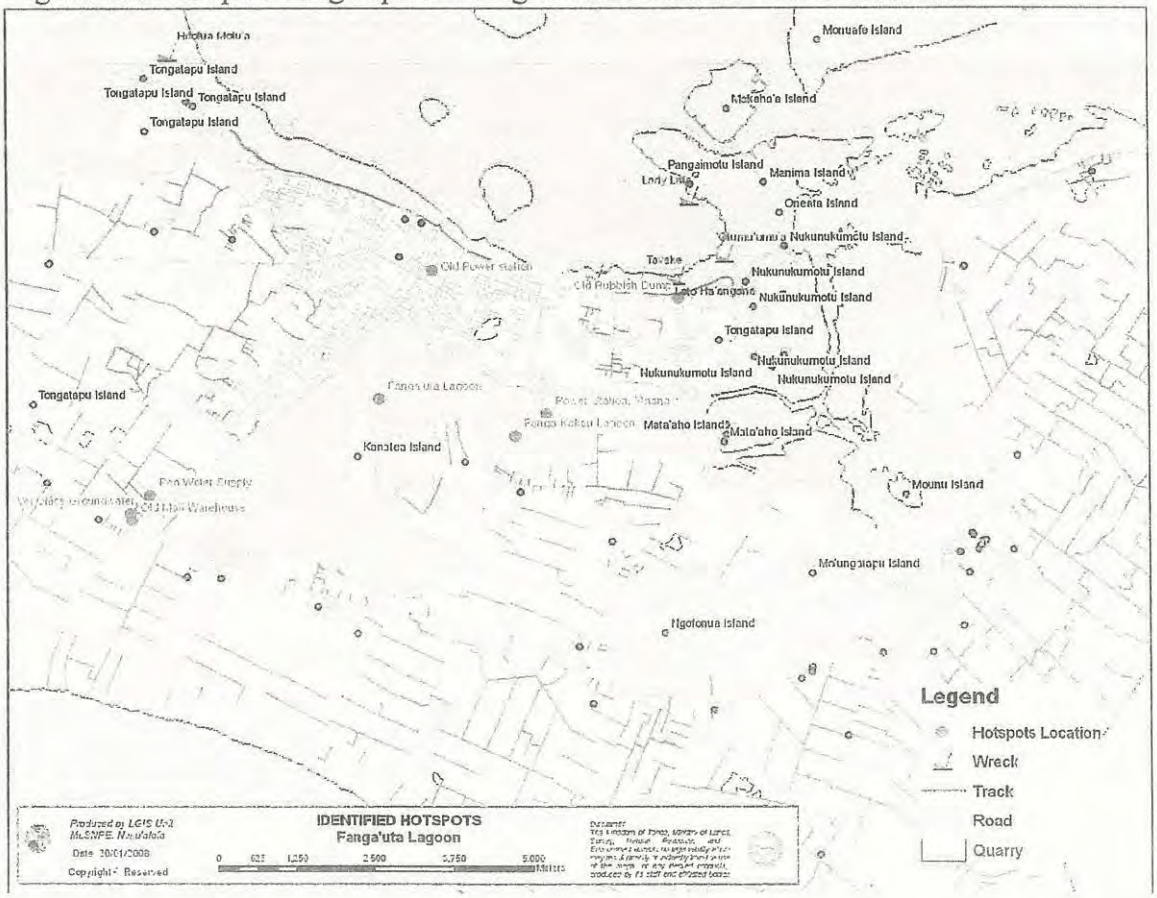
It was concluded that the risk to the public from the buried DDT at Pangai Ha'apai is minimal. Further analysis of the buried DDT can be carried out as part of further investigation regarding the buried DDT at Tokomololo as some locals think that the exact burial area is underneath one of the existing buildings.

It was estimated that 5 tonnes of DDT were buried outside the old pesticide storage warehouse at Tokomololo in Tongatapu during 1974. The burial ground is now covered with a verandah, within the catchment boundary for Fanga'uta Lagoon (see fig 2.3b) and close by are two ground water wells hence samples from groundwater, fish and sediments were analysed[18] for pp-DDT/DDD/DDE (see Table 2.3d). There were no pp-DDT/DDD/DDE detected in the samples. Since the levels of pp-DDT/DDD/DDE in bivalve (<0.01), fish (<0.001) and soil (<0.01) were much less than the WHO/Codex standard of 1 mg/kg it was concluded that there are no risks to the public.

Table 2.3d. Results of DDT in samples from Tokomololo Buried DDT

No.	Samples	pp-DDT	pp-DDD	pp-DDE
1	Groundwaters: Veterinary Office	<0.001 µg/l	<0.001 µg/l	<0.001 µg/l
2	Pea Water Supply	<0.001 µg/l	<0.001 µg/l	<0.001 µg/l
3	Fish *"kanahe" (Mugil cephalus)*	<0.01 mg/kg	<0.01 mg/kg	<0.01 mg/kg
4	Sediments: Pea	<0.001 mg/kg	<0.001 mg/kg	<0.001 mg/kg
5	ʻAnana	<0.001 mg/kg	<0.001 mg/kg	<0.001 mg/kg
	STANDARD			

Figure 2.3b. Map of Tongatapu showing the Location of DDT Assessment



The groundwater and sediment samples were also analysed for other POPs and only dieldrin was detected (0.001 µg/l) in the Vet groundwater (see Table 2.3c)

Table 2.3e. POPs in Ground Water and Sediment Samples

No.	Organochlorine (OC) Pesticides	Pea Groundwater µg/l	Vet. Groundwater µg/l	Pea Sediments mg/kg	Anana Sediments mg/kg
1	HCB	<0.001	<0.001	<0.001	<0.001
2	Heptachlor	<0.001	<0.001	<0.001	<0.001
3	Heptachlor epoxide	<0.001	<0.001	<0.001	<0.001
4	Aldrin	<0.001	<0.001	<0.001	<0.001
5	gamma-BHC (Lindane)	<0.001	<0.001	<0.001	<0.001
6	Alpha-BHC	<0.001	<0.001	<0.001	<0.001
7	Beta-BHC	<0.001	<0.001	<0.001	<0.001
8	Delta-BHC	<0.001	<0.001	<0.001	<0.001
9	Trans-Chlordane	<0.001	<0.001	<0.001	<0.001
10	Cis-Chlordane	<0.001	<0.001	<0.001	<0.001
11	Oxychlordane	<0.001	<0.001	<0.001	<0.001
12	Dieldrin	<0.001	0.001	<0.001	<0.001
13	Endrin	<0.001	<0.001	<0.001	<0.001
14	Endrin Aldehyde	<0.001	<0.001	<0.001	<0.001
15	Endrin Ketone	<0.001	<0.001	<0.001	<0.001
16	Alpha-Endosulfan	<0.001	<0.001	<0.001	<0.001
17	Beta-Endosulfan	<0.001	<0.001	<0.001	<0.001
18	Endosulfan Sulfate	<0.001	<0.001	<0.001	<0.001
19	Methoxychlor	<0.001	<0.001	<0.001	<0.001

The EA has ensured that there are no immediate risks to the public from the 2 DDT burial grounds. However, the history of the usage of DDT in Tonga in the past years is evident in the human milk study 2007 where Tonga was relatively high 729 ng/g fat in comparison to Fiji (urban 804.3 & rural 573.5) and Kiribati (188.9). Therefore it is important to ensure that there are no further releases to the environment.

PCB

The waste transformers were dumped along the coastal area of Fangakakau Lagoon, outside 'Anana Power Station during 1999 hence the attempt to test for PCBs in 49 out of 76 transformers. The testing of the remaining 27 transformers was not possible since there was no oil left in the transformers. Some were turned over and some were open, allowing oil to be spilled, removed or had been stripped down. Soil samples were removed for analysis in 2006 by the AusAID project and the level of PCB was less than 20 ppm. Therefore, the analysis for PCB was on samples of sediment and soil from the old power station[19] at Siaine (See Table 2.3f)

Table 2.3f. PCBs in Sediments and Soil

No.	Samples	PCB (mg/kg)
1	Sediments: Pea	<0.01 mg/kg dry wt
2	Anana	<0.01 mg/kg dry wt
3	Soil - Siaine	<0.01 mg/kg dry wt
	Standard	**>50 mg/kg**
4	"Kanahe" fish (*Mugil cephalus*)	<2 µg/kg wet wt
	Standard	**0.5 mg/kg**

Standard referred to New Zealand standard.

Dioxin-like PCBs

In assessing the level of dioxin-like PCBs in the soil from Tukutonga Dump[20] using gas chromatography and high –resolution (>10,000) mass spectrometer, it was 72 pg/g DW WHO_{05} – TEQ_{DF}. The detailed results were as follows:

Table 2.3g. Dioxin-like PCBs in Soil from Tukutonga Dump

No	PCB Cogeners	Level Pg/g	WHO_{05} – TEF	WHO_{05} – TEQ_{DF} Contribution
Non-Ortho PCBs				
	PCB77	530	0.0001	0.053
	PCB 81	39	0.0003	0.012
	PCB 126	100	0.1	10
	PCB 169	14	0.03	0.42
Mono-Ortho PCBs				
	PCB 105	13400	0.00003	0.40
	PCB 114	750	0.00003	0.022
	PCB 118	28300	0.00003	0.85
	PCB 123	460	0.00003	0.014
	PCB 156	3430	0.00003	0.10
	PCB 157	790	0.00003	0.024
	PCB 167	1220	0.00003	0.037
	PCB 189	140	0.00003	0.0042

PCDD/PCDF

The level of PCDD/PCDF in soil from Tukutonga Dump was assessed[20] using high resolution (>10,000) mass spectrometer. The result was 60 pg/g DW WHO_{05} – TEQ_{DF}. The detailed result is shown in Table 2.3h.

Table 2.3h. PCDD/F in Soil from Tukutonga Garbage Dump

No.	PCDD/F Cogeners	Level pg/g	WHO_{05} – TEF	WHO_{05} – TEQ_{DF} Contribution
1	2,3,7,8 – TCDF	17	0.1	1.7
	2,3,7,8 - TCDD	2.0	1	2.0
2	1,2,3,7,8 – PeCDF	22	0.03	0.67
	2,3,4,7,8 – PeCDF	39	0.3	12
	1,2,3,7,8 - PeCDD	18	1	18
3	1,2,3,4,7,8 – HxCDF	35	0.1	3.5
	1,2,3,6,7,8 – HxCDF	37	0.1	3.7
	2,3,4,6,7,8 – HxCDF	42	0.1	4.2
	1,2,3,7,8,9 – HxCDF	2.9	0.1	0.29
	1,2,3,4,7,8 – HxCDD	16	0.1	1.6
	1,2,3,6,7,8 – HxCDD	35	0.1	3.5
	1,2,3,7,8,9 - HxCDD	18	0.1	1.8
4	1,2,3,4,6,7,8 – HpCDF	180	0.01	1.8
	1,2,3,4,7,8,9 – HpCDF	17	0.01	0.17
	1,2,3,4,6,7,8 - HpCDD	460	0.01	4.6
5	OCDF	180	0.0003	0.055
	OCDD	2710	0.0003	0.81

The 5 compounds that made up 80% of the total TEQ in Human tissue[21] were detected: 2,3,7,8-TCDD (2 pg/g), 1,2,3,7,8-PCDD (18 pg/g), 1,2,3,6,7,8-HxCDD (35 pg/g), 2,3,4,7,8-PeCDF (39pg/g) and PCB 126 (100pg/g). The 2,3,7,8-TCDD is known to be carcinogen to human.

PBDE

The polybrominated diphenyl ethers were detected in the soil sample from Tukutonga Garbage Dump.[20] The level was relatively high (ΣPBDE=270 ng/g dry wt) in comparison to similar study in Fiji (ΣPBDE=2.7 ng/g dry wt). The four dominant PBDE congeners were BDE 209 (160 ng/g dry wt), BDE 99 (20 ng/g dry wt), BDE 47 (13 ng/g dry wt) and BDE 183 (11 ng/g dry wt).

Methylmercury

As one of the known persistent toxic substances (PTS) in the region,[22] methylmercury was included in the inventory.[23] The results is shown in the table below, indicating that the level of methylmercury is well below the WHO/FAO Codex standard of 1 mg/kg.

Table 2.3.2 Levels of methylmercury in reef/deep sea fishes of Tonga

Local Name	Average length (cm)	Mean Weight (Kg)	(n)	Total Hg/ Me-Hg Levels (mg/kg)			
				Total Hg Range	Total Hg (Mean ± SD)	Estimated Me-Hg (Mean ± SD)	Limit for Me-Hg
Black Marlin	144.5	46.8	2	0.015 – 0.31	0.16 ± 0.14	0.15 ± 0.13	1.0
Blue Marlin	148	47.1	2	0.015 – 0.11	0.06 ± 0.04	0.06 ± 0.04	1.0
Albacore	98.8	18.8	4	0.23 - 0.26	0.25 ± 0.01	0.24 ± 0.01	1.0
Yellow fin tuna	137.5	46.3	4	0.092 – 0.12	0.1 ± 0.01	0.1 ± 0.01	1.0
Dolphin Fish	109.3	9.3	4	0.15 – 0.31	0.20 ± 0.06	0.19 ± 0.06	1.0
Unicornfish	17.5	0.65	4	<0.01	<0.01	<0.01	1.0
Bicolor Parrotfish	30.3	0.90	4	<0.01	<0.01	<0.01	1.0

2.3.6 Future production, use and releases of POPs

The POPs chemicals, with the exception of the unintentional by-products were never produced in Tonga and their use was banned since 1973. In reference to the register of specific exemptions (Article 4) referred to Annex A and/or Annex B, these POPs chemicals were no longer used in Tonga hence there is no requirement for exemption.

2.3.7 Monitoring programmes

There were some ad-hoc analyses for POPs in previous years but no monitoring programmes prior to the enabling activity. It is expected that assessment with respect to Annex A: part II chemicals, releases from unintentional production of Annex C chemicals as well as the assessment of POPs in human milk will be implemented in a five yearly period.

2.3.8 Public Participation

There were no public awareness programmes, prior to the EA and POPs is not even in the school curriculum, hence the level of awareness is very minimal. However, during the duration of the POPs Project, public awareness was implemented as follows:

1. Inventory. TV/Radio programmes were conducted prior and during a particular study, so that the public is aware of the study, POPs issues and to gain the public commitment. The assessments were carried out by the Task Team but for each study, a one day key stakeholder workshop was conducted with the ultimate aim of awareness and to reach concensus.
2. National Consultation Workshops. The National Consultation Workshop was conducted in Tongatapu, Vava'u, Ha'apai & 'Eua. Task team members presented

the National Profile of Chemical Management, POPs Inventory and the Hazardous Wastes and Chemicals Bill 2006. Small groups discussion was conducted and groups were asked to identify issues relevant to their particular island district which may have not been included in the presentation.

3. Technical Assistance – International. During the visit of Overseas consultants, training workshop was always part of the programme to ensure transfer of knowledge and skills to local counterparts/key stakeholders. Meeting for review/discussion of inventory/plan of action with Task Team members was also conducted. News release including interview of the consultant enhanced the public awareness programmes with no extra charges to the project.
4. Integrate to Other Existing Programmes.
   Environment Awareness Week. This is an annual activity coordinated by the Ministry of Environment and Climate Change to coincide with the World Environment Day (6 June). Activities included the display and distribution of POPs brochure. Interact with interested teachers and students. A quiz competition was also conducted in 2008 for secondary school students.
   School quiz. Collaborate with the Ministry of Education to include at least one question in each quiz as a current event question on the awareness topic of the week.
   Tonga Research Association & Langafonua. Present the POPs inventory to the TRA Conference 2007 that was held in Tonga as well as to the umbrella group for women in Tonga – Langafonua 'a Fafine Tonga.
   Association of Tonga University Women in the Region & Methodist Women Regional Conference. The result of the POPs in human milk study was presented to the group in their regional conference that was held at the International Dateline Hotel in Nuku'alofa as well as the Methodist Women Regional Conference held at Queen Salote College Hall during 2008.

2.3.9 NGO and Private Sector

The NGO and Private Sector stakeholders were always invited to send a representative to all project's workshops for awareness and empowerment with knowledge on regional/global trend. The NGO stakeholders include the following:

- Tonga Electrical Power Company: Shoreline Group of Companies
- Recycling Company: Gio Scrap Metals
- Composting Company: Ma'ui'ui Organics
- Women in Development: Langafonua 'a Fafine Tonga
- Tonga National Youth Congress
- Tonga Family Health Association
- Tonga Association of Non Government Organisation
- Tonga Trust
- Tonga Chamber of Commerce

The NGOs had been playing a key role in awareness programmes as part of the project activity as well as their own activity at the village level at no cost to the project.

2.3.10 Technical Infrastruture

1. Task Team. A Task Team (TT) was established to conduct the POPs Assessment with appropriately qualified representatives from the following key stakeholders:

    - Ministry of Environment and Climate Change
    - Ministry of Health
    - Ministry of Agriculture, Food, Forestry and Fisheries
    - Ministry of Transport
    - Ministry of Police, Prison and Fire
    - Shoreline Group of Co.

    The team were further equipped through training workshops conducted locally and assisted by International Consultant which were as follows:

    - Review the National Profile of Chemical Management 2000 and update in 2005;
    - Review past POPs inventory 1999 and draft the POA for POPs inventory 2006; and
    - Update skills and knowledge on scientific research methodology.

    The TT members formulated the study proposal which was further discussed and endorsed through a one day key stakeholder consultation workshop. The progress of the study was reported back to scheduled meeting of the TT to further discuss as issues arise etc.

2. Laboratory Analysis. It was evident from the National Profile of Chemical Management that none of the existing laboratories in Tonga are accredited for POPs analysis. Therefore, the following laboratories were contracted to conduct the analysis.

Table 2.3j. Laboratory Analysis for POPs Inventory

No.	Name of Laboratory	Country	Analysis
1	Agri-Quality Lab.	New Zealand	-Mercury in fish (from Tuimatamoana Market): • hakula pulu (*Makaira nigrican*) • hakula 'uli'uli (*Makaira indica*) • 'alapakoa (*Thunnus alalunga*) • takuo (*Thunnus albacores*) • mahimahi (*Coryphaena hippurus*) • hohomo (*Scarus ghobban*) • 'ume (*Naso unicornis*)
2	National Measurement Institute	Australia	-PCB in Transformers -pp-DDT/DDD/DDE in groundwater (from Pea & Vet. Office) -pp-DDT & PCBs in sediments (from 'Anana & Pea) -PCBs in soil (from Siaine) -PCDD/PCDF & PCBs in soil (from Tukutonga) -pp-DDT/DDD/DDE & PCBs in fish (from Fanga'uta) • kanahe (*Mugil cephalus*) • sediments -DDT in soil, bivalve & fish (from Ha'apai) • kaloa'a (*Anadara antiquata*) • 'ufu (*Leptoscarus vaigiensis*)
3	State Institute for Chemical and Veterinary Analysis of Food (CVUA)	Germany	-POPs in Human Milk

The samples were collected and sent via courier services. There were some difficulties due to loss and deferral in delivery of samples.

2.3.11 Identification of impacted populations/environment

In accordance with the National POPs assessment, the following impacted population and environment were identified.

DDT

The population/environment at risk are Pangai in Ha'apai and Tokomololo in Tongatapu. There was a lack of reliable information about the exact point of burial at Ha'apai. However, the POPs assessment established that there are minimal risks of contaminating the environment.

PCDD/PCDF, dioxin-like PCBs and PBDE

The accidental burning of the rubbish dump at Tukutonga ended in 2006 with the opening of an engineered landfill under AusAID project. However, this is still the practice in one of the main islands hence the identification of the population surrounding Kalaka rubbish dump at Vava'u.

2.3.12 System for assessment and listing of new chemicals

The system for assessment and listing of new chemicals existed only for the pesticides and enforced by the Pesticide Act 2002.

2.3.13 System for assessment and regulating chemicals in the market

Due to lack of capacity and legislation, Tonga is really depending on the assessment made by developed countries. The ban of the POPs in 1973 was based on similar activities taken by many other countries.

3. STRATEGY AND ACTION PLAN ELEMENTS OF THE NATIONAL IMPLEMENTATION PLAN

3.1 Policy Statement

The Government of Tonga is committed to protect human health and the environment from persistent organic pollutants hence the development of appropriate strategies within the framework of the National Strategic Development Plan 8 and the Corporate Plan of relevant organizations/agencies. The National Implementation Plan (NIP) is further supported by the formulation of the Hazardous Wastes and Chemicals Bill 2009 (HWCB 2009) which is currently being processed for approval.

3.2 Implementation Strategy

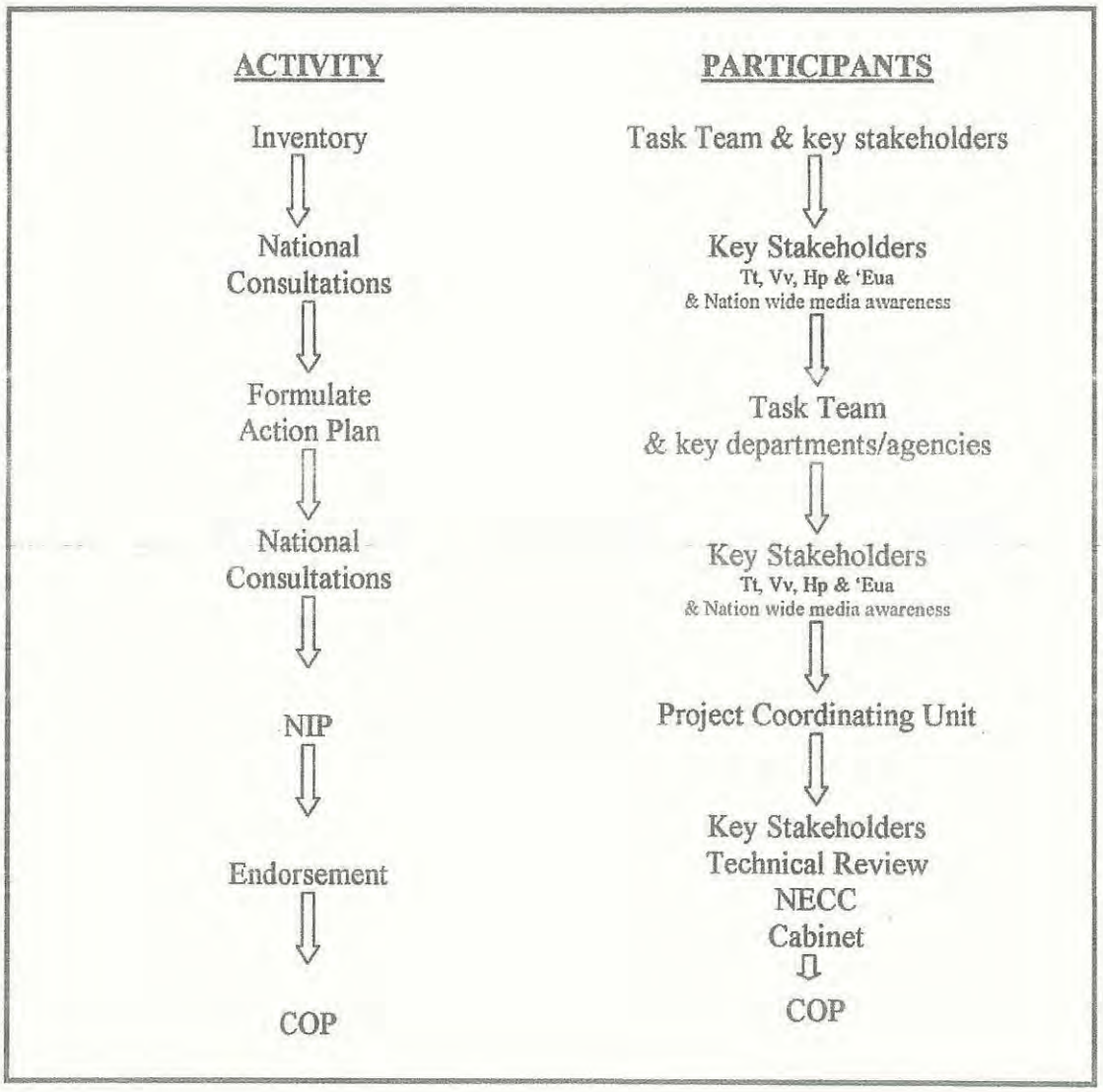
It is expected that capacity building during the enabling activity will sustain the implementation of the plan. Therefore, the coordination committee set up by Cabinet: National Environment Coordinating Committee shall be the Competent Authority (CA) for the purposes of the Stockholm Convention as stated in the HWCB09 section 19. Therefore the CA will consist of representatives from the following:

- Ministry of Environment and Climate Change
- Ministry of Agriculture, Fisheries, Forestry & Food
- Ministry of Health
- Ministry of Labour, Commerce & Industries
- Ministry of Finance & National Planning
- Ministry of Foreign Affairs
- Crown Law Department
- Revenue Services Department (Customs)
- Ministry of Police, Prison & Fire
- Ministry of Education, Cultural Affairs and Culture
- Ministry of Works
- Ministry of Transport
- Ministry of Training, Employment, Youth & Sports
- Tonga Association of Non-government Organisations (2)
- Co-opted Members (2)

The CA is multi-sectoral and will ensure close collaboration among key stakeholders in implementing the national strategies. The functions and responsibilities of the CA covers all levels of hazardous chemical management from import to waste (HWCB09 section 19(3)).

The Ministry of Environment and Climate Change (MECC) was the focal point during the implementation of the EA and will continue to be the focal point for the purposes of the SC as well as other chemical conventions (HWCB09 section 18). It is recommended that a unit be set up at MECC to carry out the tasks specified under the secretariat role of the Department.

The National Implementation Plan (NIP) was formulated within the framework of the National Strategic Development Plan 8 and departmental/agency corporate plan based on issues from the inventory phase and Tonga's obligations under the Stockholm Convention by a Task Team representing key stakeholders. The processes were as follows:



The NIP for Tonga has the following broad objectives:

- Ensure that there are no further imports of POPs pesticide and removal of DDT buried in 1970s with any contaminated soils;
- Ensure that there are no further imports of PCBs, implement a system of safe handling and storage of waste transformers for PCB testing and to eliminate PCB no later than 2025;
- Reduce the releases of unintentional POPs;
- Ensure that there are no further imports of Hexachlorobenzene. Assess its releases from source categories and formulate strategies for reduction/elimination;
- Assess the releases of Chlordane from source categories and formulate strategies for reduction/elimination; and
- Improve public awareness, research development and monitoring issues relevant to POP's management.

3.3 Activities, strategies and action plans

The activities, strategies and action plans included development and capacity-building proposals and priorities, timeline for plan implementation and measure of success as well as resource requirements formulated within the national and corporate plans framework (refer to Annex 7 for details).

3.3.1 Activity: institutional and regulatory strengthening measures

The responsibility for the management of hazardous chemicals was distributed among a number of institutions without any regulatory measures. As a result of consultations during EA, the hazardous chemicals and wastes section has been established at the Ministry of Environment and Climate Change.

The Crown Law Department (CLD) in collaboration with the Ministry of Environment and Climate Change (MECC) will ensure that the following activities (details in Table 3.3a) are carried out:

- ratification of the SC on POPs;
- processing the Hazardous Wastes and Chemicals (HWC) Bill 2009 and the drafting of Regulations; and
- promote public awareness of POPs legislation and Tonga's obligations under SC.

Table 3.3a Plan of Action for Institutional and Regulatory Strengthening

Detailed List of Activities	Key contributing agencies	Timeline	Performance Indicators	Cost Estimate (USD) & Source	Resources Needed
1)Approval and implementation of Waste and Chemical Section (WCS)	MECC, MoF PSC	Y1-5	-WCS established -staff & budget	External=N/A Internal=5,000	TA (legal)
2)Ratification of Chemical Conventions	MECC, MoFA, CLD,PMO	Y1-5	Chemical Conventions ratified	External=5,000 Internal=5,000	Workshops
3)Promote public awareness	MECC, CLD, MAFFF, MoH	Y1-5	Awareness survey completed	External=5,000 Internal=5,000	TA (awareness survey)

3.3.2 Activity: measures to reduce or eliminate releases from intentional production and use

All intentional POPs were imported from overseas countries to be used in Tonga until the import and use of intentional POPs were banned in1973.

3.3.3 Activity: production, import and export, use, stockpiles and wastes of Annex A POPs pesticides (Annex A, part 1 chemicals)

The leading agency is the Customs Department in collaboration with MECC and MAFFF. The activities (details in table 3.3b) are as follows:

- Formulate strategies to ensure control of the import and use of all POPs/pesticides, and capacity building for the Department

- Improve Port of Entry practices for POPs/pesticide handling, storage and disposal
- Improve the level of information available on pesticide handling, storage and disposal

Table 3.3b Plan of Action for Control of Annex A POPs Pesticides

Detailed List of Activities	Key contributing agencies	Timeline	Performance Indicators	Cost Estimate (USD) & Source	Resources Needed
1)formulate strategies to improve the control of imported POPs/pesticides	TCS MAFFF MECC	Y1	Strategies developed	External=20,000 Internal=10,000	TA, Training materials/ facility etc.
2)formulate POPs/pesticides code of practice: handling, storage and disposal for port of entry	TCS MAFFF, MECC	Y2	Code of practice approved and published	External=46,300 Internal=20,000	TA, training materials/ Equipments etc.
3)Improve availablility of POPs/ pesticide information	MAFFF TCS, MECC	Y1-3	Database/information system established	External=39,000 Internal=19,000	TA, IT equipment, office supplies

3.3.4 Activity: production, import and export, use, identification, labeling, removal, storage and disposal of PCBs and equipment containing PCBs (Annex A, part II chemicals)

There were 10 transformers (mainly in outer islands) identified during EA to be tested for PCBs as it comes off-line. There is a need to identify and test other equipment possibly containing PCBs such as fluorescence tube. The leading agency is Tonga Power Ltd in collaboration with MECC. The activities (details in table 3.3c) are as follows:

- screen waste transformers for PCBs in a 5 yearly period;
- promote safe handling of equipment with PCBs; and
- inventory of equipment (other than transformers) that contain PCBs.

Table 3.3c Plan of Action for Control of PCBs

Detailed List of Activities	Key contributing agencies	Timeline	Performance Indicators	Cost Estimate (USD) & Source	Resources Needed
1)Identify possible sources of PCBs other than transformers & unintentional production	MECC, TPL	Y1	-List established -random samples tested for PCBs -disposals	External=40,000 Internal=20,000	TA, screen testing kits, lab. testing
2)Testing waste transformers (10) for PCBs	MECC, TPL	Y1-5	-waste transformers tested and disposed in an environmental friendly manner	External=50,000 Internal=20,000	Train personnel, testing kits, laboratory testing, Travel to Vava'u, shipment/ disposal
3)Promote awareness	MECC, TPL, MoH	Y1-5	-update awareness brochure on PCBs -develop posters -train trainers (school teachers) -documentary	External=10,000 Internal=5,000	-TA, office supplies, DVDs.

3.3.5 Activity: production, import and export, use, stockpiles and wastes of DDT (Annex B chemicals) if used in the country

Although DDT were banned in Tonga in 1973, a single consignment of approximately 11 tons of DDT was donated to Tonga after Cyclone Isaac in 1982. There is a need to strengthen border control (details in table 3.3d). The leading agency is TCS in collaboration with MAFFF and MECC.

Table 3.3d Plan of Action for Control of DDT/Hazardous Chemicals

Detailed List of Activities	Key contributing agencies	Timeline	Performance Indicators	Cost Estimate (USD) & Source	Resources Needed
Improve border Control pertaining to import of DDT/ hazardous chemicals	TCS, MAFFF, MECC	Y1	-Border control system in place.	External=2,500 Internal=2,000	TA,

3.3.6 Activity: register for specific exemptions and the continuing need for exemptions (article 4)

Since the ban on intentional POPs in 1973, there is no need for exemptions.

3.3.7 Action plan: measures to reduce releases from unintentional production (article 5)

The releases of unintentional POPs in Tonga were mainly from uncontrolled combustion. However, during the consultations, the public concerns were the releases from vehicles and at sea. The action plan (details in table 3.3e) therefore was formulated to reduce releases from:

- landfill fire
- uncontrolled domestic waste burning
- agricultural waste burning
- accidental fire
- vehicles
- disposals
- tobacco

Table 3.3e Plan of Action to Reduce Releases from Unintentional Production

Detailed List of Activities	Key contributing agencies	Timeline	Performance Indicators	Cost Estimate (USD) & Source	Resources Needed
1)Establish landfill for Vava'u, Ha'apai and 'Eua. Ongoing support for extension of recycling and composting services to outer islands. Review management system for quarantine waste.	MoH, MECC, MLCI, MLSNRE, NGO	Y1-5	-new landfill established -recycling and composting services available in outer islands	External= 1,520,000 Internal= 200,000	Land, heavy machinery hired, TV/Radio programme/ community meeting, TA
2)Promote recycling/composting at household levels	MECC, MoH, MLCI, NGO	Y1-5	Increase % of household with compost and sorting bins for recycling	External=35,000 Internal=10,000	Awareness materials: brochures, posters, awards etc. & TV/Radio programmes.
3)Workshop on proper agricultural practices and to minimize agricultural burning. Revise machinery services in outer islands and improve availablility of appropriate services.	MAFFF, MECC, NGO	Y1-5	-decrease in % of agricultural burning -appropriate machinery procured	External= 515,000 Internal= 200,000	TA, stationaries, photocopying etc.
4)reduce the incidence of accidents through community based fire prevention campaign, maintaining a comprehensive fire investigation/analysis and research capability, effective & efficient operational management, Improve and maintain competencies of fire fighters.	TFS, NGO	Y1-5	-guideline for fire risk area developed, % activities implemented, Fire Service Act reviewed and ammended, effective and efficient communication system	External=56,000 Internal= 12,000	TAs, communication system, stationaries, photocopying etc.
5)reduce releases from vehicles through awareness, healthy vehicle program, vehicle buyer information system, window cards to identify used vehicles, tax regime recognizing lower emission vehicles/promote earlier take-up of lower sulphur diesel fuels and introduce emission specifications/10-second rule	MOW, MECC, CLD, MoT, Traffic, TCS, IR, MoFin, NGO	Y1-5	Increase awareness, healthy vehicle,	External=35,000 Internal=20,000	TAs, stationaries, photocopying etc.
6)reduce releases from disposals through implementation of Marine Pollution Prevention Act (MPP), establishment of land waste oil disposal regulatory regime, proper waste disposals and preparedness for oil/chemical spill emergency	MoT	Y1-5	MoT implemented, waste oil regulated & emergency plan for oil/chemical spill in place.	External= 1,336,000 Internal=26,000	TAs, stationaries, photocopying etc.
7)reduce releases from tobacco	MoH	Y1-5	Reduce releases from tobacco and related diseases	External=68,260 Internal=35,000	Stationeries, equipment, TV/Radio programmes, travel, training/awareness materials

3.3.8 Activity: measures to reduce releases from stockpiles and wastes (article 6)

In accordance with the result of the Tonga Human Milk Study, it was surprising that the chlordane and hexachlorobenezene were among the POPs detected as it was never mentioned during the consultations in preparation for the POPs inventory. Therefore these 2 chemicals were not included but it is important to be covered in future inventories in order to reduce releases from stockpiles and wastes.

3.3.9 Strategy: identification of stockpiles, articles in use and wastes

To complement the inventory that was conducted during the SC enabling activity and based on the results of the study on POPs in human milk, the following strategies (details in table 3.3f) were identified:

- Determine the emission of hexachlorobenezene by source category and design a plan of action to reduce releases from stockpiles and wastes
- Identify possible sources of emission for Chlordane from stockpiles and wastes
- Identify possible sources of releases for the newly approved POPs

Table 3.3f Strategies for identification of Stockpiles, Articles in Use and Wastes

Detailed List of Activities	Key contributing agencies	Timeline	Performance Indicators	Cost Estimate (USD) & Source	Resources Needed
1)inventory of hexachloro-benzene by major source category	MECC, MAFFF, TCS	Y1-2	Report on hexa-chlorobenzene in Tonga approved	External=18,500 Internal=9,000	TA, lab analysis, station-aries, photo-copying etc.
2)inventory of chlordane by major source category	MECC, MAFFF, TCS	Y1-2	Report on chlordane in Tonga approved	External=66,300 Internal=30,000	TA, lab analysis, station-aries, photo-copying etc.
3)inventory of newly approved POPs by major source category	MECC, MAFFF, TCS	Y1-2	Inventory report on newly approved POPs	External=87,000 Internal=40,000	TA, lab analysis, sationaries, photocopying etc.

3.3.10 Activity: manage stockpiles and appropriate measures for handling and disposal of articles in use.

The aim of these activities (details in table 3.3g) is to dispose any stockpile identified from section 3.3.9.

- packaging/transport/storage of stockpiles/articles in use
- transport overseas and disposals

Table 3.3g Plan of Action for Handling and Disposal of POPs Wastes

Detailed List of Activities	Key contributing agencies	Timeline	Performance Indicators	Cost Estimate (USD) & Source	Resources Needed
1)packaging/transport/storage of stockpiles/articles in use	MECC, MAFFF, MoH	Y1-5	All POPs waste packaged and in good storage.	External=40,000 Internal=15,000	TA, packaging material, safety gear etc.
2)transport overseas and disposals	MECC, MAFFF, MoH	Y1-5	All POPs waste shipped for disposal	External=40,000 Internal=15,000	Container, disposal agency contracted

3.3.11 Strategy: identification of contaminated sites (Annex A, B and C Chemicals) and remediation in an environmentally sound manner

There were two sites identified during inventory where DDT was buried namely Tokomololo, in Tongatapu and Pangai in Ha'apai. Hence the need for further assessment and possibly remediation (details in Table 3.3h) in an environmentally sound manner as follows:

- Construct a profile of the contaminated volume of soil with DDT on burial site
- Secure the legal rights/permission to remove contaminated soil and gravel from the identified burial sites
- Contract the overseas agency for disposal of DDT in an environmentally friendly manner
- Secure UN approved packaging material for long term storage, UN approved protective gear and handling tools
- Dig, package and label the volume of DDT contaminated soil
- Complete all necessary documents and transport the contaminated soil to the agency

Table 3.3h Strategies for Identification of Contaminated Sites and Remediation

Detailed List of Activities	Key contributing agencies	Timeline	Performance Indicators	Cost Estimate (USD) & Source	Resources Needed
1)construct a profile of the contaminated soil with DDT/ POPs on burial site.	MAFFF, MECC	Y1	Profile of contaminated soil established	External=20,000 Internal=10,000	Accredited lab for analysis,
2)obtain legal rights/permission to remove contaminated soil	MAFFF, MECC, CLD	Y1	Legal rights obtained	External=2,000 Internal=1,000	Ownership of contaminated soil
3)identify and contract agency for disposal	MAFFF, MECC	Y2	Agency for disposal contracted	External=10,000 Internal=5,000	UN approved packaging material
4)excavate, package, label and restoration of site	MAFFF, MECC	Y2	Contaminated soil packaged	External=15,000 Internal=5,000	Digging machinery
5)complete documentation & shipment	MAFFF, MECC & TCS	Y3	Waste as in 4) above, shipped for disposal	External=50,000 Internal=1,000	Import/ export documentation

3.3.12 Activity: facilitating or undertaking information exchange and stakeholder involvement

The information network established during EA is expected to be continued by the Ministry of Environment and Climate Change in collaboration with key stakeholders (details in table 3.3i) through:

- Updating POPs website
- Update key stakeholders on POPs developments through e-mails/newsletters etc.

Table 3.3i Plan of Action for Information Exchange

Detailed List of Activities	Key contributing agencies	Timeline	Performance Indicators	Cost Estimate (USD) & Source	Resources Needed
Updating and maintenance of POPs website	MECC	Y1-5	Update on POPs highlighted	External=5,000 Internal=5,000	Internet connection
e-mails sent out/newsletter	MECC	Y1-5	Stakeholders informed	External=3,000 Internal=3,000	Printing newsletter

3.3.13 Activity: public awareness, information and education (article 10)

The leading agencies are the Ministry of Education, Women Affairs and Culture (MEWAC) in collaboration with Ministry of Environment and Climate Change and Ministry of Training, Employment, Youth and Sports (MOTEYS). The activities (details in table 3.3j) are as follows:

- Press release and TV/Radio awareness programmes
- Consultation meeting with stakeholders
- Workshop to improve public awareness and information on POPs for teachers and other stakeholders (PTA, Women groups, etc.)
- Review and update related curriculum to include POPs issues from primary to secondary levels
- Develop strategies used for effective teaching of POPs in schools like competitions and games
- Training of Science teachers on safety measures to be employed in handling of laboratory chemicals
- Strategies to monitor, assess, analyse progress in action plan

Table 3.3j Plan of Action for Public Awareness, Information and Education

Detailed List of Activities	Key contributing agencies	Timeline	Performance Indicators	Cost Estimate (USD) & Source	Resources Needed
1)Public Awareness	MECC MEWAC MOTEYS	Y1 -Y3	Trainers (Teachers) trained, PTA, Women group, youth and public participation	External=78,100 Internal=21,400	Training equipment and stationaries.
2)Curriculum Review and introduce POPs to curriculum at primary, secondary and diploma levels.	MEWAC MOTEYS MECC	Y1-5	Approved and implementation of updated curriculum	External=179,400 Internal=142,000	Computers and station-aries & photo-copying
3)Develop strategies used for effective teaching of POPs in primary and secondary schools	MEWAC	Y2-Y4	Posters, documentary etc.	External=80,000 Internal=20,000	Production equipment, colour printer, laminator etc.
4)Develop laboratory manual, establish an appropriate national system for ordering/distribution/ handling/storing/disposal and train school teachers on safety in handling lab. chemicals	MEWAC	Y2	Code of practice established and teachers trained	External=75,000 Internal=25,000	TA, travel and accommodat-ion, photocop-ying and stationaries
5)Design and implement a course on POPs/hazardous chemical manage-ment at diploma level	MOTEYS	Y1	Approval of programme and implementation commenced	External=173,000 Internal=13,500	Stationaries and photo-copying
7)Establish and Administer a licensing system for all chemical users	MOTEYS, MLCI, MAFFF, CLD, MECC, Chemical users, Farmers, Police	Y4-5	Approved policies, regulations and programme	External=20,000 Internal=20,000	Stationaries and photo-copying
8)Install a system for quality assurance	MOTEYS	Y1	Approval of appraisal programme	External=14,400 Internal=33,000	Stationaries and photo-copying
9)Monitor and evaluate the implementation of sector plan	MEWAC	Y2	% of activities implemented	External=5,000 Internal=35,000	Stationaries and photocopying

3.3.14 Activity: effectiveness evaluation (article 16)

As the leading agency, the Ministry of Environment and Climate Change in collaboration with key stakeholders shall coordinate the effectiveness evaluation (details in table 3.3k) in accordance with the requirements of the COP. During the EA of the SC on POPs, Tonga for the first time did the study on POPs in human milk which provided baseline data. The MECC can repeat the study to determine the effective implementation of the NIP.

Table 3.3k Plan of Action for Evaluation

Detailed List of Activities	Key contributing agencies	Timeline	Performance Indicators	Cost Estimate (USD) & Source	Resources Needed
1)Join regional/global study on POPs in human milk	MECC, MoH, MAFFF	Y1-5	National Report Printed	External=50,000 Internal=20,000	TA, Lab analysis, sample containers, courier, packaging materials etc.
2)Key stakeholders workshops for awareness & training of Task Team	MECC, MoH, MAFFF	Y1-5	Workshop and study implemented	External=5,000 Internal=1,000	Workshop facility, stationaries, printing/ copying

3.3.15 Activity: reporting

The Ministry of Environment and Climate Change as the focal point is to coordinate the formulation of the report (details in table 3.3l) in accordance with the requirement of the COP.

Table 3.3l Plan of Action for Reporting to the COP

Detailed List of Activities	Key contributing agencies	Timeline	Performance Indicators	Cost Estimate (USD) & Source	Resources Needed
1)Key stakeholder workshops: report on implementation of the NIP	MECC	Y1-5	% activities implemented	External=5,000 Internal=5,000	Workshop facility, stationaries, printing/ copying
2)Compilation of Report in accordance with format required by the COP	MECC	Y1-5	Report approved and transmitted to the COP	External=5,000 Internal=5,000	Stationaries, printing/ copying

3.3.16 Activity: research, development and monitoring (article 11)

The Ministry of Environment and Climate Change as the focal point for SC is to continue to support both local and overseas researchers on POPs under existing available resources. The Ministry of Environment and Climate Change is to continue to cooperation with the MEWAC and MOTEYS and foster the interest of students in conducting their research project on POPs (details in table 3.3m).

Table 3.3m Plan of Action for Research, Development and Monitoring

Detailed List of Activities	Key contributing agencies	Timeline	Performance Indicators	Cost Estimate (USD) & Source	Resources Needed
1)Research on POPs/hazardous chemicals (secondary and diploma and post graduate training)	MECC MOTEYS MEWAC	Y1-Y5	Final report approved	External=85,800 Internal=45,800	Lab. Analsis, Stationaries & photo-copying
2)Research on POPs/hazardous chemicals – need basis.	MECC MOTEYS MEWAC	Y1-5	Final report approved	External=50,000 Internal=10,000	Lab. Analysis, stationaries printing & copying

3.3.17 Activity: Technical and financial assistance (articles 12 and 13)

The Ministry of Environment and Climate Change as the focal point for the SC is to continue to coordinate and process the request for financial support and incentives for successful implementation of the SC.

3.4 Development and capacity-building proposals and priorities

The national capacity were further enhanced during the implementation of the EA through the following:

- establishment of the Project Coordinating Unit at the Ministry of Environment and Climate Change to co-ordinate the enabling activity project;
- review legislation and formulate Hazardous Wastes and Chemicals Bill;
- conducting POPs inventory;
- procurement of equipment and laboratory services;
- training/consultations workshops;
- international/regional meetings;
- awareness programmes

However, there is a need for further capacity building (table 3.4) as follows:

Table 3.4 Plan of Actions for Capacity Building

No.	Actions	Capacity Building Proposals
1	Institutional & regulatory strengthening	▪ Improve capacity of Hazardous Wastes and Chemicals Unit at Ministry of Environment and Climate Change to co-ordinate all activities on POPs and all hazardous wastes and chemicals
2	Strengthen border control	▪ Improve capacity of border control agencies on POPs/hazardous wastes and chemicals management including BAT/BEP
3	Strengthen POPs pesticides control	▪ Improve capacity for pesticide registration
4	Strengthen PCBs management	▪ Improve capacity for identification of PCBs/storage & disposals
5	Strengthen the reduction of unintentional production	▪ Improve capacity for proper waste disposals/recycling/composting/proper agricultural practices in outer islands ▪ Improve capacity for community fire prevention and minimize release from vehicles. ▪ Improve capacity for reduction of releases from disposals and tobacco
6	Strengthen the identification of stockpiles, articles in use and wastes	▪ Improve capacity for inventory of hexachlorobenzene, chlordane and the nine newly approved POPs
7	Strengthen the identification of contaminated sites	▪ Improve capacity for identification of contaminated sites ▪ Improve capacity for identification of DDT contaminated site in Tokomololo/Pangai and removal for disposal
8	Facilitate information exchange	▪ Improve capacity for information sharing through POPs website etc.
9	Strengthen awareness and education	▪ Improve capacity for awareness focusing on training trainers ▪ Improve capacity for teaching on POPs/hazardous wastes and chemicals in all levels
10	Strengthen evaluation	▪ Improve capacity to participate in the regional/global study on POPs in human milk
11	Strengthen reporting	▪ Improve capacity for reporting on the implementation of the NIP
12	Strengthen research, development and monitoring	▪ Improve capacity for research and monitoring

3.5 Timetable for plan implementation and measures of success

The timetable for plan implementation and measures of success are shown under activities 3.3.1 to 3.3.16

3.6 Resource requirements

The total estimated cost of all the activities planned to meet Tonga's obligations under the SC is USD5,893,160. The estimated costs are as follows:

Section	Action Plan	External	Internal	Total
3.3.1	Institutional and regulatory strengthening	10,000	15,000	25,000
3.3.3	POPs pesticide management	105,300	39,000	144,300
3.3.4	PCBs management	100,000	4,500	104,500
3.3.5	DDT management	2,500	2,000	4,500
3.3.7	Reduce releases from unintentional production	3,565,260	503,000	4,068,260
3.3.9	Identification of stockpiles, articles in use and wastes	171,800	79,000	250,800
3.3.10	Handling and disposals	80,000	30,000	110,000
3.3.11	DDT contaminated site remediation	97,000	22,000	119,000
3.3.12	Facilitate information exchange	8,000	8,000	16,000
3.3.13	Public Awareness, information and education	624,900	309,900	934,800
3.3.14	Effectiveness Evaluation	55,000	21,000	76,000
3.3.15	Reporting	10,000	10,000	20,000
3.3.16	Research, development and monitoring	10,000	10,000	20,000
TOTAL		**4,839,760**	**1,053,400**	**5,893,160**

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ANNEXES

A1: Government and key stakeholder NIP endorsement Workshop

Participants to Stakeholder Consultation on Draft NIP June 2009		
1	Dr Nailasikau Halatuituia	Ministry of Lands, Survey, Natural Resources & Environment (MLSNRE)
2	Dr Malakai 'Ake	Ministry of Health
3	Dr Viliami T. Manu	Ministry of Agriculture, Forestry, Food & Fisheries
4	Rev. Toe'umu Fineanganofo	Church Minister
5	Faiva Tu'ifua	District Officer
6	Masima Sefesi	District Officer
7	Kalio Moala	District Officer
8	Sione T. Taufa	District Officer
9	Mataiasi Holani	District Officer
10	Sioape Tu'iono	District Officer
11	Roger Miller	Private Sector: Waste Management Ltd
12	Filimone Tu'ikolovatu	Private Sector: Gio Recycling
13	Minoru Nishi Jr	Private Sector: Nishi Trading Co.
14	'Ofa Fakalata	Private Sector: Ma'ui'ui Organics
15	Keasi Pongi	NGO: CSF
16	Sisilia T. Taumoepeau	NGO: Tonga Trust
17	Hauoli Vi	NGO: Langafonua 'a Fafine Tonga
18	Mausa Halahala	NGO: Tonga National Youth Congress
19	Siaosi Vaka'uta	Public Enterprise: Tonga Power Ltd
20	James Lutui	Crown Law Department
21	Tupou Vaipulu	Ministry of Foreign Affairs
22	Selalina F. Prescott	Energy Section: MLSNRE
23	'Ofa Finau	Ministry of Transport
24	Moana Taukolo	Tonga Trade: Ministry of Labour, Commerce & Industries
25	Te'efoto M. Mausia	Public Health Inspection: Ministry of Health
26	Talahiva Fine	Ministry of Education, Women Affairs & Culture
27	Lofia Heimuli	Ministry of Police, Prison & Fire Services
28	Mafua 'i vai'utukakau Maka	Ministry of Works
29	Fatui Langilangi	Ministry of Training, Employment, Youth & Sports
30	Lisiate Bloomfield	SLM Project, Ministry of Environment and Climate Change
31	Nalesoni Leka	POWPA Project, Ministry of Environment and Climate Change
32	Tupe Samani	Ministry of Environment and Climate Change
33	Sione Talo Fulivai	Climate Change Project, Ministry of Environment and Climate Change
34	Suliana Vi	POPs Project Coordinating Unit
35	Lavinia Fonoifua	POPs Project Coordinating Unit

A2: Record of stakeholder and public consultation

I. National Consultations on POPs Inventory/National Profile of Chemical Management & Draft Hazardous Wastes and Chemicals Bill (2006) March-April 2007

TONGATAPU

No.	Names 18/04/2007	Organisation/Agency	No.	Names	Organisation/ Agency
1	Dr. Nailasikau Halatuituia	Ministry of Land, Survey, Natural Resources & Environment (MLSNRE)	24	Taimani 'Akimeta	Fasi Pharmacy
2	Dr. Haunga Petelo	Ministry of Labour Commerce and Industries	25	Martin Finau	Ministry of Fisheries
3	Rev. Toe'umu Fineanganofo	Church Minister	26	Viliami Mahe	IW Project - Environment
4	Lilieta Takau	NCSA Project - MLSNRE	27	Azania Newton	MLSNRE
5	Suliana Vi	POPs Project - MLSNRE	28	Viliami Manu	MAFFF
6	Talo Fulivai	Climate Change Project - Environment	29	Sisilia Taumoepeau	Tonga Trust
7	Taniela Fale	POPs Project - MLSNRE	30	Siaosi Vaka'uta	Shoreline
8	Talita Helu	Tonga Solid Waste Management Project (TSWMP) - MOW	31	Kelela Tonga	MoT
9	Roger Miller	Solid Waste Management Ltd	32	'Onesi Tu'ifua	MoT
10	Luna Tu'ikolovatu	'Uiha & Sons LtD	33	Samuela Hanisi	Tonga Family Health
11	Manu Tonga	Ministry of Work	34	Ha'unga Petelo	Ministry of Labour Commerce & Industries
12	'Atunaisa Fetokai	MLSNRE	35	Sonia Chargrin	TSWMP
13	Tuna Fielakepa	Langafonua 'a Fafine Tonga	36	Mafile'o Masi	MLSNRE
14	Lu'isa Malolo	Climate Change MLSNRE	37	Viliami Mahe	MLSNRE
15	Vao Langi	Tonga Association of Non Government Organisation	38	'Ofa Fakalata	Ma'uima'ui Organic Ltd
16	'Alisi Fotu	Pan Pacific Tonga			
17	Mausia Halahala	Tonga National Youth Congress			
18	Uepi.T.Lea	Ministry of Health			
19	Tu'ikolongahau Halafihi	Ministry of Fisheries			
20	Timi Naeata	Tonga National Youth Congress			
21	Malakai Ake	Ministry of Health			
22	'Amanaki Paea	Diploma Student, CDTC			
23	Tevita Faka'osi	Diploma Student, CDTC			
24	M. Talahiva Fine	Ministry of Education, Women Affairs and Cultures			

VAVA'U

No.	Names 26/11/2007	Organisation/Agency	No.	Names	Organisation/Agency
1	Paula Tatafu	Government Representative			
2	Sione Paea	Environment		**Clerical**	
3	Vunivesi Minoneti	Ministry of Agriculture		Ma'ana 'Akauola	Environment
4	Kelela Tonga	MoT		Lavinia Fonoifua	Environment
5	'Asipeli Palaki	Environment		Penikoni 'Aleamotu'a	Environment
6	Siaosi Vaka'uta	Shoreline		Tangikina Samani	Environment
7	Azania Fusimalohi	Environment			
8	Martin Finau	Ministry of Fisheries		**Driver**	
9	Uepi Lea	Ministry of Health		Vili Valu	Environment
10	Taniela Fale	POPs Project			
11	Suliana Vi	POPs Project			
14	Sela Moa	Ministry of Justice			
15	Noma Fifita	Ministry of Justice			
16	'Alaipuke 'Esau	Youth			
17	Tevita Fonokalafi	Forestry, MAFFF			
18	Peni Tonga	MLSNRE			
19	Paula tafitu'a	Treasury, MF&NP			
20	Taniela Vai Loseli	District Officer, Hihifo			
21	Finau Tupou	District Officer, Neiafu			
22	Sei H Tu'itupou	MOW			
18	Saia Taufa	MOW			
19	Tofa Finau	Cooperative Society			
20	Anaise Noa	Forestry, MAFFF			
21	Paula Lo'amanu	MLSNRE			
22	Lute 'Aipolo	Principal Fangatongo			
23	Kelesi Tu'itupou	Shoreline Co. Ltd			
24	Melenaite 'Olie	Traffic, MPPF			
25	Sipatilati Fusi	MF & NP			
26	Lesieli Fanua	MoT			
27	Kalafitoni Latu	MEWAC			
30	'Asena T. Ma	MEWAC			

HA'APAI

No.	Names	Organisation/Agency	No.	Names	Organisation/Agency
	FACILITATOR		21	Mele Hola Vi	WID Pangai
1	Rev Paukamea Tiueti	Church Minister	22	'Aisake Fifita	MLCI
2	Paula Tatafu	Governor's Office	23	Kelepi Fotu	Pulefakavahe V/L
3	Vunivesi Minoneti	MAFFF	24	Sosefina Vili	Fisheries Dept
4	Kelela Tonga	MMP	25	Rev 'Aisea Taumoe'anga	Siasi Konisitutone
5	'Asipeli Palaki	MLSNRE	26	Kepu 'Ioane	TVB
6	Siaosi Vaka'uta	Shoreline Group of Co. Ltd	27	Leotisia M Fifita	Taufa'ahau College
7	Azania Fusimalohi	MLSNRE	28	Sailosi V Fanua	Ha'ato'u
8	Martin Finau	Ministry of Fisheries	29	'Akositaine Mo'ungaloa	Governor's Office
9	Uepi Lea	Ministry of Health	30	Halamehi Taufu'i	Ministry Of Work
10	Taniela Fale	POPs Project	31	Langilangi Fono	Shoreline
11	Suliana Vi	POPs Project	32	Ma'aki Folau	Tonfon
12	Sione Paea	MLSNRE	33	Havili 'Ahoafi	Church of Tonga
13	Sela Moa	Crown Law Department	34	Losa Latukakatou	Youth Congress
14	Noma Fifita	Crown Law Department	35	Livai Kaivai	'Ofisakolo Koulo
			36	Rev Hotili Vaitaiki	Church of Tonga
			37	Folau Lokotui	Principal Police Magistrate
	PARTICIPANT		38	'Ienui Tapu	Red Cross
16	Mosese Fifita	MOH	39	Sefo Kiole	Holopeka Youth
17	Fokitala'a Kakau	Tonga Trust	40	Pita Vi	Ngoue
18	'Akanesi Makakaufaki	MOH	41	Tevita 'Ahoafi	Dept of Fisheries
19	Siokapesi Telefoni	Holopeka Youth	42	Moimoi Fakahua	'Ofisakolo Pangai
20	Siaosi Vaha'i	St. Josephs College	43	'Ana Liuaki	Marine& Ports

'EUA

No.	Names	Organisation/Agency	No.	Names	Organisation/Agency
			7	Sela Moa	CLD
1	Semisi Halaholo	Government Rep.	8	Norma Fifita	CLD
2	Rev Mele Mausia	Church Minister	9	Azania Newton	MLSNRE
3	'Asipeli Palaki	MLSNRE	10	Vunivesi Minoneti	MAFFF
4	Suliana Vi	POPs Project	11	Siaosi Vaka'uta	Shoreline Co. Ltd
5	Taniela Fale	POPs Project	12	Uepi Lea	Ministry of Health
6	Kelela Tonga	MoT	13	Tu'ikolongahau Halafihi	Fisheries
	PARTICIPANT			**CLERICAL**	
14	Ma'ata Tuai	MEWAC	24	Ma'ana 'Akau'ola	POPs Project
15	'Elenoa Taufa	"	25	Lavinia Fonoifua	POPs Project
16	'Akanesi Tausinga	"	26	Penikoni Aleamotu'a	MLSNRE
17	Penisimani Hapihau	Futu	27	Ului Latu	Environment Hp
18	Sitaleki Tukia	MAFFF			
19	Lupe Tu'ivai	Treasury			
20	Silia Tuai	MLCI			
21	Falati Papani	Tourism			
22	Tevita Leha	Town Officer			
23	Fifita Fungalei	Town Officer			

II Consultations on Sector Plan of Action for the National Implementation Plan Oct-Nov 2007

2.1 DEPARTMENTS

2.1.1 Ministry of Labour, Commerce & Industries (including key stakeholders)

1	Moana Taukolo	10	Steven Tupou
2	Tevita Niu Lata	11	Luseane 'Aho
3	Manu 'Iongi	12	Sau Likiliki
4	Sione Vailanu	13	Chris MAFFFi
5	'Atalua Falekaono	14	Luna Tu'ikolovatu
6	Distaquaine Tu'ihalamaka	15	Fa'one Bloomfield
7	'Olivia Katoa	16	Fine Tohi
8	Roger Miller		
9	Bhougavalli Rajesh		

2.1.2 Ministry of Transport (including key stakeholders)

1	Kelela Tonga	5	'Esau Tupou
2	Viliami Kulu	6	Sione Saipa'ia
3	Vakautapola Vi	7	Uepi Latu
4	Vuni Latu		

2.1.4 Ministry of Environment and Climate Change

1	'Asipeli Palaki	7	Totoa Latu
2	Lupe Matoto	8	Viena Finau
3	MAFFFile'o Masi	9	Lu'isa Malolo
4	Samuela Pakileata	10	Lilieta Takau
5	Tupe Samani	11	'Oketi Lutui
6	Lola Liava'a		

2.1.5 Ministry of Police, Prison & Fire Services

1	Lofia Heimuli	4	Seliuti Latu
2	'Inoke Folau	5	Filisonu'u Fineanganofo
3	Sinamoni Kauvaka	6	Talau Limoni

2.1.6 Ministry of Training, Employment, Youth & Sports

1	Taniela Fusimalohi	8	Temalisi Kata
2	Fatui Langilangi	9	Sitiveni Fifita
3	Jeffrey Taufa	10	Samuela Pua
4	Keilini Nonu	11	Ofo Va'inga
5	'Akanesi 'Otunuku	12	'Aisea Latu
6	'Emeline Tongotea	13	'Ekitino Vaiangina
7	Kolope Fisi'ihoi	14	'Emele Latu

2.1.7 Customs

1	Heiloni Latu	4	Sau Likiliki
2	Manase Tonga	5	Fa'one Bloomfield
3	'Esafe Tokau	6	Po'oi Kaufusi

2.1.7 Shoreline Group of Co. Ltd

1. Siaosi Vaka'uta
2. Semi Talia'uli
3. Samisoni Fatai

2.1.8 Ministry of Education, Women Affairs and Culture

1	Talahiva Tonga Fine	12	Saimone Similai
2	Manutala'aho Tupou	13	'Oto'ota Fifita
3	Leti Tangi	14	Tepola Fangaloka
4	Henga Fa'a'ese	15	Sipola Halafihi
5	'Ilaisaane Tongotea	16	Siutiti Mahina
6	Tulikava Sete	17	Justine Holmes
7	'Olivia Katoa	18	Malia Tamo'ua
8	Sione Hafoka	19	Seini Manu
9	Quenda Langi	20	Matelita Taufa
10	'Ilaisaane Teisi	21	Lola Tokotaha
11	Sela Teisina		

2.1.9 Ministry of Works

1	Maliu Takai	4	Sifa Latu
2	Manu Tonga	5	Peni Vea
3	Makasini Latu	6	Mosese Lavulavu

2.2 ISLAND DISTRICTS

2.2.1 TONGATAPU

No.	Names	Organisation/Agency	No.	Names	Organisation/Agency
	FACILITATOR		29	Uikelotu Vunga	Tonga Trust
1	'Asipeli Palaki	Environment	30	Matelita Taufa	Education
2	Vaimoana Taukolo	Ministry of Labour	31	Siale Fihaki	Town Officer
3	Lofia Heimuli	Fire Services	32	Silia Mohetau	Student
4	Niu Fakakovikaetau	Ministry of Health	33	Lu'isa Malolo	Environment
5	Dr Malakai Ake	Ministry of Health	34	MAFFFile'o Masi	Environment
6	Siaosi Vaka'uta	Shoreline Limited	35	Hauoli Vi	Langafonua
7	Gloria Guttenbeil	Crow Law	36	Tupe Samani	Environment
8	Siaosi Faka'osi	Environment	37	'Oketi Lutui	Student
9	Suliana Vi	Environment	38	Halakiono	Environment
10	Talahiva Fine	Ministry of Education	39	Lola Liava'a	Environment
11	Sela Moa	Crow Law	40	Timi Naeata	Youth
12	Kelela Tonga	Marine & Ports	41	Po'oi Kaufusi	Customs
13	Fatui Langilangi	Youth & Sport	42	Sau P. Likiliki	Customs
14	Fa'one Bloomfield	Customs	43	Sione T. Taufa	Customs
15	Talita Helu	Solid Waste Management	44	'Ilaisaane Tongotea	Education
			45	ACFO Folau	Fire Services
	PARTICIPANT		46	ACFO Kauvaka	Fire Services
16	'Ofa Fakalata	Ma'ui'ui Organic	47	FO Fineangnofo	Fire Services
17	Kalio Moala	Town Officer	48	FO Latu	Fire Services
18	Mataiasi Holani	Town Officer	49	Saimone Similai	Education
19	Seliuti Latu	N/A	50	Tulikava Sete	Education
20	Maloni Havea	MOW	51	'Oto'ota Fifita	Education
21	Manu Tonga	MOW	52	Viliami Mahe	Environment
22	Makasini Latu	MOW	53	Kolope Fisi'ihoi	MOTEY
23	'Onesi Tu'ifua	Marine & Ports	54	Mosese Fonohema	MOTEY
24	'Olivia Katoa	MEWAC	55	Keilini Nonu	MOTEY
25	Vaimoana Mafi	MAFFF	56	'Akanesi 'Otunuku	MOTEY
26	Manase Tonga	Shoreline	57	Talita Helu	Tonga Solid Waste Project
27	Semi Talia'uli	Shoreline	58	Patisepa Folaumoetu'i	Environment (NBSAP Project)
28	Samisoni Fatai	Shoreline	59	Saitoni Tupou	Education

2.2.2 VAVA'U

No.	Names	Organisation/Agency	No.	Names	Organisation/Agency
	FACILITATOR				
1	Rev. Paukamea Tiueti	Church Minister	11	Vaimoana MAFFFi	MAFFF
2	Paula Tatafu	Government Rep.	12	Niu Fakakovikaetau	Health
3	Sione Paea	Environment (Vv)	13	Fatui Langilangi	'Eua
4	Sela Moa	Crown Law	14	Talahiva Fine	MEWAC
5	Puluno Toke	Labour & Commerce (Vv)	15	Kelela Tonga	Marine & Ports
6	Azania Fusimalohi	Environment	16	Siaosi L Faka'osi	POPs Project
7	Vehitau Ma'ukie	Customs (Vv)			
8	Siaosi Vaka'uta	Shoreline			
9	Tonga 'Olie	Fire Services			
10	Suliana Vi	POPs Project			
	PARTICIPANT		41	Lee College Faleola	Customs
18	Saia Taufa	MOW	42	Toafa Finau	Cooperative Society
19	Moteita Falekaono	Town Officer	43	Titali Kolomalu	MLCI
20	Taniela Vai Loseli	District Officer Hihifo	44	Kalafitoni Latu	Principal (Vv High School)
21	'Alipate Hingano	District Officer Leimatu'a	45	Lesieli Fanua	MOT
22	'Otenili Fisi'ikava	Fisheries	46	Lupe Mahe	OIC Primary Schools
23	Paula Lo'amanu	Lands & Survey	47	Peni Tonga	Lands & Survey
24	Finau Tupou	District Officer Neiafu	48		
25	Lea'aeto'a Tu'itupou	Defence OIC	49	Leopino Fa'asolo	Health Inspection
26	Paula Tafitu'a	Treasury OIC	50	Hopoate Puta	Principal Saineha High School
27	Sisi Toutai Tonga	Police			
28	Alaipuke 'Esau	National Youth Congress	52	Vehitau Ma'ukie	Customs
28	Tevita Fonokalafi	Forestry	53	Peni Simipata	Teacher
29	'Esili Kauvaka	Shoreline	54	Lute 'Aipolo	Principal Fangatongo
30	Melenaite 'Olie	Traffic	55	'Asena T Ma	Education
31	Sipatilaiti T Fusi	Central Planning	56	Kelesi Tu'itupou	Shoreline
32	'Anaise Noa	Forestry	57	La'ie Tonga	Governor's Office
33	To'ifalefehi Moala	MAFFF OIC	58		
34	Vehikite Kioa	Town Officer	59	Latu Lepolo	Media
35	Fakaului 'Ahofono	Fire Service			
36	Silika Mo'unga	Principal Tailulu College		**CLERICAL**	
37	Fehi Fainu	Quarantine	60	Tangikina Samani	MLSNRE
38	Sei H Tu'itupou	MOW	61	Vili Vatu (Driver)	MLSNRE
39	Maopa 'Otuafi	Governor's Office			
40	Lolina Tonga	MLCI			

2.2.3 HA'APAI

No.	Names	Organisation/Agency	No.	Names	Organisation/Agency
	FACILITATORS		30	Alani Falevai	MPPF
1	Folau Lokotui	Representative of the Governor	31	Feleti A Iketau	MOW
2	Rev. S. Lavemai	Church Minister	32	Vaima'ali Tau'ataina	Education
3	Siaosi MAFFFi	Lands & Survey	33	'Olivia MAFFFile'o	Education
4	Sela Moa	Crown Law	34	Viliami Huni	Town Officer
5	'Aisake Fifita	Labour & Commerce (Hp)	35	Sekope Paongo	Town Officer
6	Azania Fusimalohi	Environment	36	Laulea Tama'ofa	Marine & Ports
7	Lee Faleola	Customs (Vv)	37	Mosese Fifita	Health Inspection
8	Siaosi Vaka'uta	Shorelines	38	Katokakala Langi	Tourism
9	Lofia Heimuli	Fire Services	39	Iengi Tapu	Tonga Red Cross
10	Viamoana MAFFFi	MAFFF	40	Sosefina Vili	Fisheries
11	Niu Fakakovikaetau	Health	41	Kiki Balzer	Tailulu College
12	Maliu Takai	MOW	42	Pita Vi	District Officer
13	Suliana Vi	POPs Project	43	Emanuele Mo'ale	MAFFF
14	Siaosi Faka'osi	POPs Project	44	Finau Uata	Private Sector
15	Fatui Langilangi	MOTEYS	45	Livai Kaivei	Town Officer
16	Talahiva Fine	Eduction	46	'Alani Kavakiholeva	MOW
17	Kelela Tonga	Ministry of Transport	47	'Ulise 'Ofakineiafu	Taufa'ahau College
			48	Lusio MAFFFi	Education
	PARTICIPANT		49	Ika katoa	MAFFF
16	Peseti Vea	Education	50	Fr. Kakala	Church Minister
17	Fusi F. Kaho	Health	51	M.Soakai	MAFFF
18	S. Fe'ao	MAFFF	52	Vili Lolohea Lolo	MAFFF
19	Vaisinia Falevai	Education	53	Taniela Vaha'i	Education
20	T. Toutai	MAFFF			
21	Kaimaka Vailahi	Town Officer (Faleloa)	54	Viliami Fakahua	MAFFF (retired)
22	Sunia Napa'a	Forestry	55	Moimoi Fakahua	Media
23	Tevita Vakasiuola	Health	56	Sitaleki Soakai	MAFFF (retired)
24	'Ana Lupe Voi	Principal (Ha'apai High Sc)	57	Similai Mateaki	Treasury
25	Paula Tu'itavuki	Education	58	Peni Ueta	Marine & Ports
26	Lata Ulavalu	Town Officer			
27	Fokitala'a Kakau	Tonga Trust		**CLERICAL**	
28	Latai Tuita	Police	59	Paea Latu	Governor's Office
29	Safi Hu'avi	Lands & Survey	60	Sione Tupou	Environment

2.2.4 'EUA

No.	Names	Organisation/Agency	No.	Names	Organisation/Agency
	FACILITATORS		20	Siokapesi Tulahe	Tonga Trust
1	Semisi Halaholo	Government Rep.	21	'Aisake Samiu	TCC
2	Taulango Manukeu	Treasurer	22	Kalolaine Tukia	TCC
3	Talahiva Tonga	MEWAC	23	Semi Tei	Shoreline
4	Vaimoana MAFFFi	MAFFF	24	Sione Tu'angalu	Shoreline
5	Siaosi Faka'osi	POPs Project	25	Masiu Ta'e'iloa	NGO 'Ohonua
6	Azania Fusimalohi	Environment	26	Maikolo Fifita	NGO
7	Silia Tuai	MLCI	27	Tulounga Lu'au	NGO Mata'aho
8	Kioa Palasi	MOW	28	Aloma Kauvaka	Justices
9	Moheloa Maka	Police	29	Tevita Vea'ila	TWB
10	Felenili Havea	Church Minister	30	'Aiveni Lotulelei	D/Officer
11	Niu Fakakovikaetau	Health	31	Ma'afu Latu'ila	T/Officer
12	Fatui Langilangi	MOTEYS	32	Siua Fa'u	T/Officer Mu'a
13	Suliana Vi	POPs Project	33	Toafa Faka'utoki	D/Officer
14	Kelela Tonga	Marine & Ports	34	Taniela Hakaumotu	T/Officer
			35	Manu Takai	T/Officer
	PARTICIPANT				
1	Suliasi Saafi	T/Officer Angaha			
2	Penisimani Hapihau	Futu			
3	Manuele Lama	Sapa'ata			
4	'Apai Lu'au	Mata'aho		**CLERICAL**	
5	Makatangi Filiai	Tongamama'o	36	Pelenaise Tonga	Office of Gov. Rep.
6	Tauleva Tafea	Petani			
7	Tevita Ma'u	Ha'atu'a		**DRIVER**	
8	Mikaele Ma'ake	Pangai	37	'Eukaliti Langi	Office of Gov. Rep.
9	Ului Latu	P.M.O			
10	Ma'ata Tuai	Education			
11	Vea Vaka'uta	Education			
12	Lolo M Fili	MAFFF			
13	Lesieli 'Amone	MAFFF			
14	'Okalani 'Amone	MAFFF			
15	Toa Livai	MAFFF			
16	Tupou Vaea	MAFFF			
17	Sione Faiva	Police			
18	Maui Tafea	Tourism			
19	Matavai Maofaeata	Tonga Trust			

A3: Representative public information materials

The following brochures have been distributed widely as part of the awareness campaign.

1. Why POPs? Describing the characteristics of POPs chemicals emphasizing the POPs of importance to Tonga.

2. DDT and Dieldrin in Tonga. Describing what and why DDT & dieldrin were used in Tonga as well as the DDT hotspots.

3. PCBs in Tonga. Describing what PCBs is and the result of the latest inventory.

4. Dioxins and Furans in Tonga. Describe the type of activities that releases D & F in Tonga and the result of the latest inventory.

5. A Guide to Making Home Compost. A step by step procedure in how to make a banana circle. Also describing other methodologies of home composting.

6. Recycling in Tonga. Describing the goods that can be recycled/reused with pictures to assist in the sorting. A step by step procedure for proper disposal is also included.

7. Methyl mercury in Fish of Tonga. Describing the assessment of mercury in fish of Tonga and it is within the WHO/Codex standard.

8. Tonga NIP for Stockholm Convention on POPs. The NIP document is summarized in a brochure, including activities from the enabling activity and AusAID POPs in PICs project.

A4: Supporting information on chemicals

The following documents provide information on chemicals

1. Annual Trade Report (TOP$40).
   Contact Statistics Department, P.O. Box 149, Nuku'alofa, Tonga.
   Fax (676) 24 303, Phone (676) 23 300,
   e-mail: amfinau@stats.gov.to

2. The National Profile of Chemical Management in Tonga 2005 (TOP$60).
   Contact Ministry of Environment & Climate Change, P.O. Box 917,
   Nuku'alofa, Tonga.
   Fax (676) 25 051, Phone (676) 25 050
   e-mail: asipeli_palaki@yahoo.com

3. The National Inventory on POPs Chemicals (TOP$80)
   Contact Ministry of Environment & Climate Change, P.O. Box 917,
   Nuku'alofa, Tonga.
   Fax (676) 25 051, Phone (676) 25 050
   e-mail: asipeli_palaki@yahoo.com

A5: Details of relevant international and regional treaties

10.1 Cooperation and Involvement with International Organisations, Bodies and Agreements

The Government of the Kingdom of Tonga is a contracting State or Signatory to a number of international organisations. Being a contracting State or Signatory, the Kingdom must respect and honour the obligations of organization with their respective Agreements, Conventions and Protocols thereto. The Kingdom joined the UN in September 1999 and has been a signatory to UNEP and various specialized agencies of the UN for some years (Table 10.A). The bulk of the international legal instruments, namely Agreements, Conventions and Protocols to which the Kingdom is a Party, are not concerned directly with chemicals management. Although the Kingdom has agreements with these international organisations, a lack of resources inhibits the implementation of many of these plans. This is due to the Kingdom's own list of priorities, limited funding for these initiatives and a paucity of trained/qualified personnel that can carry out the tasks associated with the obligations of these organisations. Such limited funding is due to *inter alia* lack of commitment performed at the national level. In some aspect, the organization may continue to provide the funding but at the regional level. This would in fact isolate the Kingdom from that particular organization. Further difficulties arise due to the lack of the Kingdom's participations in the regional and international conferences and workshops with regard to their duties and obligations associated with these organizations. Even if they do participate either those selected are not qualified and therefore the implementation of the same at the national level would not be carried out accordingly or those participating are qualified but the Kingdom would not support such implementation because of its own priorities.

The Kingdom is a signatory to a range of international agreements/procedures associated with chemicals management (Table 10.B). However, there is lacking of implementing of many of the initiatives that form the basis of these agreements. This is due to the lack of resources, both financial and technical assistance and advice including the proper facilities and professional required to successfully fulfil those responsibilities. Another hindrance to the effective implementation of these agreements is a lack of support given by the Kingdom to the respective government ministry. Furthermore, there is a lack of coordination, cooperation and understanding, and division of responsibilities among the Government Ministries.

Table 10.A Membership in International Organisations, Programmes and Bodies

International Organization/Body/Activity	National Focal Point (Ministry/Agency & Primary Contact Point)[1]	Other Ministries/ Agencies Involved	Related National Activities
Intergovernmental Forum on Chemical Safety (IFCS)	Not member		
UNEP IRPTC - National Correspondent IETC - Cleaner Production Centre	Environment Dept	MoAF	Chemicals management, environmental management, institutional strengthening
IPCS	Not member		
WHO	MoH	MoFA	Financial and/or technical assistance in areas include public health, legislation, education, scholarships and training
FAO	MoAgri Food	MoForest / MoFisheries	Educational programmes on Agricultural, forestry and fisheries
UNIDO	MoFA	MoLCI	
ILO	MoFA	MoLCI	
World Bank			
Asian Development Bank (ADB)	MoFinance		Infrastructure and heath initiatives
OECD	Not member		
Regional Economic Commissions: South Pacific Forum	Prime Minister's Office		
Others:			
SPREP	Environment Dept		Environmental legislation, education and waste management
ICAO	MoCivil		

Table 10.B Participation in International Agreements / Procedures Related to Chemicals Management

International Agreements	Primary Responsible Agency	Relevant National Implementation Activities
Agenda 21 - Commission for Sustainable Development	Environment Dept	National Chemical Profile
UNEP London Guidelines (voluntary procedure)[1]	MoLSNR	
FAO Code of Conduct (voluntary procedure)[1]	Not Member	
Montreal Protocol	MoLSNR	
ILO Convention 170	Not member	
UN Recommendation for the Transport of Dangerous Goods	Not member	
Basel Convention	Not member	
London Convention	MoLSNR	
GATT/WTO agreements (related to chemicals trade)	MoLCI	
Chemicals Weapon Convention	MoF	Implementing the international obligations by drafting a Bill to that effect
Waigani Convention	Environment Dept	
Bilateral Agreements (specify)		
SPREP Convention	Environment Dept	
Stockholm Convention	Environment Dept	
Rotterdam Convention	Not member	

10.2 Participation in Relevant Technical Assistance Projects

The Kingdom is a party to a range of technical assistance projects related to chemicals management (Table 10.C). The Environment Department (referred hereinafter as "the Department") was established to deal with all environment issues at the international, regional and national arenas. The Department takes over the functions of the EPACS section of the MoLSNR in relation with the environment matters. The Department is now the competent authority and a focal contact point in some of the international environment legal instrument such as the Convention on Biological Diversity 1995 and the Cartagena Protocol on Biosafety 2003.

The most substantial and recent environment project one in the Kingdom is the Solid Waste Management Project. The goal of the Project is to contribute to a cleaner environment and improved public health for the people of Tonga by establishing an environmentally sound, sustainable and effective solid waste management system on Tongatapu, including a new landfill, located at Tapuhia quarry, Vaini, Tongatapu to be implemented over a four (4) – year period. The Australian Government is contributing $AUD 1,652,000 and the

Government of Tonga is providing a further $AUD 283,967 for the civil works construction. The executing agency for the Project is the Ministry of Health but the implementing agency is the Ministry of Works.

On the 19th day of January 2005, His Majesty's Cabinet approved the creation of a new Waste Management Authority. It is anticipated that the project management, community awareness and the institutional staff of the Project Office will co-locate with the new Authority when established.

The other AusAID projects of relevance include the Water Board Project, which is only peripherally related to chemicals management, and the Health Project, which includes reviewing and drafting the health legal legislation, including the Pharmacy Act 2001 and Therapeutic Goods Act 2001.

Other technical assistance projects have been much shorter in duration and have, generally, been based within the Department. The various initiatives of these projects have included environmental impact assessment, waste management, pollution in the Fanga'utu Lagoon, pesticide residues in sediment, assessment of laboratory facilities and a region-by-region national pollution inventory.

Table 10.C Participation as Recipient in Relevant Technical Assistance Projects

Name of Project	International / Bilateral Donor & Implementing Agency Involved	National Contact Point	Relevant Activities
Solid Waste Management	AustAid	MoW	Landfill
Drafting Biosafety Bill	UNEP	Dept of Environment	Drafting Biosafety Bill and reviewing the appropriate the related Acts
Health Legislation	WHO	MoH	Reviewing the health legislation and drafting Bills on chemical and environmental helath
Water Board	NZAID / AuAid	Tonga Water Board /Health	Institutional Strengthening
POPs	SPREP	Environment	PCBs
PIC's	SReP	Environment	PCBs
Action Strategy for managing the environment	SPREP	Environment	Environmental management

10.3 Comments / Analysis

It appears that little has been done to effectively integrate the various international programmes and avoid unnecessary duplication. This is as much a function of the international donor agencies' inability/unwillingness to investigate whether the project is required, what ministries should be involved, which Tongan organisations should be involved

in these aid programmes and whether the work has already been commenced/completed elsewhere. This stems from the relative lack of communication and division of responsibilities among the various ministries, and between the Kingdom and the donor agency.

A common problem is that there is often very little implementation of projects initiated by international/bilateral agreements. Whilst the aid recipients are often blamed for not carrying through the project, aid donors must reassess their approach, if their projects are repeatedly abandoned. The most effective project design may not be the one that, superficially, achieves the most in the shortest time period. Rather, the best practical design may be the one that gives the recipient a sense of ownership in the project, and thus impels the recipient to continue with the project after the donor organisation has left the country.

There is lack of co-ordination, communication and division of responsibilities at the national level with respect to the implementation of international agreements concerned with chemicals management. One important reason for this is that there is no central administration unit to oversee all such agreements and assign responsibility for their implementation to the various government departments. Again, this is influenced by the lack of both technical assistance and advice, including appropriate equipment and competent and qualified personnel and/or financial resources required to successfully manage this task. At present, there are no suitably qualified personnel nor appropriate facilities to fill this role, as the position would require a sound knowledge of a broad range of chemicals, chemical wastes, and their effects on human and environmental health, and the appropriate facilities for the disposal of the same. Once the responsibilities have been effectively assigned, however, it still remains for the responsible government organisation to implement the processes required.

Although there are procedures to help ensure coordination between the ministries/agencies that are responsible for the protection of health, safety, and the environment, there is still a degree of division of responsibilities of the Ministries in the activities of these operations. There needs to be coordination, more open communication and knowledge and responsibilities sharing among the ministries concerned with chemicals management.

The effectiveness of international programmes within the Kingdom could initially be improved by a better understanding of the priorities of developing nations by the international bodies. Many of these international programmes are of a generic kind and need to be better adapted to local conditions if they are to be seen as useful by the Kingdom. The sponsors of international programmes need to make sure that there is a commitment from the recipient to implement any necessary measures. There will be no ongoing process unless the relevant government departments feel that they are in the "driver's seat" rather than merely following orders from outside agencies which do not fully understand Tongan priorities. The advantages of these programmes *within the context of national objectives* must be made clearer to persons of authority in the Kingdom if national organisations are to redefine their priorities and give these projects the necessary attention.

The major obstacles to implementing internationally based reforms are *inter alia* a lack of coordination, communication and understanding of the obligations and benefits of these programmes. They are often seen as merely cosmetic efforts with little of value to the nation. It must be made clear to the signatory nation by the relevant international organisations that the project will lead to improvement within the nation in practical, rather than overly broad, terms. If possible, a financial value of the reforms coupled with a projected time frame, should be assigned. Most importantly, the local people/organisations implementing these

international agreements should be given a sense of ownership of these projects, with the proviso that the international sponsoring organisation will provide technical assistance and advice if necessary.

Recommendations

1. That Tonga expedites the ratification and accession processes to be a Party to the Basel, Stockholm and Rotterdam Conventions respectively;

2. That an Environment Bill to provide the Environment Department with statutory power of its establishment and functions to regulate and control all environment matters and other related matters; and

3. That a Chemical and Hazardous Wastes Bill to address and implement the obligations under the Basel, Rotterdam, Stockholm and Waigani Conventions.

A6: Country history in addressing the POPs issue

1972 POPs chemicals importation were banned

1980 POPs Waste were shipped to New Zealand

1982 Approximately 11 tonnes of DDT were donated under charity after Cyclone Isaac

1998 AusAID POPs in PICs project conducted national inventory

1999 –AusAID TEMP/SPREP conducted a survey on PCBs in waste transformers in Tongatapu.

-Draft Profile of National Chemical Management under UNITAR Project

2005 -POPs awareness programmes commenced as part of the UNEP/GEF POPs Project. The programmes range from TV/Radio programmes to distribution of brochures.

-Revise the Profile of National Chemical Management under the UNEP/GEF POPs Project.

2006 -Waste DDT, PCBs (in transformer oil) etc. were shipped to Australia for proper disposal under the AusAID POPs in PICs project.

-POPs inventory conducted under UNEP/GEF enabling activities for the Stockholm Convention on POPs. The inventory covered Dioxins and Furans, PCBs, DDT and dieldrin. DDT burial ground was discovered at Tokomololo. Samples including groundwater, sediment and fish from Fanga'uta lagoon were tested for DDT/DDD & DDE.

2007 - Assess the level of methyl mercury in fish of Tonga and collection of samples for analysis of POPs in human milk.

-A National Implementation Plan was formulated based on the Profile of National Chemical Management, POPs inventory and national consultations.

- National Consultation on Action Plans for the NIP. DDT burial ground was identified at the old MAFFF station at Pangai Ha'apai.

2008 -POPs awareness programme re-enforced. Information provided were based on the UNEP/GEF POPs inventories. The programmes range from TV/Radio programmes to distribution of brochures, quiz competition for secondary schools, power point presentations to interested groups ranging from the Tonga Research Association,

Association of Tonga University Women to Church and Community groups.

-the human milk samples were analysed for POPs and POPs like chemicals at CVUA laboratory in Germany.

-Samples including shellfish, fish and soil were tested for DDT/DDD & DDE under the UNEP/GEF POPs Project.

2009 -Technical Review of NIP by Technical Adviser (Bruce Graham)

-NIP Endorsement Workshop

-Ratification of Stockhom Convention

-Policy Decision for processing of Hazardous Wastes and Chemicals Bill 2009 for approval. Compile final documents and forward to Crown Law Department.

-Auditing of UNEP/GEF funds up to June 2009. The report to be completed at zero balance.

2010 -Kingdom of Tonga approved the accession to the Basel and Rotterdam Convention

-Approval of POPs Inventory 2006/07 and NIP Document

-Project Terminal & Audit Report

ANNEX A7: SECTOR ACTION PLANS FOR IMPLEMENTING TONGA'S OBLIGATIONS UNDER THE STOCKHOLM CONVENTIONS ON PERSITENT ORGANIC POLLUTANTS

A sectoral approach was adopted for the development of the NIP based on the POPs Inventory 2006/07 and national consultations. The estimated cost of the NIP to be implemented over 5 years is USD$5,893,160 where USD$1,053,400 will be met internally which is an inkind contribution through staff salary who will contribute towards the implementation and USD$4,839,760 will be met externally

Activity: institutional and regulatory strengthening measures

The leading agencies for this activity are the Ministry of Environment and Climate Change and the Crown Law Department.

I. MINISTRY OF ENVIRONMENT AND CLIMATE CHANGE

Background

Tonga is not a party to the Stockholm Convention on POPs. However, the Government of Tonga agreed in principle to all the articles under the convention, by signing the initial stage, and became eligible to the POPs EA for the formulation of NIPS. It is also the requirement of the POPs convention to have NIPS in place.

The SDP8 under goal 7 and strategies 1, 2, 3, and 20 are all relevant to POPS project and especially with the general management to hazardous chemicals in Tonga.
Goal 7- Ensure environmental sustainability and disaster risk reduction

Strategy 1: Complete and enforce the legislative framework for environmental conservation and management.

Strategy 2: Integrate environmental costs and benefits into Government decision-making procedures covering, policies, projects and private investment proposals.

Strategy 3: Implement environmental education programmes and engage communities in remedial measures.

Strategy 20: Implement and ensure sustainability of the Nuku'alofa Waste management Project

The Department's Corporate Plan clearly addressed the management of POPS in Tonga, in it's vision, role, objectives and activities.

Vision "the people of Tonga are better able to plan and manage the use of their environment for sustainable development of present and future generations"

Role

(a) To coordinate the role of Government in relation to all environmental management and decision making;
(b) To promote meaningful public involvement in relation to issues of environmental management;

(c) To ensure the observance within the Kingdom of Tonga of its international obligations relating to the protection of the environment;
(d) To promote the concept of sustainable utilization and management to the environment and the natural resources of the Kingdom of Tong;
(e) To facilitate and conduct research and assessments of the impacts of any activity on the environment;
(f) To formulate appropriate environmental legislative framework and plicies;
(g) To strengthen environmental legislation and policies as well as their enforcement;
(h) To promote the understanding, management

Specific Objectives on POPs – Corporate Plan/Management Plan

- To establish Corporate Strategic Planning and Management
- To mainstream sustainable resource and development process
- To report the state of the environment
- To coordinate the management of POPS

ACTION PLAN'S GOAL

To coordinate the Management of POPs in Tonga

OBJECTIVES

1. Development of mechanism and framework for management of POPs in Tonga.
2. Identification of measures to reduce releases from unintentional production(uncontrolled combustion)
3. Identification of threats pose by pops to environment and address

RESOURCE REQUIREMENT MATRIX

ACTIVITIES	Human resources	Facilities	Equipment	Costing
Activity/Task 1.1.1 High Level Consultation 1.1.2 Cabinet Submission 1.1.3 Privy Council submission	MECC staff	Workshop facility venue	T.V equipment	
1.2.1 Establishment of POPs Unit within the Environment Department 1.2.2 Recruitment of POPs staff 1.2.3 Purchase of equipment	2 staff	Office	Computers Lap top Desks/etc	20,000
1.3.1 Draft Bill to be submitted to Law Reform Committee 1.3.2 Draft Bill to approved by Cabinet 1.3.3 Draft Bill to be submitted to Parliament 1.3.4 Draft to be approved by Privy Council 1.3.5 Stakeholder Consultation on the	MECC staff,/CEO Committees POPs staff and team		Transport, office equipment. TA	$30,000

POPs Act 1.3.6 Enforcement of POPs Act 1.4.1 Establishment of POPs steering committee 1.4.2 Establishment of Technical Team	POPS staff Members members	office	Computers transport	$30,000
2.1.1 Community consultation workshop and training 2.1.2 Media coverage, T.V, Radio, News Paper, Internet, Website 2.1.3 School 2.1.4 NGOs, Youth, churches 2.1.5 Decision making consultation	MECC staff	venue	Awareness material Transport TA	$40,000
2.2.1 Short term training 2.2.2 Long term training 2.2.3 Attachment 2.2.4 On the Job training 2.2.5 Regional and international workshops and meeting	POPs staff Rep. form Line Ministries staff	University Regional organizations Gov't agencies overseas	Travel Transport TA	$200,000
2.3.1 Dioxin and Furan form waste and incinerator 2.3.2 Dioxin and Furan form burning fossil fuel 2.3.3 POPs release from transport and heavy machinery 2.3.4 Other POPs chemicals 2.3.5 BET adoption 2.3.6 BAT adoption	POPs staff Task team	Office	Survey equipment Allowance	$20,000
2.4.1 Yearly auditing the status of POPs chemicals 2.4.2 Formulation of guidelines and code of conduct	POPs staff 1 consultant	office	Fee consultant Computers Office supplies	$40,000
2.5.1 regional or national incinerator for POPs disposal 2.5.2 Storage building	MOH MECC staff	Building Incinerator	incinerator	$200,000
2.5.3 shipment of POPs for further destruction				
2.6.1 Project proposals 2.6.2 Local budget allocation 2.6.3 Formulation of Funding mechanism 2.6.4 Establishment of Trust Fund 2.6.5 Close consultation with MEAS and Funding Organization	MECC staff POPs staff	office	Computer internet office supplies	$10,000
2.7.1 Data storage program 2.7.2 Database 2.7.3 Data analytical	POPs staff 1 IT person	office	Computer package	$10,000

II. CROWN LAW DEPARTMENT

The Crown Law Department is under the Ministerial direction of the Attorney General and Minister of Justice and is headed by the Solicitor General. Its main functions revolve around the following categories:

1. Providing legal advice to Government
2. Representing Government in all Litigation
3. Criminal Prosecutions
4. Law Officer functions, and
5. Legislation Drafting

Role in relation to POPs

The Crown Law Department will be directly involved in the management of POPs in the following ways -

- liaising with the Environment Department on the drafting of relevant legislation and subsidiary legislation
- endorsing proposals to ratify the relevant international conventions
- representing Government in all litigation in relation to the regulation of POPs

ACTIVITY 1 - Ratification of the Stockholm Convention on Persistent Organic Pollutants

The Stockholm Convention on Persistent Organic Pollutants came into force on 17 May 2004. The objective of the Convention, as stated in Article 1, is to protect human health and the environment from persistent organic pollutants.

Tonga has not ratified the Stockholm Convention. Crown Law will be requested to provide legal advice on whether or not Tonga should ratify the Convention. It is anticipated that, based on the results of the public consultations carried out the general view seems to be, that we should ratify the Convention immediately.

ACTIVITY 2 - Highlight Tonga's international obligations

Once Tonga ratifies the Stockholm Convention, it would undertake the following obligations:

- eliminate the use of POPs listed in Annex A: Art 3 (1) (a).
- restrict the production of POPs listed in Annex B: Art 3 (1) (b).
- control the import and exports of POPs: Art 3 (2).
- regulate production and use of new pesticides and new industrial chemicals which exhibit the characteristics of POPs: Art 3 (3).
- reduce or eliminate releases of POPs from unintentional production: Art 5.
- reduce or eliminate releases of POPs from stockpiles and wastes: Art 6.

- designate a "national focal point" for the exchange of information: Art 9.
- promote awareness and education: Art 10.
- encourage research, development and monitoring: Art 11.
- report on implementation measures: Art 15.

ACTIVITY 3 - Work closely with the Environment Department in the enforcement of the Hazardous Wastes and Chemicals Bill and the drafting of Regulations under the Bill

The current legislative framework is made up of the following sectoral legislation:

Waste Management Act 2005 – provides for the collection and disposal of solid wastes and the management of all wastes including hazardous wastes in Tonga. The Act prohibits the importation into or the arrangement for the movement into, out of or within, Tonga of any toxic or hazardous waste.

Customs and Excise Act (Cap 67) - Part I Schedule II of this Act prohibits the importation into Tonga of "all toxic or hazardous wastes" (para. 8). However, there is no definition of what might be toxic or hazardous waste.

Marine Pollution Prevention Act 2002 – provides for the prevention of and response to marine pollution and the dumping of wastes and other matters and to give effect to international marine pollution Conventions.

Pesticides Act 2002 – This Act establishes the Pesticides Registration Committee (section 7). The functions of the Committee include:

- issue guidelines for the storage, distribution, use and disposal of pesticides;
- promote the efficient, safe use, storage and disposal of pesticides.

Section 6 requires the Registrar to keep a Register of Pesticides; issue pesticide licences for the manufacture, import, distribution or sale of any pesticide; and to issue permits for buying, obtaining or use of any pesticide.

Public Health Act 1992 - Part VI of the Act empowers the Minister of Health to make arrangements for the collection, transport and disposal of domestic, commercial and trade waste (section 91). The Minister is also empowered under section 94 to make Regulations specifying –

a) the types of solid or liquid waste which shall be considered to be toxic or hazardous to health;
b) those sites approved by the Minister as suitable for the storage or controlled disposal of toxic or hazardous waste;
c) the types and specifications of containers to be used for the storage or disposal of toxic or hazardous waste;

d) such other matters relating to the transportation, storage, or controlled disposal of toxic or hazardous waste as the Minister may require.

Up to now, no such regulations have been made.

The importation of any toxic or hazardous waste is prohibited under section 98.
The provision is ineffective because there is no definition of what might be toxic or hazardous waste.

The existing legal framework is deficient as it does not regulate hazardous wastes and chemicals in accordance with the international standards set by the Conventions.

The Hazardous Wastes and Chemicals Bill – The Hazardous Wastes and Chemicals Bill is the draft framework legislation that would implement the four international conventions relevant to the management of hazardous wastes and chemicals namely –

- the Stockholm Convention on Persistent Organic Pollutants, 2001 (Stockholm Convention)
- the Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade, 1998 (Rotterdam Convention)
- the Convention on the Control of Transboundary Movement of Hazardous Wastes and their Disposal, 1989 (Basel Convention)
- the Convention to Ban the Importation into Forum Island Countries of Hazardous and Radioactive Wastes and to Control the Transboundary Movement and Management of Hazardous Wastes within the South Pacific Region, 1995 (Waigani Convention)

The Bill will address the gaps found in the current legislative framework. Part II of the Bill deals specifically with Persistent Organic Pollutants. It regulates the manufacture, production, importation, exportation, use, storage and disposal of POPs. It appoints the Environment Department as the focal point for all four Conventions. It also designates the National Environment Coordinating Committee as the Competent Authority for the purposes of the Conventions. Section 7 (2) of the Bill provides for the development of a National Implementation Plan for the control and proper management of POPs in Tonga.

The Environment Department will liaise with Crown Law on the drafting of Regulations under the Bill. Section 44 of the Bill gives the Minister of Lands, Survey, Natural Resources and the Environment the power to make Regulations necessary for the effective implementation of the Bill and the applicable Conventions including Regulations which provide for –

- additional or alternative "hazardous wastes" and "hazardous chemicals" to be regulated under the Bill
- planning requirements (including compliance, implementation and emergency planning) for government agencies and for companies and persons involved in the management of hazardous substances
- the implementation of relevant international standards
- the collection, evaluation and reporting of data
- monitoring the effects of hazardous substances and the status of implementation of the applicable Conventions

- responsibilities to maintain registers, and for information to be recorded in them
- additional controls over imports and exports, including the tracking of shipments and other border control activities such as customs codes and identification measures
- the imposition of requirements relating to containers, packaging and labeling for hazardous substances
- additional licensing, permit and certification systems, including permits for the collection, transportation and disposal of hazardous wastes and substances
- requirements relating to the sound management of hazardous substances, and the operation of waste management and disposal facilities
- requirements for the provision of safety equipment and procedures and for the training of employees working with hazardous substances
- specific provisions relating to managing radioactive wastes and substances in Tonga, including regulating or prohibiting the importation of equipment and materials which may generate or become radioactive wastes
- obligations to minimize pollution from wastes and substances, and to minimize the consequences of any pollution incidents
- reporting requirements in relation to pollution incidents, discharges, likely impacts on human health and the environment and other relevant matters (including protection for persons making such reports)
- all aspects of the enforcement framework by the Competent Authority and other agencies, including the promotion of inter-agency cooperation and coordination
- promoting cooperation in the taking of legal proceedings for breaches of the Bill
- additional powers by relevant agencies to obtain information
- the provision of powers and facilities to monitor and verify compliance, and to order remedial or preventive action
- the promotion and enforcement of environmentally sound management practices and encouragement of the adoption of new environmentally sound technologies
- the imposition of "user fees" and the "polluter pays" principle
- controls over the incineration and dumping of wastes and substances at sea
- regulating and rehabilitating areas and buildings contaminated by hazardous substances
- the effective involvement of community and industry representatives in planning and decision making processes
- the provision of relevant information, education and training programmes, and
- facilitating the implementation of regional and sub-regional initiatives concerning the proper management of hazardous substances.

ACTIVITY 4 - Work together with the Environment Department in promoting public awareness of POPs legislation and Tonga's international obligations

Article 10 of the Stockholm Convention requires Parties to promote and facilitate awareness among its policy and decision makers and the public with regard to POPs. Crown Law will cooperate with the Environment Department in promoting awareness of the Stockholm Convention and POPs legislation.

3.6.1 Activity: production, import and export, use, stockpiles and wastes of Annex A POPs pesticides (Annex A, part 1 chemicals)

Context and Analysis of Issue

Under Article 3 of the Convention, Parties are required to:

Prohibit and/or take legal and administrative action necessary to eliminate production and use of Annex A, Part I, chemicals (POPs pesticides), and restrict production and use of Annex B chemicals (DDT); and
Regulate any trade in these POPs with both Parties and Non-parties

There is a great need for much better monitoring and enforcement of the current controls over POPs and other pesticides. This would include capacity building for the Customs agency, for better enforcement of import restrictions and detection of illegal imports.

Goal

To ensure that the current controls on the importation of all pesticides, including POPs, are effectively enforced.

Objectives

1. To develop (and then implement) the most effective strategies to ensure control of the import of all pesticides, including POPs, including capacity building for personnel in the Tonga Customs Services Department.
2. To develop a program for pesticide handling, storage and disposal through training education and awareness.
3. To improve the level of information available on pesticide imports.

Management Options

The Department are currently suffered from a lack of resources for effective implementation and enforcement and the operational personnel within the agency; lack the necessary training to allow the agency to effectively fulfil their roles in this area.

This action plan is therefore based around improvement of the operational practices including the development of effective control systems, capacity building within the key agencies, and an on-going programme for improving practices at the user level.

Implementation Strategy

Lead Agencies: The lead agencies for this Action Plan will be the Tonga Customs Services, with assistance from the Ministry of Environment and Climate Change.

Programme Implementation: the key steps involved in implementation are summarised below, while a more detailed list of activities is given in Annex 5.

Objective 1: Strategies to ensure control of the import and use of all POPs/pesticides, and capacity building for the Department

- Assess and agree on the most effective strategies for the control of POPs/pesticides
- Determine the most effective training methods and materials
- Determine ongoing local delivery option and ensure its competence
- Identify the most effective way of monitoring compliance
- Identify best mechanism whereby TCS and the Pesticide Registrar can control importation of POPs/pesticides

Objective 2: Programme to improve Port of Entry practices for pesticide handling, storage and disposal

- Determine target audiences
- Determine communication strategy (messages and media)
- Collate and translate into local languages appropriate materials
- Make materials readily available for stakeholders
- Develop and implement training programmes, including identification and training of local trainers

Objective 3: Improve the level of information available on pesticide imports

- Identify existing system(s) in use in Tonga
- Hold a stakeholder workshop to learn about existing databases and if they meet current and future needs
- Develop the most appropriate database and determine who can best manage it
- Determine how such information can be made readily available to decision makers
- Implement the proposed system

Resource Needs and Timing: The overall resource needs and timing are summarised below, while more detailed information is given in Annex 5.

Detailed Work Plan for POPs and Other Pesticides (Articles 3, Annexes A and B)

Detailed List of Activities	Key Contributing Agencies*	Timeline (duration)	Performance Indicators	Cost Estimate (USD) & Source	Resources Needed
Objective 1: To develop (and then implement) the most effective strategies to ensure control of the import of all POPs pesticides, including capacity building for personnel in the Customs Department. **Lead Agencies:** MECC and TCS					
Assess and agree on the most effective strategies for the control of POPs pesticides	MECC* DoA* TCS	Months 1-3	Strategies developed	External: $500 Internal:	Consultative meeting costs (venue, refreshments, stationery)
Determine the most effective training methods and materials		Months 6-8	Effective training methods and materials identified	External: $7000	Consultancy Training materials
Determine on-going local delivery option and ensure its competence		Months 9-10	Method of delivery identified and tested	External: $8000	Training Facilitator/s Training materials, training costs (venue, refreshments, stationery)
Identify the most effective way of monitoring compliance		Months 11-12	Effective way of monitoring compliance identified and tested	External: $1500	Consultancy
Identify best mechanism whereby TCS and the Pesticide registrar can control importation of POPs pesticides	MECC TCS Labour Dept*	Months 11-12	Agreement on best mechanism	External: $1500	Consultancy
Objective 2: To develop a program for pesticide handling, storage and disposal through training and awareness.					
Determine target audiences	MECC*	Months 11-12	Target audience identified	External: $300	Consultative meeting costs (venue, refreshments)
Determine Communication Strategy	TCS*	Months 13-14	Communication Strategy developed	External: $3000	Consultancy
Collate and translate into local languages appropriate materials (toolkit)		Months 15-16	Toolkit of materials prepared	External $8000	Local language translators Printing and Audio/Visual preparation
Make materials readily available to all stakeholders		Months 17-18	Toolkit distributed at relevant gatherings, televised and radio broadcast	External $10000	Cost of mass-producing the Toolkit Postage costs
Develop and implement training programmes, including identification and training (overseas) of local trainers	TCS MECC*	Months 19-24	Training programmes	External $10000 External $15000	Attachment Program overseas Organisations Training facilitators Training costs (venue, refreshments, stationery)

Detailed List of Activities	Key Contributing Agencies*	Timeline (duration)	Performance Indicators	Cost Estimate (USD) & Source	Resources Needed
Objective 3: To improve the level of information available on pesticide imports					
Identify existing system(s) used in Tonga to provide information on pesticide imports	DoA* TCS MECC*	Months 7-8	Existing system(s) identified	External: $2000 Internal:	Consultancy
Hold a stakeholder workshop to learn about existing databases and current and future needs		Months 7-8	Workshop implemented	External: $2000 Internal:	Workshop costs (venue, refreshments, stationery)
Develop the most appropriate database who can best manage it		Months 9-10	Home-base of database identified, database developed	External: $30000 Internal:	IT Officer (3 Months) Office space IT supplies
Determine how such information can be made readily available to decision makers		Months 11-12	Information products identified	External: $3000 Internal:	Communications Officer
Implement the proposed system		Months 13-36	System developed and implemented	External: $2000 Internal:	Office space

TOTAL: USD$103800.00

3.6.2 Activity: production, import and export, use, identification, labeling, removal, storage and disposal of PCBs and equipment containing PCBs (Annex A, part II chemicals)

It is the existing policy of the power company to import and use only transformers/capacitors that are labeled as PCB free. However, as only 67% of the non-labelled transformers were tested in 2006 under the UNEP/GEF POPs project, there is a need to test 33% once they are no longer used on the line and become waste. Any PCB that will be identified has to be exported overseas to be disposed in an environmental friendly manner. All requirement of the recipient country has to be completed prior to export as Tonga is not a party to any of the Chemical Conventions.

Detailed Workplan for PCBs (Article 3, Annex A, Part II)

Detailed List of A	Key contribution Agencies	Timeline (Duration)	Performance Indicators	Potential Source of financing	Cost Estimate (USD)	Resources Needed
Objective 1: Identify existing transformer that still in service and stockpile Lead Agency: Department of Environment						
Prepare a list of transformer that need to be tested	DoE	month 1-3	List of transformer to be completed and endorsed	External	$1,000	Shoreline Officer
List of Technical equipment for testing		month 4-6	List of testing equipment	External	$3,000	Consultancy
Conduct training on identification and sampling of PCBs in transformer	SPL	months 5-7	Training conducted	External	$2,500	Training cost (Venue, refreshment, materials and stationery)
Upgrade and recognize laboratories that analyze for PCBs		months 7-12	Labs upgraded & recognize	External	$8,000	Lab supplies.
Conduct education awareness on health issue for PCB's management		months 7-10	Awareness conducted	External	$2,000	Printing & Radio, TV etc.

3.6.3 Activity: production, import and export, use, stockpiles and wastes of DDT (Annex B chemicals) if used in the country

The DDT were never produced in Tonga therefore reliant on import only. However, DDT was the most effective pesticide in the control of the *Lemprosema* moth infecting the banana plantation hence it was distributed widely throughout Tongatapu, Vava'u, Ha'apai and 'Eua. The DDT was banned since 1973 but unfortunately there were still some import as form of charity after Cyclone Isaac in 1982. There is a need to enforce the banned of DDT with an appropriate legislation and to strengthen porter control.

3.6.4 Activity: register for specific exemptions and the continuing need for exemptions (article 4)

Since the banned on intentional POPs in 1973, the intentional POPs were no longer used hence there is no need for exemptions.

3.6.5 Action plan: measures to reduce releases from unintentional production (article 5)

This seems to be the main part of the national plan, as the effort to reduce the releases from unintentional production requires the close collaboration among the key stakeholders including local communities.

3.3.6a. **Uncontrolled Combustion**

The emission of dioxins and furans in Tonga were mostly from uncontrolled combustion (inventory 2006) consisting of landfill fire, domestic waste burning, agricultural burning and accidental fire. The action plan to reduce releases from unintentional production are as follows:

LANDFILL FIRE

The opening of the proper engineered landfill at Tapuhia resulted in the close down of Tukutonga in 2006. This coincide with the opening of recycling/composting companies in the private sector for the organics and recyclable waste. The service is provided only in the main island of Tongatapu. The waste collection service in Vava'u is only for the urban area. The remaining still practice domestic waste burning. There is a need to construct a landfill for Vava'u. Ha'apai and 'Eua are still on the process of identifying a proper site for waste dump.

Detailed list of Activities	Key contribution Agencies	Timeline (Duration)	Performance Indicator	Potential Source of Financing	Cost estimate (TOP) source	Resources Needed
Establish a proper landfill for Vava'u	MOH, MLSNRE,	Year 2	Vv landfill established	Donor	500,000	Heavy machinery
Establish recycling/ composting companies	MLCI, MECC	Year 1	Recycling/ composting companies established	Donor	50,000	Small business establishment
Identify site for waste of 'Eua and Ha'apai	MOH, MLSNRE	Year 1	Site identified and land registration	Donor	100,000	land
Establish a landfill for 'Eua and Ha'apai	MOH, MECC, MOW	Year 2-4	Landfill established	Donor	800,000	Heavy machinery
Awareness Programme	MECC,MOH	Year 1-5	Community support	Donor	50,000	TV/Radio programme
Key stakeholders Workshops	MECC, MOH	Year 1-5	Stakeholder support	Donor	10,000	Meeting venue transport
Legislate waste management in outer islands	MECC, MOH & CLD	Year 1	Waste Act of outer islands approved	Donor	10,000	Legal drafter

UNCONTROLLED DOMESTIC WASTE BURNING

The Waste Act 2008 prohibit the burning of waste with a penalty (comment on current status of implementation)

Detailed list of Activities	Key contribution Agencies	Timeline (Duration)	Performance Indicator	Potential Source of Financing	Cost estimate (TOP) source	Resources Needed
Community/ key stakeholder workshop	MAFFF, MECC & MOH	Year 1-5	Completion	Donor	10,000	Meeting venue transport
Village community Pilot project	MECC, MAFFF & MOH	Year 2	Completion	Donor	10,000	Awards & publicizing
Recycling/ composting competition	MECC, MOH	Year 3	No. of competitor	Donor	5,000	Awards & publicizing
Awareness Programme	MECC, MOH	Year 1-5	Increased awareness	Donor	10,000	TV/Radio programmes

AGRICULTURAL BURNING

The growers are advised against agricultural burning, however, it is still the practice especially with the lack of machinery in agriculture, particularly in the outer islands.

Detailed list of Activities	Key contribution Agencies	Timeline (Duration)	Performance Indicator	Potential Source of Financing	Cost estimate (TOP) source	Resources Needed
Community workshop for growers	MAFFF, MECC	Year 2	Completion	Donor	10000	Technical Assistance, venue & transport
Revise machinery services in outer island	MAFFF	Year 1	Completion	Donor	5000	Technical assistance
Procure machinery for outer islands	MAFFF	Year 2-3	Machinery for outer Islands procured	Donor	500000	agricultural machinery

ACCIDENTAL FIRE: TONGA FIRE SERVICE FIRE PREVENTION PLAN 2007-2010 IN CONJUNCTION WITH POP'S MANAGEMENT PROJECT.

We will contribute for the achievement of the Tonga Fire Service Overall Vision (which is "*A SAFER AND HAPPY SOCIETY*") by providing a modern fire service which works with local community and with other agencies to reduce risks from fires and other emergencies.

We will response speedily and effectively to deal with fires and other emergencies and, if necessary, take calculated risks to save life, protect property, render other humanitarian services and protect the environment, when community needs us.

We will emphasize and focus heavily on two major goals which are firstly, ***Prevent Fires From Occurring*** and secondly, ***Reducing Numbers of Fire Incidences***. Achieving these goals will ensure the protection and minimizing of unintentional burning of anything through out the Kingdom, which could release Dioxin and Furan to the atmosphere.

OBJECTIVES

1. Minimize the likelihood and security of fires by developing and implementing a wide range of community based on Fire Prevention campaigns and programs.
2. Assist in the prevention of fires, through developing, implementing and maintaining a comprehensive fire investigation, analysis and research capability.
3. To improve the effectiveness and efficiency of Operational Management.
4. Develop and maintain the current and future needs of the Service by maintaining and expanding the competencies of operational Fire Fighters.

As has been mentioned above the goal and objectives of this, action plan is targeted on first, Preventing Fires from Occurring, from a belief that if there will be no fire occurring than there will be no dioxin and furan releases to the atmosphere. Second is from a view of, if we can reduce the number of fire incidences it means we are on a process of minimizing the volume of toxic gases (Dioxin and furan) releasing annually to the atmosphere.

Implementation Strategy

Lead Agencies : The lead agency for this Action Plan will be the Tonga Fire Service and reporting to the Ministry of Environment and Climate Change.

DETAILED WORK PLAN.

Detailed list of Activities	Key contribution Agencies	Timeline (Duration)	Performance Indicator	Potential source of Financing	Cost estimate (Top) source	Resources Needed
Objective One: **Minimize the likelihood and Security of Fires By Developing and Implementing a wide Range of Community Based on Fire Prevention Campaigns And Programs.** ***Lead Agencies:*** TFS						
❖ Develop a guideline for fire risk area	TFS MECC	8- 5 Months Review every two years	Guideline Development	Internal	$500.00	Routine operational costs.
❖ Develop procedures, policies and standard notices for the issue of notice under section 15 (2) of the Fire Service Act.	"	7 – 8 Months by April 2008	Notices developed and approved	Internal	$500.00	Routine operational costs.
❖ Develop and Implement a rational Community Fire Education Programmed for each Fire District.	"	6 – 8 Month by June 2008.	Program Implemented	Internal External	$500.00 $2000.00	Routine operational costs. - 5 Fire Extinguishers - Fuel for Transportation
❖ Inspect properties to ascertain any potential danger to life or property from fire.	"	Annually on going as requested and determined	Properties inspected where required	Internal	$500.00	Routine operational costs.
❖ Establish a program for school visits to promote fire education to students.	"	Commence December 2007	Record of annual number of visits	Internal External	$500.00 $2000.00	Routine operational costs 5 – 10 Fire Extiquishers
❖ Provide fire related training to other agencies as required	"	On going as it is	Training Provided	Internal External	$500.00 $2000.00	Routine operational costs - 5 Fire Extiquishers - Fuel for transportation - Overtime

Expected Outcome

(1) A reduction in numbers of deaths attributed to fire
(2) A reduction in numbers of injuries attributed to fire.
(3) A reduction in costs of properties damages by fire.
(4) A reduction in numbers of fire incidents.
(5) No Unintentional Fire (burning) occurs.

Detailed list of Activities	Key contribution Agencies	Timeline (Duration)	Performance Indicator	Potential source of Financing	Cost estimate (Top) source	Resources Needed
Objective Two: **Assist in the Prevention of Fires, through Developing, Implementing And Maintaining a Comprehensive Fire Investigation, Analysis and Research capability.** ***Lead Agencies:*** TFS						
❖ Establish and maintain strategic partnership with occupants or land owners and community members in each Fire District to reduce the incidence of deliberately lit bush fires or fire negligence.	TFS MECC	By June 2008	Strategic partnership established maintained strengthened and reviewed.	Internal	$500.00	Routine operational costs.
❖ Implement appropriate reporting process within the Fire Investigation Unit.	"	By June 2008	Appropriate reporting process implemented	Internal	$500.00	Routine operational costs.
❖ Request Investigation of fires that do not have an obvious cause or are of suspicious nature	"	On going	Percentage (%) of fire investigated with source identified	Internal External	$500.00	Routine operational costs. - $200.00 Fuel for Transportation

❖ Reviewed current registration and seek legislative amendments to the Fire Service Act to strengthen the Services ability to effectively investigate fires and discharge its responsibilities.	"	Project to start by January 2008	Legislation Amendments	Internal External	$500.00	Routine operational costs. $10000.00 Consultancy costs
❖ Develop training program in Fire Investigation	"	Once a year start 2008	Training Program conducted	Internal	$2000.00	Routine operational

Expected Outcomes

- ❖ Increasing number of suspicious fires investigated.
- ❖ Reduction in numbers of suspicious fires

Detailed list of Activities	Key contribution Agencies	Timeline (Duration)	Performance Indicator	Potential source of Financing	Cost estimate (Top) source	Resources Needed
***Objective Three*: To improve the Effectiveness and Efficiency of Operational Management.** Lead Agencies: TFS						
❖ Develop and maintain a safe effective and efficient response capability to response to all fire and other emergency calls.	TFS MECC	By June 2008	- developed standard response system. - Response time in accordance with Service Standard. - Response Training Program Conducted	Internal	$500.00	Operational costs Routine
❖ Maintain a dedicated 24 hour contact system for the receipt of fire and related incident	"	By June 2008 on going	All incident calls answered with in established target time	Internal	$500.00	Routine Operational Costs.

calls and response of Fire Service.			(with in four minutes (4 mins)			
❖ Develop and maintain an efficient and effective communications for the management of incidents and other activities.	"	By June 2008 100% on going	Communication service and systems meets operational requirements.	External	$20000.00	For Donors to cover Communications, System expenses (Radios)
❖ Develop and maintain a Fire Incident Management Manual	"	By December 2008	Manual completed	External	$5000.00	Consultancy

Expected Outcome

- ❖ Ninety percentage (90%) response with in standard time (5minutes).
- ❖ A reduction in average damage cost caused by fires.

Detailed list of Activities	Key contribution Agencies	Timeline (Duration)	Performance Indicator	Potential source of Financing	Cost estimate (Top) source	Resources Needed
***Objective Four*: Develop and Maintain the Current and Future Needs of the Service By Maintaining and Expanding the Competencies of Operational Fire Fighters.** Lead Agencies: TFS						
❖ Conduct a training need analysis for all members of the Tonga Fire Service	TFS MECC	By April 2008	Training need analysis completed	Internal	$2000.00	Routine operational cost.
❖ Provide training and assessment to advanced fire fighter level.	"	As it is an on going process	Training implemented in accordance with plan targets.	External	$2000.00 $10000.00	Routine operational cost Consultancy
❖ Develop and maintain a comprehensive operational exercise system.	"	On going	Regular operation training exercise	Internal	$2000.00	Routine operational cost.

Expected Outcome

- An increase in percentage of operational personnel processing the competencies required by the service.

MINISTRY OF MARINE & PORTS

Detail list of activities	Contributing Agencies	Timeline (duration)	Performance Indicators	Potential Source of Financing	Cost Estimate (USD)	Resources needed
Objective 1: Enforce application of Existing Law for Disposal into water **Output:** All Ships, seafarers and Public are enforced with the application of the Marine Pollution Prevention Act, 2002 and Public Health Act						
All ships must have oil record book, garbage record book and garbage pins on board for recording of activities	MMP	6 months	All ships has record books for each particular activity	Int	1,000	MMP Officers
Survey must be carried out monthly to ensure the compliance of the above and before issuance of survey certificate	MMP	6 months	Survey conducted before issuance of certificate	Int	2,000	MMP Officers
Coastal sites, accommodation and construction should meet the Standard for prevention of pollution to the sea.	MOH MOW MECC	12 months	All standards are notified and public are informed	Int	2,000	MOH, MECC, MOW, MMP Officers

Public Awareness Programme should be conducted on media and trainings	MMP MOH	5 months	Awareness Program and Training informed and conducted	Ext	6,000	MMP, MOH, MECC and MOW Officers
Objective 2 : Formulation of Land Waste Oil Disposal Legislation **Output :** Land Waste Oil Disposal Act approved						
Prepare list of waste oil disposal sites and engineering businesses and Government body that is of concern.	MLC MOW	2-3 months	Complete list	Int Ext	1,000 2,000	MLC, MOW, MECC Officers
Liaise with MECC, Crown Law, Labour and Commerce	MECC Crown Law MLC	2-3 months	A Bill is formed	Ext	4,000	MECC, MLC, Crown Law Officers
Other relevant areas and organizations get together and brain storm issues to be contents of the Act.	BP Asco Motors MOW Car Dealers Engineering Businesses	2 months	Brain Storming issues is listed and included in the Bill	Ext	2,000	Relevant Organization Representatives
Training, Educate and Public awareness Programme for the relevant stakeholders	MECC Every engineer sites and businesses Crown Law and MLC	4 months	Training conducted	Ext	6,000	MECC, Crown Law, MLC officers + Relevant Stakeholders
Objective 3 : Domestic and International Standard to be met by the Stakeholders **Output:** All disposal system and equipment are up to standard						

Registration of businesses and vessels be strictly comply with the a standard for waste oil disposal	MMP, MLC, MECC	6 months	Registration are issued with complied stakeholders only	Int	2,000	MMP, MECC and MLC Officers
Registration fees may include the incentives for the proper disposal of waste oil and oil spill	MMP, MLC	12 months	Fees are paid including incentives	Int	2,000	MMP, MLC
Check that stakeholders must have required equipment and proper disposal system on board or on land to meet the standard requested, monthly	MMP, MECC Officers	12 months	Stakeholders systems meet the domestic, international standard	Int	2,000	MMP, MECC
Septic Tanks and Household be provided with instructions for constructions and disposal by the coastal area.	MOH, MOW, MECC	12 months	Septic Tanks are build in approval of the relevant ministries	Int	2,000	MOH, MOW and MECC
Ships are required to comply with Sewage disposal standard as well as sludge tanks and are to be checked when arrival at port by the competent authority	MMP	12 months	All ships are complied with the standard and checked at port on every arrival	Int	2,000	MMP Officers
Public Awareness Programme and Trainings	MMP, MECC	12 months	Public Awareness Program conducted	Ext	6,000	MMP, MECC Officers
Engineer places are to	MECC, Town	24 months	Every engineer places	Ext	2,000	MECC, Town Officers

inspected in the village inspections every 2 months for a cleaner and healthier environment.	Officers		are in good and healthy environment			
Vehicles are to be checked quarterly for any indication of waste oil	(Transport), MOW, Engineer	12 months	Checking conducted	Ext	6,000	Transport, MOW, Engineer
Attend International and Local Trainings on the standards to be met and to be establish for the compliance of Stakeholders	SPREP, IMO, UNEP, MECC, MMP	4 months	Trainings attended and conducted	Ext	30,000	MMP, MECC Officers
Objective 4 : Waste Disposal Facilities **Output:** Better System and Facilities for a clean environment						
Provide heavy, enough space and hard to steal rubbish bins at the ports for rubbish from the ships.	MMP	36 months	Heavy rubbish bins are provided or alternatives	Ext	100,000	MMP
Empty drums should be provided and requested from ships for disposal of ships waste oil.	MMP	36 months	Empty drums provided and used	Ext	10,000	MMP
Tanktainers is provided for collection and trading of waste oil	MMP, MECC	36 months	Tanktainers are provided	Ext	120,000	MMP, MECC
Provide place to dump damaged vehicles into for collection and further action for a better environment	MECC, MOW, Stakeholders	24 months	Dumping place for damaged vehicles provided.	Ext	20,000	MECC, MOW, Stakeholders

Training and workshops for Public usage of facilities in Tongatapu and outer islands as well	MMP, MECC	36 months	Awareness Programme and Training conducted And public know how to response to spills from ships	Ext	8,000	MMP, MECC
Objective 5: Collection Waste Oil Treatment **Output :** Waste Oil Treatment System is used						
A contracted body to do this collection of waste oil from sea and land	MECC	36 months	Contract agreed and signed	Ext	100,000	MECC
Collect of waste oil from facilities weekly and put in tanktainers	Contract (MECC)	36months	Waste oil collected	Ext	500,000	Contract (MECC)
Distribute facilities (empty drums, etc) to identified contaminated sites monthly	Contract (MECC)	36 months	Facilities distributed	Ext	30,000	Contract (MECC)
Two tanktainers required for replacement	Contract (MECC)	36 months	Tanktainers are in place	Ext	100,000	Contract (MECC)
Transfer of tanktainer to overseas (NZ or Fiji) while another tanktainer is on place.	Contract (MECC)	36 months	Tanktainers are transferred and returned	Ext	100,000	Contract (MECC)
(Alternative) Surveyor from overseas to check the waste oil facility at port for usage.	MMP	1 month	Waste oil facility has checked	Ext	30,000	MMP Officer

Objective 6: Oil , Chemical Spill Emergency Output : Response equipment and requirement are properly intervene						
Establish a POLFUND for oil spill response and cleanup	MMP, MOT	12 months	POLFUND established	Ext / Int	500,000 / 10,000	MMP, MOT
Fulfill the Response Equipment to meet the requirement for Tier 2 in Tongatapu and outer islands as well (first priority to 'Eua and Ha'apai)	MMP	3-7months	Oil Spill Response equipment fulfilled for tier 2	Ext	100,000	MMP Officer
Tanktainers be used for response.	MMP, Contractor	36 months	Tanktainers are ready to use in oil spill incident	Ext	50,000	MMP, Contractor
Attend Local and International Trainings or attachment at foreign countries	MMP	36 months	Oil Spill international and local related trainings and attachment took place.	Ext	200,000	MMP , MECC Officers
Objective 7: Public Awareness Programme **Output :** Every one is aware of the proper disposal of wastes on land and at sea						
Use media for panel	MMP, MECC, MOH, MOW, MLC, Crown Law	4-6 months	Media panel conducted	Ext	10,000	MMP, MECC
Use Schools, youth committees and communities for competition	MOE, MECC	3-4 months	Competition carried out	Ext	50,000	MECC, MOE

Provide pamphlets and posters for public	MECC, MMP	6-12 months	Pamphlets and posters published	Ext	8,000	MECC, MMP
Publish for Education Syllabus	MOE, MECC	12 months	Syllabus published and included	Ext	10,000	MECC, MOE

TRANSPORT (Ministry of Works)

ACTION PLAN TO ADDRESS UNINTENTIONAL RELEASES OF PERSISTANT ORGANIC POLLUTANTS (DIOXINS AND FURANS) IN TONGA FROM MOTOR VEHICLES EMISSIONS.

Introduction

1.1 The National, Regional and Global Concern

Towards the end of the last millennium, there was a growing concern at national and regional level particularly among, Small Island Developing States (SIDS) regarding the health implications of the release of Persistent Organic Pollutants (POP's) into the environment. These concerns were based on the understanding that POP's "posses toxic properties, resist degradation, bio-accumulates and are transported through the air, water and migratory species across international boundaries and deposited far from their place of release where they accumulate in terrestrial and aquatic ecosystems." These concerns were also in accordance with the Charter of the United Nations and the principles of international law where sovereign nations have the right to exploit their own resources pursuant to their own policies provided they ensure that activities within their jurisdiction "do not cause damage to the environment of other states or of areas beyond the limits of national jurisdiction".

Developing nations were also aware of their limited capability to manage these chemicals and the risks they posed to communities and their environments and the need for technical assistance to build their capacity to deal with these issues.

1.2 The International Initiatives and the Stockholm Convention.

In its decision No. 19/13C of February, 1997 the Governing Council of the United Nation Environment Programme (UNED) passed a resolution "to initiate international actions to protect human health and the environment through measures which will reduce and/or eliminate emissions and discharge of persistent organic".

This resulted in the formation and adoption of the Stockholm Convention in May, 2001. The objective of this Convention as stipulated in Article 1 is to "protect human health and environment from persistent organic pollutants. This convention is mutually supportive with other international agreements in the field of trade and environment such as the Program of Action for Sustainable Developments of Small Island Developing States adopted in Barbados on 6 May 1994; the Rotterdam Convention on the prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade 1998 and the Basel Convention on Control of Transboundary Movements of Hazardous Wastes and Disposal 1989.

Each party to this Convention was required, to develop and implement their own action plan "for the implementation of its obligation under this convention". Under Article 5, parties are required to take measures for continuous minimization of releases of unintentionally produced POP's (PCB's, HCB's Dioxins and Furans) chemicals listed in Annex C, and where possible eliminate their releases through "the application of available, feasible and practical measures that can expediently achieve a realistic and meaningful level of release reduction or source elimination".

This proposed Action Plan is therefore designed to address the unintentional release of persistent organic pollutants from vehicle emissions in Tonga.

1.3 The Government's Commitment to the Stockholm Convention

As a signatory to this Convention, the Government of Tonga's commitment is reflected by its efforts to draft and endorse an action plan to address issues relating to hazardous chemicals and a National Implementation Plan (NIP) to fulfill its oblications under this agreement. The Government's Vision in its Strategic Development Plan 8 (SDP 8) is to create a society where all Tongan enjoy higher living standards and a better quality of life through good governance, equitable and environmentally sustainable economic growth, improved education and health standards.....: "This vision is very much pursuit of socio-economic progress, better health standard and high quality of life in the context of clean and healthy sustainable environment.

Tonga is also a signatory to other international agreements which are complementary to the provisions of this Convention.

1.4 Issues identified during the Consultation meeting with Stakeholders (26th and 28th Sept)

1. There is lack of awareness on the issues associated with vehicle emissions both In the public sector and throughout the industry.
2. There are deficiencies in current practices associated with vehicles; from buying a vehicle, to maintaining it, to the way fuel is handles (Oil Grading-More stringent fuel specifications is required to be more compatible with the current vehicle fleets which could help minimize emissions)
3. No legal framework governing emissions from vehicles nor from asphalt production.
4. Resources constraints-absence of appropriate equipments and technical knowledge to test emissions from vehicles.
5. Lack of incentives to encourage people to take own initiative to reduce emissions (during absence of other ,mechanisms)
6. Imported vehicles are not regulated (to be re-conditioned prior to import or limitation on years of manufacture nor in terms of milage used) which could lower emissions.
7. Other options for road works eg:concrete is too expensive
8. Unavailability of appropriate technologies that could offer low emission rate (low emissions graded oil products)
9. Lack or absence of cooperation among stakeholders (Government agencies, fuel/gas suppliers, vehicle owners association/individual operators, vehicle dealers/suppliers, etc.) to identify ways to deal with POP's issues
10. Lack of leadership-Government should be more active in promoting and sensiting issues associated with POP's.
11. Inadequate Waste Disposal Management system to eliminate waste product.

2. ACTION PLAN

2.1 Policy Statement

The Government of Tonga is committed to the Stockholm Convention through goals and objectives set out in the SPD 8 (as indicated above) as well as in approving strategies for the implementation of the National Implementation Plan (NIP).

Other Government's initiatives includes the Draft Hazardous Wastes and Chemicals Act 2006, Part 2, Section 6&7 of this Bill regulated the manufacture, production, importing/exporting, storage and using of any POP's in the country. Anybody breaching these provisions shall be liable upon conviction to a fine not exceeding $500,000 or to a term of imprisonment not exceeding 5 years or both.

The Pesticide Act 1989 also regulates the importation, production, usage and storage of specific.pesticides including POP's chemicals prohibited under the Stockholm Convention.

2.2 Goal

The progressive reductions and eventual elimination of the releases of dioxins and furans from vehicle emissions in Tonga

2.3 Objectives

1. Update and improve Government's policies and legal framework to regulate issues relating to the releases of dioxins and furans from vehicle emissions.
2. Promote public awareness on emission related issues and what can be done to address them.
3. Provide some financial incentives to encourage the procurement and purchase of low emission built vehicles and for fuel suppliers to import lower sulpher diesel fuel.
4. Introduce Minimum Standard for imported vehicles and fuel supply.
5. Introduce some new measures to enforce lower emission programme
6. Introduce better fuel management programme to ensure fuel quality and fair trade to customers/end-users
7. Considering of emissions from vehicles at institutional level (emission factors to be considered in relevant project evaluation, testing of new drivers, school curriculum at all level, etc.

2.4 Major Activities to be undertaken to achieve stated objectives

2.4.1Review Government's policy and regulations relating to the unintentional production and release of Dioxin and Furans from vehicle emissions
2.4.2 Prepare information system (for public & industry) to promote awareness of emissions and what could be done about it.
2.4.3 Introduce Healthy Vehicle programme
2.4.4 Introduce Vehicle buyers information to have better informed decision
2.4.5 Introduce Window Cards system to increase awareness and popularity
2.4.6 Introduce Tax Regime recognizing Lower Emission vehicles
2.4.7 Introduce Tax regime to promote earlier take-up of Lower Sulpher diesel fuel
2.4.8 Introduce Emission specification – 10 Seconds Rule
2.4.9 Introduce opacity smoke check as part of quarterly vehicle inspection
2.4.10 Introduce Industry Code for fuel handling
2.4.11 Introduction of Minimum Fuel Standards
2.4.12 Introduce vehicle minimum entry standards.

2.5 Action Plan development

This plan was formulated by the Ministry of Works in collaboration with other stakeholders. Information collected was through a couple of intense consultations to which the following agencies were represented: Ministry of Works (Civil Engineering, and Mechanical and the National Emergency Management Office, and the Traffic Department, Ministry of Police. B.P Oil and Shell Co. Ltd were consulted on the phone. Further feedback from them is required as well as other stakeholders that were not able to attend.

A range of emission reduction measures practiced overseas were also consulted, some of which are adapted to suit the Tongan situation and included in this Plan.

WORK PLAN DETAILS.

Measure 1. Review Government Policies/Legal Framework relating toPOP's

Strategy: That a consultant be invited to work together with the Crown Law and other relevant agencies in reviewing Government policies and legal framework to ensure issues of emissions from vehicles are adequately controlled.

Target Group: Vehicle Dealers, Fuel Suppliers, Vehicle/Plant Operators, owner and general public.

Aim: To promote awareness among key stakeholders of their legal obligations to emission reduction.

Consideration: There is a general concensus that if Government is serious about its commitment to Global conventions on POP's, it should take the lead in reducing vehicle/plant emissions by putting the legal framework in place. Although the issues related to POP's are of concern to everybody, business people need clear direction from Government.

It is recommended that a legislation relating to the import/export of vehicles/plants and usage, handling, storage of fuel, oil, gas and their derivatives be enacted to ensure emissions are kept to the minimum standard acceptable internationally.

An alternative source of energy (LPG & others) that are cheaper and more environmental friendly should be considered.

- A public awareness campaign of every level be conducted (media, public consultations, etc) to sensitive the emission issues and to get feedback on appropriate cause of action before drafting the Bill.
- Policy for importing commercial vehicles of 10 years maximum be extended to cover private vehicles.
- A policy to encourage usage of public transport in urban areas (Nuku'alofa and possibly Neiafu, Pangai & 'Ohonua) be introduced gradually. A series institutional and public consultations will be required before this measure is introduced.

Lead Agency: MLSNE

Task Group: MOT, MOL, Crown Law

Timeline: 10 months

Performance Indicators: Legislation Enacted within timeframe indicated.

Measure:2. **Public/Industry Information and Awareness**

Strategy: Coordinated mixed media campaign including pamphlets, booklets, papers, radio, television and website, where possible.

Target Group: Public in general plus specific target groups including commercial vehicle operators, vehicle owners, mechanics, learner driver trainees and schools.

Aim: To provide awareness of emissions and what people can do about it. Also to raise public intolerance towards gross emitting vehicles.

Considerations: There is a general lack of awareness about the health and environmental implications of vehicle emissions and a lack of quality information available in Tonga on what is the cause of vehicle emissions and what can be done to improve them.

It is recommended the vehicle emissions awareness campaign include:

- A simple pamphlet available at refueling stations, distributed by the fuel companies and their agents, providing simple emissions hints to drivers such as:
  - 'Turn off the engine if stopped for a time'
  - Easy on the accelerator..... and your wallet' – referring to smooth driving techniques that are effective in reducing emissions and fuel consumption
  - 'Pay for a service, it saves you money'- referring to the benefits of servicing your vehicle regularly
  - 'Next time you buy (a vehicle), buy wisely – regarding the cost to own and operate a vehicle and how a petrol vehicle may offer a more cost effective option than a diesel vehicle
- Industry booklet, providing more technical detail on:
  - Vehicle emissions including basic theory
  - Servicing recommendations
  - Servicing requirements for a Healthy Vehicle Check
  - Discussions on fuel quality, and
  - Discussions on driving styles.
- Information pamphlet made available at the time of annual inspection advising vehicle owners of the requirements of any new regulations coming into force, for example, checking of exhaust opacity (smoke check)
- Introduce driving course for new drivers at institutional level (Traffic or Schools)
- Public education and awareness through workshops, TV & Radio
- Adverts in the daily papers informing the public of new rules and where to get more information
- Radio talkback
- Include emission issues on Test Driving questions.

Lead Agency: Ministry of Transport, MLSNE
Task Group: Overseas Consultant, MOT, Fuel Suppliers/Gas Station, Ministry of Health, Traffic Department.
Timeline: 4 months
Performance Indicators:

- Number of brochures taken
- Number of news items on vehicle emission on radio an television and in newspapers
- Feedback on level of awareness (public survey)

Measure: 3. **'Healthy Vehicle' Program**

Strategy: Coordinated programme where various maintenance-related elements achieve a recognized **'Healthy Vehicle'** status and can display a current **'Healthy Vehicle'** symbol.

Elements includes:

- Healthy Vehicle – on achieving a 3 monthly (say) healthy vehicle pass or the vehicle otherwise being part of an approved maintenance programme.
- Healthy Vehicle Mechanic – on being accredited through training
- Healthy Vehicle Workshop – on having a healthy Vehicle mechanic present and meeting other minimum requirements such as equipments, workshop facility.
- Healthy Vehicle service reminder, options being a windscreen sticker or a reminder from a Healthy Vehicle workshop.
- Introduce "Roadside Inspection" at random

Incentives in taking part may include:

- Vehicles displaying a current Healthy Vehicle Sticker being less likely to be stopped at roadside inspections
- Cars sales yard that exhibit the Healthy Vehicle Sticker attracting purchasers due to vehicles being checked.
- A Healthy Vehicle status being an easy requirement to refer to for tourist and hotel operations.
- Provides added confidence to vehicle owners seeking a workshop for mechanical repairs
- Direct self-service owners towards quality oils
- Avoid roadside inspection harassment.

Target Group: All vehicles and their owners, the vehicle service industry and Hotel and tourist businesses

Aim: Provides an incentive to ensure vehicles are checked on a regular basis.

Considerations: This proposed programme ties up many short comings found in the vehicle maintenance sector in Tonga:

- The 12-month period between inspections appears too long for vehicle owners.
- Most countries have accredited workshop programme run by the motor trade industry. There is no such programme operating in Tonga. The public and industry find it diffcult to determine where to get their vehicles serviced due to being unsure of the quality of work. Also, there are many workshops that currently have good systems in place and experienced mechanics and would easily be accredited with a Healthy Vehicle status. Thus a Healthy Vehicle programme presence could be quickly achieved
- Many organizations associated with tourists say they wish to impose higher minimum standards for vehicles serving their clients but currently do not have a standard they feel appropriate to refer to
- Many self service vehicle owners choose low-grade oils, oils that are not recommended for use with high sulphur fuels.

- Currently there is no measure of a use vehicle's health available apart from what importers offered thus people buying vehicles from a car sales businesses rely heavily on the good will of those selling the vehicles. A Healthy Vehicle Check would provide a set vehicle inspection system that includes a test of smoke emission for diesel vehicles, and should provide added purchaser benefit in warranty disputes.

Benefits of such a scheme also include:

- A suitable 'Healthy Vehicle symbol on vehicles and at workshops would provide added emissions awareness benefit
- Encouragement for mechanics to be further trained

Lead Agency: Ministry of Transport

Task Group: Ministry of Works, Traffic, Police, TMPI, Private Workshops

Timeline: 2 months

Performance Indicators:

- Number of participating vehicles, mechanics and workshops.
- Minimum 'roadside inspection" pull overs.

Measure: 4. **Vehicle Buyer Information System**

Format: Simple pamphlet, small booklet for those requiring more information including awareness material for buses and trucks.

Target Group: All vehicle purchasers/buyers

Function:
Provision of information on vehicle operating costs, maintenance requirements, fuel economy and emissions to potential buyers so they can make informed decisions. Many purchasers of vehicles do not understand the cost involve in operating a vehicle and make a poor purchase decisions. Many also purchase diesel based on the pump price of fuel when a petrol vehicle could be a lower overall cost option.

Considerations:
Information is required to be accessed easily. Pamphlets and Booklets to be available at car dealerships, Fair trade principle for both dealers and buyers.

Lead Agency: MOT

Task Group: MOL, MOW, Vehicle dealers.

Timeframe: 2 months

Performance Indicators:

- Pamphlets taken by buyers
- Number of vehicles with emission technology imported.

Measure: 5. **Window Cards to Identify used vehicles.**

Strategy: Compulsory use of window cards on used vehicles being sold by vehicle dealers.

Target Group: Used vehicle sellers, vehicle buyers.

Function: To provide details about a vehicles specifications including distance traveled and whether the vehicle has passed a Healthy Vehicle Check. Also recommend the display of the results of smoke check, once credible facilities are available.

Considerations: Currently there is no clear indication of a vehicle's specifications at the time of sale. Odometers of recently imported used vehicles are frequently wound back before sale.

Of more relevance to vehicle emissions, window cards provide opportunity to make purchasers aware that the vehicle has had a vehicle health checked. Window cards also provide opportunity to advertise the emissions build or smoke test results, say provided in an easy to understand 5-star rating that indicates a vehicle's ease in passing a smoke check (with normal maintenance)

Requires public demand for information on a vehicle's health at the time of sale, to encourage vehicle sellers to take part.

Lead Agency: Ministry of Transport

Task Group: Traffic Department, MOL, Customs

Timeframe: 2 months

Performance Indicators:
Number of vehicles using window cards.

Measure: 6. **Tax Regime Recognising Lower Emission Vehicles**

Strategy: Tax incentives at vehicle import

Target Group: All vehicle importers of lower emission vehicles

Function: Increase the tax differential between vehicle of different emissions build and for used vehicles, consideration of actual emissions performance to encourage the order and purchase of lower emission vehicles.

Considerations: The current vehicle import duty provide a flat tax for used vehicles. It is recommended to further structure this differential import tax regime to encourage vehicles of inherent lower emissions to encourage those vehicles built to more recent emissions standards or that operate on petrol. The tax regime provide advantage only to vehicles that proof has been provided that they are built to recent emissions standards,(i.e catalyst converter and other tech.) recognizing that the emissions performance of a newer used vehicles should generally be still within design limits. Vehicle emissions build would need to be identified at the border. A vehicle's emissions build is reasonably easily available for vehicles of recent manufacture or used Japanese vehicles. An additional incentive for petrol-fuelled vehicles is also recommended to promote the uptake of these vehicles in recognition of their lower emissions concern.

Lead Agency: Ministry of Finance

Task Group: Customs, Inland Revenue, Vehicle Dealers/Suppliers, MOL

Timeframe: 4 months

Performance Indicators:

- Tax regime introduced within indicated timeframe.
- Increase in number of Lower Emission vehicle built and Petrol vehicle imported and purchased by public.

Measure: 7. Tax Regime To Promote Earlier Take-Up Of Lower Sulphur Diesel Fuels

Strategy: Lower import tax for lower sulphur fuels

Target Group: Fuel Suppliers.

Function: To provide monetary incentive for the earlier supply and use of lower sulphur fuels, particularly diesel fuels. The use of lower sulphur diesel fuels is expected to decrease particulate emissions, including smoke.

Considerations: The fuel supply industry in Tonga do not have minimum specifications. Lower sulphur content diesel fuels are generally more expensive for oil companies to purchase. Some cost incentive would be required if fuel companies are to be encouraged to adopt the supply of lower sulphur diesel before it is demanded by legislation. This could be achieved through reducing the import tax on lower sulphur diesel fuels.

The change in tax could be justified through health benefits

Once Tonga adopts a lower maximum sulphur content specification for diesel, say a maximum of 500ppm, it is suggested partial tax relief then be provided for the supply of ultra-low sulphur diesel fuels (diesel with a maximum sulphur content of 50ppm) providing incentive to establish and maintain supplies of fuel appropriate for emerging engine technologies.

Lead Agency: Ministry of Finance

Task Group: Customs, Fuel Suppliers and their agents, Inland Revenue.

Timeframe: 4 months

Performance Indicators:

- Introduction of tax regimes
- Supply of lower sulphur diesel fuel before mandatory requirement
- Increase in demand for lower sulpher diesel

Measure: 8. **Introduce Emission Specifications/10-Second Rule**

Strategy: Rules and Penalty for operators of vehicles emitting visible emission from exhaust for more than 10 seconds.

Target Group: All vehicles and their operators, but particularly diesel vehicles.

Function: Provides a mean to demand a maximum smoke emission for operating vehicles.

Considerations: This is a practical regulatory instrument that could be implement in Tonga against vehicle emission. There are possibly other environmental regulations that could be considered, but without case-precedents, such environmental regulations would be difficult to use. It is recommended the 10-second rule be primarily used in conjunction with other mechanisms as a fall back response; say to back up failures in earlier awareness mechanism in itself. The exception to this would be for the issues of fine to operators of cross emitting vehicles found continually violating the rule as follows:

- The initial issue of information on how smoke emission can be reduced, followed by.
- An infringement notice that can be revoked or partially revoked on proof of appropriate maintenance having been carried out, followed by
- A non-revocable infringement notice (also for repeat offenders or for operators of gross emitting vehicle earlier in the programme.)

Part of the incentive for not emitting smoke would be avoiding the inconvenience of pullover. A wide screen sticker indicating a vehicle has been maintained under a recognized (healthy vehicle, say) maintenance programme may avoid unnecessary pullover.

Lead Agency: **Ministry of Transport**

Task Group: **Traffic Department, Police, MOW**

Timeframe: **4 months**

Performance Indicators:

- Number of vehicles pulled over

Measure: 9. **Exhaust Opacity Smoke Check.**

Format: Vehicles required to pass a smoke check.

Target Group: All diesel vehicles. (Note petrol vehicles should not smoke and hence any visible exhaust emission from a petrol vehicle under normal operations is grounds for failing a petrol vehicle)

Function: Provides a minimum entry or in-service smoke emissions check as a means to identify gross emitters and have them remove from service until they are repaired or evidence of minimum maintenance has been provided.

Consideration: Smoke checking provides better opportunity to screen primarily for gross emitters and to provide options for passing that are more socio-economically acceptable.

The focus for emissions testing or checks is visible smoke from diesel vehicles. Visible exhaust smoke is used as an indication of the emission of exhaust particulates

There are many times during the life of a diesel vehicle where a smoke check could be carried out including at the time of original entry to the fleet and at the time of the annual inspection or for Certificate of Roadworthiness (COR). It is recommended to introduce a smoke check on a quarterly basis before quarterly licence is issued.

- Capture imported used vehicles entering the fleet for the first time as they are required to pass COR requirements before being used on the road.
- Provide regular checking of individual vehicles during their life
- Demand vehicles are sold to new owners in appropriate condition by also requiring vehicles sold to have a Quarterly Licence..

Major issues

- Lack of appropriate equipments (opacity meters) and expertise to do the job.
- New legislation/regulations may be required for enforcement purposes

Lead Agency: MOT

Task Group: Mechanical Workshops, MOW, Traffic

Timeframe: 6 months

Performance Indicators:

- Number of vehicles removed from service.
- Number of installations supported by full-trained personnel.
- Trends in build of imported vehicles.

Activities & Tasks	Human Resources	Facilities	Equipments	Services & martial	Other Resources	Costing Int/Ext.
Activity1. **Review government policies/regulations relating to POPs** **Lead Agency: MLSNE** **Timeframe: 10 months**						
Task 1 Identify and analyses existing legal framework relating to the releases Pop's	Overseas Consultation, Crown Law, Police/Traffic, Ministry of Transport (MOT)	Office space for consultant , office furniture	Computers with internet access, communication, vehicle/transport ation	Secretarial services/ 1 Support staff	Funding source for meeting fees refreshments	External Consultant US$15000 Internal =US$100.000
Task 2 Consult Crown Law on legal framework relating to emissions form vehicles and asphalt production	Overseas consultant with two local counterparts	As above	Copier machine in addition to above	Stationeries	As above	
Task 3 Draft policy paper for Cabinet's approval	Consultant with local counterpart	As above	Driver to deliver document, stationeries	Funding	Covered	

Task 4 Draft working/information paper for public consultation process	As in task 3	As above	As above	As above		Covered

Task 5 Public Consultation meeting (TBU, Vv, Hp, Niua's & 'Eua	Overseas consultant, local counterparts, Office of Governors and Gov't. representatives, PMO and District and Town Officers and communities	Community halls	Generators, power point, screen, flip charts, easle, markers/texter, pens and writing pads.	Catering service, two or there Support staff.	Airline tickets, hotel accommodation on and travel allowance	Total=US $250,000
Task 6. Draft proposed Bill to Crown Law for processing (vetting, formatting, translating, etc before it goes to Cabinet Law Committee and to Parliament and His Majesty's endorsement)	Consultant, MLSNE, Crown Law	Office Space	Office Equipments	Translation	One support staff	Internal

Activity 2
Public and industry information system to promote awareness on vehicle emissions, their health and environmental implications and what could be done about it.
Lead Agency: MLSNE
Timeframe: 4 months

Task 1 Preparing of simple information pamphlets providing simple emission hints to drivers (how to save gas, regular servicing needs, emissions from different quality fuels, etc.	Overseas consultant, MOT, Fuel suppliers and Gas station MOW, MOH	Office space for consultant, Others operate form existing	Office equipments for consultant while others use existing	Stationeries	Funding	Internal =$4300 External= $1240.00

Task 2 Prepare industry booklet providing more technical information on emission	do	do	do	do	do	Covered
Task 3 Video/CD supporting industry booklet	do	do	do	do	do	do
Task 4 Public awareness compaign using media (TV/Radio)	MOT	A3Z/TV Tonga Studio	NA	NA	Funding for awareness programme	Internal=$1500
Task 5 Review driving licence to include emission issues	Traffic, MOW	Existing	Existing	Printing	Funding	Internal=$1000 Total =$126500

Activity 3
Establish Healthy Vehicle Program indicating what to do and benefits
Lead Agency: MOT
Timeframe: 2 months

Task 1 Set up framework, criteria and processes to follow to achieve "Healthy Vehicle" status (form regular checking and servicing to acquiring of Healthy Vehicle sticker/logo)	Overseas Consultant to work together with local consultant, MOE	Office Space furniture	Identify and procure appropriate equipments and technologies	NA	Secretariat to arrange meetings consultations, deliver messages etc.	External US$30,000+6000 =36000 Internal $3000

Task 2 Design of Training programme	Consultant in collaboration with TMPI & other tertiary training institutes, Ministry of Education, MOW	Operate form existing facility	Procure appropriate equipments such as smoke checking meters, Training materials (textbooks etc)	Need endorsement by overseas recognized authority (eg. Fiji Institute of Technology or NZ Accreditation Board, etc)	Qualified personnel may be identified at this stage	Internal= $2500
Task 3 Identify training facility/institutions qualified local personnel to conduct training	Consultant(need to consult the MOE)	AS above	NA	NA	NA	Internal. Existing budget
Task 4 Promote Awareness on accreditated workshops and personnel/mechanics and benefits of achieving such a status	MOT to prepare stickers for Healthy Vehicles(in collaboration with traffic and Printing) and inform vehicle owners, using media of location	Printing	NA	Printing Dept	Funding to be identified	Internal =$500
Task 5						Total cost= $42,000

Activity 4
Prepare simple information and accessible booklet for buyers of all vehicles.
Operation cost, maintenance requirements, fuel economy/handling, etc, so buyers could make information decision.
Lead Agency: Ministry of Transport
Timeframe: 2 months

Task 1 Design Booklets and pamphlets	MOT, Visual Aid Local Consultant (1)	Existing	Computers	Stationeries	Funding to identified locally	Internal=$3400 External=$8000
Task 2 Awareness for vehicle owners of booklets availability and where to get it	MOT, Vehicle Dealers, Gas Station	MOT, Vehicle dealers & gas station	Nil	Nil	Funding	Internal=$500 Total=$11900

Activity 5
Prepare Window Cards indicating vehicle specifications, (age, milage used, emission built technology, test pass. Eg. Smoke check, etc)
Lead Agency: MOT
Timeframe: 2 months

Task 1 Design Window Cards	Visual Aid personnel (1) local consultant	Existing	Existing	Printing	Funding	Internal=$3400 Externat=$8000
Task 2 Identify outlets/Distribution point	MOT	Existing	Existing	Print	Funding	Internal
Task 3 Awareness Programme	MOT	DO	DO	Media	Funding	Internal=$500 Total=$11,900

Activity 6
Introduce Tax Regime recognizing Lower Emission Vehicles
Lead Agency: Ministry of Finance
Timeframe: 6 months

Task 1 Review Tax policy and relevant legislation	Overseas consultant, one local consultant	Office space	Office equipments	Stationeries and secretarial service provided	Crown Law legal advice; funding	Internal=$5200 External $150.000 $24000
Task 2 Conduct feasibility study(practically & affordability)	do	do	do	do	do	covered

Task 3 Carry out public consultations to get feedback	Do, PMO with District/Town officers and communities	Town/village halls	Projectors, screen and probably generators	Stationeries	Funding for airline tickets, hiring venues, accom-modations	Internal Travel=per diem =stationeries=$1500 External = Covered
Task 4 Draft policy paper to Cabinet and proposed bill to Crown Law	Overseas consultant	Office space	Existing	do	Advisory form Crown Law	Covered
Task 5 Ladging of proposed bill through process	MOF, Crown Law, Local Consultant	NA	NA	Legal advice	Funding	Covered Total=180700

Activity 7

Introduce Tax Regime to promote supply and earlier take up of Lower Sulphur diesel fuel

Lead Agency: MOF

Timeframe: 6 months

Task 1 Review tax policy and (practicality & affordability	Overseas consultant, one consultant	Office space	Office equipments	Stationeries and secretarial service provided	Crown Law legal advice; funding	Internal $5200 External $150,000 $24000
Task 2 Conduct feasilbility study (practicality & affordability)	do	do	do	do	Do	
Task 3 Carry out public consultations to get feedback	Do, PMO with District/Town officers and communities	Town/Village halls	Projectors, screen and probably generators	Stationeries	Funding for airline tickets, hiring venues, accommodations	Internal travel+ per diem + stationeries = $1500 External = covered
Task 4 Draft policy paper to Cabinet and proposed bill to Crown Law	Overseas Consultant	Office space	Existing	do	Advisory form Crown Law	Covered
Task 5 Lodgine of proposed bill through legal process	MOF, Crown Law, Local consultant	NA	NA	Legal advice	Funding	Total = $180,700

Activity 8
Introduce Emission Limitations- 10 second rule as a mean of demanding a maximum smoke emission form operating vehicles
Lead Agency: MOT
Timeframe: 4 months

Task 1 Adapt existing progressive infringement penalty regime	Local Consultant, MLSNE, Police	Office space	Office equipments	Stationeries	Funding	Internal =$20300 External = $124000
Task 2 Lodge public awareness campaign on rationale of programmed, the rule itself and penalty regime	MOT, Traffic/ Police	Existing	Existing	Media (TV, Radio, Print)	Funding for awareness programme	Internal=$2500
Task 3 Provide hotline for public to report incidents that violates 10 seconds rule	Existing	Office space	Dedicated phone line	NA	Funding for new posts and facility	Internal= $2500 Total=$25300

Activity 9 Exhaust Opacity smoke check on diesel engine to eliminate of exhaust particulates
Lead Agency: MOT (to be carried out on a quarterly basis before granting of quarterly certificate of fitness)
Timeframe: 6 months

Task 1 Integrating this measure with existing requirements to pass quarterly fitness test	Traffic and MOW personnel	Existing	NA	Printing	Funding for administrative cost	Internal=$1500
Task 2 Procurement of appropriate	do	NA	NA	Overseas Agent/supplier	Funding for training exercise	Internal = $2500
Task 3 Training	Existing	Existing	New Equipments (opacity mater)	Stationeries	Funding for training exercise	Internal = 1500 Total=$5500

Activity 10
Introduction of Industry Code for Fuel Handling to ensure maintenance of Fuel Quality
Lead Agency: MOT
Timeframe: 4 months

Task 1 Drafting and approval of code (demanding all relevant personnel to follow requirements)	Overseas and 1 local consultant	Office space	Offi9ce equipment and furniture	Stationeries	Funding	Internal=4300 External = $124000
Task 2 Training of personnel involved in handling fuel	Fuel Suppliers, MOT, MLSNE	Training Venue	Project screen, laptop computer	Writing pads, flip chart, texter, marker, pens	Refreshment cost, transport cost for trainees from outer islands	Internal = 3500
Task 3 Public Awareness programme	MLSNE, and Fuel Suppliers	NA	NA	TV/Radio	Funding	Internal = $1500
Task 4 Regular sample testing of fuel quality	MOT and fuel supplier	Random selected Gas Stations	Appropriate equipments (water Paste Cream for testing)	NA	Funding	Internal = $500 Total = $133800

Activity 11
Introduction of Minimum Fuel Standard as a mechanism to enforce the maintenance of fuel quality to end use customers
Lead Agency: MOT
Timeframe: 4 months

Task 1 Draft policy paper to Cabinet for permission to introduce Standard	Overseas consultant, local consultant	Office space	Office equipments: computers, phones	Stationeries	Funding	Internal = $4300

Task 2 Draft Bill and regulations in consultation with Crown Law	do	do	do	do	do	Covered
Task 3 Carry out public consultation	Consultation, MOT	Meeting venues (in TBU and outer islands	Projector, screen, easel, computer, generation	Stationeries, flip charts	Funding for transport, airline tickets, TA for local consultant, venues	Internal = $3700 External=$3656
Task 4 Lodge proposed 'bill to 'Crown Law to process	do	Existing	NA	NA	NA	Covered
Task 5 Public awareness campaign on media	MOT, Vehicle dealers, MLSNE	NA	NA	NA	Funding	Internal=$1500 Total=$137500

Activity 12
Introduce Standards for all vehicles to be build minimum emission technology
Lea Agency: MLSNE/MOT
Timeframe: 4 months

Task 1 Draft policy paper to Cabinet for permission to introduce Standard	Overseas consultant, local consultant	Office space	Office equipments, computers, phones, copiers, etc	Stationeries	Funding	Internal = $4300 External =$124000
Task 2 Draft Bill and regulations in consultation with Crown Law	do	do	do	do	do	Covered
Task 3 Carry out public consultation	Consultation MOT	Meeting venues (in TBU and outer islands	Projector, screen, easel, computer, generator	Stationeries, flip charts	Funding for transport, airline tickets, TA for local consultant, venues	Internal=$3700

Task 4 Lodge proposed Bill to Crown Law to process	do	Existing	NA	NA	NA	Covered
Task 5 Public awareness campaign on media	MOT, Vehicle dealers, MLSNE	NA	NA	NA	Funding	Internal=$1500 Total=$137500

Activity 12
Introduce Standards for all vehicles to be build minimum emission technology
Lead Agency: MLSNE/MOT
Timeframe: 4 months

Task 1 Draft policy paper to Cabinet for permission to introduce Standard	Overseas consultant, local consultant	Office space	Office equipments; computers, phones	Stationeries	Funding	Internal = $4300
Task 2 Draft Bill and regulations in consultation with Crown Law	do	do	do	do	do	Covered
Task 3 Carry out public consultation	Consultants	Meeting venues (in TBU and outer islands)	Projector, screen, easel, computer, generator?	Stationeries, Flip charts	Funding for transport, airline tickets, TA for local consultant	Internal=$3700 External=$3656
Task 4 Lodge proposed Bill to crown Law to process	do	Existing	NA	Legal advice	NA	NA
Task 5 Public Awareness Campaign on media	MOT, Vehicle Dealer, MLSNE, Crown Law	Studio	NA	NA	Funding of awareness	Internal=$1500 Total=$137156
					Grand Total	**=$1,242,956**

MINISTRY OF HEALTH

Activities & Tasks	Human Resources	Facilities	Equipment	Service, Material	Other Resources	Costing: Int/Ext

Activity: Develop Health Promotion programme to Reduce Tobacco Related disease

T1 Television(Narrative) Two 15 minutes TV show/mth x6mths	2	studio	Attach ment	$57.50/tv show x 2/mth x 6mth		$690.00
T2 Radio (Narrative) Two 15 Minutes Radio Show/mth x 6 mth	2	Studio	As above	$51.75/radio talk x 2/mth x 6mth		$621.00
T3 TV Spots 30 seconds tv spot to show 3 time/day x 6 mth	2	Studio	As above	$46.00/TV spot x 3/day x 6mth		$828.00
T4 Radio Spots 30 seconds Radio spot to 4 Times/day x 6mth	2	Studio	As above	$12.65/radio spot x 4 day x 6mth		$303.60
T5 Community Training 1 week Community Training x 7 district within 6 mth (4 in the main island, 3 outer islands)	20 ppts X 7 distri ct	Community Hall	As above	• $20.00/participants x 5 days/week x 6mth • $100.00 Venue/day x 5 days/week x7 communities within 6 month • $10 morning & after tea x 20 participants x 5 days x 7 weeks • Return ticket from/to outer island		$1,4000.00 3,500.00 $7,000.00 $806.00

Activity: Enforcement Of Tabacco Act

T6	One (EO)	nil	Transportation	T$100./Weeks	nil	Ext/T$2400./6moth
T7	One (EO)	nil	Transportatio n	nil	nil	Same cost with Task: 1
T8	One (EO)	Smoking singe sticker	Transportatio n Electric drill and secrews	Hire equipment T$100. Weeks	nil	Ext/T$2400./6moth
T9	One (EO)	Special bags (seal)	Transportatio n	nil	nil	T$600./moth
T10	20 participants x 6 districts Tongatapu	Communit y Hall	Stationery	$20./ Participants X 3days/week/ 6moth	nil	T$7200.00/6moth
T11	20 participant x 2 districts 'Eua	Communit y Hall	Stationery	$20./participant x 3 days/week/ 6moth	nil	T$2400.00/6moth
T12	20 participant x 2 districts Ha'apai	Communit y Hall	Stationery	$20./participant x 3 days/week/6moth	nil	T$2400.00/6moth
T13	20 participant 4 districts Vava'u	Communit y Hall	Stationery	$20./participant x 3days/week/ 6moth	nil	T$4800.00/6month

Activity: Advocacy for Health Public Policy

T14 Dialogue with appropriate Policy Makers about using new Technology and best environmental practices eg. Use of Low-Waster Technology	1	Component of	Our Current	National Health Plan		
T15 Development of Funding Proposals to potential donors for purchasing Low-Waste Technology Equipments	1	Component of	Our Current	National Health Plan		
T16 Establishment of Occupational Health and Safety	1	Component of	Our Current	National Health Plan		
Services						

ESTIMATED COSTING

Personnel		
No	Description	Amount on Tongan currency
1.	Government employee (one person)	TOP$675. / moth
2.	Support staff	Nil
3.	Field staffs (two Labour) $20./ day/2 moth	TOP$800./ moth
4.	Local consultant	Nil
5.	International consultant	Nil
Communication costs: US$250/month		
1.	Phone (card)	TOP$100./moth
2.	Fax	Nil
3.	Mail	Nil
4.	Internet	Nil
5.	Courier	Nil
Other Office Support: US$200/month		
1.	Stationery	Nil
2.	Newspaper or TV Program	TOP$300./moth
3.	Tea / coffee	TOP$100./moth
Transport cost: Use existing government rates		
1.	Internal ($3.50/1st km & $1.85/km) rate depend on km uses	TOP$???/moth
2.	International	Nil
Other operational cost: Use existing government rates		
1.	Accommodation rental?	

Equipment US$25000		
1.	Computers or Laptop computer	TOP$2500
2.	Phone or Digital camera	TOP$400
3.	fax	

OTHER ISLAND TRAVEL ALLOWANCES

Vava'u $74.00/day	Ha'apai $44.00/day	Eua $49.00/day

Staff recruited for 6 month $1306.08/mth x 6 mth = $7,836.48

Outer Island Travel Allowances

Vava'u $59.00/day	Ha'apai $35.00/day	'Eua $39.00/day	Niuafo'ou/Niuatoputapu $33.00/day

3.6.6 Activity: measures to reduce releases from stockpiles and wastes (article 6)

In accordance with the result of the Tonga Human Milk Study, it was surprising that the chlordane and hexachlorobenezene were among the POPs detected as it was never mentioned as of particular important to Tonga during the review of the POPs inventory conducted under the POPs in PICs Project and prior to the POPs inventory under the EA. Therefore these 2 chemicals were not included but it is important to be covered in future inventories in order to reduce releases from stockpiles and wastes.

3.6.7 Strategy: identification of stockpiles, articles in use and wastes

-Determine the emission of hexachlorobenezene by source category & design a plan of action to reduce releases from stockpiles and wastes

Detailed list of Activities	Key contribution Agencies	Timeline (Duration)	Performance Indicator	Potential Source of Financing	Cost estimate (TOP) source	Resources Needed
Establish Task Team for assessment	MECC, MOW, MOH, MAFFF	Year 1	TT established	Donor	External $500 Internal	Meeting venue
Workshop: review any previous assessment. Confirm and allocate tasks for the inventory	MECC, MOW, MOH, MAFFF	Year 1	Completion	Donor	External $5,000 Internal	Meeting venue transport
Workshop: Review study proposal for the inventory prepared by members of the TT	MECC, MOW, MOH, MAFFF	Year 1	Completion	Donor	External $3,000 Internal	Meeting venue transport
Conduct the study and compile reports	MECC, MOW, MOH, MAFFF	Year 2	Report approved	Donor	External $6,000 Internal	Transport
Workshop: To review the results and recommendations from the study	MECC, MOW, MOH, MAFFF	Year 2	Recommendations approved	Donor	External $3,000 Internal	Meeting venue transport

-Determine the release of Chlordane from stockpiles and wastes

Detailed list of Activities	Key contribution Agencies	Timeline (Duration)	Performance Indicator	Potential Source of Financing	Cost estimate (TOP) source	Resources Needed
Establish a Task Team for the assessment	MECC, MAFFF	Yr 1	TT established	Donor	External $300 Internal	Venue & transport
Workshop: Compile distribution list by island district, review andy previous assessment. Confirm and allocate tasks for the inventory	MECC, MAFFF	Yr 1	Completion	Donor	External $5,000 Internal	Venue & transport
Workshop: Review study proposal for the inventory prepared by members of the Task Team	MECC, MAFFF	Yr 1	Completion	Donor	External $3,000 Internal	Venue & transport
Conduct the study and compilation of reports	MECC, MAFFF	Yr 2	Report approved	Donor	External $6,000 Internal	transport
Workshop: To review the results and recommendations from the study	MECC, MAFFF	Yr 2	Recommendations approved	Donor	External $3,000 Internal	Venue & transport

3.6.8 Activity: manage stockpiles and appropriate measures for handling and disposal of articles in use

3.6.9 Strategy: identification of contaminated sites (Annex A, B and C Chemicals) and remediation in an environmentally sound manner

DDT

There were 2 sites of buried DDT identified from the inventory phase of the EA: Tokomololo in Tongatapu and Pangai in Ha'apai. Therefore the following activities and tasks are necessary:

Activity 1. Construct a profile of the contaminated volume of soil with DDT on sites of buried DDT	
Task 1	Secure a samplings grid profile to establish the depth and width of the DDT contaminated volume of soil
Task 2	Send these samples to be analyzed crudely for presence of DDT
Task 3	Construct and mark out the profile of the DDT contaminated soil and gravel
Activity 2. Secure the legal rights/permission to remove contaminated soil and gravels from the identified sites of buried DDT	
Task 1	Consults the current holder of the DDT buried sites for permission to remove the contaminated soil, otherwise seek a cabinet decision to obtain the right to the sites legally since its impacts the underground water supply to the community as a whole.
Task 2	Awards compensations if damages to the property occurs during the implantation of the removal process
Activity 3. Contract the agency for disposal of DDT in an environmental friendly manner	
Task 1	Draft & signing of contract
Task 2	Arrange packaging, transport and shipment
Activity 4. Secure UN approved packaging material for long term storage, UN approved protective gear and handling tools	
Task 1	Secure a supplier and costing of UN approved packaging material (no. will be estimated from the volume of contaminated soil), protective gear and handling tools.
Task 2	Secure funds and purchase the above items
Activity 5. Dig, package and label the volume of DDT contaminated soil	
Task 1	Hire an excavator to dig the DDT contaminated volume of soil
Task 2	These soils will be filled into the packages by the full gear operator and then label
Activity 6. Transport the package contaminated soil and store in a well designated secure and controlled facility while awaiting shipment	
Task 1	Secure a well designated secure and control facility for storage for at least one year
Task 2	Transport and store the package DDT contaminated soil
Task 3	Monitor the status of the storage facility

Detailed list of Activities	Key contribution Agencies	Timeline (Duration)	Performance Indicator	Potential Source of Financing	Cost estimate (TOP) source	Resources Needed
Construct profile of contaminated soil	MAFFF, MECC	Yr 1	Completion	Donor	External $20,000 Internal	Accredited lab for analysis
Secure legal rights to remove the contaminated soil	MAFFF, MECC, CLD	Yr 1	Completion	Donor	External $1,000 Internal	Ownership of contaminated soil
Secure UN approved packaging material & contract company for disposal	MAFFF, MECC	Yr 2	Packaging material procured	Donor	External $10,000 Internal	UN approved packaging material
Dig, package and label contaminated soil	MAFFF, MECC	Yr 2	Completion	Donor	External $50,000 Internal	Digging machinery
Transport contaminated soil	MAFFF, MECC & Customs	Yr 3	Completion	Donor	External $200,000 Internal	Storage, shipment & disposal

PCDD/PCDF

The rehabilitation of the Tukutonga dump site is not included here as work is already underway through NZODA.

3.6.10 Activity: facilitating or undertaking information exchange and stakeholder involvement (article 9)

3.6.11 Activity: public awareness, information and education (article 10)

MINISTY OF TRAINING EMPLOYMENT YOUTH AND SPORTS (MOTEYS)

POP'S MANAGEMENT PROJECT ACTION PLAN

BACKGROUND

Program 2: Training

Key Result Areas: Quality Assurance
Policy and Regulation
Delivery Oversight

Related Goals: Implement Government Policies effectively
Improve quality and expand technical and vocational training for all
Communicate effectively with stakeholders.
Develop and maintain a culture of excellence in the workplace.

Objectives from Corporate Plan 4.2

1. Implement a reform program for technical and vocational education and training
2. Install a system for quality assurance for all technical and vocational training
3. Create a National Advisory Committee on Technical and Vocational Education and Training to provide advice to the Minister
4. Arrange for twinning programs with overseas training institutions for accreditation and recognition of training and upgrading of trainers and training facilities.

The Training is made up of the following sectors:

- Tonga Institute of Science and Technology (TIST)
- Tonga Maritime Polytechnic Institute (TMPI)
- Community Development and Training Center (CDTC)
- Short Term Training
- Tonga Institute of Spots (TIOS)
- Youth
- Employment

POP's Goal Statement

To improve public awareness, research development and monitoring issues relevant to POP's Management.

Objectives:

- To improve public awareness and information on POP's and related hazardous chemicals Management
- To review and update present curriculum to include POP's Management
- To design and implement a course in POP's and hazardous Management
- To carry out research, development and Monitoring POP's and hazardous Management
- Establish and administer a licensing system for all chemical users.
- To install a system for quality assurance to monitor success and progress of all actions
- To establish a reinforcing system to enhance cooperation

Major Activities

Activity 1: Consultation Meeting with stakeholders
Activity 2: Develop and improve public awareness and information
Activity 3: Review and update present curriculum to include POP's Management
Activity 4: Design and Implement a course in POP's and hazardous Management
Activity 5: To carry out research, development, and monitoring POP's and hazardous Management.
Activity 6: Establish and administer a licensing system for all chemical users
Activity 7: Design and Install a system for quality assurance to monitor success and progress of all actions.
Activity 8: Establish a reinforcing system to enhance cooperation

WORK BREAKDOWN STRUCTURE:

Activity 1	**Consultation Meeting with stakeholders**
Output: Gain a broader understanding of POP's tasks and action plans.	
Task 1	Introduction of POP's project
Task 2	Information on sector objectives relates to all activities
Task 3	Form working committee to oversee training and awareness
Task 4	Plan future activities for implementation of sector action plan

Activity 2	**Develop and improve public awareness and information**
Output: Support and contribution of public	
Task 1.	Training of trainers
Task 2	Media (Tv, radio), Poster
Task 3	Publicized in all local papers.
Task 4	Youth workshop
Task 5	Dramatized the purpose
Task 6	Singing Competition to advise the purpose

Activity 3	Review and update the present curriculum to include POP's Management
Output: Revised curriculum inclusive of POP's management.	
Task 1	Writing workshop to identify related areas of the curriculum eg: Classification of chemicals, Chemical handling, Safety, etc.
Task 2	Writing up curriculum materials
Task 3	Trialing, Evaluation, Feedback, Improvement and Implementation
Task 4	Quality assurance to monitor progress and assessment of information

Activity 4	Design and Implement a course in POP's and hazardous management
Output: On going effective courses for POP and hazardous management	
Task 1	Develop staffs in POP's Management
Task 2	Develop and set up training programme in specialized areas: • Classification of the chemicals • Transportation of chemicals (this include its local distribution) • Safety use of the chemicals • Dilution • Calibration • Chemical Spraying • Medical First Aid • Disposal • Storage of chemicals and equipments
Task 3	Run workshop throughout the groups
Task 4	Design course policy and regulation – consultant, coordinator and law advisor
Task 5	Establish an Advisory Committee to oversee the application of the above task. The member of the Advisory Committee are as follows: One member from this sector: MOTEYS, MOEWAC, MAFFFF, MOLSENR, Rep from chemical users, One rep from students did the course

Activity 5	To carry out research, development and Monitoring POP's and hazardous Management
Output: Result with action for furthering development of the POP programme	
Task 1	Existing research programme to coordinate with POP's Management Programme
Task 2	Issue permit for overseas post graduate to carry out research on the POP's programme
Task 3	Establish a working committee to oversee the entire programme

Activity 6	Establish and administer a licensing system for all chemical users
Output: Issue legal licence for all chemical uses	
Task 1	Re-establish a board/committee, to responsible for licensing business, contractors, consumers and enforce legal use of chemicals. One rep form: MOTEYS, MOLC, MAFFFF, Crown Law., Chemical users, farmer, Police
Task 2	Board / committee must consult with Crown law Department prior and during preparation of policies and regulation.
Task 3	Board / Committee implement policies and regulation under the direction of MOTEYS., MAFFFF, MOLC.
Task 4	Install a quota system for all chemical import and the licensing board shall ensure that these are monitored. Members of Board: One from MOTEYS, MAFFFF, MOLC, Custom

Activity 7	**Install a system for quality assurance to monitor success and progress of all actions.**
Output: Continuity and consistency of a quality training and learning	
Task 1	Establish an Assessment Board/Committee to assess and ensure that the quality assurance of the overall training system is maintained.
Task 2	The board will be the accrediting authority for credentialed (certificate and diploma). Members are advisory committee and Principal of each training institutions.
Task 3	Assess the training program (training manual, training facilities, training equipments, safety, and First Aids, Methods of assessment, Grading system, Recording system, Awarding certificate
Task 4	Assess trainers qualification
Task 5	Assess trainers presentation
Task 6	The board/committee must provide a form of guideline or criteria to lead the trainers.
Task 7	Evaluate the training Progarmme and trainers.

Activity 8	**Establish a reinforcing system to enhance cooperation.**
Output: • **Develop consumer's confident** • **Crate job opportunities** • **Consumers expressing of appreciation in terms of marketing chemical free product such as vegetables, fruits, root crops and animal products.** • **Consumer / customers expressing of appreciation in purchasing consuming chemical free products.** • **Assist Ministry of Health Improving Community / Public Health which contribute to healthy workforce that enhance sustainable social and economic development**	
Task 1	Install a rewarding system
Task 2	Acknowledge the effective of training system:

RESOURCE REQUIREMENT MATRIX:

Activity and Tasks	Human Resources	Facilities	Equipment	Services & materials	Other resources	Costing: Internal/External
ACTIVITY 1: Consultation Meeting with stakeholders **OUTPUT: Gain a broader understanding of POP's tasks and action plans.**						
Task 1: Introduction of POP's Project	MOTEYS Staffs	MOTEYS conference room	Nil	$20/participant	Nil	External: $500 Internal:$5000
Task 2: Information on sector objectives relates to all activities	MOTEYS Staffs	MOTEYS conference room	Nil	$20/participant	Nil	External $300 Internal $5000
Task 3: Form working committee to oversee training and awareness	MOTEYS Staffs	MOTEYS conference room	Nil	$20/participant	Nil	External $ 200 Internal $5000
Task 4: Plan future activities for implementation of sector action plan.	MOTEYS Staffs	MOTEYS conference room	Nil	Nil	Nil	Nil

Activity and Task	Human Resources	Facilities	Equipment	Services & Materials	Other Resources	Costing: Internal/External
ACTIVITY 2: Develop and improve public awareness and information **OUTPUT: Support and contribution of the public**						
Task 1: Training of Trainers	Hired qualify instructor & MOTEYS staffs	MOTEYS Training Center	Training Manual Training equipments 2.Knapsack Sprayer @$200/K 2 Mister @$3000/M Protective Clothing 4 Hat @$15/hat 4 Goggle @$15/goggle 4 Mask @ $20/mask 4 Protective jacket @$60/P 4 Protective pan@$50/p 4 Cloves@$20/cloves 4 boot @$120/boot 4 x 4 wheel drive van $50000 1 Tractor @ $50000. 1 Boom Sprayer tank 400 litres @$4000 Stationary Photocopying paper Tonor	Hired expert $100/day MOTEYS $20/day Hired equipment-$150/week	Training manuals	External $25000 Internal $5000
Task 2: Media- TV &	A3Z staffs & MOTEYS	Nil	Nil	$115.00/30 minutes	Nil	External $500

Radio	staffs and Expert			115 x 4 460		Internal $2000
Task 3: Banners	MOTEYS staffs	MOTEYS Head office	10 Banners 12 m White Clothes @$2.00/m x10 = $240 1 White threads @$3.00 Paint • Red @.$25. 00 • Green @$ 25.00 • Blue @$25.00 • Black @$25.00 Rope 30m@$2.00/m $60.00 x10 = $600 6 Painting brush @$4.00 = $24.00	Hired expert @$200.00/day MOTEYS staffs $20.00/hour (6 x 10@$20/hr =$1400) Hired crane @$200	Refreshment	External $2000 Internal $2000
Task 4: Publicized in all local papers	Chemical Expert Kalonikali Staffs Taimi 'o Tonga Staffs Talaki Staffs Kele'a Staffs.	Nil	Computer flash	1 month Publicized in all local papers Taimi $200.00 Colour x 4 = $800.00 x 2 issue = $1600.00 Talaki $250.00 Colour x 4 = $1000.00 Kele'a $200.00 Colour x 4 = $800.00 Kalonikali $ 200.00 Colour x 4 = $800.00 Chemical Expert $200/day	Pesticide Acts Training Material	External $5000 Internal $2000
Task 5: Dramatized the purpose	Youth Groups	Community Hall	Stationary Photocopying paper tonor	$2000.00 First Prize $1500.00 Second Prize $1000.00 Third Prize $400.00 Atele Indoor statium	Refreshment	External $5000 Internal $2000
Task 6: Singing competition to advertise the purpose	Youth Groups & Kava Clubs	Community Hall Kava Clubs	Stationary Photocopying paper tonor	$2000.00 First Prize $1500.00 Second Prize $1000.00 Third Prize $100/participant Atele Indoor Stadium@$400	Refreshment	External $6000 Internal $2000

Activity and Task	Human Resources	Facilities	Equipment	Services & Materials	Other Resources	Costing: Internal/External
ACTIVITY 3: Review and update the present curriculum to include POP's Management **OUTPUT: Revised curriculum inclusive of POP's management**						
Task 1: Writing workshop to identify related areas of the curriculum eg: Classification of chemicals, Chemical handling, Safety etc.	Consultant Principal of TIST, TMPI, and CTDC, Short Term Training.	MOTEYS Conference Room and TIST, TMPI, and CTDC Training Centre	2 lab top @$4000/lap top = $8000. Computer Projector @$3000 1 Computer scanner @$1500 1 Digital camera @$2000 Stationary Photocopying paper Tonor	1 week Workshop. Consultant is paid @$600.00/day $50.00/participant/ day	Refreshment and lunch @$150/day x 5 days = $750	External=$10,000 Internal=$10,000
Task 2: Writing up curriculum materials	Principal of TIST, TMPI, CDTC & Short Term Training	MOTEYS Conference Room and TIST, TMPI, and CTDC Training Centre	1 lab top $4000.00 3 computers @$2000/computer = $6000. 4 computer flash @ $60.00/flash = $240 1 photo copy machine @ $10000.00 1 Computer scanner @ $1000.00 Binder @ $1000.00 Colour Printer $1000.00 Digital Camera = $2000.00 Stationary: Photocopying paper Tonor $1000	Start June 2008 6 months writing 6 Months trial 6 Months 6 Evaluation 6 Months Feedback 6 Months Improvement Implementation	Nil	External=20,000 Internal=$10,000
Task 3: Trialing, Evaluation, Feedback, Improvement and Implementation	Instructors	TIST, TMPI, CTDC , Short Term Training Centre	Stationary	Instructors is paid @$30.00/hour. 1 hr/day x5/wk x 15 wk/semester = 75 hr = $2250	Training manual	External $5,000 Internal $10,000
Task 4: Quality assurance to monitor progress and assessment of information	Principal of TIST, TMPI, CDTC, Short Term Training	TIST, TMPI, CTDC , Short Term Training Centre	Stationary	12 meeting /year @$50.00/Meeting	Refreshment	External $5,000 Internal $10,000

Activity and Task	Human Resources	Facilities	Equipment	Services & Materials	Other Resources	Costing: Internal/External
ACTIVITY 4: Design and Implement a course in POPs and hazardous management **OUTPUT: On going effective courses for POPs' management**						
Task 1: Develop staffs in POP's management	MOTEYS staffs attachment to overseas institution eg: SPC, Provide Scholarship	Nil	Nil	Nil	Nil	External $10,000 Internal $5,000
Task 2: Develop and set up training programme in specialized areas: *-Classification of chemicals* *- Transportation of chemicals (include local distribution)* *- Safety use of chemicals* *- Dilution* *- Calibration* *- Chemical spraying* *- Medical First Aid* *- Disposal* *- Storage of chemicals and equipment*	Consultant/expert and MOTEYS staffs	MOTEYS Training Center	1 lab top @$4000 Computer Projector @$2000 Stationary @ $1000	1 week Workshop. Consultant is paid @$600.00/day $50.00/participant/day = $1000	Refreshment and lunch $100/day x 5 = $500	External $10,000 Internal $5,000
Task 3: Run workshop throughout the groups	MOTEYS staffs, hired instructors, 280 from communities 30 from Nuku'alofa 30 from Hihifo 30 Vaini District 30 From Mu'a 30 From Fu'amotu 30 from 'Eua 30 from Ha'apai 30 from Vava'u 20 from Niuatoputapu 20 from Niuafo'ou	MOTEYS Training center & community Hall	Stationary: 10 box Photocopying paper 3 Tonor for photocopier 5 reams A4 Certificate paper 3 Black inkjet No.45 3 coloured inkjet No. 23 300 Black/blue pen	2 days workshop Trainer: $30/hr 16x$30/hr = $480 Trainee: 30x2daysx$10/day = $600 Transport: Coordinator & trainer 2x2daysx$5/day = $20.	Refreshment $100/dayx2= $200	External $10,000 Internal $5,000
Task 4: Design policy and regulation (Consultant, MOTEYS Principal of TIST, TMPI, CDTC, and Short Term Training and law advisor from the Crown law	Consultant MOTEYS staffs Law advisor from Crown law	MOTEYS Training Center	Stationary 4 box of photocopying paper 4 Tonor 1 Binder 1 Stapler 1 scanner	3 days workshop 6 months writing Consultant $600/day MOTEYS staffs & Law advisor $100/day	Refreshment $100/day x 3 = $300	External $3,000 Internal $3,000

Task 5: Establish an Advisory Committee to oversee the implementation of the above task. Members of the Advisory Committee are as follows: One member from this sector: MOTEYS, MOEWAC, MAFFFF, MOLSENR, MOH One rep from chemical users, one rep from students did the course.	One rep from MOTEYS MOEWAC MAFFFF MOLSENR MOH Chemical user student	TIST TMPI CDTC Short Term Training	Stationary Photocopying paper 4 tonor 1 Binder 1 Stable	1 Meeting/quarter $100/meeting 4x100= $400/ person	Refreshment $100/meeting Total $400.00	External $50,000 Internal $10,000

Activity and Task	Human Resources	Facilities	Equipment	Services & Materials	Other Resources	Costing: Internal/External
ACTIVITY 5: To carry out research, development and Monitoring POP's and hazardous management **OUTPUT: Result with action fro furthering development of the POP's Programme**						
Task 1: Existing research programme to coordinate with POP's management Programme	CDTC Students	MOTEYS Training Center	Stationary	One year programme	Nil	External $5,000 Internal $2,000
Task 2: Issue permit for overseas post graduate to carry out research on the POP's programme	Local/Overseas post graduate	Prime Minister's office MOEWAC's office	Stationary	2 year programme @$30000.00/year = $60000.00 Tuition fees Air fares Accommodation Books allowance Laboratory fees etc	Nil	External $100,000 Internal $60,000
Task 3: Establish a working committee to oversee the entire programme	One rep from CDTC, one rep from MOEWAC, One rep from prime minister's office, one from TIST, and TMPI, Environment	MOTEYS conference room	Stationary Fax Machine @$800.00	Start June 2008 1 Meeting/semester @$100/meeting	Meal $100/meeting	External $5,000 Internal $5,000

Activity and Task	Human Resources	Facilities	Equipment	Services & Materials	Other Resources	Costing: Internal/External
ACTIVITY 6: Establish and administer a licensing system for all chemical users **OUTPUT: Issue legal license for all chemical users.**						
Task 1: Re-establish a board/committee to responsible for licensing business, contractors, consumers and enforce legal use of chemicals: One Members from MOTEYS, MOLC, MAFFF, Crown Law, Chemical users, Farmers, and Police	One rep from: MOTEYS MOLC MAFFFF, MOL Chemical users' Farmers Crown Law Police	MOTEYS conference room	Stationary Photocopying paper tonor	Board will re-establish in January 2010 $100/meeting	Refreshment $100 4 meeting/year x 100 = $400.	External $10,000 Internal $10,000
Task 2: Board/Committee must consult with Crown law Department prior and during preparation of policies and regulation	One rep from: MOTEYS MOLC MAFFFF, MOL Chemical users' Farmers Crown Law Police	MOTEYS conference room	Stationary Photocopying paper tonor	Board will re-establish in January 2009 $100/meeting	Refreshment $100 4 meeting/year x 100 = $400.	External $5,000 Internal $5,000
Task 3: Board/committee implement policies and regulation under the direction of MOTEYS, MAFFFF, and MOLC	One rep from: MOTEYS MOLC MAFFFF, MOL Chemical users' Farmers Crown Law Police	MOTEYS conference room	Stationary Photocopying paper tonor	Board Committee will implement policies in 2010 $100/meeting	Refreshment $100 4 meeting/year x 100 = $400.	External$5,000 Internal $5,000
Task 4: Install a quota system for all chemical import and the licensing board shall ensure that these are monitor.	One rep from: MOTEYS MOLC MAFFFF, Crown Law Chemical users' Farmers	MOTEYS conference room	Stationary Photocopying paper Tonor Fax Machine	The Licensing and implementation will commence in January 2010 $100/meeting	Refreshment $100 4 meeting/year x 100 = $400.	External $5,000 Internal $5,000

Activity and Task	Human Resources	Facilities	Equipment	Services & Materials	Other Resources	Costing: Internal/External
ACTIVITY 7: Install a system for quality assurance to monitor success and progress of all actions. **OUTPUT: Continuity and consistency of a quality training and learning.**						
Task 1: Establish an assessment Board/Committee to assess and ensure that quality assurance of the overall training system is maintained.	Principal of TIST TMPI, CDTC, Short Term Training	MOTEYS Training facilities	Stationary Photocopying paper Tonor Phone fax	The committee will operate in January 2009. $50/meeting 1 meeting/month x 12 = $1200	Refreshment $100/meeting 12meeting x $100 = $1200	External $5,000 Internal $5,000
Task 2: The board will be the accrediting authority for credentialed (certificate and Diploma) Members of advisory committee are Principal of each training institutions.	Principal of TIST TMPI, CDTC, Short Term Training	MOTEYS Training facilities	Stationary Photocopying paper Tonor Phone fax	The committee will operate in January 2009 $50/meeting 1 meeting/month x 12 = $1200	Refreshment $100/meeting 12meeting x $100 = $1200	External $3,000 Internal $3,000
Task 3: Assess the training program (training manual, train facilities, training equipment, Safety , First Aids, Methods of Assessment, Grading System, recording system,, Awarding Certificate.	Principal of TIST TMPI, CDTC, Short Term Training	MOTEYS Training facilities	Stationary Photocopying paper Tonor	The committee will operate in January 2009	Nil	External $2,000 Internal $100,000
Task 4: Assess trainers qualification	Principal of TIST TMPI, CDTC, Short Term Training	MOTEYS Training facilities	Stationary Photocopying paper Tonor	Start January 2009	Nil	External $2,000 Internal $100,000
Task 5: Assess trainers presentation	Principal of TIST TMPI, CDTC, Short Term Training	MOTEYS Training facilities	Stationary Photocopying paper Tonor	Start January 2009	Nil	External $2,000 Internal $100,000
Task 6: The board/committee must provide a form of guideline or criteria to lead the trainers.	CEO Principal of TIST TMPI, CDTC, Short Term Training	MOTEYS Training facilities	Stationary Photocopying paper Tonor	Start January 2009	Nil	External $2,000 Internal $100,000
Task 7: Evaluate the training Programme and trainers.	CEO Principal of TIST TMPI, CDTC, Short Term Training	MOTEYS Training facilities	Stationary Photocopying paper Tonor	Start January 2009	Nil	External $2,000 Internal $100,000

Activity and Task	Human Resources	Facilities	Equipment	Services & Materials	Other Resources	Costing: Internal/External
ACTIVITY 8: Establish a reinforcing system to enhance cooperation. **OUTPUT:** • **Develop consumer's confident** • **Crate job opportunities** • **Consumers expressing of appreciation in terms of marketing chemical free product such as vegetables, fruits, root crops and animal products.** • **Consumer/customers expressing of appreciation in purchasing consuming chemical free products.** • **Assist Ministry of Health Improving Community/Public Health which contribute to healthy workforce that enhance sustainable social and economic development.**						
Task 1: Install a rewarding system	MOTEYS Student Farmers Community/Public	MOTEYS Training facilities	Stationary	Start December 2009	Nil	External $5,000 Internal $50,000
Task 2: Acknowledge the effective of training system	MOTEYS Student Farmers Community/Public	MOTEYS Training facilities	Stationary 10 box Photocopying paper 4 Tonor for photocopier 5 reams A4 Certificate paper 4 Black inkjet No.45 4 coloured inkjet No. 23 300 Black/blue pen	Start December 2009	Nil	External $2,000 Internal $20,000

DETAIL ACTION PLAN FOR THE NIP.

Activity and Tasks	Contributing Agencies	Timeline (Duration)	Performance Indicators	Potential Source of Financing	Cost Estimate (USD)	Resources Needed
ACTIVITY 1: Consultation Meeting with stakeholders **OUTPUT: Gain a broader understanding of POP's tasks and action plans.**						
Task 1: Introduction of POP's Project	Environment Staffs MOTEYS Staffs	2 Months. September & October 2007	Approved by the CEO	External	External $400 Internal $2,500	Nil
Task 2: Information on sector objectives relates to all activities	MOTEYS Staffs	2 Months. September & October 2007	Approved by CEO	External	External $150 Internal $3,000	Nil
Task 3: Form working committee to oversee training and awareness	MOTEYS Staffs	2 Months. September & October 2007	Approved by CEO	External	External $500 Internal $5,000	Nil
Task 4: Plan future activities for implementation of sector action plan.	MOTEYS Staffs	2 Months. September & October 2007	Approved by CEO	External	External $400 Internal $3,000	Nil

Activity and Task	Contributing Agencies	Timeline (Duration)	Performance Indicators	Potential Source of Financing	Cost Estimate (USD)	Resources Needed
ACTIVITY 2: Develop and improve public awareness and information **OUTPUT: Support and contribution of the public**						
Task 1: Training of Trainers	MOTEYS Staffs and Hired Expert	May - June 2008	Approval of Plan/Program Training provided	External	External $23,000 Internal $4,000	Training equipments 2.Knapsack Sprayer 2 Mister Protective Clothing 4 Hat 4 Goggle 4 Mask 4 Protective jacket 4 Protective pan 4 Cloves 4 boot paired of boot 1 4 x 4 wheel drive van 1 Tractor 1 Boom Sprayer tank Stationary Photocopying paper Tonor
Task 2: Media- TV & Radio	A3Z Staffs ,MOTEYS Staffs and Hired Expert	June 2008	Approval of Program	External	External $400 Internal $3,050	Nil

Task 3: Banners	MOTEYS	June 2008	Approved by the MOTEYS CEO and the Environment CEO	External	External $1,200 Internal $1,200	Clothes Threads Paint Rope Painting Brush Hired crane
Task 4: Publicized in all local papers	Chemical Expert Kalonikali Staffs Taimi 'o Tonga Staffs Talaki Staffs Kele'a Staffs	June 2008	Approved by the MOTEYS CEO and the Environment CEO	External	External $4,500 Internal $1,500	Computer flash
Task 5: Dramatized the purpose	Youth Groups	May 2008	Participation of youth groups	External	External $4,000 Internal $1,050	Stationary Photocopying paper tonor
Task 6: Singing competition to advertise the purpose	Youth Groups and Kava Tonga Clubs and Environment & MOTEYS	June 2008	Participation of public	External	External $5,000 Internal $1,500	Stationary Photocopying paper

Activity and Task	Contributing Agencies	Timeline (Duration)	Performance Indicators	Potential Source of Financing	Cost Estimate (USD)	Resources Needed
ACTIVITY 3: Review and update the present curriculum to include POP's Management **OUTPUT: Revised curriculum inclusive of POP's management**						
Task 1: Writing workshop to identify related areas of the curriculum eg: Classification of chemicals, Chemical handling, Safety etc.	Consultant MOTEYS Head of Schools	May 2008	Approved by the CEO	External	External $8,000 Internal $8,000	2 Lab top 2 Computers 1 Computer scanner 1 Computer Projector One Digital camera Stationary Photocopying paper Tonor
Task 2: Writing up curriculum materials	MOTEYS Head of schools	June – December 2008	Improved curriculum	External	External $17,000 Internal $7,000	1 lab top 3 computers 4 computer flash 1 photocopying machine 1 Scanner 1 Binder 1 Colour printer 1 Digital camera Stationary Photo copying paper &

						Tonor
Task 3: Trialing, Evaluation, Feedback, Improvement and Implementation	Head of MOTEYS Schools, Instructors and students	May 2008 – December 2010. Trial – Feb – June 2009. Feedback. July – Dec. 2009 Improvement Feb. – June 2010 Implementation July – December 2010	Training materials	Internal	External $1,200 Internal $1,200	Training materials
Task 4: Quality assurance to monitor progress and assessment of information	MOTEYS Head of Schools	January – June 2011	Improved training materials	Internal	External $4,500 Internal $1,500	Training materials

Activity and Task	Contributing Agencies	Timeline (Duration)	Performance Indicators	Potential Source of Financing	Cost Estimate (USD)	Resources Needed
ACTIVITY 4: Design and Implement a course in POPs and hazardous management **OUTPUT: On going effective courses for POPs' management**						
Task 1: Develop staffs in POP's management	MOTEYS Staffs	January 2009 - 2012	Acceptance of programme	External	External $5,000 Internal $2,500	Nil
Task 2: Develop and set up training programme in specialized areas: *-Classification of chemicals* *- Transportation of chemicals (include local distribution)* *- Safety use of chemicals* *- Dilution* *- Chemical spraying* *- Medical First Aid* *- Disposal* *- Storage of chemicals and equipment*	Expert & MOTEYS	January to December 2009	Acceptance of programme	External	External $5,000 Internal $2,500	1 lab top 1 computer projector Stationary: Photocopying paper tonor
Task 3: Run workshop throughout the groups	MOTEYS and Community	July 2008 to May 2009	Approval of programme	External	External $5,000 Internal $2,500	Stationary: 10 Box Photocopying paper 3 Tonor for photocopier 5 reams A4 Certificate paper 3 Black inkjet 3 inkjet No. 23 300 pen (blue & black)
Task 4: Design policy and regulation (Consultant, MOTEYS Principal of	Consultant MOTEYS staffs &	January – June 2009	Approved policy	External	External $2,500 Internal $2,500	Stationary Photocopying

TIST, TMPI, CDTC, and Short Term Training and law advisor from the Crown law	Crown law					paper pen binder
Task 5: Establish an Advisory Committee to oversee the implementation of the above task. Members of the Advisory Committee are as follows: One member from this sector: MOTEYS, MOEWAC, MAFFFF, MOLSENR, MOH One rep from chemical users, one rep from students did the course.	MOTEYS Environment MOEWAC MAFFFF MOH Chemical user Student	Establish July 2009	Acceptance of programme	External	External $2,500 Internal $ 1,000	Stationary Photocopying paper Tonor Binder Stable

Activity and Task	Contributing Agencies	Timeline (Duration)	Performance Indicators	Potential Source of Financing	Cost Estimate (USD)	Resources Needed
ACTIVITY 5: To carry out research, development and Monitoring POP's and hazardous management **OUTPUT: Result with action for furthering development of the POP's Programme**						
Task 1: Existing research programme to coordinate with POP's management Programme	Agricultural Diploma Students at CDTC	2008 - 2012	Approved research proposal	Internal/external	External $2,500 Internal $2,500	Stationary Photocopying paper tonor
Task 2: Issue permit for local/overseas post graduate to carry out research on the POP's programme	Local/overseas post graduate students	2009-2010	Approved research proposal	External	External $5,000 Internal $3,000	Nil
Task 3: Establish a working committee to oversee the entire programme	MOTEYS staffs MOEWAC Environment Prime Minister's office	July – December 2008	Approved programme	External/Internal	External $2,500 Internal $2,500	Stationary Photocopying paper Tonor Fax machine

Activity and Task	Contributing Agencies	Timeline (Duration)	Performance Indicators	Potential Source of Financing	Cost Estimate (USD)	Resources Needed
ACTIVITY 6: Establish and administer a licensing system for all chemical users **OUTPUT: Issue legal license for all chemical users.**						
Task 1: Re-establish a board/committee to responsible for licensing business, contractors, consumers and enforce legal use of chemicals: One Members from MOTEYS, MOLC, MAFFF, Crown Law, Chemical users, Farmers, and Police	MOTEYS MOLC MAFFFF Crown law Chemical users Farmers Police	Start January 2010	Approved programme	External	External $5,000 Internal $5,000	Stationary Photocopying paper Tonor
Task 2: Board/Committee must consult with Crown law Department prior and during preparation of policies and regulation	MOTEYS MOLC MAFFFF Crown law Chemical users Farmers Police	July 2009- June 2010	Approved policies	External	External $2,500 Internal $2,500	Stationary Photocopying paper Tonor
Task 3: Board/committee implement policies and regulation under the direction of MOTEYS, MAFFFF, and MOLC	MOTEYS MOLC MAFFFF Crown law Chemical users Farmers Police	July 2010	Approved policies/regulation	External	External $2,500 Internal $2,500	Stationary Photocopying paper Tonor
Task 4: Install a quota system for all chemical import and the licensing board shall ensure that these are monitor.	MOTEYS MOLC MAFFFF Crown law Chemical users Farmers Police Custom	January 2010	Approved programme	External	External $2,500 Internal $2,500	Stationary Photocopying paper Tonor Fax

Activity and Task	Contributing Agencies	Timeline (Duration)	Performance Indicators	Potential Source of Financing	Cost Estimate (USD)	Resources Needed
ACTIVITY 7: Install a system for quality assurance to monitor success and progress of all actions. **OUTPUT: Continuity and consistency of a quality training and learning.**						
Task 1: Establish an assessment Board/Committee to assess and ensure that quality assurance of the overall training system is maintained.	MOTEYS head of schools	January 2009	-Acceptance of appraisal program -Improve teaching performance - Improvement in student success	Internal/ external	External $2,500 Internal $2,500	Stationary: Photocopying paper Tonor Fax phone
Task 2: The board will be the accrediting authority for credentialed (certificate and Diploma) Members of advisory committee are Principal of each training institutions.	MOTEYS head of schools	January 2009	Acceptance of policies and regulation	Internal/ external	External $2,500 Internal$2,500	Stationary: Photocopying paper Tonor Fax phone
Task 3: Assess the training program (training manual, train facilities, training equipment, Safety , First Aids, Methods of Assessment, Grading System, recording system,, Awarding Certificate.	MOTEYS head of schools	January 2009	- Acceptance of appraisal program - Improved programs/department performance - No accident or injuries - sound assessment moderation procedures - Clean environment	Internal	External $1,500 Internal $5,000	Stationary: Photocopying paper Tonor Fax phone
Task 4: Assess trainers qualification	MOTEYS head of schools	January 2009	- Qualified staffs	Internal	External $1,500 Internal $2,500	Photocopying paper tonor
Task 5: Assess trainers presentation	MOTEYS head of schools	February 2009	Quality deliverance and presentation - Acceptance of scheme - Acceptance of teaching aids	Internal	External $500 Internal $2,500	Photocopying paper tonor
Task 6: The board/committee must provide a form of guideline or criteria to lead the trainers.	MOTEYS head of schools	February 2009	Approved form of appraisal/guideline	Internal	External $500 Internal $2,500	Photocopying paper tonor
Task 7: Evaluate the training Programme and trainers.	MOTEYS head of schools	February 2009	Approved and acceptance of training program - acceptance of teaching aids - Approved and effective system	Internal	External $500 Internal $2,500	Photocopying paper tonor

Activity and Task	Contributing Agencies	Timeline (Duration)	Performance Indicators	Potential Source of Financing	Cost Estimate (USD)	Resources Needed
ACTIVITY 8: Establish a reinforcing system to enhance cooperation. **OUTPUT:** • **Develop consumer's confident** • **Crate job opportunities** • **Consumers expressing of appreciation in terms of marketing chemical free product such as vegetables, fruits, root crops and animal products.** • **Consumer/customers expressing of appreciation in purchasing consuming chemical free products.** • **Assist Ministry of Health Improving Community/Public Health which contribute to healthy workforce that enhance sustainable social and economic development.**						
Task 1: Install a rewarding system	MOTEYS Students Farmers Public	January 2010	Qualify students Skilled farmers Healthy workforce	Internal	External $1,000 Internal $2,500	Stationary Photocopying paper Tonor Certificate paper Black inkjet Colour inkjet
Task 2: Acknowledge the effective of training system	MOTEYS Students Farmers Public	January 2010	-Qualified students -Crate job opportunities -Develop consumer's confident - healthy workforce	Internal	External $1,000 Internal $2,500	Stationary Photocopying paper Tonor Certificate paper Black inkjet Colour inkjet

Ministry of Education Women Affairs and Culture (MEWAC)

BACKGROUND:

Stakeholders for Education comprise of the following:

- Ministry of Education and Governing Boards(Mission School)
- Parents Teachers Association
- Ex-students
- Church Leaders
- Community at large

RATIONALE:

To comply with the requirements of the Stockholm Convention, the Ministry of Education Women's Affairs and Culture must outline and submit an Action Plan to the Coordinator of POPS MANAGEMENT PROJECT, in accordance with the Term of Reference and issues raised during the Kingdom's Consultation Meetings conducted throughout the year. Accordingly, these Action Plans are to be used to design the National Implementation Plan or NIP for Tonga.

GOAL STATEMENT:

To improve public awareness to all related sectors of the school community on POPS Management.

OBJECTIVES:

- Improve public awareness and information on POPS Management to all Education stakeholders throughout the Kingdom.
- To review and update the present curriculum in related areas to include POPS Management issues for all levels in schools.
- Address the most effective strategies to educate schools and education sector
- To carry out research, development and monitoring of POPS Management in schools.
- To request to the Ministry to include POPS issues as Internal Assessment topics in Senior classes beginning 2008 for appropriate subjects.
- To lobby the Ministry to address the issue of safe handling, distribution, storing and disposing of Laboratory chemicals in schools.
- To establish an Assessment tool to monitor success and progress of action plan

SUMMARY OF MAJOR ACTIVITIES:

- ACTIVITY 1: Consultation Meeting with stakeholders
- ACTIVITY 2: Workshop to improve public awareness and information on POPS for Teachers and other stakeholders (PTA, Women groups, etc)
- ACTIVITY 3: Review and update related curriculum to include POPS Issues from primary to secondary levels
- ACTIVITY 4: Develop Strategies used for effective teaching of POPS in schools like competitions and games.

- ACTIVITY 5: Training of Science teachers on safety measures to be employed in handling of Laboratory chemicals
- ACTIVITY 6: Strategies to monitor, assess, analyse progress in Action Plan

WORK BREAKDOWN STRUCTURE:

Activity 1	Consultation Meeting with stakeholders on POPS Management
Task 1	POPS management awareness including relevant issues from previous consultation in most districts of Tonga
Task 2	Information on sector objectives- relate to Activity 3 on review and update of related areas in curriculum to include POPS
Task 3	Review objectives and develop in working groups- information to improve on action plan
Task 4	Form a Working committee to address POPS Management in curriculum and to oversee future training and awareness activities
Task 5	Plan future activities for implementation of sector action plan

Activity 2	Workshop to improve public awareness and information for teachers and other stakeholders
Task 1	Conduct a need analysis for appropriate activities for teachers, PTA members and Women's Groups
Task 2	Training of teachers on POPS MANAGEMENT issues
Task 3	Training of PTA and Women Group members on the issues
Task 4	Compiling a Handbook on safe handling of chemicals
Task 5	Procure and/or translate relevant resource materials on POPs for Primary/Secondary School

Activity 3	Review and update related areas of the curriculum to include POPS Management
Task 1	Writing workshop- identify related areas of the curriculum eg Science, Health Studies, Agriculture, Design Technology, etc to include POPS Management
Task 2	Writing of curriculum materials and all supporting materials for teaching of POPS Management
Task 3	Curriculum review process- trialling, evaluation, feedback, improve materials, implement
Task 4	Monitor of progress and assessment of information/awareness scope in schools

Activity 4	Develop strategies used for effective teaching of POPS Management issues in schools eg. Competitions and games.
Task 1	Quiz on POPS MANAGEMENT – TV and Radio – primary and secondary schools
Task 2	Science Committee to develop games on POPS issues
Task 3	Conduct Arts, Singing, Drama, Posters, etc to promote important issues on POPS MANAGEMENT
Task 4	Viewing of films on POPS and conducting radio and TV spots once a month

ACTIVITY 5	Training of Science teachers on safety measures to be employed in school laboratories
Task 1	Train Science teachers on safe handling, distribution, storing and disposing of laboratory chemicals
Task 2	Write up a chemical laboratory manual on the safe handling of chemicals to be used by all Science teachers
Task 3	Lobby for funds to establish a centre for the ordering, distribution, handling, storing and disposal of lab chemicals

ACTIVITY 6	Strategies to assess, monitor and analyse the progress of Action Plan
Task 1	Design assessment and monitoring tools for action plan
Task 2	Analysis of data from assessment results
Task 3	Report to relevant parties on progress of plan and review plan

TIMELINE: (weeks, months, years)

ACTIVITY	YEAR 1 2007	YEAR 2 2008	YEAR 3 2009	YEAR 4 2010	YEAR 5 2011
1- task 1-5	4mths				
2- task 1-4	2mths	1-6 mths			
3 task 1-4	2mths	All year	All year	All year	All year
4 task 1-4		6mths	6mths	6mths	
5 task 1-3		6mths			
6 task 1-3		4mths			

RESOURCE REQUIREMENTS MATRIX:

Activities & Tasks	Human Resources	Facilities	Services, Materials	Costing (USD)	Other Resources
Activity 1 (Task1-5)	25 stakeholders, facilitator, PCU (M/E)	Venue(free) photocopier	Handouts Textures, flip charts	Int=20,000 Ext=30,000	refreshments
Activity 2 (Task1-4)	12 committee members, Task Team member	Venue(free) CDU	Handouts-Action Plan, planning templates	Int=10,000 Ext=40,000	refreshments
Activity 3 (Task1-4)	Science Team curriculum writers	Venue(free) CDU	computers internet access	Int=50,000 Ext=150,000	refreshments
Activity 4 (Task1-5)	Teachers, students, Task Team member	Media, schools	Questions, Themes, etc	Int=20,000 Ext=80,000	
Activity 5 (Task1-3)	Working Comm. Members (12), Task Team member	CDU	Assessment tools-handouts	Int=25,000 Ext=75,000	Report outline to all parties
Activity 6 (Task1-3)	Science Writing Team (CDU)	CDU	Part-time writers	Int=35,000 Ext=5000	refreshments

Note: All activities to include outer islands schools in tasks relevant to them.

AGENCIES RESPONSIBLE:

- Ministry of Education Women's Affairs and Culture
- Tonga Institute of Education
- Secondary Schools
- Primary Schools
- Pre-Schools
- Parents Teachers Association
- Ministry of Land, Survey, Natural Resources and Environment
- Churches

INDICATORS FOR MONITORING:

- Evaluation of Curriculum Materials in related areas
- School Visits: questionnaires for teachers' and students' response
- Scope of participation in activities: number of participants
- Media coverage of activities to show success: quiz, posters, leaflets, arts
- Formal assessments eg. examinations, tests, quiz, etc
- Regularity of holding competitions and number of participants
- Survey- interviews, questionnaires,
- Environmental Impact Assessment
- Number of participants n research projects at senior levels
- Number of teachers, PTA members, women's group members trained

Note 2:

A number of the activities planned will be part of the Ministry's normal undertaking of its role eg. Classroom teaching of information, activities outline in the Competitions; school visits, review, updating and writing of curriculum teaching resources and support resources. Many of the tasks outlined will be carried out as part of normal curriculum and therefore timeline will be on-going till 2015. During this period the normal curriculum processes will take place, that is, writing of draft materials, trialing, assessing the materials, rewriting, re-trialing and final draft for use in all schools throughout the Kingdom.

Many activities will be on-going projects or tasks eg. internal assessment or research projects normally carried out by students to meet the pre-requisites of subjects like Science and Agriculture at Form 5 or Biology and Chemistry at Form 6 and Form 7. Tonga Institute of Education will include POPS Management issues in their curriculum also.

3.6.12 Activity: effectiveness evaluation (article 16)

The Ministry of Environment and Climate Change as the focal point is to coordinate the evaluation in accordance with the requirements of the COP

3.6.13 Activity: reporting

The Ministry of Environment and Climate Change as the focal point is to coordinate the formulation of the report in accordance with the requirement of the COP

3.6.14 Activity: research, development and monitoring (article 11)

The Ministry of Environment and Climate Change as the focal point is to continue to support both local and overseas researchers on POPs under existing available resources. The Ministry of Environment and Climate Change is to continue to cooperate with the Ministry of Education, Women Affairs and Culture (MEWAC) and Ministry of Training, Employment, Youth and Sport (MOTEYS) and foster the interest of students in conducting their research project on POPs.

3.6.15 Activity: Technical and financial assistance (articles 12 and 13)

The Ministry of Environment and Climate Change as the focal point is to continue to coordinate and process the request for financial support and incentives for successful implementation of the Stockholm Convention.

Annex 8: Current List of POPs as of January 2009

The current list of POPs are as follows:

(1) aldrin;
(2) chlordane;
(3) dichloro-diphenyl-trichloroethane (DDT);
(4) dieldrin;
(5) endrin;
(6) heptachlor;
(7) mirex;
(8) toxaphene;
(9) hexachlorobenzene (HCB);
(10) polychlorinated biphenyls (PCBs);
(11) polychlorinated dibenzo-*p*-dioxins; and
(12) polychlorinated dibenzofurans.

The first nine of these are pesticides. HCB is also classed as an industrial chemical, as are PCBs, while the dioxins and furans are unintentional by-products in combustion and some industrial activities. HCB and PCBs can also be formed in this way.

There are nine chemicals that are recommended by the POPs review committee to be added to the above list. These are:

i. pentabromodiphenyether (PBDE);
ii. chlordecone;
iii. hexabromobiphenyl;
iv. lindane;
v. perfluorooctane sulfonate;
vi. octabromodiphenyl ether;
vii. alpha hexachlorocyclohexane;
viii. beta hexachlorocyclohexane; and
ix. penta chlorobenzene.

There are three chemicals that are currently under review to be added to the above. These are:

(i) short chained chlorinated paraffins (SCCPs)
(ii) hexabromocyclododecane
(iii) endosulfan

The common characteristics of POPs chemicals are: persistent, bioaccumulation/ bioconcentration, toxic and long range transport hence the need for national and global effort.

Annex 9: Overview of Economic Sectors

Table 1A. Overview of the industrial and agricultural sector

Sector	Contribution to GDP	Number of employees	Major products
Industries/manufacturing	17.4	6,710	bakery, printing, wood, textiles
Tourism	14.8	2,000*	tours, travel
Financial	11.6	657	Banking
Agriculture (including fisheries)	28.3	9,953	squash, vanilla, root crops, fish
TOTAL	72.1	17,320	

*Statistics

Table 1B. Structure of the manufacturing/agricultural sector

Sector	Micro farms/facilities (%)	Small farms/facilities (%)	Medium farm/facilities (%)	Large farms/facilities (%)
Industries/manufacturing	60	35	5	0
Agriculture	40	30	20	10

Table 1C. Breakdown of agricultural production by region*

Region	Major crops	Total crop value** (T$)	Total employees	2001 productive area size (acres)
Tongatapu	pumpkin, root crops, watermelons, kava, vanilla	100,000,000	7,769	16,826
Vava'u	pumpkin, root crops, watermelons, kava, vanilla	50,000,000	2,978	7,465
Ha'apai	root crops, watermelons, kava, vanilla	20,000,000	1,036	2,927
'Eua	pumpkin, root crops, watermelons, kava, vanilla	50,000,000	906	3,133
Niuatoputapu	root crops, watermelons, kava, vanilla	5,000,000	260	865
Niuafo'ou	root crops, watermelons, kava, vanilla	3,000,000		
Total (excluding the Niuas)		220,000,000	12,949	30,351

*MAFFF Agricultural Census 2001
**Own estimates

Table 1D. Breakdown of industrial production by region*

Region	Major products	Total value of production (T$)**	Number of industrial facilities	Number of employees
Tongatapu	manufacturing, tourism prime facilities, commercial farming, commercial fishing	37,363,800	53	360
Vava'u	tourist facilities, commercial farming, commercial farming	14,454,600	18	100
Ha'apai	tourist facilities	4,981,840	3	10
'Eua	Commercial farming, tourist facilities	7,472,760	5	23
Niuatoputapu				
Niuafo'ou				
Total		62,273,000	89	493

*2002-04 estimates by MLCI (Industry Division)
**actual investments

Table 1E. Industrial employment by major economic sectors

ISIC Code**	Description	Number of facilities (est)	Total employment	Annual output value (T$)	Waste streams
31	food industry	30	372	1,822,409	Putrescible wastes
32	textiles/clothing and leather goods	5	21	58,991	dye wastes
33	wood and wood products	3	55	35,722	CCA waste, dye wastes
34	Printing	4	115	175,640	ink wastes, paper wastes
35	chemical/coal/petrol/plastic products	2	15	1,227,692	waste oil, waste petroleum
36	non-metallic mineral products	5	40	182,204	mineral wastes
37	basic metal industry (mechanical services)	9	47	118,799	various
39	other manufacturing industries	17	117	246,404	various
	mining and extraction (coals/oil/gas/minerals)	0			
	electricity generation	1			diesel exhaust
	dry cleaning	1			dry cleaning wastes, ozone depleting substances
Total		77	782	3,867,861	