

NATIONAL REPORT ON THE EXISTING PLANNED OZONE RESEARCH AND MONITORING ACTIVITIES

SAMOA

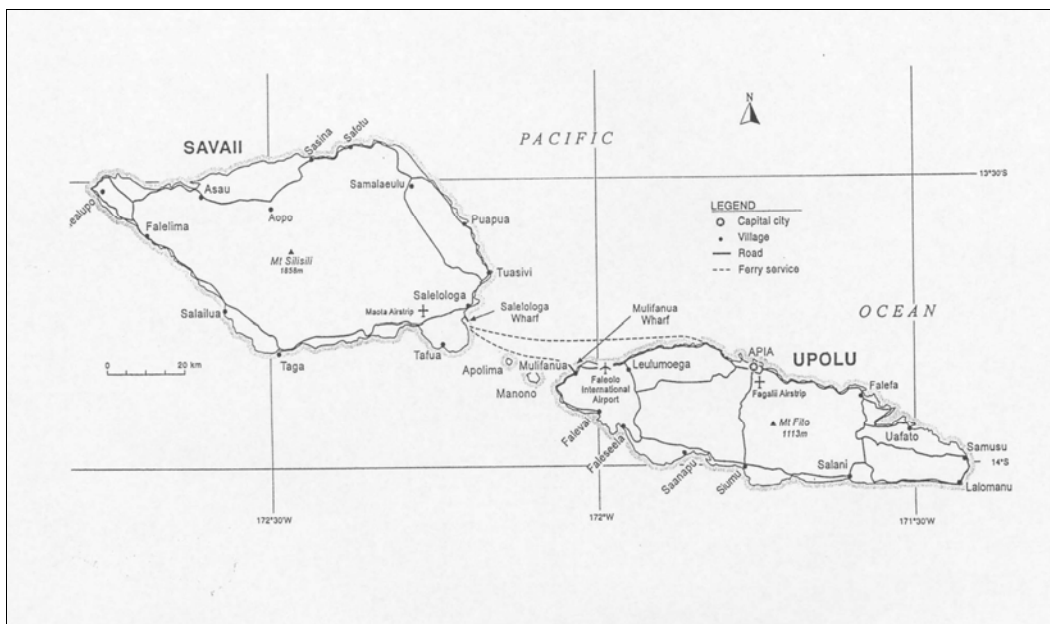
1.1 Introduction

Samoa acceded to both the VC and the MP on 21 December 2002. As a developing country it has been classified as an Article 5(1) country, eligible to receive technical and financial assistance under from the MLF. The proposed TPMP for HCFCs describes Samoa's approach and associated activities to guide its efforts to comply with the agreed phase-out schedule for HCFCs, from the baseline determination from 2009 and 2010 consumptions to full phase out in 2040. It was prepared by the NOU of MNRE under the supervision of the NOC.

1.2 Country background

Samoa is a Pacific small island developing state that became an independent country in 1962 after a period as a United Nations Trust Territory under New Zealand administration (see Figure 1). This part looks at the background features of Samoa to understand the local setting where the current ozone activities take place and the proposed will be applied and implemented The setting in this context is the local environment comprising the physical, political, social and economic conditions and the circumstances that would shape decision-making on project activities.

Figure 1 – The islands of Samoa



1.2.1 Geographic features

Samoa is comprised of two relatively large islands, Upolu and Savaii, two smaller inhabited islands, Manono and Apolima, and a number of smaller uninhabited offshore islands, islets and rocks (see Figure 1 above). It is the larger and western part of the Samoan archipelago, located between 13° and 14° south latitude and 171° and 173° west longitude. The islands stretch over a distance of about 200 km covering a total land area of about 2,900 km² (40% in Upolu and 60% in Savaii) and an exclusive marine economic zone of approximately 130,000 km². 80% of total land area is held under customary ownership, 16% is government land and 4% freehold. The capital, Apia, is located about midway on the north coast of Upolu. Salelologa is the main centre on Savaii, located on the southeast coast.

The Samoan islands are composed mainly of volcanic, with areas of recent lava flows still exposed on Savaii. Soils are generally clay in texture, free draining, porous and relatively shallow. About 40 per cent of Upolu and 50 per cent of Savaii are characterised by steep slopes descending from volcanic crests, with the interior of both islands covered by montane forests. Cloud forest is found at the higher altitudes on Savaii. The country is rugged and mountainous with the Upolu crestal ridge rising to 1,100 m, and Savaii's highest mountain reaching up to about 1,850 m. A coral reef surrounds the islands for nearly half of the coastline except where there are coastal cliffs and headlands, and where young lava flows have filled the lagoon.

The climate is generally hot and wet with distinct dry (April to November) and wet (December to March) seasons. Annual rainfall is about 3,000 mm (varying from 2,500 mm in the rain shadow areas of Savaii's northwest to over 6,000 mm in the Savaii highlands), with most of the precipitation occurring in the wet season. The average temperature is 27 degrees Celsius with 80% humidity. Samoa experiences southeast trade winds almost all times of the year with tropical cyclones occurring during the wet season.

2.1 Current activities and implementation programmes carried out by the NOU

There are two Implementation programmes and plans currently in place. This is the Terminal Phase out Management Plan for CFCs and the HCFC Phase out Management Plan.

Majority of the activities under the TPMP for CFCs have been completed with only the incentive programme which is scheduled to be completed before mid 2011. On the other hand the HCFC Phase out Management Plan is already in place for Samoa and has been submitted as a Regional Approach to the Executive Committee Meeting in April 2011.

The following will provide the existing and planned research and monitoring activities currently in place for Samoa.

3.1 ODS legislation

In spite of the strong provisions of the current ODS regulations, observance by importers and RAC companies was extremely poor. There was only limited compliance with annual licensing and quarterly

reporting requirements. As a result, it was extremely to obtain accurate information on the use and consumption of ODS. Data provided by the MfR were also found to be incomplete and inconsistent making it quite difficult to determine actual volumes of imported ODS and the number of ODS-based equipments that were brought into Samoa.

However, review of the ODS legislation is currently taking place and the Legal Consultant from the Ministry of Natural Resources and Environment is assessing this review whether it should become an Act or an Amendment. This review will most likely be completed by the end of 2011.

4.1 ODS Consumption

Samoa is not an ODS producing country with demand only for RAC services. Australia, New Zealand and Fiji are the main exporters of ODS to Samoa, although some ODS or ODS-based equipment may have been brought in illegally by local residents or foreign ships.

5.1 Terminal Phase out Management Plan – Activities

The Terminal Phase-out Management Plan for ODS in Samoa was approved by the Executive Committee in its 53rd Meeting in November 2007. According to the agreement between the Government of Samoa and the Executive Committee of the Multilateral Fund for Phase-Out of Ozone-Depleting Substances, Samoa will provide annual report on the implementation of previous year plan and annual implementation plan for the current year.

The National Ozone Committee (NOC) oversees the implementation of the TPMP. One staff member of Samoa Ministry of Natural Resources, Environment and Meteorology is dedicated to the implementation of TPMP. NOC meetings are conducted to discuss arising issues in the implementation on a monthly basis or by request of National Ozone Unit (NOU) or NOC members depending on arising monitoring issues from time to time.

Samoa TPMP implementation started in mid 2008 after the signing of agreements between the Government of Samoa with UNEP and UNDP. The NOU is dedicated to accelerate the implementation of both UNEP and UNDP TPMP components to ensure achievement of all objectives stated in these Agreements before the end of the Project.

This report therefore will provide a summary of the activities undertaken during the time the TPMP started its implementation programme in Samoa in mid 2008 till 2010.

5.1 Achievement of Targets.

Samoa fully met the 2009 targets which is 0.0 ODP tons for CFC import and 0.0 ODP tons for servicing.

Samoa reported zero consumption in 2008 for CFC and other ODSs (except HCFCs) to the Ozone Secretariat as shown below.

Table 1: ODS Consumption during 2003-2010 (ODP Tons)

ODS	2003	2004	2005	2006	2007	2008	2009	2010
CFCs	0	0	0	0	0	0	0	0
Halons	0	0	0	0	0	0	0	0
Other Fully Halogenated CFCs	0	0	0	0	0	0	0	0
Carbon Tetrachloride	0	0	0	0	0	0	0	0
Methyl Chloroform	0	0	0	0	0	0	0	0
HCFCs	0.2	0.4	0.2	0.2	0.2	0.1	0.1	0.1
HBFCs	0	0	0	0	0	0	0	0
Bromochloromethane	0	0	0	0	0	0	0	0
Methyl Bromide	0	0	0	0	0	0	0	0

Source: Ozone Secretariat

Licensed companies provided the NOU with their annual consumption data before 1 March every year as obligated under the license conditions. These data, as well as data from Customs, are reviewed by the NOU before providing a final report of the ODS consumption.

6.1 IMPLEMENTATION OF 2009 & 2010 ANNUAL IMPLEMENTATION PROGRAMME

6.1 Component 1: Policy, Regulatory and Institutional Support

6.1.1 Review of the Atmospheric Policy:

The Atmospheric Policy has been reviewed and it is now still in its final draft. The Ozone Layer Regulations 2006 has been reviewed and is currently being assessed by the Attorney Generals Office.

A total number of two consultations and two workshops were carried out for the review of the Ozone Layer Regulations 2006, however it is intended that an Amendment of Ozone Regulation will be proceed in the near future.

6.1.2 Training of Enforcement Officers:

Training has been carried out for enforcement officers including Customs, Quarantine and conservation officers that are monitoring of imports and enforcement of the regulations. Technicians were hired to conduct these trainings. The customs officers have improved

awareness and capacity to carry out their duties to control the banned refrigerants and equipments that are under control of the Montreal Protocol.

6.2 Component 2: Training Course for Refrigeration Technicians, Capacity Building and Awareness Activities

6.2.1 Support for Refrigeration Association:

The Samoa Refrigeration Engineering Association (SREA) is functioning well and collaborating with the NOU in conducting trainings and monitoring of the licensing system. A JICA volunteer is now working closely with the NOU and the SREA in reviewing the Samoa Technicians Certification System; this system is regarded very important towards the licensing system in Samoa. It is expected to be in place in July 2011.

6.2.2 Expansion of Technician Training Programme

Refrigeration and Air conditioning technicians' trainings were conducted and 101 technicians were certified during 2009, with 41 technicians certified in 2010. All in all, there were four Trainings carried out for Good refrigeration practices carried out by authorized technicians from SREA and NUS lectures. As a result of this, a total number of 152 technicians certified. However, some of these technicians attended the trainings twice for refreshment purposes.

6.3 Awareness:

Awareness programs have been carried out for the relevant national stakeholders including workshops to further inform them of the relevant information that they need to be aware of. Also a consultation with the MNRE IT personnel have been conducted for future posting of updated Ozone Issues in the MNRE Website. This is accessed by the public.

Furthermore, a number of Important Ozone Issues pertaining the Phasing out of CFCs have been published in the Samoa Observer Newspaper and the main Television channel for effective awareness of the public towards Ozone issues and results of workshops. Also displays of Ozone boards were carried out at the National University of Samoa's Open Day and Career Day for two years.

6.4 Component 3: Technical assistance and equipment support for servicing/training establishments

6.4.1 Training / Demonstration Equipment:

The Freeze Dry Systems Ltd, Auckland New Zealand was the selected Company for the supply of equipments and the consultant selected was John Campion from the same company. He has been in the refrigeration and vacuum industry business for thirty years.

A whole week Workshop was carried out at the Australian Pacific Technical College Workshop area for the demonstration and trainings were carried out in July 2010.

Representatives from all the ODS Servicing Companies and Importers attended as well as NOC members and Institutions. A total number of 62 participants attended the training and demonstration of equipments.

6.4.2 Equipment procurement:

Procurement of 3 sets of recovery recycling for Refrigeration Service Shops and 2 sets of MAC Recovery and Recycling and selection of shops and distribution of the equipment is completed.

Ongoing / Planned Activities for 2011.

Component 4: Technical Assistance and Equipment Support

6.4.1 Incentive Programme:

Under the TPMP, training and demonstration equipment to the refrigeration and air conditioning servicing industry association was provided with assistance made available in the first tranche. Funding for the second tranche would be used for assisting the country in reducing its dependence on CFC based air-conditioning equipment in Mobile Air-Conditioning (MAC) applications through retrofit incentive program for conversion to alternatives.

This component will cover the following activities:

- Incentive programme for retrofit of 1,000 CFC-based MAC systems at \$30 per car. The NOU would have the flexibility to decide on the focus of their incentive programme on MAC or other RAC equipment depending on prevailing situation. The incentive should not be more than 50% of actual retrofit cost.
- Awareness campaign for popularizing the programme as well as to familiarize the automobile users with the prospective vehicle inspection and registration mechanism and the ban on CFC-based systems after 2009. The awareness activities would be undertaken as a part of the ongoing ODS phase-out initiatives under IS project.

6.5 Component 5: Coordination and Monitoring

National Ozone Committee meetings are held with representatives from Ministry of Commerce, Industry and Labour, Customs Department, Office of the Attorney General, Samoa Refrigeration Engineering Association, Samoa Institute of Technology, Ministry of Finance regularly to discuss any required issues from time to time.

Regular contact with UNEP DTIE, Asia Pacific Regional Network, SPREP, Samoa Refrigeration Engineering Association, the National Ozone Committee, the Private Sector, other government departments/agencies/corporations; and other sections/divisions of the MNRE regarding matters pertaining to the implementation of the Montreal Protocol in Samoa.

7. HCFC Phase out Management Plan

7.1 ODS importation

Primary data on annual imports of HCFCs from 2007 to 2010 was compiled from information from received from importers and cross-checked against Customs Department import data. When the NOU started the implementation of the ODS import licensing system, 11 companies were granted licenses of which six were active (Table 4). Two of these six, BOC Gases and Trade Supplies, were importers/resellers while the rest imported ODS for their own use.

Table 2: Registered RAC companies, 2010

Company	Refrigerants	Equipment
BOC Gases Samoa Ltd	Yes	Yes
Origin Energy Samoa Ltd	Yes	Yes
Samatic Refrigeration Ltd	Yes	Yes
Trade Supplies (Samoa) Ltd	-	Yes
DJ Grevel Refrigeration	-	Yes
Kool Line Refrigeration (Samoa) Ltd	-	Yes
SL Refrigeration Ltd	-	Yes
West End Co. Ltd	-	Yes
Supercool Refrigeration & Air Conditioning	-	Yes

Source: NOU survey

7.2 ODS use and consumption

Samoa consumption of HCFCs is shown in Table 5, with a baseline of 3.88 MT or 2.13 ODP (MT) for Samoa. The survey found that the most common refrigerants were HCFC-22 (HFC-134a and R-404A), R-407C, R-410A and R-507A; there was currently no hydrocarbon-based refrigerant being offered. The importation of CFCs was discontinued in 2003 as a direct outcome of the implementation of the CP and RMP and in response to the TPMP for CFC phase-out. Since the ban on CFC imports, recovered and recycled CFCs and drop-in alternatives were used to meet the servicing and maintenance needs of existing equipment.

Table 2: Estimated HCFC consumption for Samoa, 2005-2010

HCFC	2005	2006	2007	2008	2009	2010	Baseline
(MT)	0.2	0.29	2.31	2.97	3.50	4.26	3.88
ODP (MT)							2.13

Source: NOU survey

7.3 RAC sector

The RAC sector is the only sector consuming HCFCs in Samoa. Since there is no national manufacturing HCFC or HCFC-based equipment, the entire consumption is in servicing of refrigeration and air conditioning equipment.

7.3.1 Domestic refrigeration

Domestic refrigerators are not manufactured in Samoa and the requirements are set and determined by imports. The importation of new non-ODS refrigerators commenced in late 1990s from Australia, New Zealand and other Asian countries. Second-hand HCFC refrigerators are also being imported from Australia and New Zealand.

It was estimated that there were about 30,000 units of HCFC-based refrigerators operating in 2010. With over 90% of households served by the national electricity grid this will lead to increased use of domestic refrigerators. It is more than likely that most villagers will purchase second hand refrigerators, and these communities will need to be informed about the impending phase-out of HCFCs and the proposed incentives to convert their equipment to non-ODS refrigerants.

7.3.2 Commercial refrigeration

Commercial refrigeration equipment includes chest freezers and visi coolers. Chest freezers are mainly used in supermarkets, grocery shops, food product stores and restaurants.

The population of HCFC-based commercial refrigeration equipment in 2010 is estimated at about 700 units. While a significant percentage of existing commercial refrigeration equipment is reaching the end

of its existing life most units, for economic reasons, will be repaired rather than replaced. Second hand equipment is being imported and retrofitted using HCFCs because the new generation refrigerants are expensive to acquire.

The servicing demand in Samoa is very low for commercial refrigeration equipment due to small numbers of existing equipment. It was assumed that 400 gms per unit was required for recharge consumption of commercial equipment during servicing, with about 50% of equipment needing servicing. It is expected that the majority of new commercial equipment will be serviced with non-ODS alternatives.

7.3.3 Industrial refrigeration

Industrial refrigeration equipment is being used primarily for refrigeration applications in food processing industries such as the ice cream factories (about 20 units). About 7 chillers for centrally air-conditioned applications were installed in public buildings in Apia including the new Justice and Court Administration complex.

7.3.4 Mobile air conditioning (MAC)

The usage of vehicles in Samoa has experienced exceptional growth in recent years. As shown in Table 6, the number of registered vehicles more that doubled during 2002-07. The majority of the vehicles imported into the country were second-hand using ODS-based MACs.

Table 3: Number of registered vehicles in Samoa, 2001-2007

Year	Total number of registered vehicles	Light vehicles ¹		Estimated amount of refrigerants (kg)
		Number	% of total	
2001	7,731	6,359	82	4,292
2002	9,196	7,910	86	5,339
2003	11,288	9,932	88	6,704
2004	13,485	12,120	90	8,181
2005	14,400	13,000	90	8,775
2006	15,012	13,603	91	9,182
2007	16,215	14,794	91	9,985

Source: SBS

The amount of 0.9 kg was prescribed by the RAC servicing companies as the average amount of refrigerant contained in each imported vehicles. It was also assumed that 75% of the light vehicle population have MAC units and 30% are serviced annually.

7.3.5 Domestic and commercial air conditioning

There are 3,000 installations of HCFC-based room air-conditioning units (mainly in office and commercial buildings, hotels, restaurants and hospitals) with a few in private homes.

7.3.6 Servicing establishments

There were 21 licensed refrigeration service and repair workshops mainly on Upolu Island. Of these, about 14 catered to the domestic, commercial and industrial refrigeration sub-sectors and 7 dealt with the MAC sub-sector. There are a total of about 120 technicians operating in the RAC servicing sector with varying skill and competency levels.

8. Recommendations:

In regards to the recommendations mentioned in the Ozone Research Managers Meeting, 2008. Samoa does not have any further recommendations at this stage.

Samoa is looking forward to participate in this Ozone Research Managers Meeting in order to become fully aware and understand activities planned to be implemented for research and monitoring activities.