PROJECT TITLE: **PROJECT OF THE GOVERNMENT OF GRENADA**
Terminal Phase-out Management Plan for CFCs

IMPLEMENTING AGENCY: UNEP and UNDP

SUB-PROJECT TITLES

(a) Component 1 (UNEP): Establishment of a Monitoring, Evaluation and Reporting Mechanism
(b)Component 2 (UNEP)**:** Enforcement of the Licensing systems and Prevention of Illegal Trade
(c)Component 3 (UNEP): Training and Certification of Technicians and Establishment of an Association of Refrigeration Technicians
(d)Component 4 (UNDP): Provision of Equipment and Retrofit Demonstration

NATIONAL CO-ORDINATING AGENCY: **NATIONAL OZONE UNIT, MINISTRY OF AGRICULTURE, FISHERIES, FORESTRY, LANDS, PUBLIC UTILITIES, ENERGY AND MARKETING AND NATIONAL IMPORTING BOARD (MNIB)**

LATEST REPORTED CONSUMPTION DATA FOR ODS ADDRESSED IN PROJECT

A: ARTICLE-7 DATA (ODP TONNES, 2005)

Annex A Group 1 CFCS	Consumption	Annex B, Groups 11 and 111	Consumption
CFC- 12	0.545	Carbon tetrachloride (CTC)	0.0
CFC -115	0.0	Methyl chloroform (TCA)	0.0

B: COUNTRY PROGRAMME SECTORAL DATA (ODP TONNES, 2005)

ODS	Foam	Ref.	Aerosol	ODS	Solvents	Process agent	Fumigant
CFC	-	0.545	-	-	-	-	-
	-		-	CTC and TCA	0.0 0.0	-	-
HCFC		1.71					

CFC consumption remaining eligible for funding (ODP tonnes)	n/a

CURRENT YEAR BUSINESS PLAN: Country in compliance

PROJECT DATA		2006	2007	2008	2009	2010	Total
ODS #1 CFCs (ODP tonnes)	Montreal Protocol limits	2.985	0.896	0.896	0.896	0	5.673
	Annual phase-out from ongoing projects	**0.0**	**0.0**	**0.0**	**0.0**	0.0	**0.0**
	Annual phase-out newly addressed	**2.985**	0.896	0.896	0.896	**0**	5.673
	Annual unfunded phase-out	**0**	**0**	**0**	0	0	0
ODS #2 (ODP tonnes) TCA and CTC	Montreal Protocol limit	0	0	0	**0**	**0**	0
	Annual consumption limit	0	0	0	0	0	0
	Annual phase-out from ongoing projects	0	0	0	0	0	0
	Annual phase-out newly addressed	0	0	0	0	0	0
	Annual unfunded phase-out	0	0	0	0	0	0
TOTAL ODS CONSUMPTION TO BE PHASED OUT							

Project costs (US $):		2006	2007	2008	2009	2010	Total
Funding for lead agency [UNEP]		xxxxx	xxxxx	xxxxx	xxxxx		xxxxx
Funding for [UNDP]		xxxxx	xxxxx	xxxxx	xxxxx		xxxxx
Total project funding		xxxxx	xxxxx	xxxxx	xxxxx		xxxxx
Support costs (US $))							
Support cost for lead agency [UNEP]		xxxxx	xxxxx	xxxxx	xxxxx	0	xxxxx

Support cost for [UNDP]		xxxxx	xxxxx	xxxxx	xxxxx	0	xxxxx
Total support costs		xxxxx	xxxxx	xxxxx	xxxxx	**0**	xxxxx
TOTAL COST TO MULTILATERALFUND (US $)		xxxxx	xxxxx	xxxxx	xxxxx	**0**	xxxxx

FUNDING REQUEST:

Project costs: **US$** xxxxx
Support costs xxxxx
Total: **US$** xxxxx

Prepared by: UNEP DTIE & UNDP **Date:** May 10, 2006

PROJECT OF THE GOVERNMENT OF GRENADA
TERMINAL PHASE-OUT MANAGEMENT PLAN FOR CFCS

1. PROJECT OBJECTIVES

The objectives of this project are:

a) To enable Grenada to meet its obligations related to phasing out the use of Annex A CFCs under the Montreal Protocol; and
b) To ensure timely, sustainable and cost-effective CFC phase-out through the development and implementation of a combination of investment, training, technical and policy/management support components.

2. BACKGROUND

Grenada is the most southerly of the Caribbean Windward Islands and is located to the north of Trinidad and Tobago and south of St. Vincent and the Grenadines. It is the largest of the three islands (Grenada, Cariacou and Petite Martinique) comprising the independent state of Grenada. which has a total land area of 133 sq. miles and a total population estimated at 90,000 (2002 Census). The economy of this tri-island state is based on tourism and agriculture. Grenada is known as the "Isle of Spice" as cinnamon, cloves, ginger, mace and nutmeg have always been important exports.

Grenada acceded to the Vienna Convention for the Protection of the Ozone Layer and the Montreal Protocol on Substances that Deplete the Ozone Layer on March 31, 1993, the London Amendment on July 12, 1993, the Copenhagen and Montreal Amendments on May 20, 1999. and the Beijing Amendment on January 12, 2004. With an annual per capita consumption of ODSs of less than 0.3 MT, the country is classified as an Article 5 Country under the Protocol. In addition, with a total annual consumption of less that 360 ODP tonnes, the country is further classified as a Low ODS Volume Consuming country (LVC). The Country Programme, incorporating the national strategy and action plan to phase out ODS in line with the Montreal Protocol schedule was approved by the Executive Committee of the Multilateral Fund (MLF) in December 1999. The Country Programme identified activities and initiatives Government and industry would undertake to achieve ODS phase-out, including institutional strengthening, public awareness activities, development and enforcement of regulations and recovery and recycling of CFCs

As Grenada is neither a producer nor an exporter of ODS, consumption, as defined under the Montreal Protocol, is equal to imports. Between 1999 and 2004, with the assistance of the MLF, Grenada implemented a number of projects and activities to reduce its consumption of CFCs in the refrigeration and air-conditioning (R&AC) servicing sector, the main sector where ODSs are consumed in the country. The projects and activities were incorporated into Grenada's Refrigerant Management Plan (RMP), which was approved by the Executive Committee of the Multilateral Fund at its 30th Meeting.. All of the activities identified in the approved RMP have been completed or are near completion and the country is now ready to proceed with a Terminal Phase out Management Plan.

Grenada is in the process of preparing comprehensive legislation in the form of an Act to support the ODS phase out in the country. This Act is expected to be passed by mid-2006. However, in the interim, the country has prepared for gazetting Ministerial Orders prohibiting the importation of equipment containing ozone depleting substances as well as introducing a quota system for imports of CFCs and requiring licenses for importing CFCs and retrofitting equipment

containing ODS. The ODS Licensing and quota system was effected March of 2006. With the implementation of the Licensing System, consumption (imports) of CFCs is to be completely phased out by December 31st, consistent with the Montreal Protocol schedule.

This TPMP was prepared by UNEP, with the support of UNDP and an international consultant. Assistance was also provided by the National Ozone Unit and a local consultant hired to undertake data collection and analysis.

2.1 Impact of Hurricane, Ivan September 2004, A Marco Assessment of the Social and Economic Direct and Indirect losses and secondary effect of Hurricane Ivan on the Grenada Economy conducted by the Organization of Eastern Caribbean States September 2004 (OECS)[1] tabled that overall damage were EC$2.2 billion or twice the current value of GDP. Direst damage to infrastructure (commercial, industrial government and domestic) was estimated at 90% in accordance to this report. This TPMP is therefore being prepared in the aftermath of this national disaster. In the preparation of this project document consideration has to the given that the policy and consumption trend prepared in the Country Programme in 1998 is not now indicative of the present situation of this country. Additional ODS consumption reported in 2005 may be directed to the economic status of country post 2004.

UNDP and UNEP assessment of the equipment provided under the RMP and the existing stock of equipment whose continued reliance of Annex A Group 1 CFCs were as follows,

- **a.** The AC- and refrigeration units in the domestic, commercial, industrial and governmental sectors will require repairs (and servicing). The refrigerant charge may have already been loss or system may have to be down loaded in order to effect repairs
- **b.** The Recovery and recycling equipment provided by UNDP and UNEP were all water logged and not used since this natural disaster.
- **c.** No national skills are available to repair the R and R equipment as the Training provided by UNEP and UNDP did not have provided training in this type of service repairs to the equipment provided.
- **d.** Based on the country situation conducted by UNEP and UNDP for the preparation of this TPMP, the evaluation is that the equipment provided under the RMP is not functional.

3.0 Institutional and Regulatory Framework

The activities related to ozone layer protection and the implementation of the Montreal Protocol are coordinated by the National Ozone Unit which is located within the Department of Energy based in the Ministry of Agriculture, Fisheries, Forestry, Lands, Public Utilities, Energy and MNIB Some of the key initiatives undertaken by the NOU to date include:

a) implementation of national projects and activities funded by Montreal Protocol Multilateral Fund (MLF) and including the RMP, Institutional Strengthening and Country Programme;
b) Compliance management
c) Coordinate the national stakeholder committee of the Montreal Protocol. This is a multi/stakeholder committee comprising of both private and public sectors stakeholders.
d) formulating guidelines and regulations as necessary for policy implementation;
e) organizing and executing public awareness initiatives and campaigns to promote ozone layer protection at the consumer level;

[1] Summary of this report was published on the Grenada Today, Friday October 8th, 2004, page 23.

f) Coordination with other ministries, departments and industry representatives on matters related to the national phase out strategy and its impact on consumption.
g) participating in regional and international Montreal Protocol meetings

3.1 Licensing system for the import of CFCs.

The country has completed the establishment of licensing system in March of 2006 via a Ministerial Orders prohibiting the importation of equipment containing ozone depleting substances and introducing a quota system for imports of CFCs and also licenses for importing CFCs and retrofitting equipment containing ODS. By these means, Grenada has legislatively complied with its Montreal Protocol obligations to phase out the use of CFCs. Effective March 2006, The granting of licenses to import ozone depleting substances (ODSs) and the assignment of annual quotas to importers will be the responsibility of the Deputy Prime Minister with responsibility for Agriculture, Fisheries, Forestry, Lands, Public Utilities, Energy and MNIB, acting on the advice of the National Ozone Officer. The quotas are based on the baseline consumption adopted by the Government of Grenada and are assigned to importers according to their historic market share.

Grenada is also in the process of preparing an Act to give effect to Grenada's obligations under the Vienna Convention for the Protection of the Ozone Layer and the Montreal Protocol on Substances that Deplete the Ozone Layer by controlling the import, sale, storage and use of ozone depleting substances and for related matters. This Act is in advance stage of completion and is expected to be passed in 2006.

3.2 Controls on imports of products and equipment containing or using ODS

The Ministerial Orders, March of 2006 have placed an immediate ban on the importation of equipment and appliances which use or contain CFCs. The Legislation also prohibits the importation of certain aerosols, foams, solvents and fire-fighting equipment which depend on, or contain CFCs. Under this legislation, any appliances or vehicles incorporating CFC-based technology imported into the country must be retrofitted at the importer's expense before it is released by the Customs.

4.1 Industry Structure

Grenada neither produces nor exports CFCs and there are no manufacturing or assembly operations that use CFCs as an input. Hence all consumption, which is equal to imports, is entirely in the R&AC sector for the servicing of existing CFC-based appliances, systems and equipment.

It should also be noted that the country does not consume the substances listed in Annex A Group 11 halons, Annex B Group II (carbon tetrachloride), Annex B Group III (methyl chloroform) and Annex E Group 1 (methyl bromide). Grenada has voluntarily maintained a zero consumption the use of these ODS without requesting additional assistance form the Montreal Protocol Multilateral Fund. Under the established Licensing system no license for imports will be issued for the importation of these substances.

4.2 Upstream suppliers

Production
As indicated, there is no production of CFCs in Grenada. The entire domestic demand is met through imports mainly from Antigua and Trinidad and Tobago.

Imports
The Government of Grenada has identified one major importer for CFCs who supplies the local market. However, there are also some occasional importers who import for their own use. Any of these may apply for a license to import CFCs. However, under the legislation, the total of the licenses to be issued in any one year will not exceed the quantities stipulated by quota.

Distribution
The CFCs imported are sold to the users directly by the importers or indirectly through secondary distributors or retailers.

4.3 Downstream users

Manufacturing
There is no manufacturing activity in Grenada involving the use of CFCs as intermediate products or process inputs.

Servicing
There are 7 service establishments in the mobile air conditioning (MAC) sub-sector and in the domestic and commercial sub sectors, there are about 10 service establishments with an additional 50 occasional/informal service providers offering services. Some of the MAC service establishments also service fixed systems, but it appears that the occasional service providers service both fixed (mainly domestic) and mobile systems. The larger hotels have in-house services. It is estimated that there is a total of 100 technicians operating in the formal and informal sectors, of which about 40 have been trained in either good practices in refrigeration servicing, or recovery and recycling of refrigerants, or both.
Based on market influences service technicians are practicing drop in replacements. However there are no established mechanisms of monitoring this practice.
Additionally refrigerant change labels are not made on the respective system. System may read as having CFC12 can be containing alternative refrigerants.

End-users
The end-users of products containing CFCs are in the domestic, commercial, and mobile air conditioning sub-sectors. The few chillers in operation do not use CFCs and the scale of industrial operations does not merit separate consideration from the commercial sub sector.

5.0 Description of Refrigeration and Air Conditioning Sector, Use and Demand for CFCs

In order to assess the status and results of the implementation of the RMP and to identify constraints and needs for further assistance for ODS phase-out, UNEP in consultation with

UNDP commissioned a comprehensive survey of the R&AC sector in Grenada with assistance from a local consultant, during November – December 2005 and January 2006. Questionnaires designed to assess the baseline conditions related to the usage of CFCs were circulated within the industry and supplemented with visits to facilities of service establishments and end-users. There was also a mission by an international expert on behalf of UNEP and UNDP to Grenada in January 2006. The CFC use figures obtained from the survey and interactions were correlated with the CFC import data from the relevant government departments. The results of the survey and interactions are summarized as below.

5.1 Domestic refrigeration equipment

According to the Government's statistical office, there were 33,000 households in Grenada in 2005 with the population of refrigeration equipment amounting to 24,000. About 40% of these appliances are CFC-based. With an average CFC-12 charge of 0.2 kg in each appliance, the total in-situ stock of CFC in this sub sector is 1.92 MT. The CFC-based equipment is generally the older stock, requiring service on average once every two years. With an average recharge of 0.2 Kg per service and with 70% of service operations requiring a recharge, the annual consumption in this sub sector is estimated at 672 kg. No recovery of refrigerants is practiced in the domestic sector. It must also be noted that R-12 compressors for domestic appliances are readily available on the local market for prices ranging from US$100 - $150, depending on their capacity, while similar R-134a compressors cost on average 30% more that their R-12 equivalents. The average life of domestic appliances in Grenada is estimated to be 10 years.

Commercial & industrial refrigeration equipment

There are 5 major importers of commercial and industrial refrigeration equipment and components in Grenada. The current population of commercial refrigeration equipment, excluding cold rooms is estimated at about 800 with an average initial charge of 2.0kg. Of these, 20% are estimated to contain R-12 refrigerant. These are the older stock, requiring service annually and in 60% of the service operations, a full charge is required. Based on these estimates, the current demand for R-12 in this sub-sector is 192 kg. The average life of this equipment is 15 years.

In addition, there are about 170 cold rooms/ walk-in freezers, each containing an initial charge of 6.8kg. 15% of these are estimated to use R-12 and 40% require a full service, including a full recharge of the system annually. These estimates yield a current annual demand of 69 kg. The average life of this type of equipment is estimated to be 20 years.

It is estimated that the islands have 600 water fountains and display cabinets, each using 1 kg of refrigerant and 15% of these are estimated to still use R-12. 40% of these require service incorporating a full recharge of the system annually. These estimates point to an annual demand of 36 kg. This type of equipment has an average useful life of 15 years.

An estimated 15 refrigerated trucks are in operation in the islands. They are charged with 10 kg of refrigerant, and 50% of them still use R-12 refrigerant. With an annual service cycle, and 80% of the services requiring a full recharge of the system, the annual demand in this sub sector is estimated to be 60 kg. Refrigerated trucks are estimated to have a useful life of 20 years in Grenada

Based on the above, the estimated demand for R12 refrigerant in the commercial and industrial sector is 357 kg.

5.3 MAC sector

The Grenada Government reports a population of 50,000 motor vehicles on the islands with 40% of these vehicles containing R-12 air conditioning systems. Industry practitioners estimate that 50% of these require a service involving a full recharge of the system every three years. With an average charge of about 1 kg per unit, based on these estimates, the annual demand for R-12 in the MAC sub sector annually is 3,333 kg. The average scrap age for vehicles in Grenada is estimated at 15 years.

5.4 Summary

A summary of the CFC consumption for 2004 in servicing by sub-sectors, in the R&AC Sector in Grenada is tabulated below:

Table 1: Summary of Estimated CFC Usage for 2004

Sub-sector	CFC use (ODP T)
Domestic refrigeration appliances and equipment	0.67
Commercial/Industrial refrigeration equipment	0.36
MAC equipment	3.33
	4.37

The actual consumption for 2005 was 0.545 . There is clearly a big difference between the estimated and actual consumption (for 2004 and 2005). The low figure for 2005 is probably the result of the effects from Hurricane Ivan.

The higher estimated consumptions for 2004 can be due to the following
1. Unregistered importation given that the licensing system was not yet in force
2. Systems labeled as R12 however are using drops in. This is especially so for the MAC sector

However the relative distribution amongst the sectors is representative.

5.5. Prices of refrigerants

A summary of prevailing average market prices (including taxes) in 2005 of various refrigerants in Grenada is tabulated below:

Table-2 Grenada – Prices of selected refrigerants

Refrigerant	Price (US$/kg)
CFC-12	25.74
HCFC-22	30.95
R-502	56.54
HFC-134a	88.22

As compared to the situation in many other Article 5 countries, the price of CFC-12 is lower than for HFC-134a. However, importers indicated that new shipments are likely to see a 50% increase in the price of CFC-12 and a smaller (between 10% and 20%) increase in the prices of other refrigerants. If these increases occur, the prices of CFC-12 and HFC-134a are likely to become more comparable.

5.6 **Table 3. Forecast of Unconstrained Consumption (ODP Tonnes)**

(Source:Grenada Country Programme –February 2000)

Substance	1998	1999	2000	2001	2002	2003	2005	2006	2007	2008	2009	2010
CFC-11	0,549	0,574	0,600	0,627	0,655	0,684	0,747	0,781	0,816	0,853	0,891	0,931
CFC-12	4,109	4,294	4,487	4,689	4,900	5,121	5,592	5,843	6,106	6,381	6,668	6,968
CFC-115	0,609	0,633	0,662	0,692	0,723	0,755	0,825	0,862	0,901	0,941	0,983	1,028
TOTAL	**5,267**	**5,501**	**5,748**	**6,007**	**6,277**	**6,560**	**7,164**	**7,486**	**7,823**	**8,175**	**8,543**	**8,927**

From the consumption trend forecast in the Country Programme, Grenada has exceeded reduction in ODS consumption.

6.0 Results from the Refrigerant Management Plan projects

Grenada's Refrigerant Management Plan was approved by the Executive Committee of the Multilateral Fund in September, 1999. The actions required by the Government of Grenada for the country to be compliant with the phase out schedule of the Montreal Protocol as it relates to Annex A Group I CFCs (at least up to 2005, when the 50% reduction in consumption comes into force) were outlined in this document. In accordance with this RMP, the following projects have been implemented.

6.1 Training in Good Practices in Refrigeration:

Training in Good Refrigeration Practices consisted of two sub-components, viz, Phase 1, the Train-the-Trainers programme in Good Practices in Refrigeration which was conducted in August 2001,and under which 17 "trainers" were trained and Phase 2 which commenced in July 2004 when 22 technicians were trained. ODS equipment received under this project was assigned to the T.A. Marryshow Community College was used by the institute in their Refrigeration and Air Conditioning Technicians training programme. Both training components included exposure to fixed and mobile systems.

Equipment provided under this project included: a recovery system, an electronic scale, a refrigerant identifier, 2 vacuum pumps, 8 leak detectors and associated equipment.

6.2 Training of Customs Officers

This project, which was implemented in April 2005 was based on the three-day "train the trainers" approach developed by UNEP,. It resulted in the training of 14 "trainers" who in turn trained an additional 40 officers in two separate workshops. The Customs Department has incorporated the module "Training in Monitoring of Imports and Exports Containing ODS" into its regular training programme for new officers.

6.3 Recovery and Recycling (R&R) Programme

The R&R programme initiated in October 2001 commenced with the training of 20 technicians in recovery and recycling of refrigerants by an international consultant. The training included R&R for both fixed and mobile systems. Approximately 20 technicians received this training over a three day period. As part of this project, 4 recovery units were provided. These machines were located to the TA Marryshow Community College for use in training and commercial recycling. However whereas the equipment has been extensively used for training purposes, there has been little use recorded for commercial purposes.

Table 4: Refrigerants recovered since October 2001 (in kilograms) and under the RMP

Refrigerant	2001-2002	2002-2003	2003-2004	Total Recovered	Amount reused
R-12	0	10	0	10	10
R-22	2	0	46	48	48

From September 2004, the equipment could not have been used as they were damaged by Hurricane Ivan. No data were therefore collected from this period.

6.5 RMP Budget:

Funding for RMP projects was as follows:

a.	UNEP Training in Good Practices in Refrigeration	US$ 33,000.00
b.	UNEP Training of Customs Officers	US$ 36,700.00
c.	UNDP Recovery and Recycling Programme	US$ 52,000.00
	Total value of all projects	**US$ 121,700.00**

7.0 CFC CONSUMPTION TRENDS AND STRATEGY FOR PHASE-OUT

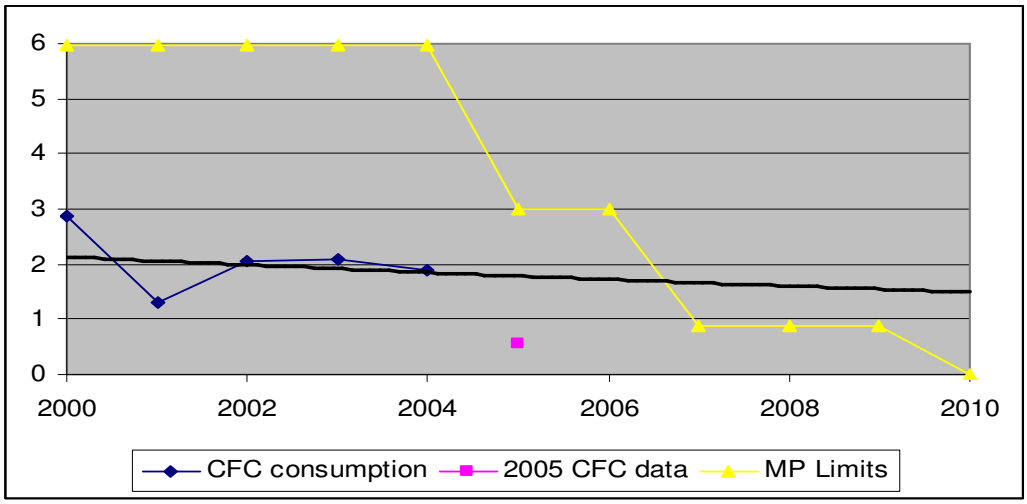
The reported consumption for all CFCs in Annex A Group I for the period 2000 – 2005 is shown in Table 5.

The calculated (estimated) consumption of Annex A CFCs for 2004 (see Table 1 above) was 4.37 ODP tonnes, which exceeded the MP limit for 2005 by 73%. However using the officially reported consumption for the same year of 1.9 0 ODP tonnes, and looking at the projected consumption for the period 2005 to 2010 taken from the Grenada Country Programme, there would still be need for the country to obtain assistance through the TPMP in order to achieve phase out.

Table 5 Reported Consumption (ODP Tonnes)

Year	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**
All Annex A CFCs	2.87	1.31	2.07	2.09	1.90	0.545

Figure 1 Reported CFC consumption, MP limits and consumption trend.



Note: the black line represents a continuation of the consumption trend from 2000 to 2004.

The reductions in consumption achieved could be attributed to a number of factors, including:

- The retirement of older equipment, which are replacement with non-CFC technologies;
- The increasing availability of non-CFC technologies on the local market;
- The public education and awareness efforts of the NOU; and
- Emissions reduction resulting from the application of the skills acquired during the training programmes under the RMP.
- Decrease in economic activities in Grenada.

Notwithstanding these reductions, the achievement of the planned reductions between 2005 and 2009 will depend on a number of additional measures being put in place. Key among these is the enforcement of the quota system and other provisions of the Substances that Deplete the Ozone Layer (Control) Regulations, which gives the Minister the legal authority to issue import quotas in keeping with the planned reductions and the Customs department the authority to enforce the quotas and providing to the private sectors the necessary tolls and capacities. The annual import quota will be allowance to the Montreal Protocol limits.

8.0 DESCRIPTION OF TERMINAL PHASE-OUT MANAGEMENT PLAN

8.1 TPMP projects and activities

The projects and activities proposed in this TPMP are based on consultations involving Grenada's NOU, UNEP, UNDP, refrigeration technicians, service workshop operators, end-users and CFC distributors, as well as an analysis of the completed RMP projects included in Section 6 of this document. Through these consultations and analyses, it became evident that in order to facilitate the complete phase-out of CFCs and to achieve compliance with the Licensing System, a number of key activities will need to be undertaken, including:

- Further training of technicians by extending training in good practices to those technicians, mostly in the informal sector, who did not participate in the initial training provided, or the one available at the college;
- Developing skills in retrofitting of existing equipment, especially MACs and the use of

drop-in replacement refrigerants;
- Further training of customs officers in the enforcement of the Regulations;
- Implementation and enforcement of the ODS import/export licensing system;
- Prevention of illegal trade;
- Establishment of an Association of Refrigeration Technicians;
- Mandating the licensing and certification of technicians through legislation;
- Promoting recovery and reuse practices and the use of R&R equipment through awareness-raising and promotion:
- Development of a Code of Good Practice;
- Providing additional recovery equipment, particularly for the MAC sub-sector, with obligations by selected owners of the equipment to report regularly on quantities of CFCs recovered, recycled and re-used; and
- Financing retrofitting where feasible, in the MAC and fixed systems sectors.
- Monitoring, evaluation and reporting on implementation of all the projects included in this TPMP

The activities proposed above are grouped into four project proposals with associated implementation schedules and budgets in Annexes 1 - 4. This approach was taken because the Government sees these activities as occurring under four broad areas of intervention.
These are:

- Creating and/or strengthening the enabling environment to facilitate the smooth transition to a CFC-free economy;
- Investment interventions to achieve specific consumption reductions; and
- Monitoring, reassessments of the impacts of interventions and realignment of interventions based on the monitoring and reassessment exercises.
- Rebuilding on the resource capacities human and technological lost due to Hurricane Ivan

In this regard the Government views this TPMP and the projects contained there-in as a set of integrated activities designed to be mutually supportive of each other, but with built in flexibility to allow for a refocusing of the specific interventions to achieve maximum impact on consumption reductions. The Government proposes to undertake these reassessment and refocusing activities in collaboration with UNEP, who is the lead Implementing Agency for the implementation, monitoring and reporting on this TPMP, and requests the Executive Committee to permit some flexibility in the implementation of the project activities, with the understanding that the total budget remains fixed at the level to be approved and the Government will not request further financial support to phase the use of Annex A Group I CFCs. Against this background, the activities proposed under this TPMP are grouped into four projects, each incorporating synergistic activities designed to help the country achieve the objectives stated in Section 1.

8.1.1: Component 1: Establishment of a Monitoring, Evaluation and Reporting Mechanism

Based on the experiences gained and lessons learnt during the implementation of the RMP, the NOU capacity needs to be strengthened. This is because the NOU does not have adequate staff (both in numbers and capacities) for effectively executing a project of this nature. Therefore, a project management unit (PMU) will be established with responsibility to monitor project implementation, report on progress, monitor the impact of projects and recommend remedial actins if project implementation is delayed or impacts not achieved. This will allow for the timely and effective implementation of the TPMP and the attainment of the expected impacts.

This Monitoring, Evaluation and Reporting Mechanism is also particularly important for Grenada given the disruption of the ODS phase out trend on the aftermath of Hurricane Ivan.

Against this background, the PMU will:

a. Manage the implementation of the TPMP on a daily basis;
b. Assist UNEP/UNDP to conduct the verification of the CFC consumption and demands
c. Monitor the implementation of each sub project component against the milestones set;
d. Prepare Annual Implementation Programmes;
e. Provide input into the preparation of Annual Implementation Plans;
f. Provide periodic reports on all sub projects to the National Ozone Office, the Implementing Agencies and the Multilateral Fund Secretariat;
g. Conduct annual performance audits;
h. Prepare Annual Progress report;
i. Identify and report on deadlines missed, and recommend remedial action;
j. Assess and report on the impact of projects against anticipated impacts; and
k. Make recommendations on adjustments to projects to maximise impact on consumption reduction

As the lead Implementing Agency, UNEP will be responsible for this activity, for which a budget of US$ 50, 000.00 is requested.

8.1.2 Component 2: Enforcement of the Licensing systems and Prevention of Illegal Trade:

With the entry into force of the ODS Regulations, the NOU, the Customs department and other enforcement agencies have a legal basis on which to monitor and control trade in ozone depleting substances and related technologies. The Customs training completed in 2004 under the RMP was conducted in preparation for this. In addition, the ports of entry on the three islands should be provided with CFC identification equipment to ensure effective enforcement of the regulations. Further, given the scenario that through the enforcement of the quota system there will be a shortfall in supply when compared to demand, and the fact that there are several ports of entry as well as other points on the coastline through which goods can, and do enter the country undetected, the conditions will be conducive to illegal trade practices. Under this component, special activities will be undertaken to address this threat. Hence, under this component, the following activities will be undertaken:

- Training of about 100 Customs officers and other stakeholders, including the Coast Guard, Customs Brokers, Trade Officials and Standards Officers in the monitoring and control of trade in ozone depleting substances;
- Provision of detection equipment; and
- Design and Implementation of an Illegal Trade Prevention Network.

The cost of this sub project will be US$40 000 and will be implemented by UNEP.

8.1.3 Component 3: Training and Certification of Technicians and Establishment of an Association of Refrigeration Technicians

This project will aim to strengthen good refrigeration practices, including recovery and recycling, and retrofitting of fixed and mobile systems using drop in replacement refrigerants by building

on the progress that has already taken place under the related training programmes under the RMP. The specific activities to be undertaken are:

- providing training in good practices to an additional 60 refrigeration technicians, mostly from the informal sector, using the local expertise developed under the RMP;
- mandating the certification of technicians through the Substances that Deplete the Ozone Layer (Control) Regulations;
- establishing an Association of Refrigeration Technicians;
- developing, publishing and distributing to refrigeration technicians a Code of Good Practice;
- promoting Recovery, Recycling and Reuse, and good practices through an awareness-raising campaign;
- develop skills in retrofitting of fixed and MAC systems, with emphasis on the use of drop-in replacements for CFCs;

This component of the TPMP is to be implemented by UNEP at a total cost of US$ 40 000.00 between September 2006 and December 2009. Together with Component 4, it is expected to achieve a reduction of 2.985 ODP tonnes of CFCs up to the end of 2010.

8.1.4 **Component 4: Provision of Equipment and Retrofit Demonstration**

The objectives of this component are two fold, viz:

a) To provide qualified service technicians with the tools and equipment necessary to improve servicing practices, thereby reducing on emissions of CFCs; and
b) to demonstrate and promote the use of non CFC drop in replacement refrigerant blends to retrofit both mobile and fixed refrigeration systems.

These objectives will be achieved through:

i) The provision of multi refrigerant recovery equipment to qualified technicians in the MAC and fixed systems sub sectors on a case by case basis as well as basic servicing tools such as brazing equipment, vacuum pumps, scales, leak detectors, storage cylinders, pressure gauges etc, to enable them to better implement the skills to be acquired under the training component; and
ii) Two small retrofit demonstration projects to encourage the use of drop in refrigerant replacement blends in the MAC and fixed systems sub sectors to demonstrate the use of these blends. Replacement blends to be decided upon (e.g. R413a) will be provided to undertake the demonstration projects as well as to introduce them to the market.

In addition, to the extent to be determined, incentives will be provided to end users to retrofit existing CFC-based equipment which have a useful life beyond 2009.

The total cost of this component, to be implemented by UNDP is US $120 000. It will be implemented between July 2006 and December 2009 and is expected trigger the voluntary retrofitting of CFC-based equipment, resulting in the elimination of 2.985 ODP tonnes of CFCs by the end of 2009 (together with Component 3).

8.2 Expected impact of TPMP on total demand and consumption

The expected impacts of each of the TPMP components are further discussed in Annexes I to IV of this document. However, the following table provides a summary of these expected impacts on an annual basis and, cumulatively up to the end of 2010.

Table 6: Expected impacts of TPMP projects (ODP T)

Comment [ADubrie1]: Table to be adjusted for Grenada > WE will ask Mr T for advise

Project component	2006	2007	2008	2009	2010	Total
Calculated consumption (MP limits)	2.985	0.896	0.896	0.896	0	5.673
Permanent reductions from retrofit incentive programme	0	0.30	0.60	0.90	0.90	2.70
Strengthening of Recovery and Reuse, training and promotion of good practices	0.75	1.56	0.76	0.22	0.91	4.20
Net annual demand	1.85	0.56	0.56	0.56	0	

I would remove this table, or adjust it to say that between component 3 & 4 we will achieve the total reduction before 2010.

As indicated in Table 6, the total phase-out required between 2006 and 2010, over and above quotas to be assigned under the Licensing system is estimated to be 5.673 ODP tonnes.

9.0 ACTIVITIES PROPOSED UNDER THE TPMP AND EXPECTED IMPACT

As part of the information gathering exercise undertaken to help prepare this TPMP, a stakeholder consultation was convened to, inter alia, assess the perceived needs of the service sector to meet the consumption limitations set by the Montreal Protocol. In the preparation of this document it should be considered that the equipment given under the RMP was destroyed in 2004 by Hurricane Ivan. This part of the consultation identified a number of areas for intervention which were crystallized into the following nine elements:

a) Further training of technicians to cover:
   - ✓ Retrofitting, with emphasis on the use of drop-in replacements;
   - ✓ Recovery and Recycling;
   - ✓ More in-depth exposure to servicing of MACs
b) Establishment of as Association of Refrigeration technicians;
c) Development and implementation of a Code of Good Practices in the refrigeration service sector;
d) Introduction of a mandatory certification scheme for technicians;
e) Establishment of Certification programme for Practitioners in the sector
f) Provision of recovery machines and associated tools and equipment;
g) Speedy enactment of the legislation to give effect to the import/export licensing system;
h) Training of enforcement personnel;
i) Incentives to encourage consumers to retrofit their equipment; and
j) Public awareness;

The activities proposed above were discussed further with the NOU and relevant government representatives and based on those discussions they are grouped into three broad areas of intervention, viz:

- Capacity development to reduce demand for Annex A CFCs during repairs and servicing

of equipment and to rebuild on capacities and other institutional support lost in the impact of Hurrican Ivan

- Reducing future demand for Annex A CFCs; and
- Strengthening capacity to monitor and control trade in CFCs and related equipment, including the prevention of illegal trade.
- Management of zero consumption and demands of the ODS already phase out or having zero consumption

In this regard the Government views this TPMP and the projects contained there-in as a set of integrated activities designed to be mutually supportive of each other, but with built in flexibility to allow for a refocusing of the specific interventions to achieve maximum impact on consumption reductions. The Government proposes to undertake these reassessments and refocusing activities in collaboration with UNEP, who is the lead Implementing Agency for this TPMP, and requests the Executive Committee to permit some flexibility in the implementation of the project activities, with the understanding that the total budget remains fixed at the level to be approved and the Government will not request further financial support to phase out the use of Annex A CFCs. Against this background, the activities proposed under this TPMP are grouped into three projects, each incorporating synergistic activities designed to help the country achieve the objectives stated in Section 1.

In addition, each sub project listed in the Annexes includes funding to monitor, evaluate and report on progress with their implementation and their impact on consumption. To this end, a national monitoring mechanism will be established. However, UNEP and UNDP will explore the opportunity to strengthen this activity through the establishment of a sub regional monitoring mechanism, to be financed by combining the relevant allocations from the countries with approved TPMPs. This approach will build synergies and allow for a more effective monitoring programme to be established. Similar sub/regional mechanism was proposed in St. Kitts/Nevis and Dominica TPMPs the approved at the 48th meeting of the Montreal Protocol Executive Committee

10. TOTAL COST AND FINANCING OF TPMP

Based on the guidelines of the Executive Committee, Grenada is entitled to receive a total of US$205,000.00 plus 50% of the amount approved under its RMP to fund its TPMP. Hence the total available to the country is US$ (205 000 + 61,050 = US$ 266,050. However, the total requested to fully fund the projects in this TPMP is US$ 250 000.00. The specific activities will be undertaken by UNEP or UNDP, based on their expertise and experiences as Implementing Agencies. The funding is to be disbursed in 4 annual tranches shown in Table 7 below, with the value of each determined on the basis of the milestones set for the particular year.

Table 7 -Proposed disbursement schedule (USD)

Project	**1st tranche (Sept. –Dec 06**	**2nd tranche (Jan.-Dec. 07)**	**3rd tranche (Jan.-Dec. 08)**	**4th trance (Jan.–Dec. 09**
Component 1 (UNEP)	xxxxx	xxxxx	xxxxx	xxxxx
Component 2 (UNEP)	xxxxx	xxxxx	xxxxx	0

Component 3 (UNEP)	xxxxx	xxxxx	xxxxx	0
Component 4 (UNDP)	xxxxx	xxxxx	xxxxx	0
Totals	xxxxx	xxxxx	xxxxx	xxxxx

11. TPMP MILESTONES

Consistent with the approach taken under the MLF for TPMPs, the disbursement of the second, third and fourth funding tranches would be contingent on the achievement of certain milestones. UNEP and UNDP will be responsible for verifying the achievement of the milestones at the end of each year prior to, and as a condition for the release of funding for subsequent years. The milestones to be achieved and verified are as follows:

December 2006

- Assist the NOO in the enforcement of the ODS Licensing system established in March of 2006 .
- Preliminary discussions on the establishment of an Association of Refrigeration Technicians:
- Initial discussions on criteria for the retrofit Incentive Scheme;
- One training workshop for Customs officers and other stakeholders;
- Training of technicians in good practices
- Procurement of equipment to facilitate the practicing of the skills acquired
- Initial discussions on designing of the Illegal Trade Prevention Network
- Monitoring and evaluation
- Enactment of the Act for the protection of the Ozone Layer

December 2007

- Further training of technicians and distribution of equipment:
- Commencement of training in Good Practices, Recovery, Recycling and Reuse of Refrigerants and Retrofitting, including the use of drop-in replacements for fixed and MAC systems;
- Promotion of the Programme;
- Establishment of an Association of Refrigeration Technicians
- Development of a Code of Good Practice
- Finalization and implementation of the Retrofit Incentive Programme
- Further training of Customs Officers;
- Amendment of the Montreal Protocol Regulations to require licensing of technicians;
- Implementation of the Illegal Trade Prevention Network
- Monitoring and evaluation

December 2008:

- Continuation of retrofitting incentive programme
- Further training of technicians;
- Further training of customs officers

- Meetings of Illegal Trade Prevention Network
- Monitoring and evaluation reports

December 2009:

- Continuation of retrofitting incentive programme
- Further training of technicians;
- Further training of customs officers
- Meetings of Illegal Trade Prevention Network
- Final monitoring and evaluation reports

Based on the expressed wish of the Government of Grenada to have some flexibility in the implementation of the projects under this TPMP, the above milestones may require some adjustment if either the order or scope of any of the sub-activities are varied to achieve greater impact on reducing consumption. In all such cases this will be done in collaboration with the relevant Implementing Agency.

TPMP COMPONENT 1

ESTABLISHMENT OF A MONITORING AND EVALUATIONPROGRAMME

PROJECT COVER SHEET

COUNTRY	Grenada
SECTORS COVERED	Refrigeration servicing sector
PROJECT TITLE	TPMP Monitoring and Evaluation Programme
PROJECT IMPACT	Ensuring the effectiveness of all projects proposed within the TPMP
Remaining unfunded consumption	2.985 ODP tones 5.673
Current (2004) consumption	1.900 ODP tones
Refrigeration sector consumption	2.985 ODP tones
Servicing sector consumption	2.985 ODP tones
Project cost	US$ xxxxx
Government Contribution	In kind
Amount requested from the MLF	US$ xxxxx
Implementing Agency Support Cost (13%)	US$ xxxxx
Total Cost of Project to the MLF	US$ xxxxx
Implementing Agency	UNEP
National Coordinating Agency	National Ozone Unit

Comment [MSOffice2]: Mr T. should it be the 5.673 instead? We would then have to change that in all the four components. Kasper

Project Summary: The TPMP monitoring programme will ensure the effectiveness of all the projects proposed within the TPMP through constant monitoring and periodic evaluation and reporting of the impacts of the projects against agreed milestones, as well as recommendations on corrective measures when milestones are not met.

Impact of Project on the Country's Montreal Protocol Obligations: This project will contribute to the country meeting its phase out schedule by ensuring that the projects are executed on time and the impacts are realized.

PROJECT DESCRIPTION

1.0 **Objective:**

To ensure the effectiveness of all projects within the TPMP through constant monitoring of project implementation, verification of project results, analysis of problems encountered and application of corrective measures.

2.0 Background:

2.1.1 The Government of Grenada proposes within this TPMP to undertake a number of projects to meet its obligations under the Montreal Protocol. In order to achieve the targets and milestones set, it will be necessary to ensure that the annual work plans are executed in a timely manner, appropriate analyses of the impacts conducted and remedial actions taken as necessary. However, based on the experiences gained and lessons learnt during the implementation of RMP, it was realized that the NOU does not have adequate staff (both in numbers and capacities) for project implementation and data reporting. As a result, the planned implementations were not realized on time. This TPMP is more demanding than the RMP and as such it is necessary to have resources dedicated to ensure the timely and effective implementation of all components of the TPMP. To this end it is proposed to establish a separate project management unit to, inter alia, oversee the implementation of all components of the project.

3.0 Approach:

Immediately following the approval of the TPMP, a monitoring, evaluation and reporting protocol will be designed for all components of the project. This will be done under the guidance of UNEP and will be informed by the following functions of the project management unit to be established under this component:

- Manage the implementation of the TPMP on a daily basis;
- Monitor the implementation of each sub project component against the milestones set;
- Provide periodic reports on all sub projects to the National Ozone Office, the Implementing Agencies and the Multilateral Fund Secretariat;
- Identify and report on deadlines missed, and recommend remedial actions;
- Assess and report on the impact of projects against expected impacts;
- Make recommendations on adjustments to projects to maximize their impact on consumption reduction;
- Assist UNEP and UNDP to conduct the verification of the CFC consumption and demand;
- Provide input into, and assist with the preparation of Annual Implementation Plans;
- Conduct annual performance audits; and
- Prepare Annual Progress reports.

3.1 In addition to the design of the monitoring and evaluation protocol, a Project Management Unit (PMU) will be established to implement the M&E protocol. The PMU will manage and coordinate the TPMP implementation and manage the day to day activities under guidance and support of the NOU, UNEP and UNDP. The PMU will be designated with the tasks listed above and will have clearly defined the

performance indicators. To this end, appropriate staff will be recruited and its management and reporting arrangements set in consultation with UNEP and the respective ministry , under which the National Ozone Unit is housed

4.0 Expected impacts

The establishment of the Project Management Unit along with the M&E protocol it will be required to follow will ensure the timely completion and effectiveness of all projects proposed within this TPMP, thus contributing to the efforts of the government to meet its 2007 and 2009 obligations under the Montreal Protocol.

5.0 Milestones:

The milestones below are based on the TPMP being approved by the Executive Committee at its 48th Meeting in April 2006 and funding made available through the Implementing Agencies by the start of the third quarter of 2006.

Table 7: Milestones for Project Monitoring Evaluation and Reporting

Activity	2006				2007				2008				2009			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Establishment of M&E protocol and unit			x	x												
Reporting on sub projects				x	x	x	x	x	x	X	x	x	x	x	x	x
Assess impacts of projects				x		x		x		X		x		x		x
Verification of consumption and demand						x				X			x			
Preparation of annual implementation plans				x				x				x				x
Annual performance audits					x				x				x			
Annual progress reports					x				x				x			
Terminal report																x

6.0 Budget:

The budget for this project, which will be implemented by UNEP is as follows:

Table 8: Budget breakdown

	Budget (USD)
Design of monitoring and evaluation protocol	xxxxx
Project staff (based on an average fee of $3000 per quarter, commencing October 2006 to December 2009	xxxxx
Operating costs	xxxxx
Total budget	xxxxx

ANNEX 2

TPMP COMPONENT 2:
CONTINUED ENFORCEMENT OF THE IMPORT/EXPORT LICENSING SYSTEM AND PREVENTION OF ILLEGAL TRADE

PROJECT COVER SHEET

COUNTRY	Grenada
SECTORS COVERED	Refrigeration servicing sector
PROJECT TITLE	Continued Enforcement of the Import/ Export Licensing System and Prevention of Illegal Trade
PROJECT IMPACT	Ensuring that consumption does not exceed Ptr Limits
Remaining unfunded consumption	2.985 ODP tones
Current (2004) consumption	1.900 ODP tonnes
Refrigeration sector consumption	2.985 ODP tonnes
Servicing sector consumption	2.985 ODP tonnes
Project cost	US$ xxxxx
Government Contribution	In kind
Amount requested from the MLF	US$ xxxxx
Implementing Agency Support Cost (13%)	US$ xxxxx
Total Cost of Project to the MLF	US$ xxxxx
Implementing Agency	UNEP
National Coordinating Agency	National Ozone Unit

Project Summary: This project develop the ability of customs officers and other enforcement personnel to monitor and control trade in ozone depleting substances and related technologies and help to prevent related illegal trade

Impact of Project on the Country's Montreal Protocol Obligations: Through this project, the importation of CFCs will be kept to within the Protocol limits for the country and illegal trade will be prevented.

PROJECT DESCRIPTION

1.0 Objective:

The objectives of this sub project are to train the remaining Customs Officers and other stakeholders in the enforcement of the Montreal Protocol Regulations and to prevent illegal trade.

2.0 Background:

With the passage into law the licensing control, the legal conditions for the enforcement of the licensing and quota system as well as the prohibition of imports of equipment incorporating CFC technology are in place. Enforcement of these measures will require a Customs department whose officers are aware of the issues and are capable of enforcing the regulations. With the passing of the Grenada legislation for the protection of the ozone layer,, the legal conditions for the enforcement of the licensing and quota system as well as the prohibition of imports of equipment incorporating CFC technology are in place. Enforcement of these measures will require a Customs department whose officers are aware of the issues and are capable of enforcing the regulations. Under the Customs Training undertaken in October 2004 as part of the RMP in 2004, 23 Customs Officers and other enforcement personnel were trained as "trainers". However, there are some 100 Customs officers stationed at various ports throughout the islands and those who were not involved in the original training will require training in the enforcement of the Regulations if the country is to meet its commitments. In addition to the Customs Officers, an additional 20 other stakeholders, including the Coast Guard officers, Customs Brokers, Trade officials and Standards Officers will be included in this training programme. In addition, given that the projected demand for CFCs will be above the quotas to be allocated, pressures will be brought to bear on supply streams. This can encourage illegal trade, particularly as Grenada is a tri-island state in close proximity to other island states, and with unprotected borders accessible by small crafts. Therefore the prevention of illegal trade is considered to be an important component in the overall phase out strategy of this TPMP.

3.0 Approach:

3.1: Training of the remaining customs officers:

Approximately 100 Customs Officers and other stakeholders have not had training in the monitoring and control of trade in ozone depleting substances and as such are not equipped to enforce the licensing system. Under this component these persons, which includes Customs officers mainly, but will also include other relevant stakeholders such as Customs Brokers, the Coast Guard, Trade Officials and Standards Officers will be exposed to the one day training programme designed during the Train the Trainers component of the original training programme conducted under the RMP in 2004. This training will be conducted by the "Customs trainers" who were trained in 2004 and will require 5 – 7 workshops to ensure that all officers receive the training. Given that some two years would have elapsed since they received their training, a determination will be made at the appropriate time as to whether they will require a refresher course prior to the start of this training.

3.2: Prevention of Illegal trade:

As indicated earlier, there is concern that demand pressures can encourage illegal trade in CFCs through the many points of entry, particularly those without Customs presence throughout Grenada. To address this, an Illegal Trade Prevention Network will be established with nodes connecting the islands and involving both the Customs and Coastguard services. In addition, to the extent possible, coordination will also be established with neighboring island states to establish an information network to cover the cluster of island states that form the northern Lesser Antilles. Its function will be to establish and maintain linkages to share information on the movements of crafts into and between the islands forming the network as well as to devise and implement strategies for search and seizure as necessary. The activities will include:

- Organisation of meetings with high ranking Customs, Police and Coastguard representatives to design the information sharing network, agree on operational details and procedures and decide on cooperation arrangements;
- Collaboration with similar personnel from neighbouring island states to become a member of, and support the network;
- Creation of an Ozone Protection Information Network; and
- Organisation of two annual planning and review meetings to discuss the effectiveness of the systems and make adjustments, as may be needed.

3.3: Milestones:

- One meeting to plan and design the Illegal Trade Prevention Network completed by August 2006
- Creation of the Ozone Protection Information Network by March 2007
- Inter-island dialogue initiated to expand the network to island states in the southern Lesser Antilles by July 2007
- Two planning and review meetings in 2007, 2008 and 2009.

3.4 Time Frame and Budget:

Table 15: Time frame for Project Components

Activity	Time-frame
Further training of Customs officers and other stakeholders	Sept. 06 – Dec 08
Provision of Refrigerant identifiers	Dec. 06- Sep.07
Contact and negotiations with neighbouring islands	March 2007
Design of Illegal Trade Prevention Network	Jul. 06 – Dec. 06
Design and review meetings	Sep. 06 – Dec. 09
Monitoring & evaluation	Dec. 06 – Dec. 09

The cost of this sub project, which will be implemented by UNEP, is as follows:

Table 16: Budget Breakdown by Line Items

Item	Budget (USD)
Further Customs Training	
.4 – 5 training workshops (organization and Training materials)	xxxxx
Travel and DSA (for participants from the outer islands)	xxxxx
Refrigerant identification equipment (6)	xxxxx
Sub-total	xxxxx
	xxxxx
Establishment of Illegal Trade Prevention Network	xxxxx
Local expert for project design and implementation	xxxxx
Establishment of information network	xxxxx
Three meetings (Initial planning meeting and 2 r meetings	xxxxx
Sub-total	xxxxx
	xxxxx
General local assistance, monitoring and reporting	xxxxx
	xxxxx
TOTAL	xxxxx

This sub project is designed to address both issues described above.

ANNEX 3

TPMP COMPONENT 3
TECHNICIANS TRAINING AND CREATION OF AN ENABLING ENVIRONMENT TO PHASE OUT THE USE OF CFC USE

PROJECT COVER SHEET

COUNTRY	Grenada
SECTORS COVERED	Refrigeration servicing sector
PROJECT TITLE	Technicians Training and Creation of an Enabling Environment to Phase out CFC use
PROJECT IMPACT	This project will assist the country to meet its targeted consumption reductions by developing the skills of technicians to avoid the use of virgin CFCs through the employment of better servicing techniques, including the recovery and reuse of refrigerants and the retrofitting of CFC based equipment.
Remaining unfunded consumption	2.985 ODP tonnes
Current (2004) consumption	1.900 ODP tonnes
Refrigeration sector consumption	2.985 ODP tonnes
Servicing sector consumption	2.985 ODP tonnes
Project cost	US$ xxxxx
Government Contribution	In kind
Amount requested from the MLF	US$ xxxxx
Implementing Agency Support Cost (13%)	US$ xxxxx
Total Cost of Project to the MLF	US$ xxxxx
Implementing Agency	UNEP
National Coordinating Agency	National Ozone Unit

Project Summary: This project will train technicians in good practices in refrigeration servicing, including recovery and reuse of refrigerants and the retrofitting of CFC based equipment. It will also enhance the environment in which technicians operate by establishing an Association of refrigeration Technicians, developing a Code of Practice for the industry an mandate the certification of technicians for entry into the profession.,

Impact of Project on the Country's Montreal Protocol Obligations: This project will contribute to the elimination of 2.985 ODP tonnes of CFCs by the end of 2009.

PROJECT DESCRIPTION

This Component will be executed by UNEP and is designed to enhance the ability of technicians to control and eventually eliminate the use of CFCs in the servicing of refrigeration and air conditioning equipment. In addition to providing training to technicians in Good Practices, Recovery and Recycling and Retrofitting, this component will also strengthen the environment in which the technicians operate by developing a Code of Good Practices, support the establishment of an Association of Refrigeration Technicians, develop a Certification Programme for Service Technicians and promoting all the activities listed above.

(i) Additional training for technicians

Approximately 60 technicians who did not receive training under the original RMP will be identified and recruited for training sessions conducted by local experts, using the facilities of the TA Marryshow Community College. While the College's training programme for Refrigeration Technicians contains a module on Good Refrigeration Practices, it is only available to students who register for its courses. Hence, in order to reach the additional 60 technicians (mostly from the informal sector) special workshops will be organized, similar to those which were set up under the RMP.

The proposed training will cover a comprehensive package, including:

- Good Practices in Refrigeration Servicing;
- Recovery, Recycling and Reuse of chemicals; and
- Retrofitting of CFC-based fixed and mobile equipment, with emphasis on the use of drop-in replacements and factors that determine the suitability of the replacements.

The above exercises will cover both fixed systems and MACs, building on the MAC trainers' training to be executed under Component 1A.

(ii) Certification and licensing of technicians:

In order to support the training of the country's remaining technicians, the Government will introduce a mandatory licensing regime for all practicing technicians as well for new entrants into the profession. The Regulations already include a provision for the licensing of Retrofitters. This will be extended to include provisions requiring technicians to be licensed in order to practice. In addition to reducing emissions and ensuring quality standards to customers in the refrigeration servicing sector, this initiative also supports ongoing efforts within the Caribbean Ozone Officers Network to have all technicians in the Caribbean region achieve a desirable common standard. With the phased entry into force of the CARICOM Single Market and Economy (CSME), beginning in January 2006, under which restrictions on the movement of services across the region will be facilitated, the setting of such standards will eventually allow technicians to offer their services throughout the region at standards consistent with those of the Montreal Protocol. This certification will also be done in coordination with the College, thereby ensuring continuation of the standard of training new students will be receiving.

(iii) Development and publication of Code of Good Practice:

Using examples from UNEP and other agencies, a Code of Good Practice establishing standards for the management and servicing of refrigeration and air-conditioning equipment will be developed, published and distributed to the country's technicians. The proposed Association of Refrigeration Technicians will be the key partner in helping to develop and implement the Code. This Code of Good Practice will also be harmonized to meet the CARICOM regional standards as is being designed under the Caribbean Single Market and Economy.

(iv) Establishment of an Association of Refrigeration Technicians:

For some time now, technicians in Grenada, in consultation with the NOU have been trying to establish an Association with little success. During the data gathering mission to the country under this project, interest in this was revived. In addition, the NOU is of the view that such an association will serve a number of purposes, including to:

a) help regulate industry practices to ensure that minimum standards are set and maintained;
b) set minimum standards for entry into the profession;
c) assist in the development and implementation of codes of good practices in the industry;
d) coordinate dialogue on matters that affect the industry, including those related to compliance with the Montreal Protocol, with the Government;
e) assist the Government with data collection and verification;
f) provide a formal point of contact between the Government and industry to discuss matters related to the implementation of the Montreal Protocol;
g) provide a formal forum where emerging local and international issues, including technological advances can be addressed; and
h) assist the NOO in Sector specific education and awareness activities

Given the above, the Government sees the establishment of the Association as an integral part of the enabling framework being established to assure its compliance with its obligations with the Montreal Protocol. This activity will require a small budget to help catalyze the establishment of the Association. The funds will be used to hire a legal consultant to prepare the Articles of Association and Rules of Procedure for the Association, fund an exchange visit by a representative of a similar Association from the region and meet the logistical costs of the first few meetings.

(v) Recovery & recycling for stationary equipment:

Ten recovery machines for fixed systems and 11 hand pumps and associated tools and equipment will be acquired and distributed to the larger service agencies who complete the certification programme described in (ii) above. Whereas these numbers may seem high, the shortfall in supplies based on the quotas to be assigned compared to the calculated demand will place pressure on technicians to recover as much gases as possible. The conditions will therefore be created to encourage widespread use of the equipment, thereby contributing to the overall effort to stay within the import quotas. It also has to be considered that the existing stock of R an d R equipment may no longer be usable or economically viable to effect repairs. Consideration will be given to have technicians pay about 25% of the costs of recovery machines and they will be required to fulfill service contract agreements under which they would report to the NOU the amount of CFC recovered, recycled and re-used on a semi-annual basis. The request to have technicians make a financial outlay for the machines is to ensure that only those who see a financial return on this investment from using the machines will acquire them. Any proceeds collected from the sale of the machines will go towards the purchase of additional recovery

equipment or reinvested in some other component of the overall phase out strategy. This activity will build on the training to be undertaken in this component by including follow-up training of additional technicians in the MAC sub sector. In addition, consideration will be given to a phased acquisition and distribution of equipment based on demand and the impact their use is having on emissions reduction.

(vii) Promotion of R&R and good practices:

A promotional campaign, including the distribution of brochures and direct contact with technicians, will be undertaken to foster the application of good practices, and the use R&R equipment. The importance of re-using CFCs stored in storage cylinders will be emphasized. A local consultant will be contracted to work with the Technician Association to undertake this activity, which will include finding ways to overcome barriers to re-use and recycling of CFCs.

(vii) Local assistance, monitoring & reporting:

A local consultant will be contracted to provide general assistance to the NOU with implementation of all the activities identified above, monitor progress, including reports of technicians on CFCs recovered, re-used and recycled, and assist with preparing semi-annual reports to UNEP and UNDP from September 2006 to December 2008.

(viii) Regional Assistance

A regional consultant will be contracted to provide general assistance as needed to the Refrigeration Sector with respect to training in new refrigerants and any other related needs that may arise.

Time Frame:

Table 9: Time frame for Project Components

Activity	**Time-frame**
Establishment of Association of Refrigeration Technicians	July 2006 – Dec 09
Development of Code of Good Practice	Jan 07 – Dec 09
Training for stationary installations and follow up training for MAC Technicians	Jan 07 – Dec 09
Promotional campaign for R&R and good practices	Jan 07- Dec 09
Amendment of the Montreal Protocol Regulations to require licensing of technicians	Dec. 07
Monitoring & evaluation	Dec. 06-Dec. 09
Regional Consultancy	Jan 2007 – Dec.2009

Table 10: Budget breakdown by Line Items:

Item	Budget (USD)
Training of technicians and good practices	
Local organization and local experts for training of additional 60 technicians in Good Practices, R&R and Retrofits for all sub sectors	xxxxx
Development of Code of Good Practice	xxxxx
Promotion of R&R and good practices	xxxxx
Establishment of Association of Refrigeration Technicians	xxxxx
Sub-total	xxxxx
	xxxxx
General local assistance, monitoring and reporting	xxxxx
	xxxxx
Regional Consultant	xxxxx
TOTAL	xxxxx

ANNEX 4

TPMP COMPONENT 4

PROVISION OF EQUIPMENT AND RETROFIT DEMONSTRATION USING DROP IN REFRIGERANT REPLACEMENT BLENDS

PROJECT COVER SHEET

COUNTRY	Grenada
SECTORS COVERED	Refrigeration servicing sector
PROJECT TITLE	Provision of Equipment and Retrofit Demonstration drop in replacement refrigerant Blends
PROJECT IMPACT	This project will assist the country to meet its targeted consumption reductions by contributing t elimination of 1.85 ODP tonnes of CFCs by the e 2009
Remaining unfunded consumption	2.985 ODP tonnes
Current (2004) consumption	1.900 ODP tonnes
Refrigeration sector consumption	1.900 ODP tonnes
Servicing sector consumption	1.900 ODP tonnes
Project cost	US$ xxxxx
Government Contribution	In kind
Amount requested from the MLF	US$ xxxxx
Implementing Agency Support Cost (9 %)	US$ xxxxx
Total Cost of Project to the MLF	US$ xxxxx
Implementing Agency	UNDP
National Coordinating Agency	National Ozone Unit

Project Summary: This project will provide technicians with the equipment and tools they require to avoid emissions of refrigerants during the servicing of refrigeration equipment *and* demonstrate to technicians how to undertake retrofits of CFC based equipment using ozone friendly drop in replacement refrigerants.

Impact of Project on the Country's Montreal Protocol Obligations: This project will contribute to the elimination of 2.985 ODP tonnes of CFCs by the end of 2009.

PROJECT DESCRIPTION

i. Objective:

The objective of this project is to assist the refrigeration servicing sector in its efforts to reduce the use of virgin CFCs by:

1. providing multi refrigerant recovery machines, tools, consumables and spares to selected service agencies on a case by case basis; and
2. promoting the retrofitting of CFC based equipment using drop in replacement refrigerant blends.

ii. Background:

Under the RMP, 20 technicians were trained in recovery and recycling of refrigerants by an international consultant. The training included R&R for both fixed and mobile systems. Approximately 20 technicians received this training over a three day period. These training experiences will be strengthened under Component 3 of this TPMP, under which further training of technicians will be provided. However, the technicians will require appropriate equipment, including multi refrigerant recovery machines and related spares and equipment, as well as tools to upgrade their ability to apply the skills to be acquired under Component 3. This component will address this need, thereby ensuring that the skills acquired under Component 3 are practiced.

Another cause for concern is the continued availability of CFC based equipment on the island, particularly those likely to have a useful life beyond 2009, and the demand they continue to create for refrigerants. The population of CFC-based equipment in St. Kitts and Nevis in 2004 is shown in the Table 13 below:

Table 13: Equipment Stock

Type of equipment/ install	Total population	CFC-based population	Contained CFCs
Domestic/ Small-sized	24 000	9 600	1.920
Commercial/Industrial	1 585	283	0.658
MACs	50 000	20 000	20.000
Total			**22.578**

Unless the CFC based equipment, particularly those likely to be in service beyond 2009 are retrofitted or retired, they will place additional pressures on the country's ability to meet its targeted reductions in consumption.

Retrofitting is generally not practiced in Grenada. However, based on data from other countries in the Caribbean, the cost of retrofitting a MAC system is in the order of US$ 370.00 and owners of such systems are unlikely to meet this cost if the system can be repaired. The same argument holds true for fixed (domestic and commercial/industrial) systems, for which the cost of a retrofit is estimated to be in the range of US$150.00 - $ 450.00. The result will be that demand reductions will not be in keeping with the level required for supplies to satisfy the market, and this can cause hardships for owners of such equipment and may even encourage illegal trade.

This project will also encourage owners of CFC-based equipment in all sectors, but with special emphasis on the MAC sub sector, to undertake early retrofits of their equipment through the incentives to be offered. This is considered necessary to avoid the projected excess demand for

CFCs that is unlikely to be met through the recovery and recycling of refrigerants.

iii. Approach:

As noted earlier, there are two sub components to this project, the approach to the delivery of which are described below:

ii) Procurement and distribution of equipment:

Under this component a national needs assessment will be conducted to determine what basic servicing tools and the number and specifications of the multi refrigerant recovery units, including spares parts will be required. In addition, criteria for selecting service agencies to receive the equipment and conditions for the donations will be determined. Following these determinations, the tools and equipment will be acquired for distribution. The actual placement of the equipment and tools will be done on a case by case basis, by applying the criteria developed for this purpose. It must be noted that since the number and nature of the equipment to be acquired will depend on the outcome of the national assessment, a pre determination of these equipment and their numbers cannot be made at this time. However, an indicative list of the equipment and tools is:

- 7 MAC machines and related parts;
- 6 recovery machines and related equipment (cylinders, recovery kits, recovery bags, pumps etc.)
- 10 portable recovery pumps for small appliances;
- 48 additional storage cylinders;
- Brazing equipment, pressure gauges, piercing pliers etc
- Scales
- Leak detectors;
- Vacuum pumps
- Consumables and spare parts.

Execution of this Component will require collaboration and cooperation with UNEP, who will be responsible the for the related training as elaborated in Component 3 above to ensure that the supporting activities such as the training of technicians, the promotional campaign and the development of the Code of Good Practice are completed in time to support this Component.

iii) Retrofit Demonstration project:

Under this component, ozone friendly drop in refrigerant replacement blends will be used to demonstrate the cost and performance effectiveness of retrofitting CFC-based equipment. Through these demonstrations, owners of CFC based equipment will be encouraged to have them retrofitted as soon as possible so as to avoid the future demand these equipment will create if they are simply repaired when serviced next. This will lead to a direct reduction in the use of CFCs required for servicing such equipment, avoid any future demand for their servicing and contribute to the country's overall phase out strategy. The emphasis will be on the use of the more cost effective use of drop in replacement refrigerant blends in all sub sectors and two demonstration sub components will be designed and executed for the MAC and fixed system sub sectors respectively. To this end, a survey will be conducted to determine the types of equipment available for retrofitting and the drop in refrigerant blends that will meet the performance criteria to ensure at least similar performance characteristics.

Prior to the launch of this initiative, local experts and the NOU will design the retrofit demonstration project by:

- developing criteria for qualification for retrofits in the sub-sectors to be targeted,
- quantifying the level of support to be provided for each sub sector, which should be either the cost of the replacement refrigerant or the labour cost for the retrofit;
- deciding on administrative and operational procedures for the scheme, including the method and timing of payments;
- identifying record keeping and reporting requirements; and
- Designing and executing a promotional campaign for the initiative.

Following the above preparatory activities, appropriate ozone friendly replacement refrigerant blends will be purchased and demonstration retrofits, targeting both service technicians and equipment owners conducted at appropriate locations around the islands. For CFC phase out to be truly successful, end users have to be convinced and facilities have to be available. The import of drop in replacement refrigerants blends such as R-413a has to be in sufficient quantity to have any impact. The service companies do not have the financial strength to be able to do that. Once the "seed" drop in refrigerant is imported and distributed across the country, and the retrofit projects pick up, the demand for the drop in refrigerant will be established, prompting importers to look at it as a business opportunity. This pilot project combined with the training to be provided by Component 3, will prove the technical and economical feasibility of the new drop in replacement blends and make them more attractive to ends users. However, it is vital for the project to have the initial support of the Multilateral Fund.

iv. Expected Impact:

The use of existing R&R equipment, the provision of additional equipment, and the retrofit demonstration projects are expected to work in a synergistic relationship to allow the service sector to meet local demand for CFCs. In an environment where under the licensing system supplies are below demand, the recovery and reuse of refrigerants and the avoidance of new demand through retrofits will contribute to permanent demand reductions. The actual reductions expected is 1.29 ODP tonnes in 2007 and 0.28 ODP tonnes in 2008 and 2009 respectively.

v. Milestones

The following milestones are set for this project:

Activity	Time-frame
Survey of equipment needs	July – Sep 2006
Development of criteria and mechanism for selection of beneficiaries	Sep – Oct 2006
Agree on incentives to be provided to undertake retrofits	Sep – Oct 2006
Identification of appropriate drop in replacement refrigerants	Sep – Oct 2006
Design and promote retrofit projects	Oct – Nov 2006
Retrofit demonstration projects	Jan 07 – Dec.09
Monitoring, evaluation and reporting	Dec. 06 – Dec. 09
Trainers' workshop (for MACs and fixed systems	Nov. 06 – Dec 08

vi. Budget

Item	Budget (USD)
Equipment	
Regional Consultant	xxxxx
Vacuum pumps, electronic scales, leak detectors, brazing equipment and tools, Multirefrigerant recovery Machines and related equipment (cyli recovery kits, pumps, etc.), portable recovery pumps for small appli storage cylinders, erc.	xxxxx
Consumables, spare parts, freight	xxxxx
Expert to conduct survey and develop guidelines and criteria for distril of equipment	xxxxx
Equipment sub total	xxxxx
	xxxxx
Retrofit Demonstration	xxxxx
Project design	xxxxx
Project implementation	xxxxx
Retrofit demonstration sub total	xxxxx
	xxxxx
TOTAL	xxxxx