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**United Nations
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**Open-ended working Group of the Parties to
the Montreal Protocol on Substances that
Deplete the Ozone Layer
Thirty-fifth meeting
Bangkok, 22–24 April 2015
Item 5 of the provisional agenda*
Policies and measures across countries and regions**

Submissions by parties on the implementation of decision XIX/6

Note by the Secretariat

1. In paragraph 3 of its decision XXV/5, the Meeting of the Parties encouraged parties to provide to the Secretariat, on a voluntary basis, information on their implementation of paragraph 9 of decision XIX/6, including information on available data, policies and initiatives pertaining to the promotion of a transition from ozone-depleting substances that minimize environmental impact wherever the required technologies are available, and requested the Secretariat to compile any submissions received for consideration by the Open-ended Working Group at its thirty-fourth meeting.
2. In response to the decision, 14 parties submitted information on their implementation of paragraph 9 of decision XIX/6 prior to the thirty-fourth meeting of the Open-ended Working Group in July 2014. That information was presented in documents UNEP/OzL.Pro.WG.1/34/INF/4, UNEP/OzL.Pro.WG.1/34/INF/4/Add.1 and UNEP/OzL.Pro.WG.1/34/INF/4/Add.2.
3. Between the thirty-fourth meeting of the Open-ended Working Group and the Twenty-Sixth Meeting of the Parties in November 2014, the Secretariat received relevant new or additional information from six parties, including a regional economic integration organization. The information submitted by that organization included submissions by five of its member States and references to legislation applicable to all 28 of its member States. The information submitted by those six parties was reproduced in document UNEP/OzL.Pro/26/INF/4.
4. In paragraph 3 of decision XXVI/9, the Meeting of the Parties encouraged parties to continue to provide to the Secretariat, on a voluntary basis, information on their implementation of paragraph 9 of decision XIX/6, and requested the Secretariat to compile any such submissions received. Pursuant to that decision, the Secretariat has compiled the information received from two parties, Mexico and Paraguay, since the Twenty-Sixth Meeting of the Parties (see annex). The information is presented as received by the Secretariat, without formal editing.

* UNEP/OzL.Pro.WG.1/35/1.

Annex

Compilation of submissions by parties on the implementation of decision XIX/6

Mexico (*Re-submission*)

Alternative selection in the phase out of HCFC Management Plan.- first and second stage in México

In line with the Decision XIX/6 of the and with regard to decisions related with the Executive Committee during the project design reduction of the release of greenhouse gases served as one of the most important criteria of technology selection. The planned investment activities' climate impact is very favorable.

Almost all HCFCs have high global warming potential. For the subprojects of the HPMP Stage I and II zero or low GWP alternatives substances were selected, wherever it was viable. These substances with low/zero GWP substances are Hydrocarbons, Perchloroethylene, Methyl Formate, Methylal, Nitrogen, water and management activities.

As a new initiative HFO blowing agent will be introduced in large amount in several domestic refrigerator factories.

Better refrigeration service practices and various non-investment projects will lead to the phase-out of 1,367 MT of HCFC-22 without phasing in any greenhouse gases.

HFCs will be applied only for certain critical applications (flammable aerosols). However, the phase out of HCFCs in aerosols 375 MT is HFC-152a, which has a relatively low GWP (124 calculated for 100 years), and has a positive impact in the pollutants release, particularly with the tropospheric ozone precursors that is an important matter in the air quality management in México.

During Stage I and II 6,531 MT HCFC-141b and 2,303 MT of HCFC-22 will be replaced by the various alternatives as shown in Table below.

HCFCs SUBSTITUTED AND ALTERNATIVES SELECTED

		[MT]	
HCFCs replaced			
		First Stage	Second Stage
HCFC-141b		3,549	2,982
HCFC-22		393	1,910
Total		3,942	4,892
Substitutes selected			
Perchloroethylene		9.1	94.6
HFC-134a		9.1	94.6
HFC-152a		86.4	289.5
Hydrocarbons		489.7	1,219.7
HFO		--	1,726.6
Recovery/Recycling		--	1,059.0
N ₂ , H ₂ O		218	308.0
Methylformate		1,590.2	--
Non investment			39.4
Total		2,405.5	4,831.4

The subprojects will generate a saving of 8.91 Mega ton. of CO₂ equivalent climate change impact in both stages of the HPMP in México as it is shown in the tables below.

CLIMATE CHANGE IMPACT CALCULATION STAGE I

Project/ action	Phase-out substance	MT	GWP	Phase-out [GT CO ₂ eq.]	Phase-in substance	MT	GWP	Phase-in [GT CO ₂ eq.]	Climate Impact [MT CO ₂ eq.]
Domestic refrigeration	HCFC-141b	354	725	0.257	HC	206.3	20	0.004	(0.25)
	HCFC-22	305	1,810	0.552	HC	152.7	20	0.003	(0.55)
Aerosol Sector				-	HC	8.8	20	0.000	0.00
				-	HFC-365/ HFC-227	3	2,200	0.007	0.01
	HCFC-141b	60	725	0.044	HFC-152a	86.4	122	0.011	(0.03)
	HCFC-22	70	1,810	0.127	HFC-134a	9.1	1,320	0.012	(0.11)
Commercial refrigeration	HCFC-141b	209	725	0.152	HC	121.9	20	0.002	(0.15)
Foam Enterprises: first tranche	HCFC-141b	1,532	725	1.111	MetFormate	893.6	20	0.018	(1.09)
Foam Enterprises - 2nd Tranche	HCFC-141b	1,194	725	0.866	MetFormate	696.6	20	0.014	(0.85)
Flushing sector – 1st Tranche	HCFC-141b	53	725	0.038	N ₂ , H ₂ O	0	20	-	(0.04)
	HCFC-22	5	1810	0.009	N ₂ , H ₂ O	0	20	-	(0.01)
Flushing Sector- 2nd Tranche	HCFC-141b	147	725	0.107	N ₂ , H ₂ O	0	20	-	(0.11)
	HCFC-22	13	1810	0.024	N ₂ , H ₂ O	0	20	-	(0.02)
TOTAL									(3.2)

CLIMATE CHANGE IMPACT CALCULATION STAGE II

[Megatonne CO₂ eq.]

Project/action	Phase-out substance	MT	GWP	Phase-out impact	Phase-in substance	MT	GWP	Phase-in impact	Climate Impact
Aerosol sector	HCFC-141b	384	725	0.28	Perchloro-ethylene	94.6	-	-	
	HCFC-22	384.3	1,810	0.70	HFC-134a	94.6	1,430	0.14	
					HFC-152a	289.5	124	0.04	
					HC	22.7	7	0.00	
					HFC-245fa	206.6	4	0.00	
	Subtotal				0.97	Subtotal		0.18	
Service flushing Phase 2	HCFC-141b	278	725	0.20	N2/ H2O	-	20	-	(0.20)
	HCFC-22	30	1,810	0.05	N2/ H2O	-	20	-	(0.05)
HCFC refrigerant management	HCFC-22	1,000	1,810	1.81	Recovery techniques	-	-	-	(1.81)
Recovery and Reclaim activities	HCFC-22	59	1,810	0.11	Recovery techniques	-	-	-	(0.11)
HC standard development	HCFC-22	145	1,810	0.26	HC	145	7	0.00	(0.26)
Updating quota system	HCFC-22	8	1,810	0.02	None	-	-	-	(0.02)
Customs training	HCFC-22	17.8	1,810	0.03	None	-	-	-	(0.03)
Public awareness	HCFC-22	13.3	1,810	0.02	None	-	-	-	(0.03)
Domestic refrigeration	HCFC-141b	1,000	725	0.73	HFO	1,000	4	0.00	(0.72)
Domestic refrigeration (second step)	HCFC-141b	800	725	0.58	HC	800	7	0.01	(0.57)
	HCFC-141b	520	725	0.38	HFO	520	4	0.00	(0.37)
	HCFC-22	252.3	1,810	0.46	HC	252	7	0.00	(0.45)
TOTAL CLIMATE IMPACT, [Megatonne CO₂ eq.]									(5.41)

Paraguay

(Translated from Spanish)

Information on the implementation of paragraph 3 of decision XXVI/9

Information is requested on a voluntary basis on the implementation of paragraph 9 of decision XIX/6, including information on available data, policies and initiatives pertaining to the promotion of a transition from ozone-depleting substances that minimizes environmental impact.

The policies and initiatives implemented in Paraguay are:

1. Support for the retrofitting of refrigeration systems (specifically refrigerators) and air conditioning systems (split, window and rooftop types) to hydrocarbons.
2. In addition, Paraguay is able to draw on the provisions of Decree No. 12685/08, regulating the environmental management of ozone-depleting substances, which vests power in the Ministry of the Environment to apply control measures to the import of non-ozone-depleting alternatives when such action is justified to prevent illegal trafficking in ozone-depleting substances.
3. Furthermore, pursuant to Ministry of the Environment resolution No. 854/10, HFCs are designated as goods under Ministry of the Environment control within the framework of the Montreal Protocol.
4. Report on the statistics of HFC gas imports by Paraguay in the years 2013 and 2014. At the national level, hydrofluorocarbons (HFCs) are the chief substitutes for HCFCs, followed to a lesser extent by hydrocarbons (HC).

In the light of the informal discussions at the Twenty-Sixth Meeting of the Parties to the Montreal Protocol concerning arrangements to deal with all the issues arising in all parties in the management of HFCs and the feasibility of reducing dependence on HFCs within a reasonable time frame, it is important to obtain statistics on the import of refrigeration gases which serve as alternatives to HCFCs, and specifically HFCs, so that this information can be used to establish a country baseline for HFC consumption. This will provide an input into the discussions which Paraguay intends to conduct at future Meetings of the Parties to the Montreal Protocol.

5. In July 2015 the Air Quality Act, No. 5211/14, was passed, requiring the Ministry of the Environment to implement a programme targeting technologies that use ozone-depleting substances.
6. Pursuant to that requirement, the Ministry of the Environment adopted its resolution No. 1242/14, establishing a programme to phase out the import of technologies which use ozone-depleting substances.

Statistical Report on HFC gases imported by Paraguay between 2013 and 2014

Project No. 80.880

Implementation of the HCFC phase-out plan

Technical Assistance and Information Management under the Montreal Protocol
Ministry of the Environment – UNDP – UNEP
Asunción, Paraguay
January 2015

I. Introduction

The overall objective of the hydrochlorofluorocarbon (HCFC) phase-out management plan (HPMP) is to enable Paraguay to meet the targets established in decision XIX/6 of the Parties to the Montreal Protocol. In Paraguay, hydrofluorocarbons (HFCs) are the main substitutes for HCFCs, followed to a lesser extent by hydrocarbons (HCs).

In the light of the informal discussions at the Twenty-Sixth Meeting of the Parties to the Montreal Protocol concerning arrangements to deal with all the issues arising in all parties in the management of HFCs and the feasibility of reducing dependence on HFCs within a reasonable time frame, it is important to obtain statistics on the import of refrigeration gases which serve as alternatives to HCFCs, and specifically HFCs.

This information can be used to establish a country baseline for HFC consumption, which will provide an input into the discussions which Paraguay intends to conduct at future Meetings of the Parties to the Montreal Protocol.

II. Objective

- Submission of statistics on the imports of gases as alternatives to HCFCs during the period 2013–2013.

III. Data collection methodology and results obtained

These import statistics were based on data compiled by the Single Window Portal set up for imports by the National Customs Authority. This portal provides information on imports under the control of the Ministry of the Environment, within the purview of the Montreal Protocol, within specified periods. The present study was based in particular on the period from 1 January 2013 to 31 December 2014.

The study analysed the following subsections of the Harmonized System:

2903.39.1: Others. Fluorinated derivatives

3824.78: Containing perfluorocarbons (PFCs) or hydrofluorocarbons (HFCs), but not containing chlorofluorocarbons (CFCs) or hydrochlorofluorocarbons (HCFCs).

III.1 2014 statistics by quantity

The large majority of imported alternative refrigerant gases are mixtures, with the exception of R-134a (1,1,1,2 tetrafluorethane). The table below shows the composition of the mixtures.

Table 1. Composition of refrigerant mixtures used as alternatives to HCFCs

Type of refrigerant	Quantitative composition
R-404a	44% R125 – 4% R134a – 52% R143a
R-407c	23% R32 – 25% R125 – 52% R134a
R-410a	50% R32 – 50% R125
R-417a	46.6% R-125 – 50% R-134a – 3.4% R-600
R-427a	50% R-134a – 25% R-125 – 15% R-32 – 10% R-143a
AN22	18.25% R-134a – 79% R-125 – 2.75% R-600

The import statistics for alternative refrigerants to HCFCs are presented below:

Table 2. 2014 import statistics

Type of refrigerant	Quantity in kg	Quantity in tonnes	% of total
R-134a	228 797	228.79	85.91
R-404a	18 451	18.45	6.93
R-407c	1 695	1.70	0.64
R-410a	4 633	4.63	1.74
R-417a	7 097	7.10	2.66
AN22	5 650	5.65	2.12
Total	266 323	266.32	100

From the above table, it may be concluded that the most extensively imported HFC is R-134a, which makes up 85.91% of imports, followed by R-404a with 6.93% of the total. Regarding R-134a, this is because it is very widely used in refrigerators, freezers, chiller cabinets, and is the refrigerant of choice in the automobile industry. In the case of R-404a, this is the refrigerant used in coldrooms.

The imports of R-417a and AN22 are intended to compensate for the shortage of R-22 on the market, since they both serve as direct replacements for R-22 in air-conditioning equipment operating with this gas. The refrigerants R-407c and R-410a are used in air-conditioning systems which operate with alternative refrigerants. It should be stressed that, following the significant clamp-down on equipment operating on R-22 which will come into effect on 1 March 2015, the imports of alternative gases (R407c and R-410a) should increase substantially, in view of the growing volume of equipment using these refrigerants that is being imported.

At the same time, the availability of HFC import statistics for 2013 has made possible the following comparative table.

Table 3. Comparison of HFC imports between 2013 and 2014

Type of refrigerant	2013 imports in tonnes	2014 imports in tonnes	Increase rate (%)
R-134a	220.22	228.79	3.89
R-404a	11.23	18.45	64.29
R-407c	0.79	1.70	115.19
R-410a	0.57	4.63	712.28
R-427a	0.11	-	-
R-417a	0	7.10	-
AN22	0	5.65	-
Total	232.92	266.32	

As mentioned above, due to the shortage of R-22 on the market in 2014, direct replacement imports (“drop-in”) have been made of refrigerants (R-417A and AN22) which were not imported in 2013.

Furthermore, there have been significant increases in the imports of alternative refrigerants, which could be related to the increase in imports of air-conditioning systems operating on ozone-friendly alternative gases. With regard to R-134a, its growth rate has been

minimal, which could be due to the growing presence on the Paraguayan market of refrigerators and freezers using R-600a, a refrigerant with low global-warming-potential (GWP), used as an alternative to R-134a.

III.2 2014 Statistics including global warming potential (GWP)

This section takes into account the global warming potential (GWP) of the refrigerants, for the purpose of calculating the CO₂ ton equivalent.

Table 4. 2014 import statistics, including GWP

Type of refrigerant	Quantity in tonnes	GWP ¹	CO ₂ tonnes equivalent	%
R-134a	228.79	1 300	297 436	72.27
R-404a	18.45	3 784	69 819	16.96
R-407c	1.70	1 653	2 801	0.68
R-410a	4.63	1 975	9 150	2.22
R-417a	7.10	2 235	15 858	3.85
AN22	5.65	2 923	16 517	4.01
Total	266.32	-	411 581	100

¹ IPCC Third Assessment Report: Climate Change 2001

As may be seen, the refrigerant with the highest global warming potential imported by Paraguay in 2014 was R-134a, with 72.27% of the total, followed by R-404a with 16.96%.

IV. Conclusion

From these statistics, it may be observed that, if the proposed amendment of the Montreal Protocol relating to HFCs is to be implemented, R-134a would be the substance for which Paraguay would have to find alternatives. As already noted, one technically and economically feasible alternative for use in refrigerators and freezers would be R-600a (isobutane).

On the other hand, at the global level there is as yet no suitable alternative to R-134a in the automated refrigeration sector.

Lastly, an alternative to R-410a and R-407c in air-conditioning units could be R290 (propane) or a mixture of hydrocarbons, for example one that is 50% R-290 and 50% R-600a.