

Trends in Ozone Depleting Substances (ODS) consumption in Sri Lanka

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Ozone layer depletion, and global warming and associated climate change are the two most important global problems in the environmental sector today. Sri Lanka has ratified international conventions and protocols related to these problems. Obligations under the Montreal protocol on substances that deplete the ozone layer is to eliminate consumption of Ozone Depleting Substances on given date as stated in the protocol.

Since signatory to the Montreal protocol in 1989, Sri Lanka has put in place national regulations and policies to fulfill its obligations. Analysis of consumption and import of all ODS shows a declining trend except MeBr and HCFC. Of the total ODS consumption in Sri Lanka, CFC amounts to nearly 86% and has reduced gradually. With this trend Sri Lanka has achieved zero consumption of CFC and Halons by 1st of January 2008, two years in advance of the Montreal Protocol targets. All other ODSs have shown a systematic reduction which has fulfilled the protocol obligations.

The consumption of MeBr has increased and it is attributed to increase demand for Quarantine and Pre shipment usage which is exempted as essential use by the Protocol. There is increase in usage of HCFC due to industrial development of the country and will be controlled in the future in advance with the protocol.

Note: Consumption of any ODS is the amount of virgin ODS used in that country during the particular year. Sri Lanka does not export any ODSs and only depends on import. Sri Lanka has banned import of CFC (including CFC 12) by 1st of January 2008. As same the consumption of CFC is zero from 2008 onwards.

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Introduction

In 1974, U.S. chemists Sherwood Rowland and Mario Molina were the first to bring the warning on thinning of the ozone layer which protects life on the earth from harmful ultra violet radiation emanating from the sun. They have been working on atmospheric chemistry in the early 1980s, as for the first time a hole in the ozone layer was observed at Earth's poles. It was 70% disappearance of protective ozone gas over the Antarctic while 30% had been depleted over the Arctic. Thinning of ozone layer is caused by Ozone Depleting Substances (ODS) emitted into the atmosphere. ODS are mainly man made and no significant natural sources have been identified. Substances used or generated in industrial and agricultural activities such as Chlorofluorocarbon (CFC), Halons, Carbon tetrachloride, Hydro Chlorofluorocarbon (HCFCs) and Methyl Bromide (MeBr) are mainly responsible for ozone depletion.

The global community realized the necessity of protecting the ozone layer from man made ODSs and got together to develop an international agreement for protecting the Ozone layer. The Vienna convention for the protection of the ozone layer was adopted in 1985 in Vienna, Austria as an international response to this global issue. In 1987, the Montréal Protocol on Substances that Deplete the Ozone Layer was ratified with the goal of gradually eliminating the use of substances that deplete the ozone layer. To date Vienna convention and its legal instrument Montreal protocol are considered as the most successful international environmental agreements.

Sri Lanka has been a party of the Montreal Protocol on substances that deplete the ozone layer since 1989. Therefore the government of Sri Lanka has to comply with obligations given under the Montreal Protocol.

Data Analysis

Since Sri Lanka is not producing any of the ODSs, consumption is based on imports. Data on consumption was extracted from the records at the National Ozone Unit. The control of CFC is determined by using the average consumption during 1995-1997 which is considered as the Base value for a country. The base value for the total CFC consumption for Sri Lanka was 449.54 MT. Annual consumption of all CFCs are given in Table 1.

Table 1. CFC consumption in Sri Lanka in MT

ODS	Consumption in Metric tones										
	Baseline (1995- 97Aver.)	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
CFC 11	46.66	11.08	12.47	26.80	7.04	9.4	10.89	11.15	5.44	16.64	1.88
CFC12	393.03	234.73	202.35	193.60	183.25	175.6	168.67	144.12	143.75	87.99	60.11
CFC113	0.99	3.72	0.00	0.00	0.02	0.002	0.00	0.00	0.00	0.00	0.00
CFC115	5.35	2.70	2.67	1.06	0.1	0.0	0.52	0.69	0.00	1.13	0.34
Total CFC	449.54	252.23	217.49	221.46	190.41	185.0	180.08	155.96	149.19	105.76	62.33

The other ODSs, Carbon Tetra Chloride (CTC), Methyl Chloroform (MCF), Methyl Bromide (MeBr) and Hydro chlorofluorocarbon (HCFC) are other ODS consumed in Sri Lanka are given in Table 2.

Table 2: ODS Consumption (other than CFC) in Sri Lanka

ODS	ODS Consumption in Metric Tones										
	Base Line	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
CTC	31.89	42.1	38.7	14.9	27.4	31.70	17.28	11.63	3.29	0.04	0.01
MCF	29.6	30.5	19.9	38.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MeBr	9.55	11.8	14.0	8.1	6.28	3.22	7.5	12.71	13.55	20.28	21.87
HCFC	202	111.7 6	117.9 3	106.3 2	156.8 2	127.7 0	231.04	177.2 0	224.57	273.35
Total (Includin g CFC)		538.7	401.8	370.1	329.6	373.1	322.5	374.34	358.4	350.6	357.5

Discussion

Total CFC consumption has been gradually decreasing from 1998 from the base value of 449.59 MT and in 2007 it was 62.33 MT, which was less by 43.43 MT than year 2006 (Table 1). It was 86.13 % reduction in total consumption as compared with base value. Data shows a clear and gradual declining trend in CFC consumption. CFC 12, the largest consuming ODS in Sri Lanka has been reduced by 85% in 2007. Sri Lanka has been able to reduce consumption of all ODSs except MeBr and HCFC. It is found that the increase in consumption of MeBr in the QPS sector which is an exception in the Montreal Protocol. Since HCFC is not controlled under the Montreal Protocol for countries like Sri Lanka (Article 5), there has been an increase in consumption with the industrial development. CTC consumption has been brought down by 99.97% as compared to its base value (Table 2). Total ODS consumption in Sri Lanka shows a clear reduction trend.

It is noted that Sri Lanka has achieved its performances to comply with Montreal Protocol targets through effective awareness creation programmes, Custom officer training programmes, Extension training programme on good refrigeration practices to ensure minimum ODS emission into the atmosphere, Granting incentive payments for the commercial and industrial refrigeration end user sector, Recovery, Recycling programme for CFC for preventing atmospheric release of CFC and to conserve the available CFCs, Retrofit programmes in the Mobile Air Conditioning (MAC) sector which lead to reduce the amount of refrigerant currently being vented both in repairs and maintenance services and Formulation of Halon Bank Management strategies at the national level and providing technical assistance.

Conclusion

Since its signatory Sri Lanka has been working on international regulations and policies set under the Montreal protocol, hence able to comply with obligations given under the Montreal Protocol successfully. Sri Lanka has made its efforts to fulfill the commitments in order to protect the ozone layer by phasing out ODSs, through specific regulations via licensing systems and effective awareness creations. According to the ODS consumption data recorded, there is a clear declining trend. The rest of the phase out targets can be achieved in the correct time without complication if the current trend in reduction is continued.

