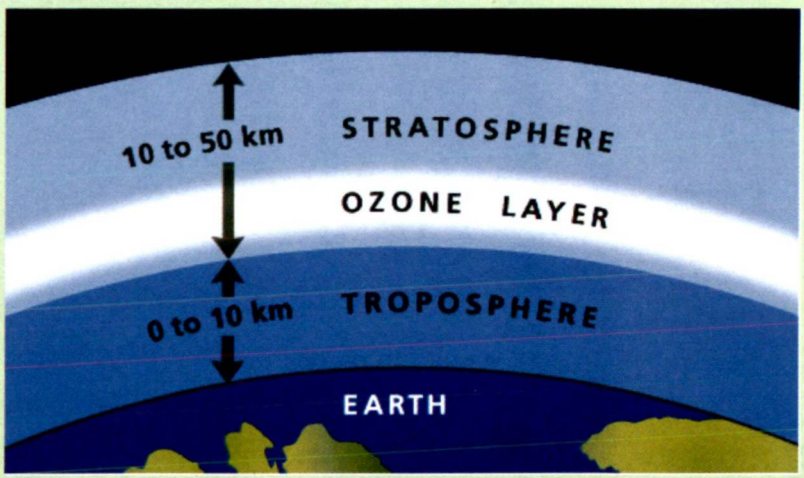
Montreal Protocol, Role of Sri Lanka for Environment Sustainability

by M.M.M. Senevirathna

Ozone Layer and its Depletion



Ozone is a gas containing three atoms of oxygen per molecule. That is formed naturally in the stratosphere from atmospheric oxygen by exposure to ultraviolet radiation and the region containing relatively high levels of ozone is called as ozone layer. It is situated in between 20-50 Km from the earth surface and plays a very important role for the sustainability of living beings on our planet Earth. Formation of ozone layer before appearing any life on Earth signifies the importance of ozone layer.

Ozone Depleting Substances (ODS) are a group of man-made chemicals that can cause the depletion of the Ozone Layer when released into the atmosphere. This depletion allows increased levels of ultraviolet (UV) radiation to reach the earth's surface. In turn, increased UV radiation poses significant threats to human health by compromising immune systems and causing higher levels of skin cancer and eye cataracts. It also disturbs the ecological balance of watersheds, agricultural lands and forests.

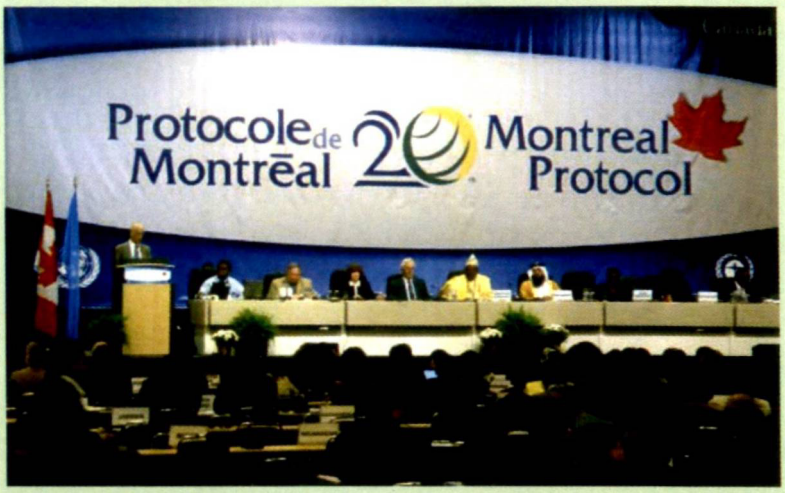


After realizing the depletion of ozone layer and the importance of preserving it, the international community ratified the Vienna Convention in 1985 and Montreal Protocol was established in 1987.The Montreal Protocol on Substances that Deplete the Ozone Layers an international environmental agreement that is widely seen as a global environmental accord that has produced tangible results in terms of reductions in ozone-depleting substances (ODS). It aims to protect the earth's ozone layer by phasing out the production and consumption of ODS.Sri Lanka became a party to the Montreal protocol on 15th December 1989 and National Ozone Unit was established under the Ministry of Environment in 1994 in order to implement Montreal protocol regulations and to fulfill its obligations actively.

The Montreal Protocol, founded on the principle of common but differentiated responsibilities depending whether the country is developed or developing. It is the only multilateral environmental agreement to date with universal ratification. Since its signature in 1987, the Montreal Protocol has been very successful in eliminating the majority of its controlled substances by 1 January 2010 and contributed to reversing the damage done to the ozone layer. Since 1994, Sri Lanka too joined with the global community and has exceeded its commitments under the Montreal Protocol before the

aforementioned stipulated time targets. CFCs and other aggressive ODS have been phased out by 2008 and is on track to phase out HCFC by 2030.

Benefits of Montreal Protocol



The Montreal Protocol has the potential to generate multiple beneficial impacts in addition to its stated environmental objective.There have been many benefits of Montreal Protocol that can best be characterized in a sustainable development framework. Since threats to the protective ozone layer were first recognized, emissions of ODS have been drastically reduced. Since most ODS are also powerful greenhouse gases (GHG), activities under the Montreal Protocol have in addition resulted in greenhouse gas reductions equivalent to several billion tones of CO_2-equivalent.As such, the Montreal Protocol has been recognized as a global success, for its contributions to safeguarding the Ozone Layer and the Global Climate. Without these contributions, ozone depletion would have increased tenfold by 2050 compared to current levels, resulting in millions more cases of melanoma, other cancers and eye cataracts.

Majority of investment projects implemented over a 25 year period by implementing agencies (UNEP, UNDP, etc.) of the Multilateral Fund for the Implementation of the Montreal Protocol, have reduced ozone depleting potential and global warming potential. Concentrations of ODSs have begun to recede in the atmosphere. However, until they diminish significantly, the ozone layer cannot begin to heal and ultraviolet radiation will continue to harm human health, crop productivity and wildlife.





Eye cataracts and skin cancers

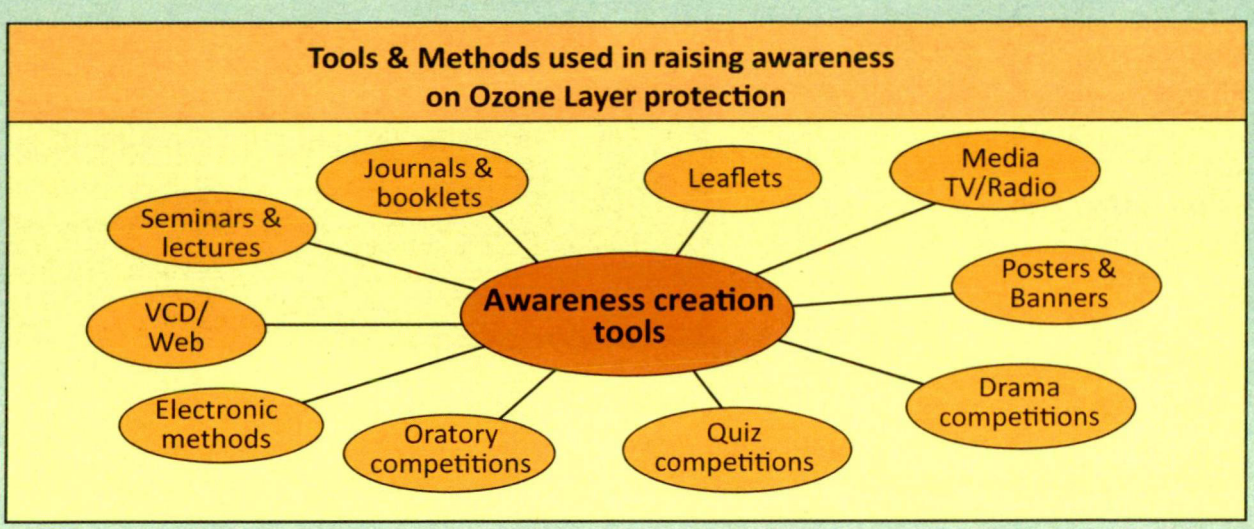
The progress to date, 25 years after the Montreal Protocol was signed, demonstrates that some projects have immensely reduced atmospheric emissions and contamination of groundwater. Other projects have increased the competitiveness of enterprises in domestic and international markets and have sustained and created employment opportunities.

Sustainable development Projects implemented in Sri Lanka

Any action taken to protect the ozone layer leads to environment sustainability. **Government is supporting to private sector to compete in a growing green economy, removing barriers to employ ozone-friendly, energy-efficient, low carbon production processes that are good for the economy and the global environment.** In this context, Ministry of Environment has implemented many projects and programmes and following programmes have shown much effect in this endevour.

Awareness programmes:

Recovery of Ozone layer is a process that takes several years to complete. Therefore, awareness creation among different target group is essential to protect it. Active awareness creation in implementing of Montreal Protocol helps in achieving environment sustainability through green economy. Therefore, several awareness creation programmes had been carried out by the NOU for different target groups since inception of NOU



Training Programmes

The main objective of these training programmes is to reduce the consumption of ozone depleting substances from particular sector of using. The main sector is the Refrigeration & Air Conditioning and form sectors. Further, the training programmes enhance good servicing and business practices in assisting to switch over to non-ODS equipments in a smooth way and sustainable manner. Over four thousand technicians had been trained and effectiveness of these training programmes is great, because emissions of ODS was curtailed as a result of proper training.



Training of Technicians

Retrofit, Recovery and Recycling Programme

Removing ozone depleting refrigerant from refrigeration or air conditioning system and making modification so that it can be recharged with one of the alternatives is called retrofitting.The recovery, recycling and reclamation of used refrigerants is a key element that they can be reprocessed for further commercial use. Recycled and reclaimed from many applications, including mobile air conditioning,

stationary air conditioning and refrigeration have many environmental and economic benefits. The major benefits include:

- Minimized atmospheric emissions and reduced environmental impact;
- Expanded market opportunity for used refrigerant;
- Reduced environmental compliance costs;
- Reduced need for new refrigerant; and
- Increased lifetime of refrigeration equipment due to contaminant removal;

Under this programme, Ministry of Environment donated about 200 equipments to Technical Colleges, Vocational Training Institutes, Refrigeration & Air Conditioning workshops island- wide

Through a successful implementation of this programme, Sri Lanka was able to recover and reuse of ozone depleting refrigerant average of 12 -14 Metric tones annually during 2007 -2010.



Recovery/Recycling equipment



Recovery refrigerant from Mobile AC

Incentive Payment Programme for Commercial and Industrial Refrigeration Endusers

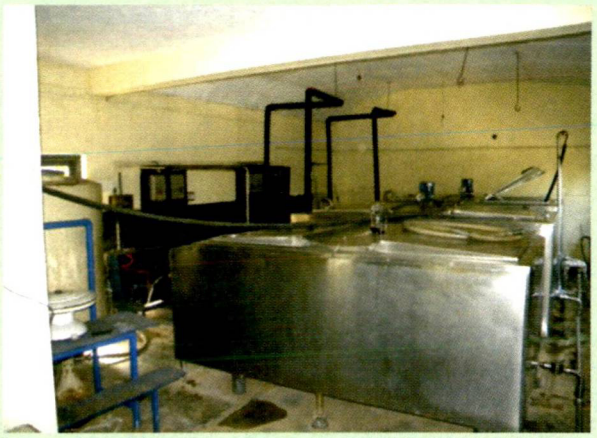
The Incentive Programme for the Commercial and Industrial End User Sector is one of the projects that has been introduced to eliminate as much as possible of the consumption of CFCs (R 12 and R 502) in the commercial and industrial refrigeration end-user sectors through the payment of financial incentive to enterprises for

1. Replace the existing refrigeration equipment working with R 12 or R 502 with new equipment to use a refrigerant that is not an ODS (e.g. R134a, R 404A,R407, R507, Ammonia) or R 22 that has only a small potential of ozone depletion
2. Permanently retrofit (convert) the existing refrigeration equipment working with R 12 or R 502 to use a refrigerant that is not an ODS (e.g. R134a, R 404A,R407, R507, Ammonia) or R 22 that has only a small potential of ozone depletion

Ministry of Environment supported industries to convert refrigeration systems that were operated with ozone depleting refrigerant to alternative refrigerants. One of the main beneficiaries of this project was MILCO Ltd, of the Ministry of Livestock Development. Approximately 2.8 Mtonnes of ozone depleting refrigerant were replaced.



Refrigeration system converted

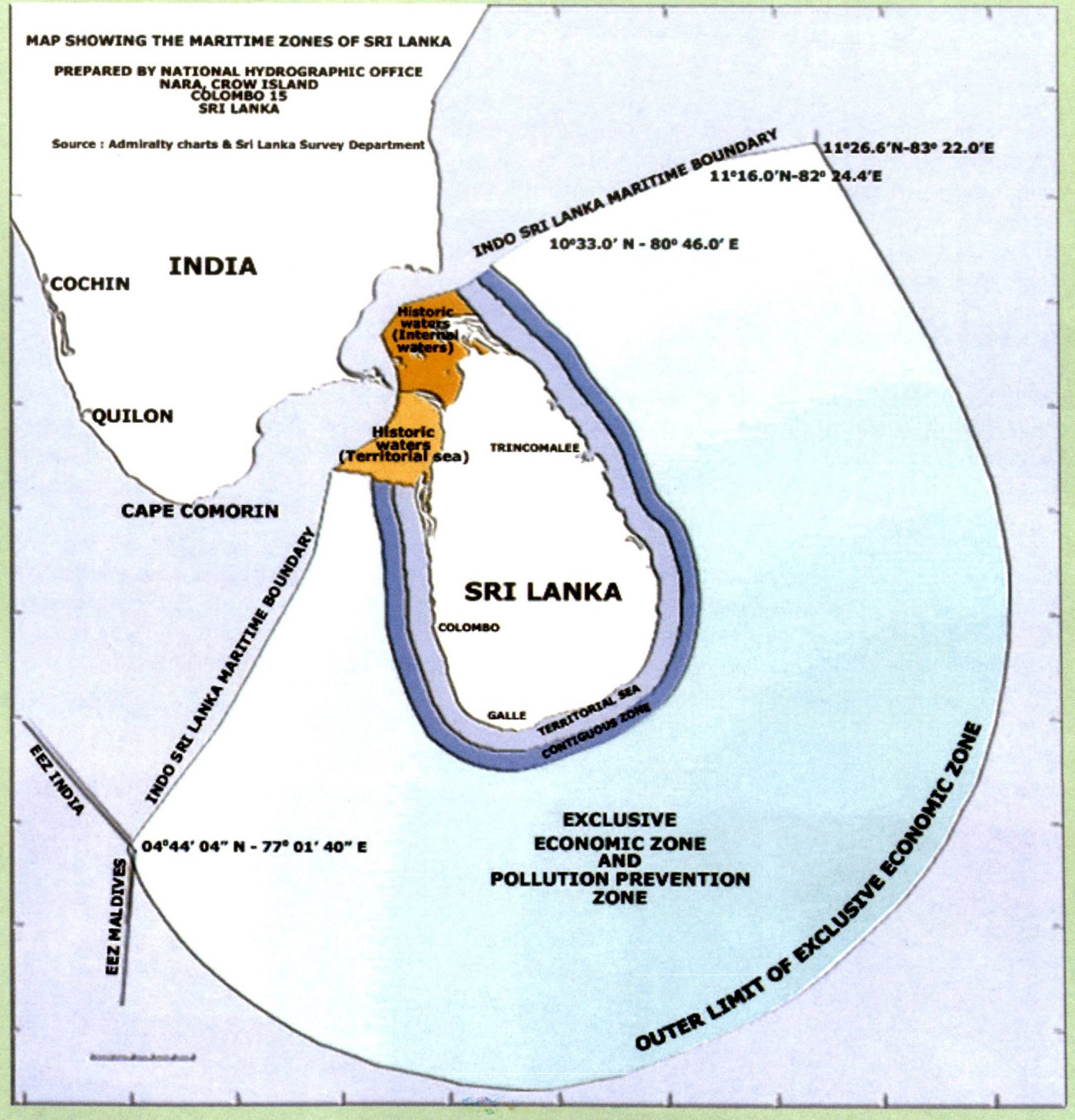


Milk chilling Tank

New Challenge

However, important challenges still remain. During the last 24 years, industry went through a transition from CFCs (with a high Ozone Depleting Potential – ODP) to HCFCs (low ODP), and is now starting to transition from HCFCs to alternatives that do not deplete the ozone layer at all. Worldwide, HCFCs are currently used in refrigeration, air conditioning, and foam products and represent the largest portion of remaining ODS consumed. Unfortunately, not all alternatives to HCFCs are climate-friendly. Depending on the alternatives selected, the phase-out of HCFCs can either significantly contribute to climate change mitigation or entirely nullify a country's efforts to reduce its climate impact.

To tackle such challenges, ***Ministry of Environment is paying its highest attention to introduce low carbon strategies as alternatives which have zero impact on green economy.*** The implementing agencies (UNEP, UNDP, UNIDO) of the Montreal Protocol assist developing countries with economies and technology in transition to implement the Phase-out of HCFCs while fostering the introduction of ozone and climate friendly alternatives.***The NOU has already launched interaction with industrialist in Sri Lanka to disseminate such information, because Sri Lanka expects to implement HCFC Phase out programme without making any difficulty to the local industries and provide incentives and other facilities for them.*** Steps have been taken to train technicians, provide equipment for Refrigeration and Air Conditioning Sector in which HCFC are commonly used and ***grant financial facility to convert foam manufacturing industry to the alternative technology.***


MAP SHOWING THE MARITIME ZONES OF SRI LANKA
PREPARED BY NATIONAL HYDROGRAPHIC OFFICE
NARA, CROW ISLAND
COLOMBO 15
SRI LANKA
Source : Admiralty charts & Sri Lanka Survey Department
INDIA
COCHIN
QUILON
CAPE COMORIN
Historic waters (Internal waters)
Historic waters (Territorial sea)
TRINCOMALEE
SRI LANKA
COLOMBO
GALLE
TERRITORIAL SEA
CONTIGUOUS ZONE
INDO SRI LANKA MARITIME BOUNDARY
11°26.6'N-83° 22.0'E
11°16.0'N-82° 24.4'E
10°33.0' N - 80° 46.0' E
INDO SRI LANKA MARITIME BOUNDARY
EEZ INDIA
EEZ MALDIVES
04°44' 04" N - 77° 01' 40" E
EXCLUSIVE ECONOMIC ZONE AND POLLUTION PREVENTION ZONE
OUTER LIMIT OF EXCLUSIVE ECONOMIC ZONE