

THE 30TH ANNIVERSARY
OF THE MONTREAL PROTOCOL ON SUBSTANCES
THAT DEplete THE OZONE LAYER
AND
THE INTERNATIONAL DAY FOR THE PRESERVATION
OF THE OZONE LAYER 16TH SEPTEMBER 2017



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PREAMBLE

The Ozone Layer Preservation Anniversary on 16 September 2017 marks the 30 years of the international community jointly implementing the Montreal Protocol on substances that deplete the ozone layer under the Vienna Convention for the preservation of the ozone layer adopted in 1985, which was signed in 1987 in Montreal, Canada.

On this special occasion, Vietnam National Ozone Unit, Department of Climate Change, Ministry of Natural Resources and Environment in cooperation with the United Nations Environment Programme has organized activities for Ozone Day Celebration with the theme “Caring for all life under the sun”.

The Vienna Convention for the preservation of the ozone layer and the Montreal Protocol on substances that deplete the ozone layer with the target to phase out production and consumption of ozone depleting substances (ODS) on worldwide scale, in order to protect the ozone layer – the shield for all lives on the Earth, have received strongly supports and consensus from both developed and developing countries.

With its achievements, the Vienna Convention and the Montreal Protocol have been recognized as one of successful international cooperation models in battling global environmental issues.

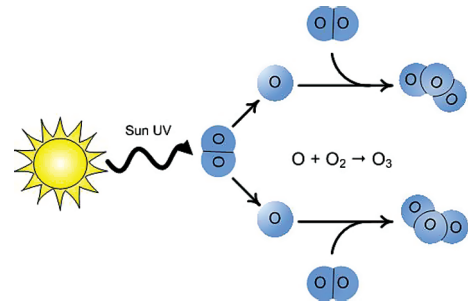
Vietnam, a member of the international community and a Party to the Vienna Convention and the Montreal Protocol, have been playing its role actively together with other countries in implementation of the Vienna Convention and the Montreal Protocol during 23 years since its ratification of the Montreal Protocol to ensure that the target of complete ODS phase-out is successfully implemented.

On this occasion, the Vietnam National Ozone Unit would like to express its thanks to related ministries, agencies, media agencies, enterprises and individuals that have cooperated closely and effectively and contributed to the implementation of the Vienna Convention and the Montreal Protocol in Vietnam.

Thanks are cordially delivered to the Multilateral Fund for the implementation of the Montreal Protocol, Global Environment Facility, United Nations Environment Programme, the World Bank, United Nations Industrial Development Organization for its support and cooperation in the implementation of the Montreal Protocol. The assistance and cooperation from these above-mentioned international organizations have contributed to successful phase-out of ODS helping Vietnam meet its commitment under the Montreal Protocol.

The Ozone Layer

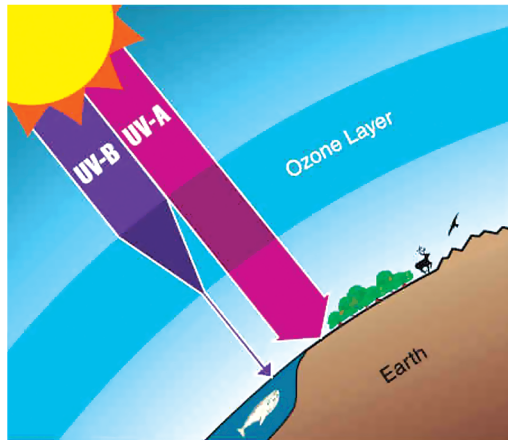
The Earth is the only planet in the solar system that has life. Life can exist on the Earth that thanks to the oxygen and other gases that form the atmosphere around the Earth. The ozone molecule consists of three oxygen atoms. Ozone is formed in the upper layers of the atmosphere in optical reactions caused by ultraviolet radiation from the sun that acts on the oxygen molecules.



Approximately 90% of the atmospheric ozone is at an altitude of 15-30 km in the stratosphere of the atmosphere forming the ozone layer. The ozone layer covering the Earth forms a shield that blocks UV-B harmful rays from the sun.

The Role of Ozone Layer

UV Protection by the Ozone Layer



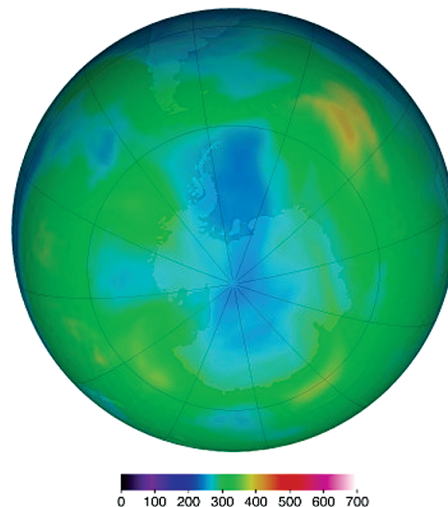
Radiation of the sun shining on the Earth consists of many types from ordinary light to ultraviolet rays (UV-A, UV-B, UV-C) in which UV-B and UV-C rays are harmful for life on Earth. However, these rays are absorbed by the gases before reaching the ground. UV-C rays are oxygenated and together with UV-B rays are absorbed by the ozone layer. The ozone layer is a very effective natural filter, preventing any harmful radiation rays. Therefore, any disturbance or depletion of the ozone layer can lead to an increase in ultraviolet radiation reaching the ground. Most of the ultraviolet radiation causes serious consequences for humans, animals and plants.

The Depletion of the Ozone Layer

Since the mid-1970s, the world community has been concerned about the depletion of ozone in the stratosphere. In 1975, the World Meteorological Organization (WMO) issued a statement about the depletion of the ozone layer. As the result, the "Global Ozone Surveillance and Research" project was launched. The results of research by hundreds of top scientists in the world have increased the understanding of the ozone layer and the threats to the ozone layer.

However, it was not until 1985 that clear evidence of the decline of ozone atoms in the ozone layer was recognized after the Halley British Antarctic Expeditionary Station published its measurements. These results indicated a significant decline in the ozone layer in the Antarctic ozone layer in the spring of the early 1980s. Significant depletion of ozone areas is called "Ozone hole" because the ozone is so low that it can no longer shield the ultraviolet radiation. Ozone depletion in the stratosphere has increased swiftly in scale. Observations by artificial satellite in 1987 showed that Antarctica "ozone hole" covers an area equivalent to the whole of Europe.

The ozone hole formed above Antarctica is due to a combination of suitable climatic conditions for the sun-induced ozone-destroying reactions in the spring. Scientific discoveries show that interactions between molecules in stratospheric clouds and chlorinated and brominated compounds play an important role in the large-scale destruction of ozone in Antarctica.

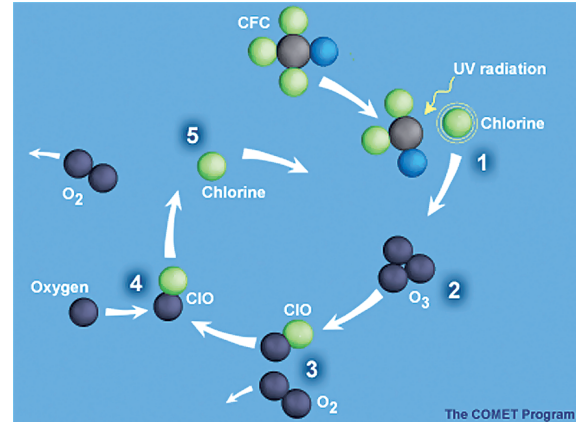


Dobson Unit

*Antarctic ozone hole status imaged
by NASA on 15 June 2017*

The Ozone Depleting Substances

In 1974, scientists found that a chemical using in industrial applications, chlorofluorocarbon (CFC), had spread throughout the atmosphere and reached the stratosphere. It was these chlorine compounds and some other compounds that contained bromine, the culprit that depleted ozone in the stratosphere. Under the impact of ultraviolet UV-B radiation at high altitudes, chlorine and bromine atoms from CFCs and other substances attacked and destroyed stratospheric ozone molecules.



Atoms that destroy ozone from CFCs combine only with oxygen for a very short period of time and then separate into independent atoms that continue to destroy other ozone molecules. A chlorine atom can destroy up to ten thousands of ozone molecules. CFCs are composed of carbon, chlorine and fluorine elements, together with carbon tetrachloride (CCl_4) and methyl chloroform (CH_3CCl_3) that are of chemical group containing chlorine that deplete the ozone in the stratosphere. These gases are widely used in many fields such as refrigeration, air conditioning, foam production, cosmetic chemistry, material cleaning and electronics.

Another type of ozone-destroying substance is bromine-containing substances. Mostly halons and methyl bromide (CH_3Br). Halon is an extinguishing agent used in the fields of aviation, oil and gas exploration and defense. Methyl bromide is used for quarantine and sterilization in agriculture. Due to their ozone depletion properties, these chlorine and bromine compounds are collectively referred to as ozone depleting substances (ODS).

The Vienna Convention for the Preservation of the Ozone Layer

Clear evidence of severe ozone depletion has given the international community great care and the need for concrete action to protect the ozone layer.

After three years of intense negotiations under the coordination of the United Nations Environment Program (UNEP), the Vienna Convention for the Preservation of the Ozone Layer was adopted in March 1985 in Vienna, Austria. The Convention contains 21 articles, urging Parties to protect human health and the environment from the effects of the ozone layer depletion. Two appendices are given to the participating countries for coordinated research, observation, exchange of information and atmospheric ozone data. The Parties also agreed to prepare specific measures in the form of a protocol under the Vienna Convention. Up to now, 197 countries have ratified the Vienna Convention.

The Montreal Protocol on Substances that Deplete the Ozone Layer

The historic Montreal Protocol on substances that deplete the ozone layer was adopted in Montreal, Canada in September 1987. The Montreal Protocol imposes measures and obligations to completely phase out production and consumption of ozone depleting substances on member countries, taking into account the particular circumstances of developing countries.



Signing the Montreal Protocol - 16 September 1987

With the development of science and technology, many alternatives have been invented and introduced. In order to accelerate the process of phase out of the production and consumption of ODS, the Montreal Protocol has been amended. Amendments at the meetings of the Parties: London (1990), Copenhagen (1992), Montreal (1997) and Beijing (1999).

The Montreal Protocol with amendments stipulates that developed countries completely phase out the production and consumption of CFCs and halons in 1996; HCFCs by 2020. While developing countries have preferential status to completely phase out consumption of CFCs and halons by 2010 and HCFCs until 2040.

In 1992, the Parties to the Montreal Protocol established the Multilateral Fund for the implementation of the Montreal Protocol (Multilateral Fund), which was financed by developed countries. The Multilateral Fund is dedicated to providing financial and technological assistances to developing countries in the process of phasing out the production and consumption of ODSs as stipulated in the Montreal Protocol.

To date, 197 countries have ratified the Montreal Protocol. 100% of global consumption of CFCs and halons has been phased out. The Montreal Protocol has become a model of international cooperation in addressing global environmental issues and protecting the Earth's environment.

Vietnam Country Programme for the Phase Out of Ozone Depleting Substances

In January 1994, Vietnam officially ratified the Vienna Convention for the Preservation of the Ozone Layer and the Montreal Protocol on Substances that Deplete the Ozone Layer, and at the same time adopted London Amendment (1990) and Copenhagen Amendment (1994) of the Montreal Protocol. In November 2004, Vietnam also ratified two Amendments Montreal (1997) and Beijing (1999).

The Government of Vietnam has assigned the former Directorate for Meteorology and Hydrology and since 2002 the Ministry of Natural Resources and Environment as the focal point in order to implement the Vienna Convention and the Montreal Protocol in Vietnam. The focal point is to coordinate with ministries and branches to develop Vietnam Country Programme for the phase out of ozone depleting substances. In 1995, the Prime Minister approved "Vietnam Country Programme for the Phase out of Ozone Depleting Substances" (the Country Programme). The Country Programme was approved by the Executive Committee of the Multilateral Fund for providing financial and technological assistances to Vietnam to phase out ozone depleting substances.

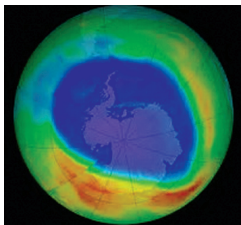
Main Objectives of the Country Programme

- ✓ Provide information on consumption and application of controlled ODS in Vietnam;
- ✓ Develop plans to monitor and control the consumption of ODS and the effectiveness of reducing the consumption of ODS;
- ✓ Develop Vietnam's policies, strategies and action plans for the phase-out of ODS and calls on countries and international organizations to provide financial and technological supports for the implementation of programme, projects and activities aiming at phasing out the consumption of ODS as proposed by the Country Programme;
- ✓ Provide incentives for technology conversion for the seek of ozone layer and environment;
- ✓ Develop policies and programme to raise awareness on ozone layer preservation and ODS phase-out in Vietnam.

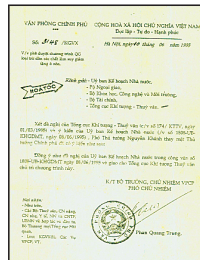
In order to implement the Country Program, as required by the Executive Committee for the implementation of the Montreal Protocol, the Vietnam National Ozone Unit was established and designated the Focal Point for implementing the Vienna Convention and the Montreal Protocol in Vietnam.

Over the past 23 years, since Vietnam ratified the Vienna Convention and the Montreal Protocol, the Vietnam Ministry of Natural Resources and Environment, a national focal point for implementing the Vienna Convention and the Montreal Protocol in close cooperation with line-ministries, agencies, industries, enterprises and stakeholders has effectively exploited the financial and technology support from the Multilateral Fund to phase out ODS. Vietnam received more than \$ 15 million in financial support from the Multilateral Fund and has completely phased out CFC, halon since 2010, phased out methyl bromide for non QPS purposes since 2015 and pure HCFC-141b used in foam manufacturing since 2015, fully meeting the obligations by the Montreal Protocol.

Vietnam and the Montreal Protocol 1994 - 2017



Vietnam conducted assessment and considered ratification of Vienna Convention and Montreal Protocol



Vietnam approved Country Programme to phase out Ozone Depleting Substances

The Ozone Award was given to organizations and individuals who contributed to the preservation of the ozone layer on the occasion of the International Day for the Preservation of the Ozone Layer 16/9, 1997-1999.

1993

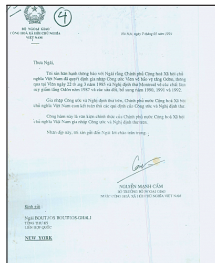
1994

1995

1996

1997

Vietnam ratified Vienna Convention and Montreal Protocol; ratified London and Copenhagen Amendments



Vietnam National Ozone Unit was established





01 project in the field of cosmetic was approved

The Ministry of Natural Resources and Environment was established and assigned as the National Focal Point for implementing the Vienna Convention and the Montreal Convention

1998

The signing ceremony of a joint circular regulating the management of imports and control of the use of methyl bromide

01 project in the field of methyl bromide was implemented



1999

2001

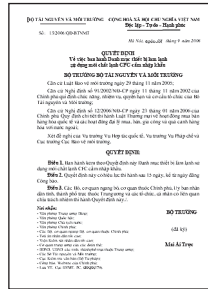
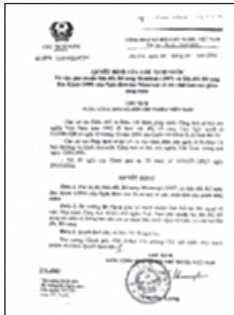
Promulgating the Joint Circular No. 717/2001/TTLT/TCKTTV-BCN-BTS dated September 17, 2001, guiding the management of the import and control of the use of ozone depleting substances in Appendix A, the Montreal Protocol

2002

Dr. Dao Duc Tuan, National Ozone Coordinator, was awarded by the United States Environmental Protection Agency (US EPA) for his contribution to ozone layer preservation

2003





Vietnam ratified Montreal Amendment (1997) and Beijing Amendment (1999) to the Montreal Protocol

Decision No.15/2006/QĐ-BTNMT dated 8th September 2006 on promulgating the list of CFC contained refrigeration equipment that is banned from import.

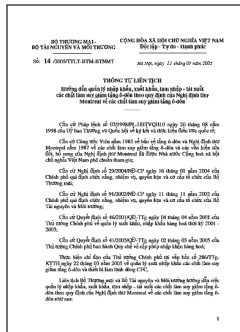
Ban the import of CFCs, halons and CTCs.

Complete phase-out of more than 500 tons of CFC, Halon and CTC from 1st January 2010



Promulgating the Joint Circular No. 14/2005/TTLT/ BTM-BTNMT dated 11 July 2005 stipulating the management of the import, export, temporary import for re-export of ozone depleting substances according to the Montreal Protocol.

A competition in regards to the ozone layer preservation for 11th and 12th grade students was organized





Vietnam is recognized for its contribution to the ozone layer preservation.

The project "Vietnam HCFC Phase out Management Plan stage I" was approved and implemented.

Promulgation of Legal Document No.1477/ KTTVBDKH-GSPT dated 29 December 2014 on the ban of importation and exportation of pure HCFC-141b from 1st January 2015

Promulgation of Legal Document No.2139/ BTNMT-BDKH dated 3rd May 2017 recommends not to issue license for new or expansion of existing foam enterprises using HCFC-141b preblended polyols.

2011

2012

2014

2015

2016

2017

Promulgation of Joint Circular No.47/2011/TTLT-BCT-BTNMT dated 30 December 2011 regulating the management of import, export and temporary import for re-export of ODS in accordance with the Montreal Protocol

Vietnam is presented a certificate of recognition for compliance with the 2010 obligation to phase out consumption of CFC, Halon and CTC in accordance with the stipulated schedule

Promulgation of Legal Document No.132/BTNMT-HTQT dated 16 January 2014 recommends not to license new or expansion of existing refrigeration enterprises using HCFCs.

Project "Reducing greenhouse gas and ozone depleting substance emissions through technology transfer in industrial refrigeration" approved

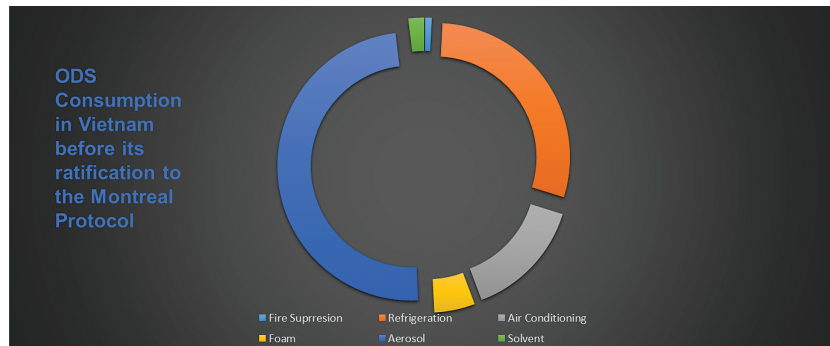
Vietnam conducted ODS destruction for the first time



ODS Consumption in Vietnam

Vietnam does not produce any ozone depleting substances. ODS is imported to meet domestic demand. In the 1990s, Vietnam consumed about 500 tonnes of CFCs, 4 tonnes of halon and nearly 400 tonnes of methyl bromide. The consumption of these substances is used in the following areas:

- Aerosol: CFC-12 is used as a propellant agent in the production of cosmetics (perfume, hair spray, aerosol spray);
- Foam production: CFC-11 is used as a blowing agent in the production of household appliances, insulation foam;
- Refrigeration and air conditioning manufacturing: CFC-11 and CFC-12 are used as refrigerants in refrigeration equipment such as refrigerators, ice makers, freezers; chillers, residential air conditioning, automobile air conditioning and other refrigeration equipment;
- Solvent: CTC is used in laboratories;
- Quarantine and Disinfection: methyl bromide is widely used in quarantine and disinfection of agricultural and forestry products, especially quarantine of agricultural and forestry products for preshipment;
- Fire fighting and prevention: there are two types of halon 1301 and halon 1402 that are for fire fighting and prevention application available at oil rig, oil tanker, aircraft.



ODS Phase-out Programme and Projects Implemented in Vietnam

As a country with low ODS consumption, less than 0.004 kg per capita per year, Vietnam is classified as a group of countries under Article 5 of the Montreal Protocol and entitled to receive technological and financial assistances from the Multilateral Fund to phase out ODS through projects that are administered by its implementing agencies such as the United Nations Development Program (UNDP), the United Nations Environment Program (UNEP), the United Nations Industrial Development Organization (UNIDO) and the World Bank (WB).

Aerosol Sector

06 technology conversion projects have been implemented at enterprises:

Sai Gon Cosmetic Company	DASO Co., Ltd	Nam Do Joint Stock Company
Thorakao Co., Ltd	Dong A Cosmetic Co., Ltd	
Chemical Cosmetic Service and Production Company		



Non CFC perfume production line

Phased out 200 tonnes CFC-12

Reduce emission of 2,180,000 tonnes CO₂ equivalent

Foam Manufacturing Sector

Two non-CFC foam production lines have been installed and come into production at two foam enterprises, Searee and Searefico.



Phased out **40** tonnes
CFC-11
Equivalent to
100% CFC-11



Replaced with HCFC-141b
(PU foam manufacturing)

Reduce emission of **190.000** tonnes CO₂ equivalent

Refrigeration and Air Conditioning Sector

03 projects to reduce emissions, recovery and recycling of CFC were implemented in areas:

Chillers at Garment and Textile Workshops

Air Conditioning for Transport Vehicles

Commercial Refrigeration

Phased out 3,6 tonnes CFC-11 per year and 45,8 tonnes CFC-12 per year

Reduce emission of 530.570 tonnes CO₂ equivalent



184 tool kits for MAC handling with CFC recovery and recycling was provided to servicing shops



2 training workshops for technicians working in MAC maintaining and servicing sector for **8** MAC refrigeration maintenance and servicing enterprises in Hanoi and Ho Chi Minh city



CFC Recycling and Recovery Machines in commercial refrigeration



CFC-11 Chiller at Nha Trang Textile Factory

Cleaning Sector

The Pilot Project "Using alternative for phasing out Methyl bromide used for quarantine and preshipment applications of bagged rice, grain - bulk cargo in silos " was conducted to find solutions and technology that were suitable for replacing the use of methyl bromide in Vietnam.



Testing phosphine (PH3)

Training Sector

Training of customs officers on inspection and control of import and export of ozone depleting substances.

Organize the trainings for more than

300 customs officers throughout the country on legal documents, procedures and skills to control the import, export of ODS and use of specialized equipment.

20 CFC identifiers were provided to the customs force at border gates.



Training of customs trainers on control of import and export of ODS in Hanoi

The train-the-trainer training programme under the Vietnam Refrigerant Management Plan (RMP)

30 trainers working in refrigeration and air conditioning sector were trained by international trainer.

1.200 trainers and technicians were

Trained



Certified



handled with
CFC



Practical use of recovery and recycling machines

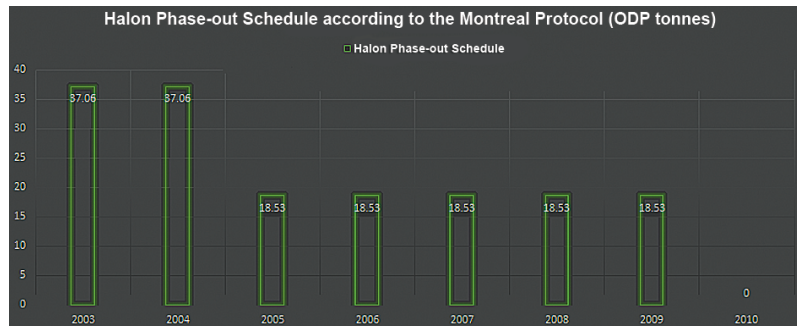
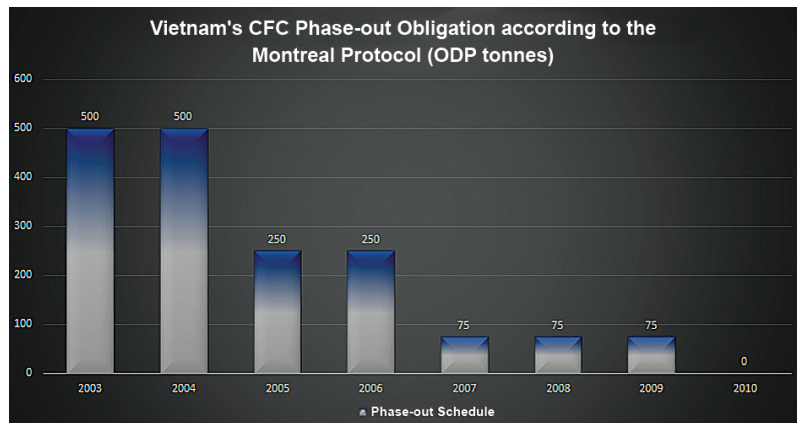


Vietnam National CFC and Halon Phase-out Management Plan

According to the Montreal Protocol, by 2010, developing countries including Vietnam, must completely phase out production and consumption of CFCs and halon.

In order to fulfill its national obligations under the Montreal Protocol, on behalf of Vietnam, the Ministry of Natural Resources and Environment in cooperation with the World Bank has developed "Vietnam National CFC and Halon Phase-out Management Plan" (NCHP) for implementation during the period 2005-2010. This plan is to ensure that the country complies with the complete phase-out of CFCs and halon by 2010 and is a continuation of activities for phasing out ODSs carried out in the preceding period. The NCHP also develops specific policy measures for the complete phase-out of consumption of CFCs and halons from 2010 in Vietnam in accordance with the Montreal Protocol.

The NCHP includes a combination of policy measures, financial and technical supports and training activities to gradually reduce and completely phase out the import and consumption of CFC and halon in Vietnam.



Activities under Vietnam National CFC and Halon Phase-out Management Plan



Trainings for technicians working in refrigeration servicing and automobile air conditioning sector were conducted

Capacity building and technical assistance for the implementation of the NCHP were implemented

Technology conversion and technical assistance to phase out the consumption of CFCs in the foam production, commercial and residential refrigeration servicing, automobile air conditioning sectors and fire suppression sector were implemented

Regulation on banning production and import of CFC contained equipment was issued. The licensing system for controlling ODS import and export was issued

Awareness raising activities on complete phase-out of CFCs and CFC contained equipment, ozone preservation information dissemination were conducted nation-wide

Administrative mechanisms to implement and monitor the implementation of the activities under the NCHP was established and implemented

Achievements of Vietnam National CFC and Halon Phase-out Management Plan

Phased out 240 tonnes CFC-11

Reduced emission of **1.140.000** tonnes CO₂ equivalent

200 participants attended the awareness raising workshops on the ozone layer preservation

320 automobile registration officers were trained on the use of MAC refrigerant identifiers

286 participants attended the awareness raising workshop on the phase-out of CFCs and not to use CFC contained products as the metered dose inhaler for asthma patients

81 training tool kits including:
- **20** tool kits were provided to vocational training schools and centers nation-wide for teaching and training purposes

- **61** MAC refrigerant identifiers were provided to vehicle registration stations

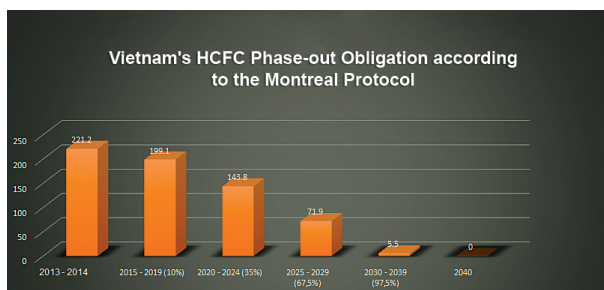
896 MAC and refrigeration and air conditioning servicing shops were provided with tool kits to ensure good practices on handling with refrigeration and MAC equipment to avoid leakage

1,132 technicians working in the refrigeration and air conditioning servicing sectors were trained on good practices when handling with RAC equipment

01 foam enterprise completed its technology conversion into HCFC-141b to phase out CFC-11

Vietnam HCFC Phase-out Management Plan, Stage I

In 2007, at the 19th Meeting of the Parties to the Montreal Protocol, Parties approved Decision XIX/6 on accelerating the phase-out of HCFCs, whereby the HCFCs phase-out schedule applicable to developing countries were indicated as followings:



Decision XIX/6 stipulates that when phasing out HCFCs, developing countries shall ensure the benefits of climate. Alternatives for HCFCs shall have zero ozone depleting potential (ODP) and low global warming potential (GWP).

In order to fulfill its national obligations under the Montreal Protocol, on behalf of Vietnam, the Ministry of Natural Resources

and Environment in cooperation with the World Bank has developed the "Vietnam HCFC Phase-out Management Plan, Stage I" (HPMP I) implemented during 2012 – 2017 period.

The HPMP I is to ensure that Vietnam fulfills its obligation to freeze its consumption of HCFCs at the baseline consumption level (221,2 ODP tonnes) from 1st January 2013 and phase out 10% of baseline consumption of HCFCs from 1st January 2015. Within the framework of HPMP I, 500 tonnes of pure HCFC-141b and 800 tonnes of HCFC-141b pre-blended polyols were phased out through technology conversion at foam enterprises using pure HCFC-141b.

Foam enterprises have conducted technology conversion using water blown and cyclo-pentane technologies that do not deplete the ozone layer and are more environmentally friendly to replace pure HCFC-141b in PU foam manufacture.

Activities Implemented under HPMP I



Capacity strengthening for customs officers on controlling import and export of HCFCs was conducted

Awareness raising and technical assistance for industries, associations and stakeholders were conducted

Training workshops for technicians in servicing shops on good practices of handling HCFC for residential air conditioner were conducted

Technology conversion into non HCFC technologies and technical assistance to phase out pure HCFC-141b and HCFC-141 pre-blended polyol at foam enterprises were implemented

Policy recommendation on not to issue license for new establishment and extension of production capacity for enterprises using HCFCs in refrigeration and air conditioning and foam sectors was issued. Licensing system for controlling ODSs was developed and implemented

A master plan to reduce consumption of HCFC-22 in refrigeration equipment in cold stores was developed. Technical assistance for refrigeration and air conditioning servicing sector was conducted through training workshops

Achievements of Vietnam HCFC Phase-out Management Plan, Stage I

Phased out **1,300 tonnes HCFC-141b**

Reduced emission of **942,500 tonnes CO₂ equivalent**

11 foam enterprises have implemented technology conversion into water blown and cyclo-pentane technologies to phase out HCFC-141b in foam production



6 training workshops

for **487**
customs
officers
were
conducted



6 training workshops on HCFC-22 phase-out and energy saving in refrigeration system in cold stores for **625** cold store owners and their technicians were conducted



4 training workshops on HCFC-22 phase-out and energy saving, energy efficiency improvement in refrigeration and air conditioning sector for **337** stakeholders participants were implemented



9 training workshops for technicians working in servicing sector on good practices of handling HCFC for residential air conditioner with **1.209** participants in total were carried out



6 safety training workshops on using cyclopentane in foam production for **532** officers and workers from **11** foam enterprises

Project “Reducing Greenhouse Gas and Ozone Depleting Substances Emissions Through Technology Transfer in Industrial Refrigeration”

Vietnam is implementing the phase-out of HCFCs as committed to the Montreal Protocol. In the industrial refrigeration sector, Vietnam is focusing on energy efficiency and the phase-out of HCFCs in large refrigeration systems to protect the ozone layer and to benefit the climate system.

The Ministry of Natural Resources and Environment (MONRE) in collaboration with the United Nations Industrial Development Organization (UNIDO) implemented the project "Reducing greenhouse gas emissions and ozone depleting substances emissions through technology transfer in industrial refrigeration" in 2014. The project is funded by the Global Environment Facility (GEF), implemented by the United Nations Industrial Development Organization and approved by the Ministry of Natural Resources and Environment on September 26, 2014.

The objective of the project is to reduce greenhouse gas emissions through technology transfer using non alternative with zero ozone depleting potential and low global warming potential in the industrial refrigeration sector in Vietnam. The project focuses on the synergies between the United Nations Framework Convention on Climate Change (UNFCCC) and the Montreal Protocol to reduce the emission of substances that deplete the ozone layer and the greenhouse gas.

The project consists of 3 components:

- i) Policy and regulatory support;
- ii) Technology transfer;
- iii) Awareness raising and capacity building in order to promote the development of a market for low GWP refrigerants, especially hydrocarbon technology in the industrial refrigeration sector.

Activities under the Project



Awareness raising and dissemination of knowledge on energy efficiency and ODS emission reduction through information materials, brochures and workshops

Technical assistance and technology transfer to apply hydrocarbon in small and medium cold stores to phase out HCFC-22



Create an innovative financing mechanism to assist enterprises in technology conversion through financial support under soft loan from linked commercial banks and agencies as well as other incentives and favourable policies to enterprises

Mẫu số 01/TĐBT

BỘ TÀI NGUYÊN VÀ MÔI TRƯỜNG
QUỸ BẢO VỆ MÔI TRƯỜNG VIỆT NAM

Địa chỉ: Tầng 6 - Tòa nhà LOD số 38 Đường Trần Thái Tông - Cầu Giấy - Hà Nội

Tel: 04.39426328 - 04.39429734 Fax: 04.39426329
Website: Vepf.vn

HƯỚNG DẪN

LẬP HỒ SƠ VAY VỐN LÃI SUẤT ƯU ĐÃI

Achievements of the Project "Reducing Greenhouse Gas and ODS Emissions Through Technology Transfer in Industrial Refrigeration"

HCFC-22 -> HC-290

25 HC-290 refrigeration units installed at **9** cold stores

Phased out **250** kg HCFC-22

Reduced emission of **450** tonnes
CO₂ equivalent

Energy saving **20 - 25%** in comparison
with baseline machines

Awareness Strengthening on Ozone Layer Preservation

Knowledge dissemination programs, scientific documentaries, national and international news on ozone layer preservation and alternative technologies; activities implementing the Montreal Protocol have been jointly developed and televised by the National Program and the Vietnam Television on VTV1 and VTV2 channels.

The central and local newspapers, specialized journals have disseminated information and news on the preservation of the ozone layer; implementing the Country Programme and the implementation of the Montreal Protocol in the country and in the world.



International Workshop on Ozone and Climate Technology



Filming at SEAREFICO Company



Newspapers on the preservation of the ozone layer and ozone layer depleting substances

More than 80 international and national workshops and seminars on ozone layer preservation were organized with the participation of representatives from 63 provinces and cities across the country.

More than 20 training courses on emission reductions through good practices, ODS phase-out, alternative technologies in refrigeration and air conditioning were organized.

Serial trainings were provided to technicians working in refrigeration and air conditioning servicing sector.

Some MAC maintenance and servicing facilities had successfully tested hydrocarbon technology.



Training on hydrocarbon technology in refrigeration and air conditioning services



Awareness Raising Materials

September 16th was chosen by the UN General Assembly as the "International Day for the Preservation of the Ozone Layer" and member countries are obliged to organize activities celebrating the anniversary solemnly on a global scale.

The Ministry of Natural Resources and Environment in collaboration with relevant ministries and agencies have annually carried out activities commemorating the International Day for the Preservation of the Ozone Layer.



Celebrating International Day for the Preservation of the Ozone Layer

To acknowledge the contributions of agencies and individuals in the implementation of the Montreal Protocol in Vietnam, since 1997 the "Ozone Award" has been awarded by the Country Programme to agencies and individuals.

30 agencies and 9 individuals including both the Vietnamese and foreigners have been awarded the Ozone Award.

3,500 children across the country have participated in the children's painting competition "We preserve the ozone layer" organized by the Country Programme in coordination with the Youth Newspaper. 36 children have received awards from the Country Programme and donors. The painting ranked at the first prize was sent to the international painting competition for the preservation of the ozone layer.



The Ozone Award



The Children's Painting Competition "We preserve the ozone layer"

A competition to learn about the preservation of the ozone layer for 11th and 12th grade students was organized. Two students won the first rank of the contest was sent for participation in the UNEP Regional Contest for the Preservation of the Ozone Layer held in Bangkok, Thailand.



700 students of the Olympia School participated in the painting festival with the theme "Restored by a World United" organized by the Ministry of Natural Resources and Environment in collaboration with DAIKIN Air Conditioning Joint Stock Company (Vietnam), and the Olympia School. Awards were granted to 48 students by the Ministry of Natural Resources and Environment and sponsor.



Participation in Regional and International Activities



As a Party to the Montreal Protocol, Vietnam fully participates in the Meetings of the Parties to the Montreal Protocol.

As a member of the Southeast Asia-Pacific Ozone Officer Network, Vietnam have participated in and hosted thematic regional workshops.

Vietnam in collaboration with the Implementing Agencies of the Multilateral Fund of the Montreal Protocol such as UNDP, UNEP, UNIDO, WB to develop and implement projects financed by the Multilateral Fund to phase out ODS.

Working with the Executive Committee of the Multilateral Fund to review the performance and effectiveness of projects funded by the Multilateral Fund in Vietnam.

The Kigali Amendment to the Montreal Protocol: HFC Phase-down



The Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer reached agreement at their 28th Meeting of the Parties on 15 October 2016 in Kigali, Rwanda to phase-down hydrofluorocarbons (HFCs).

HFCs are commonly used alternatives to ozone depleting substances (ODS). While not ozone depleting substances themselves, HFCs are greenhouse gases which can have high or very high global warming potentials (GWPs), ranging from about 121 to 14,800.

The phase-down of HFCs under the Montreal Protocol has been under negotiation by the Parties since 2009 and the successful agreement on the Kigali Amendment (Decision XXVIII/1 and accompanying Decision XXVIII/2) continues the historic legacy of the Montreal Protocol.

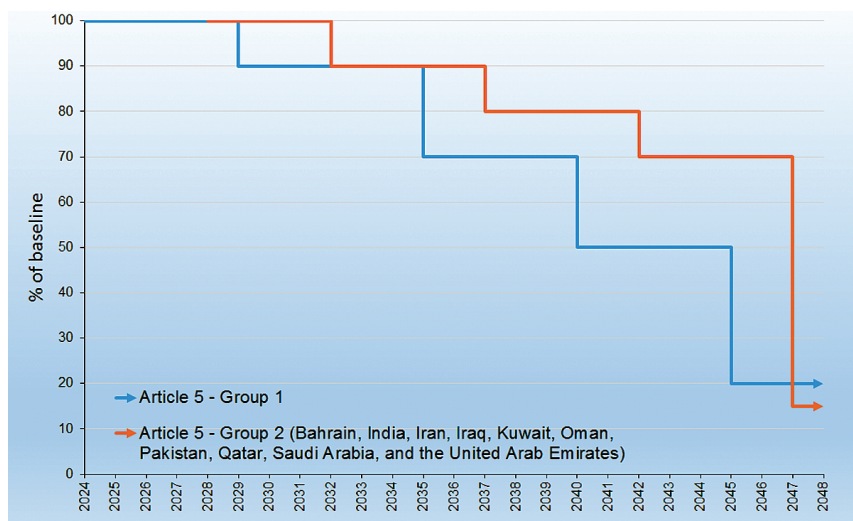
The Kigali Amendment will help avoid the global temperature increase by 0.5°C by 2100.

Overview of Kigali Amendment

- The Kigali Amendment will enter into force on 1 January 2019, provided that it is ratified by at least 20 Parties to the Montreal Protocol (or 90 days after ratification by the 20th Party, whichever is later).
- There are two groups of Article 5 Parties with different baseline years and phase-down schedules
- A new Annex F has been added to the Protocol. This lists the HFCs, separated into two groups:
 - Annex F, Group I: all HFCs (except HFC-23, and HFOs)
 - Annex F, Group II: HFC-23.
- Global warming potential values have been added to the Protocol text for HFCs, and selected HCFCs and CFCs.
- Production, consumption, imports, exports and emissions as well as consumption baselines of HFCs shall be expressed in carbon dioxide (CO₂) equivalents.
- Baselines are to be calculated from both HFC and HCFC production/consumption.
- Import and export licencing systems for HFCs must be in place by 1 January 2019.
- Trade with Parties that have not ratified the Amendment (“non-Parties”) will be banned from 1 January 2033.
- The Executive Committee is requested develop, within two years, guidelines for financing the phase-down of HFCs.

Articles 5 Parties - HFC Phase-down

	Article 5 Parties: Group 1	Article 5 Parties: Group 2
Baseline Years	2020, 2021 & 2022	2024, 2025 & 2026
Baseline Calculation	Average production/ consumption of HFCs in 2020, 2021, and 2022 <i>plus</i> 65% of HCFC baseline production/consumption	Average production/ consumption of HFCs in 2024, 2025, and 2026 <i>plus</i> 65% of HCFC baseline production/consumption
Reduction steps		
Freeze	2024	2028
Step 1	2029 – 10%	2032 – 10%
Step 2	2035 – 30%	2037 – 20%
Step 3	2040 – 50%	2042 – 30%
Step 4	2045 – 80%	2047 – 85%



Group 1: The majority of Article 5 Parties.

Group 2: Bahrain, India, Iran, Iraq, Kuwait, Oman, Pakistan, Qatar, Saudi Arabia, and the United Arab Emirates

Group 2 has a later freeze and phase-down steps compared with Group 1. The freeze date is four years later (2028 compared with 2024).

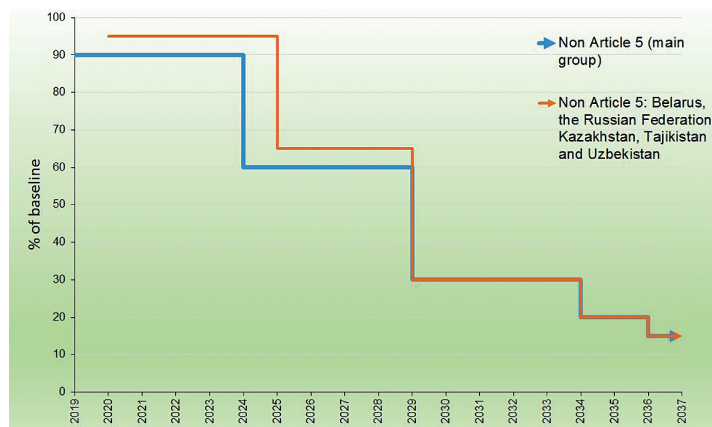
Non-Article 5 Parties - HFC Phase-down

	Non-Article 5 (Main Group)	Non-Article 5: Belarus, Russian, Kazakhstan, Tajikistan & Uzbekistan
Baseline Years	2011, 2012 & 2013	2011, 2012 & 2013
Baseline Calculation	Average production/ consumption of HFCs in 2011, 2012 & 2013 <i>plus</i> 15% of HCFC baseline production/ consumption	Average production/ consumption of HFCs in 2011, 2012 & 2013 <i>plus</i> 25% of HCFC baseline production/ consumption
Reduction steps		
Step 1	2019 – 10%	2020 – 5%
Step 2	2024 – 40%	2025 – 35%
Step 3	2029 – 70%	2029 – 70%
Step 4	2034 – 80%	2034 – 80%
Step 5	2036 – 85%	2036 – 85%

Several non-Article 5 Parties (Belarus, the Russian Federation, Kazakhstan, Tajikistan, and Uzbekistan) have a different formulation for the calculation of baseline and have different initial phase-down steps from the other non-Article 5 Parties.

Non-Article 5 Parties do not have freeze in consumption; their first control measure is a 10%, or a 5% reduction.

The final phase-down dates are the same for all Non-Article 5 Parties (production and consumption)



Development Process and HFC Phase-down Schedule of the Kigali Amendment

