



GOAL

ZERO



Success Stories from Asia and the Pacific in phasing out ozone depleting chemicals

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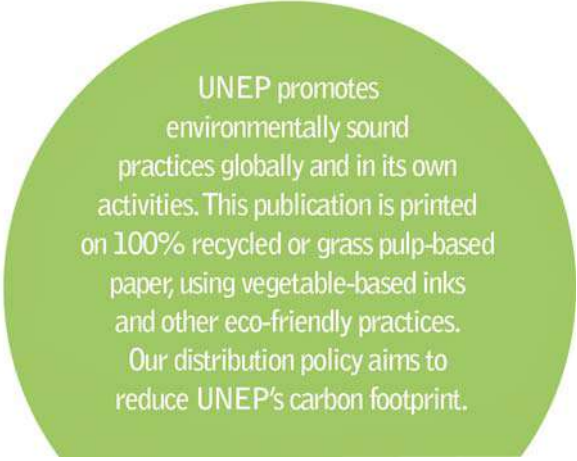
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This book dedicated to the memory of Mr K Madhava Sarma

During his tenure at the Ozone Secretariat as its Executive Secretary from 1991-2000, Mr K Madhava Sarma saw the Vienna Convention and its Montreal Protocol through numerous meetings in Copenhagen, Vienna, Montreal and Beijing. Some of the key issues resolved at those meetings were the replenishment of the Multilateral Fund and the adjustments and amendments to the Montreal Protocol. He streamlined the administration of the institutions of the Protocol, the reporting requirements and other administrative obligations so that signatories could devote their full attention to resolving challenging political issues.

Prior to being recruited to head the Secretariat, Mr Madhava Sarma was a senior member of the Indian diplomatic team involved in the negotiations between the first and the second Meetings of the Parties (1989-1991). During this time, he was an effective spokesman for the developing country perspective and co-sponsored many of the provisions of the London Amendment including on the financial mechanism, while creating enforceable obligations to protect the ozone layer. He made other significant contributions as the senior Indian official looking after environmental policy, law, institutions and international cooperation, including responsibility for global environmental issues.

He earned the 1996 US EPA Stratospheric Ozone Protection Award and an award from UNEP 'For Extraordinary Contribution to Ozone Layer Protection'.

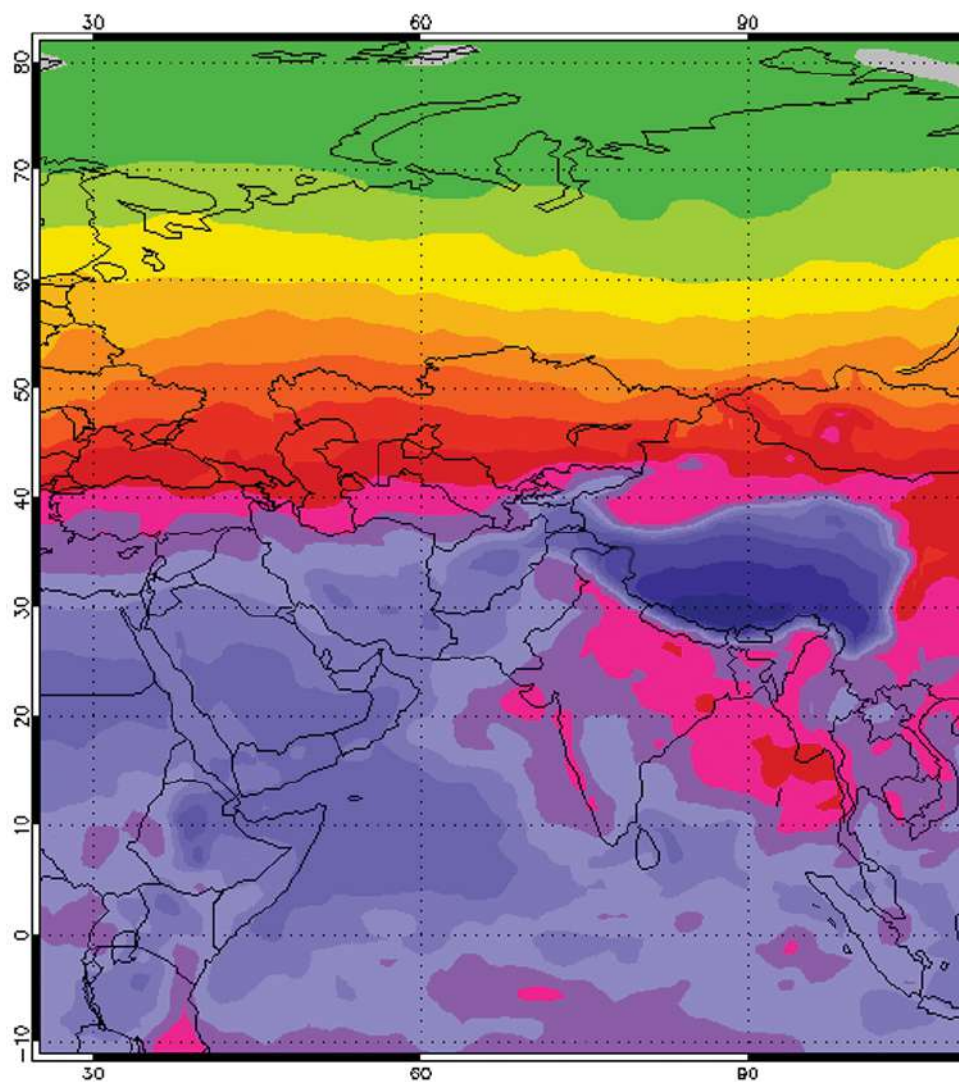


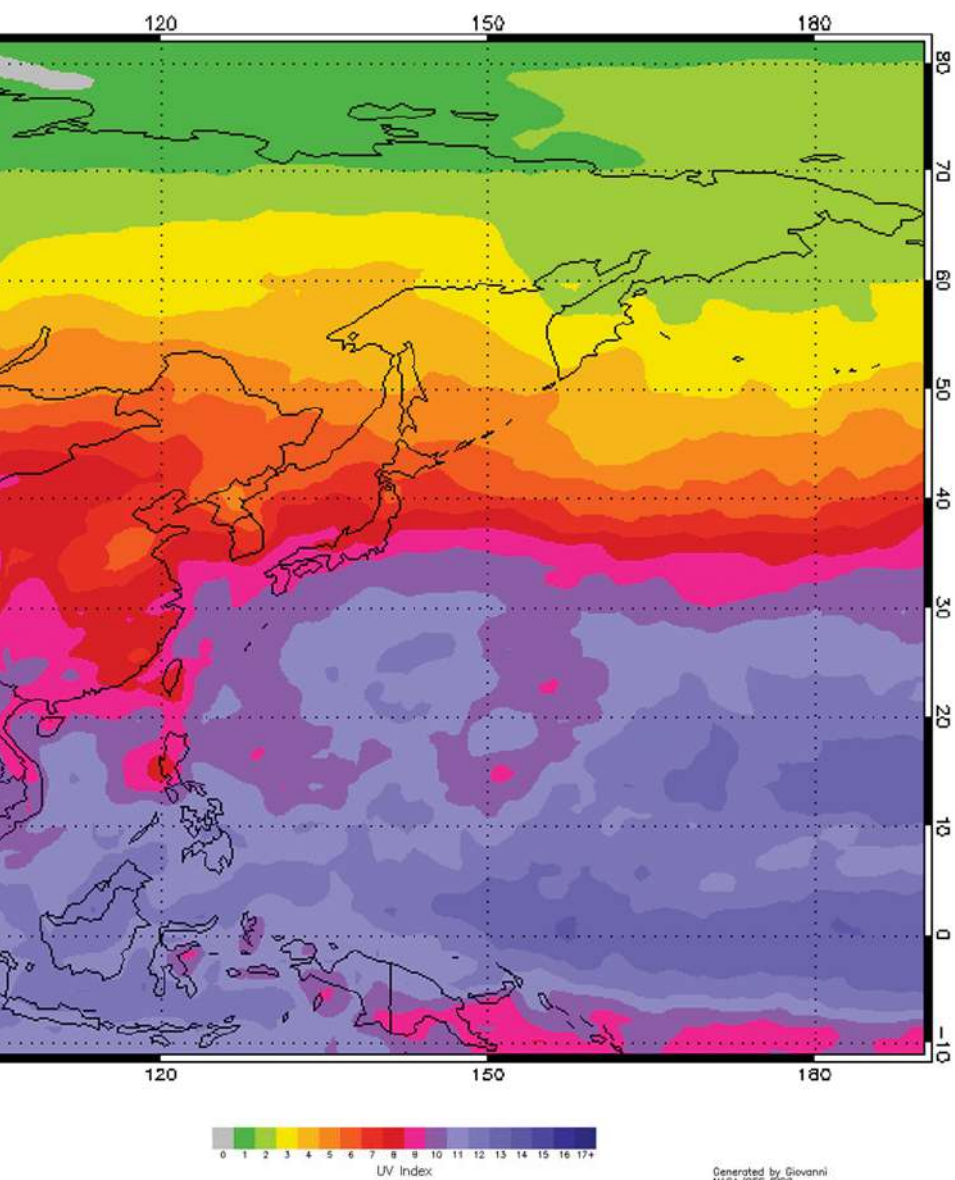
Mr K Madhava Sarma
8.7.1938 - 30.9.2010

OMI/Aura UV Index from OMUVBd v003
August 2007 Average

GLOBAL SOLAR UV INDEX

The Solar UV Index is a measurement of the UV radiation level at the Earth's surface. The higher the Index value, the greater the ultra-violet radiation leading to greater potential for damage to the skin and eyes. In countries close to the equator, the UVI can be as much as 20. Summertime values in northern latitudes rarely exceed 8. Inside the ozone hole, UVI increases due to the depletion of the ozone layer.





Acknowledgements

UNEP DTIE OzonAction, Compliance Assistance Programme, Regional Office for Asia and the Pacific (CAP ROAP) is grateful to all national ozone officers from South Asia, South East Asia and the Pacific as well as the Pacific Island Country Networks for sharing stories of their success as Parties to the Montreal Protocol, and moving towards 'Goal Zero'.

We would like to extend our gratitude to the heads of states and other senior level government officials, the Ozone Secretariat, the Multilateral Fund Secretariat, the implementing agencies and the bilateral partners of the Montreal Protocol, the Executives of leading companies and celebrities in Asia and the Pacific region for their contribution that has makes the Guest Column of this publication lively and much more valuable.

We would like to extend our appreciation to the journalists from various news agencies in Asia and the Pacific region who developed the reportage on different countries that makes this publication more exciting.

We are especially grateful to NASA for providing the maps of UV Index from the OMI OMUVBd v003 whose data are created by the Finnish Meteorological Institute (FMI).

We would also like to extend our thanks to UNEP DTIE Director, Ms Sylvie Lemmet for her overall guidance. Our special thanks and appreciation to Dr Young-Woo Park, UNEP's Regional Director and Representative for Asia and the Pacific, Mr Rajendra

Shende, Head of UNEP DTIE OzonAction Programme and the Compliance Assistance Programme (CAP) team in Paris, in particular Mr Jim Curlin, Ms Anne Fenner, Ms Jo Chona, Ms Samira de Gobert, Ms Benedictine Desbois and Ms Maria Ghoneim.

Thanks to the untiring efforts of the OzonAction CAP ROAP team: Dr Thanavat Junchaya, Mr Hu Shaofeng, Ms Kakuko Nagatani-Yoshida, Ms. Charuwan Tintukasiri, Mr Mahmood Riyaz and Ms Rowena Elemento for their valuable inputs on the draft. Thanks to the Ozone Secretariat for the Article 7 data on which the consumption graphs in this book are based.

Our special acknowledgement to Dr Sita Ram Joshi, Director General of Nepal Bureau of Standards and Metrology for facilitating and coordinating the printing and production of this publication. Thanks also to WWF Nepal, Ms Johanna Son at Inter Press Service (IPS), and Ms Mia Turner from UNEP's Division of Communications and Public Information for the reportage and guest columns, as well as the Institute of Governance & Sustainable Development and Ms Lauren W Deutsch.

Finally, we would like to thank Mr Kunda Dixit and Mr Kiran Maharajan of the *Nepali Times* newspaper in Kathmandu for editing and designing this book.

This publication was conceived and coordinated by Mr Atul Bagai, Senior Regional Coordinator and Ms Nujpanit Narkpitaks, UNEP DTIE OzonAction CAP ROAP.

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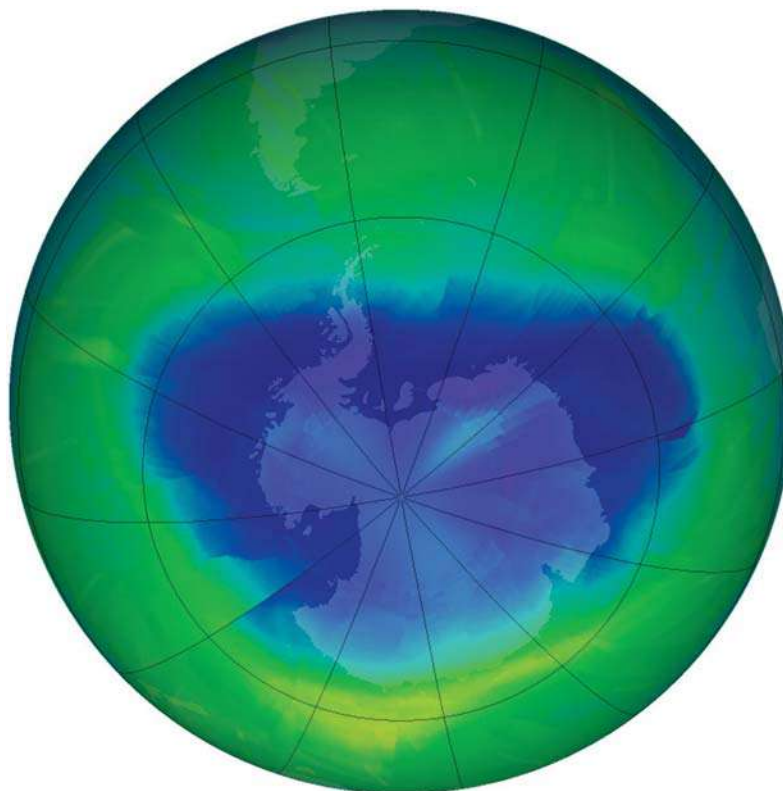
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NASA Aura satellite image of the Antarctic ozone hole on 12 September, 2010 four days before the annual commemoration of the International Day for the Preservation of the Ozone Layer. The “hole” in the ozone layer typically reaches its maximum area in September–October, but its size and depth in 2010 was slightly below the average for the 1979–2009 period.

The Story Behind the Success Stories

Rajendra Shende

Christopher Langan had an IQ of over 195, whereas Albert Einstein's was 150. Mr. Langan ended up working on a horse farm in rural Missouri, USA, whereas Einstein - well we all know of his achievements after leaving the patent office in Bern. The scoop behind the "success stories" around the world is as follows: however smart, ambitious and hard-working an individual may be, he or she cannot succeed without an enabling environment and without supportive network of humans.

I strongly believe that what is true for an individual is also true for Multilateral Environmental Agreements (MEAs). The smartest Convention with ambitious targets and creative mechanisms coupled with the most ingenious implementing mechanisms may end up without any meaningful results. Volumes have been written about the key factors behind the achievements of the Montreal Protocol. Beyond any doubt, these include technology transfer, the financial mechanism, policy enforcement and so on. However, the story behind the Protocol's 'success story' will not be complete, unless we add yet another critical factor of "giving a human face" to the Protocol.

Over the last two decades I have been closely engaged in the exercise of creating an enabling environment for capacity building-by giving a human face to these efforts. The Montreal Protocol now claims universal participation; each and every country is now Party to the Protocol. Long before this achievement, the OzonAction Regional Networks of National Ozone Units achieved universal participation of the developing countries, i.e. each and every of the 147 developing countries - even though some of them had not ratified the Montreal Protocol - engaged in an hand-holding exercise at global level and heralded the

success of the Protocol. The culture of "my brother" which is embedded in the Arabic world, a concept of "global family" which is at the core of Oriental philosophy and a notion of "equality" rooted in the Occidental world were practiced by all over the last two decades in implementing the Protocol. The NOUs of the Republic of Korea and Democratic Republic of Korea; India and Pakistan; Japan and China; Azerbaijan and Armenia- all sat next to each other in our regional network meetings and got involved with what I call "networking without borders". Their geographical borders effectively dissolved when collectively all countries resolved to achieve compliance. They held a shared value of compliance to protect the ozone layer and reduce the impact of climate change.

Brotherly networking transformed the objectives of the Protocol into an Einsteinian success. Many other Conventions claim much higher IQs and the smartest mechanisms. However, the human face of the Montreal Protocol - though many times invisible and often seeming to be obsolete in an intricately modern and crisis-ridden globalised world - has served as a lighthouse for this Protocol. This "story behind the success stories" has been fundamental to the pages that follow.



*Rajendra Shende is Head, OzonAction Programme UNEP DTIE
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The Montreal Protocol is the most successful multilateral environmental agreement to date, having phased out 98% of ozone-depleting substances.

When Zero is Excellence

Young-Woo Park

Twenty-three years have passed since the global community recognized the need to protect the ozone layer and signed the Montreal Protocol to phase out ozone depleting substances (ODS).

The Montreal Protocol is recognized as the most successful multilateral environmental agreement to date, having phased out nearly 100 ODS by 98%. From 1990 to 2010, the Montreal Protocol's control measures on production and consumption of such substances will have reduced greenhouse gas emissions by the equivalent of 135 gigatons of CO₂, making it another important instrumental in the fight against climate change.

The Montreal Protocol could not have delivered such profound achievements and success without strong governance and compliance structures put in place by its member countries. UNEP through the innovative mechanisms of the Compliance Assistance Programme, Regional Office for Asia and the Pacific (CAP ROAP), has been assisting member countries in the region, who are the main producers and consumers of ODS, to comply with the ODS phase out deadline on 1st January 2010.

Production and consumption of the most damaging ODS were eliminated, except for a few critical uses. This significant success is one of the best examples of international cooperation to solve environmental problems in history.

This publication by the CAP ROAP team reflects this historical success of Asia and the Pacific region by telling

stories of key stakeholders who are involved in the implementation of the Montreal Protocol. They include national ozone officers, implementing agencies, bilateral partners, executives of leading companies, as well as celebrities in the region. It also consists of reports composed by journalists on various countries that have made significant inroads in meeting compliance with the Montreal Protocol and overcome major obstacles for their achievements.

This publication can serve as a guide for other Multilateral Environmental Agreements on implementation of chemical management at national level. It is hoped that this publication will be used by national ozone officers as a reference on lessons learned and for taking future steps for the Hydrochlorofluorocarbon (HCFC) phase out which is the next major challenge for Asia and the Pacific region.



Dr Young-Woo Park is UNEP's Regional Director and Representative for Asia and the Pacific



A Bangladeshi manufacturer of Metered Dose Inhalers, Beximco Pharmaceuticals, that used ozone depleting chemicals has now moved to environmentally-friendly ingredients.

Our Common Future

Md Zillur Rahman

It gives me immense pleasure to know that the United Nations Environment Programme, Division of Technology, Industry and Economics (DTIE) Ozon Action, Compliance Assistance Programme, Regional Office for Asia and the Pacific is developing a book about the success and experience of Asia and the Pacific region in phasing out ozone depleting substances (ODS). I have been informed that the creation of this book was suggested by the 24 countries from Asia and the Pacific region to commemorate the 1st January 2010 Montreal Protocol ODS control measures.

Bangladesh is one of the signatory countries of the Montreal Protocol and has been working relentlessly to achieve the goals of the Protocol since its accreditation with the Montreal Protocol. It has been proved that CFC gases damage the Ozone Layer in the stratosphere and increase the amount of ultraviolet B (UV-B) radiation reaching the Earth's surface. Since the ozone layer protects human beings, animals and plants from the damaging effects of UV-B radiation, the steady increase in CFCs and other ODS constitute a major potential health hazard. It is our concerted responsibility to prevent great harm to future generations and to stop the use of

CFC gases for the interest of the entire mankind and the planet.

I am happy to know that Beximco Pharmaceuticals Ltd has introduced CFC-free inhalers which would sure help our government in achieving the goals set out in the Montreal Protocol. I believe all pharmaceutical companies of our country are taking necessary steps to covert their CFC-based products into HFA forms for the sake of environment and people.

I wish the transition and all associated in this process success for making our planet a better place to live.



Md Zillur Rahman is the President of Bangladesh





Male, the capital of the Maldives, showing its vulnerability to climate change. HCFC phase-out, with its links to both ozone depletion and global warming, is an important part of the Maldives' shift towards carbon neutrality.

The Maldives Shows Early Phase-out Is Possible

Mohamed Nasheed

The Maldives plans to phase out the use of HCFCs by 2020, 10 years ahead of the country's international obligations under the Montreal Protocol. The decision underlies Maldives' concerns over greenhouse gas emissions which cause climate change. Scientists have warned about the effects of global warming for decades. For a country such as the Maldives, which sits just 1.5 metres above the sea, these warnings come with added bite.

The Maldives hopes that by leading the way and discontinuing the use of HCFCs early, we can demonstrate that an early phase-out is possible and practical, leading the way for other countries to follow suit. The government's decision is in line with the Maldives' ambitions to become carbon neutral, by pioneering low carbon development and ecologically sound tourism.

We believe that going green isn't just ecologically sound but also economically beneficial. The Maldives is famed for its luxury resorts, whose refrigeration systems are the source of most of the country's HCFC emissions. Moving early to phase out the use of HCFCs not only helps protect the beautiful tropical environment tourists come to see but also positions Maldives as a strong eco-destination.

A similar economic logic applies to the Maldives' plans to shift from oil to renewable energy production. Imported diesel is not just dirty; it is also extremely expensive. For

us, it makes financial sense to shift from using foreign oil to using energy resources we have in abundance: namely, the sun, the sea and the wind.

We believe that countries that move first and move fast to green their economies, will be the winners of the 21st Century. As the effects of climate change continue to worsen, world leaders will be forced, sooner or later, to impose some form of price on greenhouse gas emissions. Once this price signal is in place, hundreds of billions of dollars of investments will flow from increasingly expensive dirty technologies and fuels to ever cheaper green and renewable products.

For the Maldives, the HCFCs phase-out is an important part of a wider shift towards green growth and development, where the environment is viewed not as something to be plundered but as a precious economic asset to be protected.



Mohamed Nasheed is the President of the Maldives.





The sky above Antarctica, where the annually recurring ozone hole is expected to continue as long as the stratosphere contains an excess of ozone depleting substances.

An Important Journey

João Mendes Gonçalves

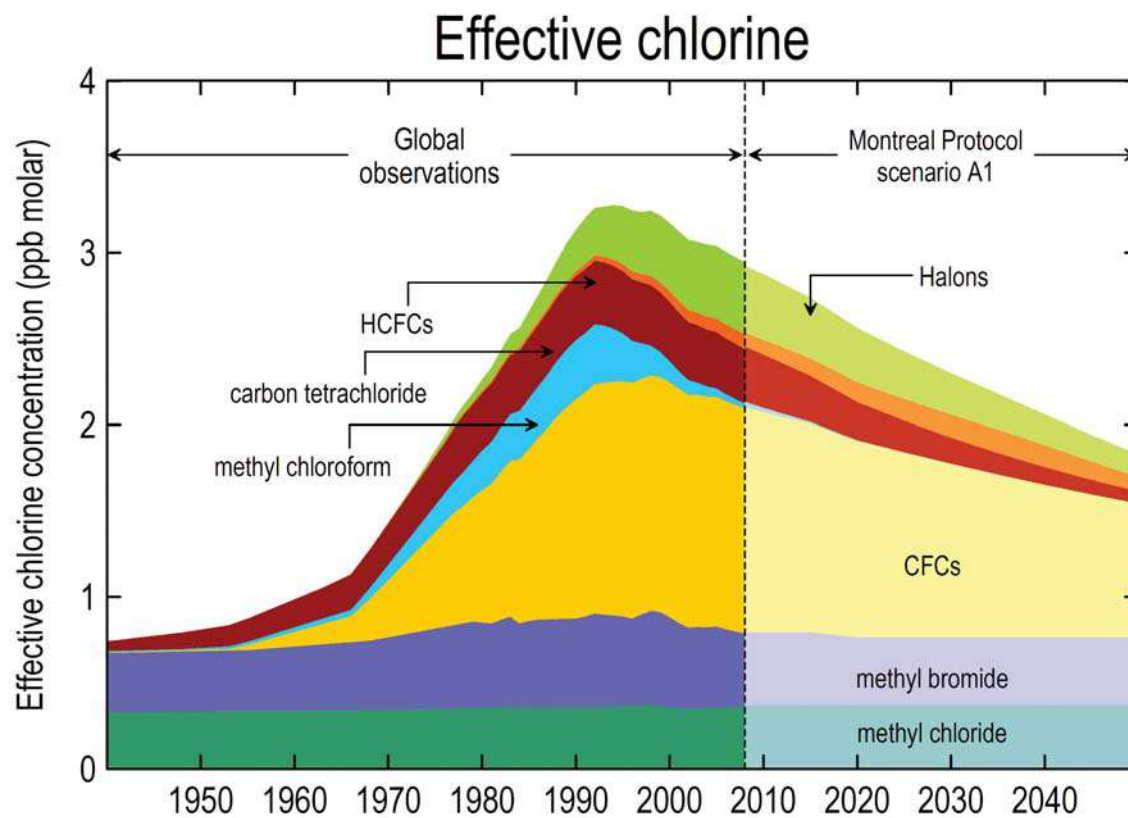
Timor-Leste is the world's youngest nation and also the latest member of the ozone family when we acceded to the Montreal Protocol on 16 September 2009. Being the last signatory to the Montreal Protocol means that we have a lot of catching up to do in order to successfully implement the Montreal Protocol. The country is facing great challenges in rebuilding its infrastructure and strengthening the civil administration among others. Despite these challenges, we know that we must do our part in protecting the ozone layer that protects life on earth.

We are optimistic that we can overcome these challenges and we are very thankful to receive the warmest welcome from other members of the family. With funding assistance from the Multilateral Fund and technical assistance from both UNEP and UNDP, we are committed to meet the obligations of the Protocol including achieving total phase-out of CFCs at the earliest opportunity and to meet the upcoming control measures from HCFCs.

It has been said that the Montreal Protocol is a timely reaffirmation that through unity of purpose and concerted action we can minimize risks to our planet and build a safer world for future generations. We are very pleased to be part of the fight against the depletion of the ozone layer and the effort towards its recovery like other states that preceded us in this important journey.



João Mendes Gonçalves is the Minister of Economy and Development of the Democratic Republic of Timor-Leste



Silver is Golden for the Vienna Convention

Annie Gabriel

In 2010, the 25th anniversary of the finalisation of the Vienna Convention for the Protection of the Ozone Layer, it is timely to reflect on the journey we have travelled. The development of international policy on ozone layer protection had a long gestation since 1974, when Molina and Rowland first controversially highlighted the threat of CFCs to the ozone layer in Nature. It took a review by the USA National Academy of Sciences in 1976 before the research was accepted widely, and in 1981 the UNEP Governing Council established a working group of experts to develop a framework convention. Disagreements about the way forward meant that by 1985 there was still no draft convention.

In 1985, Farman, Gardiner and Shaklin published findings in *Nature* that reported sharp reductions of 40-50 % in the depth of the ozone layer over Antarctica in Spring each year. The “ozone hole”, as it became known, was so wide that it spread over parts of South America and New Zealand. It was these findings that finally led countries to agree on the need for international action and the Vienna Convention was agreed very shortly thereafter. The countries that agreed the Vienna Convention also put in motion the negotiation of the Montreal Protocol, which was finalised on 16 September 1987.

While the Protocol started modestly, it is a testament to the governments of the time that actions were put in place even when the science was not fully understood, and that existing controls were tightened and new ones added as the science became clearer and the necessary steps became more obvious.

Science continues to be the fundamental driver of the Vienna Convention and the Montreal Protocol. Parties

continue to support and value not only the scientific and technical information provided annually by its technical bodies, but also the quadrennial reports on ozone depletion that track our progress in restoring the ozone layer and highlighting new issues. The climate benefits which have accrued as a result of the Montreal Protocol were evaluated by Velders et al in 2007 as being larger than those benefits that would accrue as a result of the first commitment period of the Kyoto Protocol – certainly another reason to value the work that countries started in 1985.

Twenty-five years on, the science is telling us that we are on track to meet our original objectives of returning the mid-latitude ozone layer to return to pre-1980 levels by 2045 - and for the ozone hole over Antarctica to recover by 2060. This major achievement shows what can be done when good science informs international policy. This does not mean that we should be complacent. We still need to be vigilant in meeting our obligations and in tracking our progress. The case studies in this book highlight just some of the excellent work by countries in the Asia-Pacific region, and will be a foundation for the protection of our ozone layer into the future.



Annie Gabriel is Assistant Director Ozone and Synthetic Gas Team at the Department of the Environment, Water, Heritage and the Arts in Australia



BILLI BIERLING

The summit of Mt Everest on the border between Nepal and China. At nearly 9 km above sea level, the peak juts out into the edge of the stratospheric ozone layer.

Touching the Stratosphere

Apa Sherpa

In the spring of 2010, I set foot on the top of Mt Everest for the 20th time. In the years since my first ascent, I have seen the snow cover on the world's highest mountain melting. Where there used to be ice slopes there is now only rock. This is exposing all kinds of mountaineering debris (oxygen tanks, clothing, tents and even human remains). It is sad to think that the melting of the Himalaya is not a natural phenomenon but due to human-induced emission from the burning of fossil fuels. There on the summit ridge of Mt Everest, the effect of climate change is starkly visible and dramatic. But it is downstream in the valleys of Nepal, China and Bhutan where its impact will be felt in the danger of glacial flood outbursts, from erratic rains and unseasonal blizzards.

On the top Mt Everest, nearly 9 km above sea level, I am at the upper edge of the atmosphere. Recently, I was told, that is also where there is a layer of ozone that protects life on the planet from harmful cosmic rays. This thin layer of stratospheric ozone had started to become depleted especially over the South Pole because of chemicals used in industry. But, governments around the world were

determined to act, and with the implementation of the Montreal Protocol, the ozone hole has stopped growing. I think we should be able to show the same commitment to action with the Kyoto Protocol and curb greenhouse gases. And since many ozone-depleting chemicals are also very strong greenhouse gases, it is very important to control these chemicals to save the ozone layer as well as reduce the impact of climate change.



Apa Sherpa from Nepal has climbed Mt Everest 20 times, he is the World Wildlife Fund Brand Ambassador for Climate Change.





Keeping in mind the global-warming potential of CFC alternatives, Daikin is committed to continue tackling the refrigerant issue to protect the planet's environment into the future.

Cooling without Warming the Earth

Noriyuki Inoue

Founded in 1924, Daikin Industries Ltd. has grown to become a leading producer of air-conditioning systems and fluoro-chemical products. In fiscal year 2008, Daikin's total annual sales reached US\$14 billion and it had 40,000 employees around the world.

As a unique company producing both air-conditioning equipment and refrigerant, it is greatly influenced by fluorine-related regulations. Since 1987, Daikin has been tackling the refrigerant issue in the recognition of its importance to the success of the Montreal Protocol.

Under the Montreal Protocol, it was decided in 1990 that CFC refrigerants were to be phased out by 1996 in Japan. In 1992, it was also decided that HCFC refrigerants were to be phased out by 2030 (later accelerated to 2020). Daikin responded to the toughening regulations and developed alternative substances that do not deplete the ozone layer. Now, it is confronting the new challenge of the development of new refrigerants in the fight against climate change.

With regard to refrigerants, Daikin has always provided the global market with new refrigerants: HCFC refrigerants to replace CFC refrigerants promptly and then HFC refrigerants as alternatives to HCFC. At the same time, Daikin as a leading air-conditioning manufacturer has been developing and commercializing air-conditioning systems and refrigeration equipment using new refrigerants. In 1994, the first large-size chiller with R134a was placed on the market, followed by the

conversion of all models from CFC to HFC. In 2002, the conversion of all major models from HCFC22 to HFC, which started with the building air-conditioners in 1997, was completed. In the recent years, we have been focusing our attention and effort on the development of new refrigerants and air-conditioners based on the viewpoint of reducing the climate impacts of the refrigerant. For example, R32, HFO1234, and an R32/HFO mixture that are medium or low GWP (global warming potential) refrigerants. The company is also exploring the use of natural refrigerants.

Daikin is seriously concerned with the emissions from the "bank" of refrigerants or the stock of the refrigerants contained in the equipment in use or sold in the global market. The total amount of fluorine emissions from the bank is said to be equivalent to 2.5 billion tons of carbon dioxide, which accounts for nearly 10% of the total climate impact of all the Kyoto Protocol gases combined. The reduction of emission of refrigerants is therefore crucial. Daikin is committed to continue tackling the refrigerant issue to protect the planet's environment into the future.



Noriyuki Inoue is Chairman of the Board and CEO of the Japanese company, Daikin Industries Ltd.



Sri Lanka's Dilmah Tea is sharing its expertise in phasing out the use of Methyl bromide as a soil fumigant to comply with the Montreal Protocol.

Making Business Climate and Ozone-Friendly

Dilhan C Fernando

Our family business was established with two important objectives: of bringing quality tea back to tea drinkers around the world and making our business a matter of human service. As my father, Dilmah Founder Merrill J Fernando, took his first steps in seeking to fulfill his vision, both objectives were integrated into the heart of the business that today spans over 90 countries.

Dilmah's increasing commitment to the environment that started in 2004 was strengthened in 2007 with the establishment of Dilmah Conservation. In July, 2010 my family was joined by over 100 of our partners from around the world in making a declaration: "Dilmah owes its success to the quality of Ceylon Tea. Our business was founded therefore on an enduring connection to the land and the communities in which we operate. We believe that conservation is ultimately about people and the future of the human race, that efforts in conservation have associated human well-being and poverty reduction outcomes."

This elevates the environment to the core of the Dilmah Philosophy alongside human service, and benefiting from a minimum of 10% of its global profits for projects that include marine and terrestrial habitat and species conservation with an emphasis on the north and east of Sri Lanka, helping indigenous communities sustainable, ecosystem restoration, promoting sustainable agriculture, protection of biodiversity and environmental education.

Sri Lanka has implemented various measures to comply with environmental-related international conventions

and agreements where Sri Lanka is a signatory including the Montreal Protocol. The usage of methyl bromide as a soil fumigant in the tea sector was halted to comply with the Montreal Protocol. This measure was introduced to all Dilmah owned and affiliated plantations with facilitation and subsequent monitoring by the Sri Lanka Tea Research Institute (TRI). Dilmah tea gardens now use Basamid-Granular for soil fumigation. Although the new methodology is cumbersome, our plantations have adopted it unreservedly in order to reduce the damage to ozone layer.

Bio-remediation of the tea plantations in Sri Lanka is also being undertaken. Dilmah Conservation is pursuing the biochar pathway using Dilmah tea estates to demonstrate the effectiveness of the technique, and to share the developments and expertise acquired in the process with every tea grower in Sri Lanka. Biochar is produced by thermal decomposition of organic material under limited supply of oxygen at relatively low temperatures, and it improves soil productivity. The philosophy that defines our business is aimed at recognizing that internalizing social and environmental factors is a very basic obligation of ethical business.



Dilhan C Fernando is son of Dilmah Founder and Director of Dilmah Tea



GMF-AeroAsia received the 2010 United States Environmental Protection Agency Montreal Protocol Awards for its Halon Bank Management Initiative.

The Green Airline

Emirsyah Satar

We are delighted to be recognised by the United Nations Environment Program (UNEP) for the establishment by our subsidiary PT.GMF-AeroAsia, in conjunction with the Indonesian Government, of the first Indonesian Halon Bank. This is not just for aviation users in Indonesia but we envisage cooperation with other halon banks in South East Asia and DASCEM (the Commonwealth Department of Administrative Services Centre for Environmental Management) in Australia.

Garuda Indonesia has recognised the need to be an environmentally responsible airline for over 15 years, when we introduced aircraft Aqueous Cleaning Methods in 1995. But our commitment to being an environmentally conscious airline is on-going. In 2007 we introduced the 'One Passenger, One Tree' reforestation project in Sebangau National Park in Central Kalimantan which is a 5 year program to save the vital Orangutan habitat.

We are also working with IATA to identify UN-approved Certified Emissions Reduction (CER) projects or carbon offset projects in Indonesia. The question for Garuda Indonesia in the future, is not the additional costs of being a green or environmentally aware airline, but to consider the long term benefits to our passengers,

partners, stakeholders, and the planet as a whole, of being a "green" airline.

GMF-AeroAsia has also provided technical assistance to the military establishments in Turkey and Pakistan on ODS management in defense forces. These are shining examples of GMF-AeroAsia's initiatives which help other developing countries in the region on technical operations to phase out ozone depleting substances.



Emirsyah Satar is the President and CEO of Garuda Indonesia. GMF-AeroAsia is the leader in Halon Management in Asia and the Pacific region. In 2010 GMF-AeroAsia received the United States Environmental Protection Agency Montreal Protocol Awards for its Halon Bank Management Initiative.



Dr Young-Woo Park, UNEP's Regional Director and Representative for Asia and the Pacific and Ms Judith B Cefkin, US Embassy Deputy Chief of Mission, Thailand, presenting the USEPA Montreal Protocol Award to Tata Young on 4 October 2010 at the Foreign Correspondents' Club of Thailand.

What on Earth

Tata Young

Asia and the Pacific region, and especially Thailand, have always been a special place for me. It is where I call home. For some time now, I have been assisting to help send the important message to phase out the use of ozone depleting substances through the medium of my own music. My message reaches out through my public performances and appearances to let everyone know my concern about the harmful chemicals which destroy the ozone layer, and that creates climate change.

I am a recording artist, model and actress. You might know me as an advocate for environmental and social issues such as “MTV Exit: Human Trafficking Campaign” and the “One Love – One Leaf” tree planting, and the book recycling program. My most personal undertaking is being a spokesperson in UNEP DTIE “My Ozone Wish” campaign.

Since 2008, my team and I have been collaborating with UNEP DTIE OzonAction Compliance Assistance Programme Regional Office for Asia and the Pacific in various activities to raise public awareness on ozone layer protection.

I was featured in the video called “My Ozone Wish”, a public service announcement that sent a powerful message about CFC’s and ozone depletion. We also launched UNEP Ozzy Ozone cartoon booklet: “Ozzy Goes Island Hopping” and last year, I performed at the

“EU Green Days: What on Earth Concert” in Bangkok where I spoke to encourage my fans to use ozone-friendly products. At the launch of my 3rd English album “Ready for Love”, “My Ozone Wish” video was screened at the mega event, and a special sticker saying “Protect yourself, protect the ozone layer” was placed on my album’s CD cover. I also convinced my record company to print my album on recyclable paper.

We have been working with the CAP team on a pro-bono basis and look forward to building a long-term collaboration in our continued efforts to promote the cause. We will use the power of music to capture people’s heart and encourage them to take action to protect the ozone layer and prevent climate change.

There is a saying in Asia, people can be like bamboo when it comes to change. . . we must teach the old bamboo to bend to new ideas, but the young bamboo is our future as they are the most flexible and will shape in new ways to protect and preserve our planet’s ozone shield.



Tata Young is Thailand’s international recording artist.



Turning around the air-conditioning and refrigeration industries to phase out chemicals that harm the ozone layer and warm the planet's atmosphere will require a delicate balancing act on the part of individuals, industries and governments in the Asia and Pacific region.

One Action At a Time

Li Bingbing

Even though most people learned about my interest in the environment after I was designated an Environmental Ambassador for the China Environmental Protection Foundation in 2004, my concern for the planet began many years ago.

As a young girl, I would make a point of switching off the air conditioner when we left the house. As a teenager I opted to walk or use public transport whenever possible, and until today, I separate my trash for recycling. Though small, I know these actions have had a profound impact on the well-being of our planet. I believe that if we all take our responsibilities towards the Earth seriously and make caring for the planet part of our daily routine, we could make great strides towards preserving it for future generations.

In the 1980s, scientists raised the alarm on an expanding hole in our planet's ozone layer which was allowing dangerous ultraviolet rays to hit the earth. They warned that exposure to these harmful UV rays was a major public health concern, because it made people vulnerable to DNA damage and skin cancer.

Subsequently, the scientists confirmed that a range of chemicals used in industry, agriculture and household applications were depleting the ozone. The specific culprits were Chlorofluorocarbons (CFCs) and Hydrochlorofluorocarbons (HCFS) -- the gases used in aerosols, refrigerators and air conditioners.

In China, more than half of the HCFCs are consumed in the consumer-related products, such as room air

conditioners. It is therefore essential to raise awareness on HCFC issues among the manufacturers and consumers alike. But turning around industries like air-conditioning and refrigeration which generate more than US\$100 billion per year is no easy feat, and will require a delicate balancing act on the part individuals, industries and governments.

One of my favourite quotes comes from the spiritual leader, Mohandas Gandhi who famously stated, "Your beliefs become your thoughts, your thoughts become your words, your words become your actions, your actions become your habits, your habits become your values, your values become your destiny."

We can change our planet's destiny one country at a time...one community at a time...one individual at a time...one action at a time. An easy suggestion? Next time you are shopping, reach for a product marked Non-HCFC or Ozone-friendly, your grandchildren will thank you.



Li Bingbing is a Chinese actress and singer with success in both television and film. She is also a UNEP Goodwill Ambassador and WWF Earth Hour Global Ambassador in China.



One of the most dramatic indications of global warming is Imja Lake below Mt Everest in Nepal. Trekking maps of the region from 30 years ago show no lake here. Since chemicals which destroy the ozone layer such as CFC's and HCFC's are also global warming gases, protecting the ozone layer also helps prevent climate change.

Be the Change

Dia Mirza

When you are born to a father who is an industrial designer who refuses to take on a lucrative offer from a company to redesign their factory only because he discovers they are spewing effluents in a nearby river you are bound to be environmentally conscious.

What started as an assembly directive in school permeated into every quarter of my growing up years and adult life. Turning of the switches of fans, lights etc each time I left a room to carpooling with friends to get to school, the sport club or a birthday party. Never left the tap running as I brushed my teeth (I can still sometimes hear my teacher speak those words!), air-conditioners were a luxury we couldn't afford at the time. The water heaters were never left turned on beyond the time they were needed and if I dare ever forgot then I would be reprimanded so sternly that I never forgot again!

Perhaps it was the ozone depletion that the scientists were raising alarm bells on during the late 1980's that triggered this action in my school and at home, but I am grateful that my elders reacted to this information and were not passive towards it.

Ozone layer depletion is one of the most critical environmental issues. A hole the ozone layer means our shield from UV radiation has been damaged and we are exposed to skin cancer, chronic eye ailments, malignant melanoma and various other health hazards. Also, since chemicals, which destroy the ozone layer such as CFC's and HCFC's, are also global warming gases, protecting the ozone layer also helps prevent climate change.

The transition from HCFC's to environmentally friendly alternatives is a major task, given that there are industrial giants, governments and primarily a lot of money involved. But for a developing country like India achieving development goals in an environmentally sustainable manner is possible. To succeed in this endeavor I believe that information dissemination and awareness raising activities are extremely vital.

UNEP DTIE OzonAction Programme has created various information materials about ozone layer protection, as well as its linkages with climate change for different groups of people, including the industry, the decision-makers, the technicians, the students and general public. This information gives each one of us an opportunity to, as Mahatma Gandhi said, "be the change we want to see in others".

Change happens when attitudes are altered. We can all, each one of us be that change that we want to see in others, on our planet. Build a better tomorrow bit by bit. I am glad I am doing my bit. I know my father would be.



BIKRAM BAWA

Dia Mirza is a Miss Asia Pacific from India, Bollywood actress and film producer.





While research is underway to create new, safe refrigerants, it is urgent there's no time to waste in the campaign to end HCFC use.

Heat's on for Perfectly Cool

Lauren W Deutsch

It's a typical summer day in Beijing: the air is sweltering and humid. But there's good news for the average citizen: domestically produced room air conditioners, once luxury goods, have become more affordable throughout Asia.

While the opportunity to become "perfectly cool" feels like good news, the not-so-good news is that these affordable, status-building appliances utilize as a refrigerant HCFC-22 (hydrochlorofluorocarbons), an ozone depleting substance.

Many HCFCs have high global warming potential up to 2,000 times that of carbon dioxide and thus contribute significantly to climate change. Some 60% of world-wide production and utilization of HCFCs are currently centered in Asia. Under the Montreal Protocol treaty, HCFCs were originally tagged for complete world-wide phase-out by 2040. In 2007 all signatories agreed to a new, accelerated schedule, for phase-out by 2030, allowing an annual average consumption of 2.5 percent from 2030 to 2040.

The problem stems from an economy of scale. Millions more residents of Asia from Chinese condos and Indian spa resorts to Indonesian beachside bungalows have been switching on their AC units in the last two decades than when the original treaty-based benchmark projections were made. So, while life is becoming more comfortable, all that "cool" is accelerating global warming. While the use of CFCs (chlorofluorocarbons), another refrigerant ODS, has been curtailed and the ozone layer in fact has been improving, confirmed scientific research indicates that increase in HCFC-22 levels will not only impede this progress, but its use it will actually enlarge the hole in the earth's primary atmospheric sun block.

While research is underway to create new, safe refrigerants, there's not time to waste in the campaign to end HCFC use. So the Montreal Protocol has come to the rescue: again. Adopted in 1987, the Montreal Protocol is a binding international treaty endorsed by an unprecedented number (196) of nations at all levels of economic development, including China.

Durwood Zaelke, President of IGSD and an international expert on the Montreal Protocol, notes, “The treaty is dynamic and evolving, scientists and policy makers are hoping that it can be strengthened to further protect the planet’s primary sunlight filter while also doing more to prevent the dangerous buildup of greenhouse gases.”

To that end, in 2007 the signatories agreed to a more aggressive campaign to phase-out HCFCs, which, by the United States Environmental Protection Agency’s estimates, could reduce emissions by up to 16 billion metric tons of CO₂-equivalent through 2040.

Since 1995 the United Nations Framework Convention on Climate Change (UNFCCC) has been trying to reach a consensus on a pervasive treaty to mitigate the impact of greenhouse gas concentrations in the atmosphere, especially CO₂. The discussion is deeply complex: What is the nature of this activity? Who’s responsible? What’s anyone going to do about it?

The world clearly needs environmental heroes, and China, if it can realign its economic, social and political priorities, can emerge as a great one. The Chinese know they are in a pivotal position. The country has become the world’s largest producer of residential room air conditioners, an industry that contributes some \$100 billion to its GNP. In addition to providing governments, including China’s,

with direct technical assistance for phase-out, UNEP ROAP has drawn up and implemented an impressive information, education and communication strategy (IEC). Tailoring the proper message is as critical to the success of the effort as articulating the scientific basis for action and securing the endorsement of political leadership of the treaty.

“I believe that humanizing messages would help change people’s behavior. For ozone layer protection, we try to talk about the effects of depletion on health issues, such as eye cataracts and skin cancer from UV radiation,” says UNEP ROAP’s Atul Bagai.

One of UNEP ROAP’s most promising ozone depletion and global warming communications vehicles is *Perfectly Cool* (PC), a 22-minute documentary film that premiered on BBC World News “Earth Report” series in 2009. It is an engaging overview of the increasing use of HCFC-based air conditioners in China and the search for a substitute refrigerant in a way that includes the science, public policy, industrial and consumer perspectives.

“The problems of ozone layer depletion and climate change are not necessarily easy issues for a layperson to understand,” said Durwood Zaelke. “*Perfectly Cool* is important because it turns the complex details into a compelling story that anyone can follow.” Educational

programs for the air conditioning industry in China are being held to enable manufacturers to meet with scientists and to discuss new technologies that will enable them to produce more ozone-friendly products.

UNEP ROAP's current ozone education campaign includes subtitling the film and promoting distribution to local theatres throughout Asia. It was shown to journalists at the Foreign Correspondents Club in Bangkok in October last year, hopefully to encourage more, similar coverage of otherwise complex science-based issues about the environment. Other ozone media outreach includes regional traditional media (print and broadcast) as well as "viral" new, interactive media, such as blogging and online social networking, (Facebook, Twitter, Youtube etc.) to engage more of the public in the conversation.

Much like UNICEF's "Ambassadors" campaign, that recruits regionally prominent personalities from sports, entertainment and even politics to speak out on behalf of otherwise complex or devastating social issue, Perfectly Cool features China's pop star singer Sa DingDing as a "spokes-model".

At another level, the UNEP OzonAction Paris office created an Asian-friendly cartoon character, "Ozzie Ozone", to carry age-appropriate messages to educate young children in school and activity groups. There's even an international Ozone Day (September 16) during

which time educational events are to be scheduled.

The campaign includes cause-related marketing by engaging highly-recognized brands to participate and add their "halo" of acceptability to what otherwise may seem a distant, complicated or otherwise unappealing issue. Multinational brands including Coca-Cola, McDonalds and Unilever have made ozone-layer protection and climate change part of their social responsibility campaigns in the region. "Above all," sums up Bagai, "the message should accurately reflect the urgency of the situation and how ordinary people's lives may be affected."



Lauren W Deutsch is an independent scholar living in Los Angeles who conducts research and writes about traditional culture in East Asia.

<http://www.youtube.com/watch?v=FVJZMrSfA24&feature=related>

http://www.youtube.com/watch?v=wJ5z9erRbLc&feature=watch_response



After successfully phasing out CFCs, the challenge before the Asia and Pacific countries now is to ensure that alternative refrigerants and other chemicals do not contribute to global warming.

From Montreal to Kyoto

Nirmal Ghosh

The Montreal Protocol is the only international environmental treaty to which every single country on the planet has signed up. It is also the most successful international environment treaty ever, and it may be the key to dealing with the new and rising threat of other ozone depleting substances (ODS).

From 1991 until July 2010, the Montreal-based Multilateral Fund has approved projects worth US\$2.52 billion to phase out ODS. It is a formula that works. And 2010 is a milestone year for the Montreal Protocol since all chlorofluorocarbons (CFCs, the original ozone depleting chemical) are to be phased out by the end of December 2010.

But there remain threats to the ozone layer, simply because the substitutes for CFCs, and in turn their

substitutes, themselves either deplete ozone albeit at a slower rate. And they are also powerful greenhouse gases. And even if their production is at a far lower rate than major greenhouse gases like carbon dioxide, their growing volumes and their global warming potential, make them a serious threat.

The substitution of hydrochlorofluorocarbons (HCFCs) has enabled the phase out of CFCs, and their use remains critical. Because ODS are also drivers of global warming, the phase out of CFCs has yielded significant benefits in terms of slowing global warming. Dollar for dollar and ton for ton, phase-outs under the Montreal Protocol, besides stabilising the loss of ozone, have delivered four times the benefits in reducing greenhouse gases (GHGs), than emission reductions under the Kyoto Protocol.

The Kyoto Protocol deals with huge volumes. The Montreal Protocol deals with smaller volumes, but the gases pack more global warming punch. But the new challenge is hydrofluorocarbons (HFCs), which are substitutes for HCFCs.

The world's future will to a very large extent, be determined in Asia, where India and China because of their rapid economic growth, are pumping out GHGs at an increasing rate. Elaborate and even ambitious plans to curb emissions in coming decades, are welcome but risk being too late to make a difference.

The production and use of HFCs is growing along with the two giant economies. The problem is that HFCs may be ozone-friendly, but they are powerful greenhouse gases. And as such, they are under the Kyoto Protocol, not the Montreal Protocol. And while the Kyoto Protocol

is deemed by many to have failed in its objective, the outlook as far as its successor is concerned, may be even worse.

The fundamental challenge is how to balance replacing HCFCs with a greenhouse gas. And given the apparent failure to address global warming and the uncertainty of a successor to the Kyoto Protocol, where else can one turn for a solution?

Many advocate the Montreal Protocol. Transferring HFCs from the Kyoto to the Montreal Protocol has the advantage of slotting them into a mechanism that is proven to have worked.

The Montreal Protocol has an additional advantage: it deals not with emissions, but with production.

And Kyoto deals with a basket of 12 gases, which means countries can choose which ones to give priority to. Not surprisingly, only the most convenient options are chosen, the hard choices that are needed for meaningful reductions in global warming drivers, have not been taken.

If the objective is to control HFCs and thus slow global warming, then the Montreal Protocol can deliver. But at the time of writing, developing countries have consistently objected to transferring HFCs from Kyoto to Montreal. The argument is based on procedure, but also has a financial angle, the countries may lose out on carbon credits.

Yet carbon credits seem a petty issue when it comes to the good of the global commons. The Montreal Protocol remains a shining example of what can be achieved if

the world comes together and signs up to protecting the global commons and life as we know it.

The objective is too important to be subjected to arguments over turf and procedure and a few hundreds of millions of dollars for economies that in most cases, and certainly with India and China, can afford the cost.



Nirmal Ghosh, a writer and conservationist based in Bangkok, is a senior foreign correspondent for The Straits Times, Singapore.



Mountain regions like the Himalaya are sensitive barometers to the effects of climate change, as the receding snowline in this panorama of the Annapurnas in Nepal shows.

Ozone-friendly and Low Carbon

Kunda Dixit

How Asia develops, how much fossil fuel it burns to achieve its economic growth targets, or how fast its population grows will determine what will happen to the planet in the coming decades.

What is clear is that trying to attain western living standards using the western paradigms of growth, powered by fossil carbon and using chemicals that harm the environment, will put a massive strain on the biosphere. Most developed countries have realised they are a part of the problem, and have started taking corrective action. However, Asia's growing populations and economies will find it expensive to switch immediately to cleaner, greener, and a less fuel-efficient growth path. But somehow, they must be helped to do so, otherwise we are all doomed.

In a sense, the world's climate will be determined by how much carbon Asia burns in the present century. If it is going to be business-as-usual and the growth is powered by coal, diesel and petrol we are sure to be following the worst-case scenario in the climate models. This means the archipelago countries in the Asia-Pacific will go under, and the ice-caps in the Himalaya will recede even further, endangering water supply to nearly 1 billion people. And we don't even know what this will do to weather patterns worldwide. What complicates things even more is that the source of greenhouse gases is now no longer just fossil fuels but also the multi-molecule compounds that are used in refrigeration, air-conditioning, fire extinguishers, the pharmaceutical industry, etc.

In fact some of the chemicals that have been pushed as alternatives to ozone-depleting chemicals used in refrigeration are, in fact, thousand times more potent greenhouse gases than carbon dioxide. We are now aiming not just to lower our carbon footprints, but also our Hydrofluorocarbon footprints.

As the economies of the Asia-Pacific grow, the production of these chemicals is also growing. What this means is that while we solved one problem (switching to ozone-friendly chemicals) we have created another (produced more gases with even greater global warming potential).

As living standards rise in India, China and South-east Asia, the production and consumption of these chemicals is going to shoot up. We urgently require nations in the region, businesses, manufacturers and users to be aware of the complex chemistry of what we are doing to the atmosphere.

China doesn't just produce air-conditioners and refrigeration equipment for itself but also for the world. India doesn't just make inhalers for its own asthma

patients, but for users in other countries as well. Globalised trade means that Asia should not just be seen as a consumer of harmful chemicals, but also as the main exporter.

The good news is that the Montreal Protocol is a shining example of how the world's countries can make a difference when they act together. It is a model of how scientists have succeeded in generating awareness among the public and policy-makers, and created the public pressure and political will for international action. There is no reason why the Kyoto Protocol can't replicate this uniquely effective model for international cooperation.

An even more important reason to do it urgently is that the line between Montreal and Kyoto are now being blurred. The gases that used to cause the depletion of the atmosphere's protective ozone layer are being replaced by chemicals that are going to warm the atmosphere. The ozone problem and the global warming problem are linked: both lead to climate change.

Estimates show that up to 25 giga tonnes of CO₂-equivalent of emissions between now and 2050 could be eliminated through the phase-out of HCFCs. Besides advancing the recovery of the ozone layer by 3.3 years, such phase-out will also reduce global warming.

Sometimes it is hard to look at what all these statistics about giga tonnes really mean to people. But one just has to look at how slowing the depletion of atmospheric ozone over the past four decades has helped save people from blindness. The US Environmental Protection Agency (EPA) predicts that more than 22 million additional cataract cases will be avoided for Americans born between 1985 and 2100 due to the Montreal Protocol. Cataract affects 20 million Americans alone every year, imagine the number of cataract cases that will be avoided around the world. Since the 1970s millions of skin cancer cases have also been prevented because the ozone layer's filtration of harmful ultra-violet rays has been restored. You can't put dollars and cents to numbers of lives saved, but if you could, the Montreal Protocol paid for itself long ago.

The success of the Montreal Protocol, which has been ratified by all the world's 196 countries, means that the

ozone layer will recover to its pre-1980 levels after 2065.

Thankfully, all Asia-Pacific countries are fully on board with firm commitments for the phase-outs of HCFCs. Some countries have committed to achieve the targets ten years ahead of schedule. Some of the countries need some help with the transition, but there is no lack of awareness and political commitment in this region of the world.

Asia-Pacific countries know that they are not just trying to save themselves. They want to save the planet.



Kunda Dixit is the publisher of the Nepali Times newspaper in Kathmandu, a recipient of the United States Environment Protection Agency (EPA) Award 2009.

UNDP Gears Up for the HCFC Challenge

The Asia Pacific region accounted for over 90% of the global consumption of CFCs, Halons, CTC, Methyl chloroform and Methyl bromide in developing countries. Since 1990, UNDP has assisted 18 countries in the region to achieve compliance with ODS phase-out control targets under Montreal Protocol, to ensure the introduction of sustainable ozone-friendly technologies through targeted and strategic technology transfer investment projects, institutional strengthening and capacity-building, policy support, technical assistance and training. UNDP has been involved in over 1,000 projects and programmes amounting to US\$ 300 million by the Multilateral Fund, covering diverse ODS-consuming industrial sectors such as aerosols, firefighting, foams, refrigeration and solvents. Due to the high global warming potential (GWP) of these ozone depleting substances, their phase-out has also resulted in significant mitigation of direct GHG emissions, contributing to climate protection.

Some of the key initiatives of UNDP's projects and programmes for assisting the countries in the Asia-Pacific region for compliance with targets of the Montreal Protocol, have been:

Support for small and medium enterprises (SMEs): UNDP pioneered the concept of "umbrella projects"

for addressing ODS phase-out in SMEs, which is one of the defining characteristics of the industry structure in the region. Through innovative approaches, such as customized equipment, bulk procurement, standardization and involvement and cooperation with upstream suppliers and local industry associations, technology was developed and transferred cost-effectively, for addressing over 2,000 SMEs in the region in the aerosols, foams and refrigeration sectors, ensuring the viability of the SMEs with the new ozone-friendly technology and sustainable livelihoods for workers.

Ensuring affordable treatments for asthma and chronic obstructive pulmonary disease (COPD): Ozone-depleting chemicals were used as propellants for metered dose inhalers (MDIs) to treat asthma and COPD, both of which have been increasingly prevalent in the region. UNDP is helping ten MDI manufacturers in Bangladesh, India and Pakistan to fast-track ozone-friendly alternative propellant technology so that patients don't suffer disruption in their medications.

Reducing demand for virgin ODS: The servicing of refrigeration equipment in the region is carried out predominantly by the unorganized sector comprising of thousands of technicians. As long as there are end-users



of refrigeration equipment containing ozone-depleting substances as refrigerants, the equipment remain in service and will continue to need ODS for servicing. This has been the challenge in the Montreal Protocol phase-out targets, so UNDP designed cost-effective and innovative programmes for recovery, reuse and reclamation of ODS. It involved supporting technicians through equipment, tools and training, as well as supporting end-users to retrofit or replace their equipment to work with ozone-friendly alternatives. This resulted in reduced demand for virgin ODS for servicing and helped the countries in the region to reduce their ODS consumption.

The ODS phase-out experience in the region provide important lessons for the next challenge: accelerated HCFC phase-out. High-growth HCFC-consuming sectors such as air conditioning need to be addressed soon, so as to curtail the expansion of population of HCFC-based products. Sectors where cost-effective alternatives can be implemented should be prioritized for early phase-out, supported by targeted regulations to ensure sustainable reductions without market distortion. Projects and programmes targeted at reducing demand for virgin HCFCs, such as recovery, reclamation and retrofitting, need to be expeditiously implemented, so as to maximize environmental benefits. Promoting the sound management of chemicals (SMC) is an important aspect of UNDP's work to reduce global poverty, promote human health, and achieve the Millennium Development



Specially designed low-cost foam dispensers for the first SME group project in India.

Goals (MDGs). UNDP supports governments and country partners in formulating and managing projects and programmes for controlling and eliminating ozone-depleting substances (ODS) and persistent organic pollutants (POPs). UNDP uses innovative partnerships and financing opportunities for initiatives on cross-convention synergies, such as linkages between ozone layer protection and climate change, through innovative partnerships and financing opportunities.

<http://www.undp.org/chemicals/>



With help from the World Bank, several countries in the Asia-Pacific region piloted innovative projects for performance-based phase-out plans for ozone depleting substances and chiller replacement schemes with climate benefits.

The World Bank Lends a Hand

The Asia and Pacific Region holds an important place in the long history that went towards making the Multilateral Fund (MLF) of the Montreal Protocol an effective tool for generating impressive ODS phase-out results for Article 5 countries over the last twenty years.

In particular, several countries in the region piloted innovative project implementation modalities with support by the World Bank that have now been widely adopted under the MLF. These include the chiller replacement project with climate benefits, developed in Thailand and funded on a concessional basis through the GEF and MLF; and the performance-based, national ODS phase-out plan (NOPP) first approved as a project modality for Malaysia and Thailand in 2001.

Since the inception of the partnership on the Montreal Protocol between the Bank and Southeast Asian countries in the early 1990s, the focus has been on commanding phase-out results through custom-designed and sufficiently-funded investment projects. Evolving country needs and impending compliance targets dictated the need for a shift to more comprehensive programs that could facilitate sector transformation in a cost-effective

manner. Inevitably, it was found that this required a combination of long-term policy and funding incentives at the sector and/or national level.

The Thailand Chiller Replacement Project served to demonstrate what policy, technical and financial barriers needed to be overcome for owners to replace old, inefficient chillers with non-CFC, energy efficient chillers. This experience was later used to develop another round of chiller replacement projects under the MLF that would normally have not been eligible for funding due to net incremental savings. The Philippines Chiller Energy Efficiency Project not only used a similar model of co-financing from the MLF and GEF but has taken it to the next level by capitalizing on the climate benefits through carbon finance.

Thus, with US\$1 million in MLF grant funding, the Philippines has successfully leveraged nearly US\$9 million in funding to gradually eliminate environmentally unfriendly technology. Indonesia is the latest country in the region to venture into a chiller replacement project with the Bank with yet another unique modality based on credit guarantees.



Innovative, market-based delivery mechanisms for effectively and fairly distributing grant funding to sectors comprising SMEs such as the voucher scheme, were pioneered through the Thailand and Malaysia National CFC Phase-out Plans and later replicated in the Philippines. Vietnam was able to implement its NOPP in a shorter time-period because of the experience carved out by its neighboring countries.

In fact, the Bank's work, and more critically achievement of country Montreal Protocol goals have been clearly facilitated by the close cooperation and shared economic context of the countries in this region.

HCFC phase-out management plans are now under development for the next phase of Montreal Protocol implementation with the Bank's traditional partner countries in the Southeast Asia. These HPMPs will also build upon the successful elements of the past, such as

country-led, performance-based approaches which give countries the flexibility to tackle more difficult sectors over time.



With the new challenges and opportunities brought on by HCFCs, the World Bank looks forward to developing new initiatives with its Asian partner countries that can leverage resources through ozone-climate synergies; will support both the manufacturing and servicing sectors to adopt and employ alternative technologies while achieving phase-out requirements; and, ensures a continual evolution and development of institutional and regulatory capacity for coping with the

long trajectory of HCFC phase-out.

For more information on the World Bank's Montreal Protocol Program please see:

www.worldbank.org/montrealprotocol

GTZ Proklima

Since its inception in 1996, GTZ Proklima has been mandated to assist Article 5 countries in phasing out ozone depleting substances with a focus on climate benefits as well.

GTZ Proklima has gained significant experience in working with natural refrigerants which do not deplete the ozone layer and have very low or zero global warming potential. This know-how has been made available to many countries in the Asia-Pacific region and the relevant technologies have been transferred to Article 5 countries. GTZ works on energy efficiency, economic and social development as well as environmental policy advice, and wants to share its experiences with partner countries in the Asia-Pacific region.

GTZ, on behalf of the German government, has successfully demonstrated in China and India that hydrocarbon technology is a viable technical option in the manufacturing of refrigerators (as refrigerant and foam blowing agent). In parallel, thousands of refrigeration service technicians have been trained, many from the informal sector. This has helped them not only to cope with the change in technology but also to adopt better

servicing practices and to stay in business. The training infrastructure and the relationships with industry and other stakeholders which were established during these projects can now play again an important role in the phase-out of HCFCs and even HFCs.

With the International Climate Initiative the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety has created a unique and innovative mechanism for financing climate protection with its International Climate Protection Initiative. Due to its extensive experience with natural refrigerants GTZ Proklima has implemented various projects in the Asia-Pacific region: the conversion of air-conditioner production lines to Propane (HC-290) and the introduction of CO₂ in XPS foaming, demonstration of the feasibility of these technologies in the phase-out of HCFCs.

GTZ Proklima hopes to further support Article 5 countries in this important region in simultaneously protecting the ozone layer and the global climate.

www.gtz.de/proklima



UNEP

Regional Office for Asia and the Pacific, Compliance Assistance Programme

Very few people know about the painstaking, behind-the-scenes effort that has gone into meeting the Montreal Protocol targets to slash the production and use of ozone-depleting chemicals.

This is work that needs patience, perseverance and a commitment to the cause. But coordination between the scientific community, academia is arduous, and lobbying with government bureaucracies, legislators and politicians is not headline-grabbing.

Compared to the conservation of cuddly mammals or celebrities launching high-profile initiatives to reduce national carbon footprints, this is not very glamorous work. But it is vital for the global environment, and the collective effort of thousands of individuals and institutions around the world that has made it possible for countries to meet their Montreal Protocol obligations.

The causes of atmospheric ozone depletion and global warming are converging. Some of the same chemicals that are more ozone-friendly are more potent greenhouse gases. The effort to save the global environment from the effects of ozone depletion and climate change are interlinked. How the world responds to these challenges, and whether we can take remedial action will depend on the economic growth path of the Asia and the Pacific region. With one-third of the

world's population and rising affluence, the region holds the key to the future of the planet's environment.

At the forefront of this work in the region is UNEP, which in 2002 made a conscious departure from the past in assisting developing countries in the Asia and the Pacific to enable them to implement the Montreal Protocol. The Compliance Assistance Programme (CAP) with specialized staff in its regional offices and with assistance from the Multilateral Fund provides direct technical assistance to countries to achieving compliance.

In the Asia and the Pacific region, UNEP's Regional Office for the Asia and the Pacific (ROAP) coordinates compliance assistance to developing countries through its CAP team.

Achievements

1 January 2010 was a major milestone in the history of Global Environmental Accords because it marked the date from which new production of chlorofluorocarbons (CFCs), Halons and Carbon Tetrachlorides (CTCs) were halted, except for a few critical uses. The fact that all signatories met the deadline proved that it is possible to negotiate complicated international environmental treaties and see it to successful implementation.

HCFC phase-out is the next key challenge for the region as it is the main producer and consumer of HCFCs, and production has seen a significant increase in the last 10 years. The CAP team, along with other Implementing Agencies is currently assisting countries in the region with the preparation of their HCFC Phase-out Management Plans (HPMPs).

CAP ROAP's orientation workshop for new ozone officers was piloted in Pakistan in 2006 with 14 new officers. A similar workshop was organized for 18 new ozone officers and assistant ozone officers from 11 countries in Bangkok from 3–6 November 2010. The Asia and the Pacific region have also agreed on an Informal Prior Informed Consent mechanism for ODS trade. iPIC is a voluntary mechanism that mutually supports the implementation of the national licensing systems for ODS import and export. After almost 5 years in application, over 70 countries in Asia and the Pacific, Europe, Central Asia, and Latin America and the Caribbean use the mechanism to prevent unwanted ODS trade. Originally established by the national ozone officers and their Customs counterparts in Asia, the Parties of the Montreal Protocol are encouraged to make more proactive use of the mechanism to increase the effectiveness of their licensing system as well as to reduce the loop hole that may exist still in control of ODS transboundary movements. Significant increases have been observed in cases investigated through iPIC

“queries”: from 20 in 2008, 38 in 2009, and over 80 in 2010 (as of October 2010). The full potential of the mechanism is still to be seen as Article 5 countries start controlling their production and consumption of HCFCs.

Project Sky Hole Patching

ROAP CAP with Customs Authorities in Asia and the Pacific launched the “Sky Hole Patching” project in 2006 which aims to establish a monitoring and notification system among member customs administrations to track the movement of shipments of ozone depleting substances and other dangerous wastes across the region to curb illegal trade in hazardous chemicals. Twenty customs and environmental authorities from 18 countries have joined, including Australia, Bangladesh, Bhutan, Brunei Darussalam, Cambodia, China, Fiji, India, Japan, Republic of Korea, the Maldives, Mongolia, New Zealand, the Philippines, Samoa, Sri Lanka, Thailand, and Viet Nam.

Countries with greater experience on Montreal Protocol implementation are now assisting new ozone officers develop and implement Montreal Protocol phase-out measures. For example, Maldives and Sri Lanka are collaborating in curbing the trade in CFCs, Iran provided an refrigerant identifier to Afghanistan and India provided two to Bhutan. Military officers from

from India and Sri Lanka visited Indonesia to see GMF (Garuda)'s halon bank facility.

Metered Dose Inhalers (MDI) phase-out is an important issue especially for the five large CFC MDI manufacturing countries. In response, CAP ROAP organized a meeting on the phase-out of CFCs in MDI in Sri Lanka in 2006 and for South Asia and South-East Asia and the Pacific in Langkawi in 2008. During this meeting, industry and governments agreed to the "Langkawi Declaration" for CFC MDI phaseout.

Military

Militaries in the region, too, are increasingly aware of their environmental impact at the local, regional and global levels. Environmental conditions affect military readiness and hence national security. In 2000, UNEP OzonAction produced for the first time, a set of guideline for armed forces in the developing countries entitled Maintaining Military Readiness By Managing Ozone Depleting Substances. Since then there have been significant activities in developing countries in ODS phasing-out in the defense sector.

ROAP CAP has also published the book, Ozone Protection and National Security: A Military Perspective -- Toolkit for Defence Forces to provide information to defense establishments so they can design and implement ozone-friendly approaches in their regular

equipment operation and maintenance activities. Recovery, recycling and destruction of used ODS are critical to protecting the ozone layer in addition to regulating production and consumption. Stocks of ODS are held by industrial and commercial users and are also present in old refrigeration and air-conditioning equipment. There are approximately 5.2 million metric tons of ODS. One million metric tons could be recovered from these banks and destroyed to prevent harmful emissions of ODS which are also greenhouse gases. However, in managing stocks of unwanted ODS, countries faces many challenges regarding information, economic and logistical aspects and legal barriers.

ROAP CAP is assisting the NOUs to devise ways to overcome these barriers through participatory approaches such as developing factsheets related to recovering and destroying ODS using examples from Japan and Australia.

Awareness

In 2008, ROAP CAP conducted review of the Regional Awareness Strategy and based on inputs received, devised an Strategic Action Plan for Information, Education and Communication (IEC) Activities for Asia and the Pacific Region for the years 2008-2010. In addition, ROAP CAP holds media workshops, journalist competition, exhibitions and developing publications, factsheets, films to raise public awareness on ozone related issues.

Challenges

The period 2010-2012 is likely to be even more challenging. With the 100% phase-out obligation that came into effect as of 1 January 2010, countries will need to sustain compliance within the Protocol framework, and spot and eliminate any illegal production and trade of CFCs.

Other challenges are:

- CFC MDI phase-out in CFC MDI manufacturing countries in the ROAP region (i.e. Bangladesh, China, India, Iran and Pakistan)
- Maintaining 100% phase-out in refrigeration and air-conditioning under the approved National Phase-out Plan (NPP) and Terminal Phase-out Management Plan (TPMP).
- Strengthening enforcement capacities concerning ODS by improving national and local inter-sectoral coordination, and curbing illegal trade.

HCFCs Adjustments

CAP ROAP is now assisting countries formulate an HPMP in their countries for the 2013 and 2015 targets.

The 2007 agreement to accelerate the phase-out of consumption and production of HCFCs has major implications for CAP and countries in the Asia-Pacific. Activities to ensure achieving HCFC phase-out targets,

PRIORITIES

The priorities in 2010 for the ROAP CAP team have been categorised following the three inter-linked tracks:

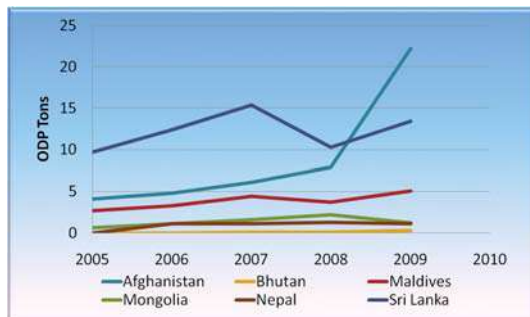
- + Enabling compliance with the 2010 control measures
- + Preparing to ensure sustainability beyond 2010 (including exploratory work on feasibility and potential benefit of innovative interventions such as destruction of seized ODS)
- + Preparing the ground for implementing new responsibilities related to the HCFC adjustment

primarily the 2013 freeze and 2015 10% reduction compared to baseline production and consumption levels (average of 2009-2010) means action need to be taken.

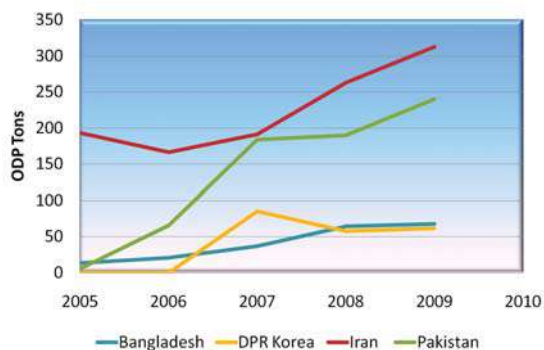
The HCFC consumption patterns can be seen in the following graphs:

South Asia

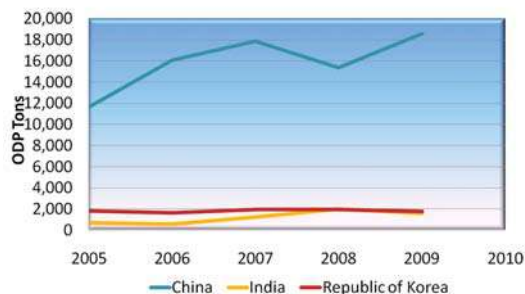
HCFC CONSUMPTION (Low Volume Countries)



HCFC CONSUMPTION (Medium Volume Countries)



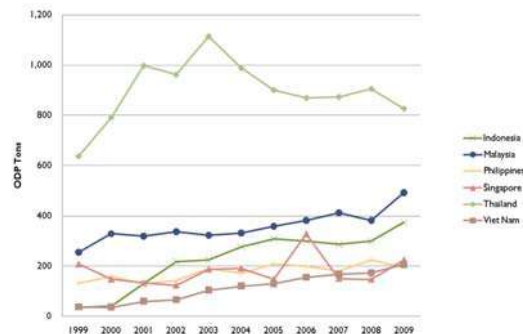
HCFC CONSUMPTION (Large Volume Countries)



South East Asia and the Pacific

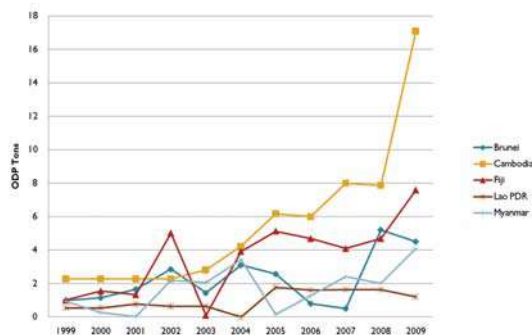
HCFC CONSUMPTION

Countries with consumption in both manufacturing & servicing



HCFC CONSUMPTION

Countries with consumption in servicing only



CAP ROAP has currently working directly with 28 countries in the region for HPMP preparation. CAP also needs to assist countries in equipping themselves for accurate data reporting of HCFC consumption for the baseline years, i.e., 2009 and 2010, and taking measures to restrict growth in HCFC consumption.

UNIDO Helps with Phase-out

UNIDO's work under the Montreal Protocol spans across some ten countries in the Southeast Asia, the Pacific and South Asia regions. As an implementing agency, UNIDO has assisted these countries to significantly reduce the use of ozone depleting substances.

UNIDO's Asia-Pacific portfolio includes substituting the process agent CTC (Carbon tetrachloride) with the ozone-friendly alternative EDC (Ethylene dichloride) at a pharmaceuticals company in India, converting to ozone- and climate-friendly hydrocarbons at refrigerator and freezer manufacturers in China, and promoting water-based technology in the production of shoe soles in a factory in Indonesia.

UNIDO has also been involved in workshops and demonstration projects in Cambodia, China, DPR Korea, Indonesia, Thailand and Vietnam, promoting non-chemical alternatives to the fumigant methyl

bromide, a potent ozone depleting substance.

Despite the achievements, the battle against ozone depleting substances is far from over. It is important

for implementing agencies to see to it that momentum is not lost and is transferred to the newer challenges ahead. UNIDO is now actively involved in preparing HCFC phase-out plans in coordination with other implementing agencies.

It is currently developing the whole, or parts of phase-out management plans for China, DPR Korea, India, Myanmar and Pakistan and is also in the process of developing

HCFC phase-out stand-alone projects for Indonesia, Pakistan and the Philippines.

<http://www.unido.org/>



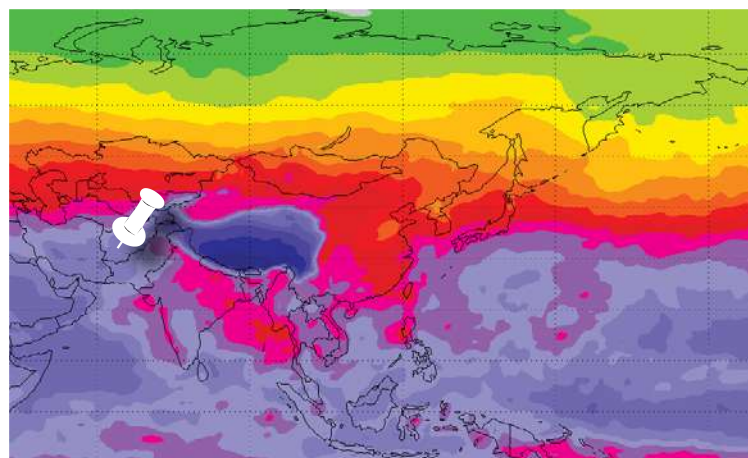
AFGHANISTAN



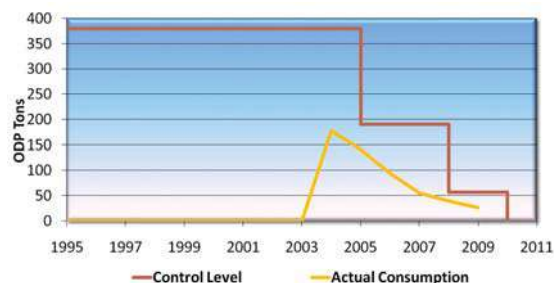
After ratifying the Montreal Protocol in June 2004, the Islamic Republic of Afghanistan prepared a National Phase-out Plan.

The \$1.2 million plan aimed to phase out estimated 180 ODP tons of ozone-depleting substances through institutional and capacity building, management and monitoring, training programs in good practices in refrigeration, recovery and recycling, umbrella foam and customs training Projects.

The government signed an agreement with the Executive Committee of the Multilateral Fund to achieve a complete ODS phase-out by the year 2010. The National Ozone Office, working under the country's National Environmental Protection Agency (NEPA) in collaboration with UNEP and GTZ Proklima, has been able to meet the targets set out in the agreement. The Afghanistan Ozone Office has also been able to achieve the major targets of the various programs/projects to be implemented under the National Phase-out Plan, despite the conflict situation in the country.



CFC CONSUMPTION



Achievements

Despite being one of the late ratifying countries and despite the troubles, Afghanistan has been in compliance of the Montreal Protocol and has achieved its 2010 target of phasing out 176 metric tons of CFCs during the last six years.

Besides this, the Afghan National Ozone Unit has:

- Trained 254 custom officers on controlling/ monitoring of imports of ozone depleting substances
- Trained 215 workshop technicians on Good Practices in Refrigeration and Recovery and Recycling Machines
- Established four training centres for training workshop technicians on Good Practices in Refrigeration and Recover and Recycling

- Promulgated ODS regulation under the Environment Law
- Celebrated Ozone Day every year
- Disseminated public awareness materials

Challenges

Being a late ratifying country of the Vienna Convention and the Montreal Protocol in 2004, it was a big challenge to meet the target of 85% reduction in CFC consumption within a couple of years. But with the help of its development partners, the goal was met.

The data collection survey for CFC consumption in 2005 was the first of its kind in the country. The response was not so good due to lower public awareness on ozone issues. The data quality was poor and the baseline was estimated on data sample basis. The ODS Regulation drafted by the NOU was delayed because of the delay in the enactment of the Environment Act. However, the ODS regulation was the first regulation approved in August 2006 under the environment law of Afghanistan, thus making it very important as its implementation will be closely monitored. This law ensured the effective implementation of ODS regulations which enabled Afghanistan to meet the 2010 Montreal Protocol target of phasing out CFCs. ODS regulation classifies all HCFCs as ODS, and the import of the chemical will be implemented after government endorsement.



Training for customs officials in Kabul in 2008



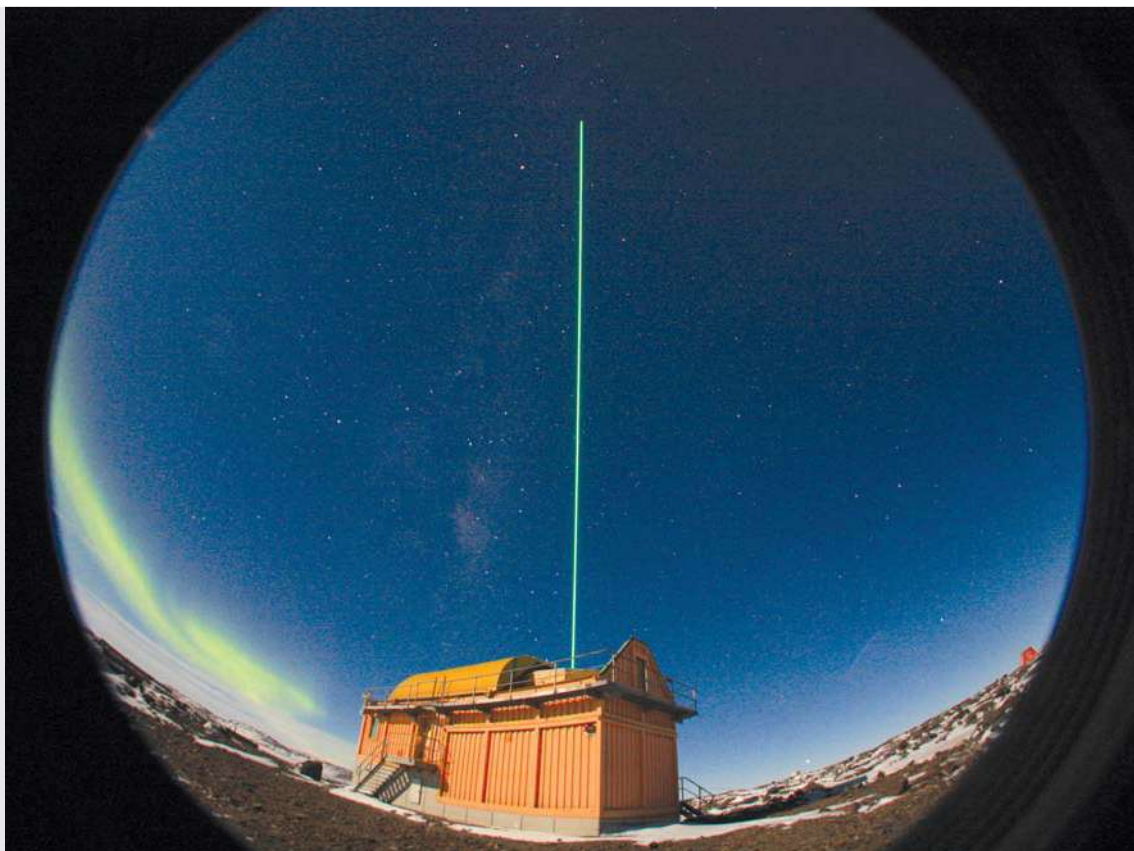
Director General Nipa hands over a new identifier to DG Customs in Kabul in 2008

Industry

The MILLI Group and Herat Foam Factory had been using CFC-11 as a blowing agent in foam production. Under the National Phase-out Plan, a technical study was carried by NOU for both foam production units. There are three discontinuous units in the country and one continuous flexible foam unit under construction. Two units are made in Taiwan, others are locally built. Training on foam production line and new foam production technology was provided to four technical

persons of these factories in Iran. The manufacturers were recommended Methylene chloride for use as an alternate to the CFC-11 that has now been phased out. The National Ozone Unit sponsored a foam production expert from the Iranian company, Karamadan identified by GTZ in order to supervise foam factories to determine the efficiency of using CFC-free chemicals during production, enhancing safety and environmentally-friendly practices.

AUSTRALIA

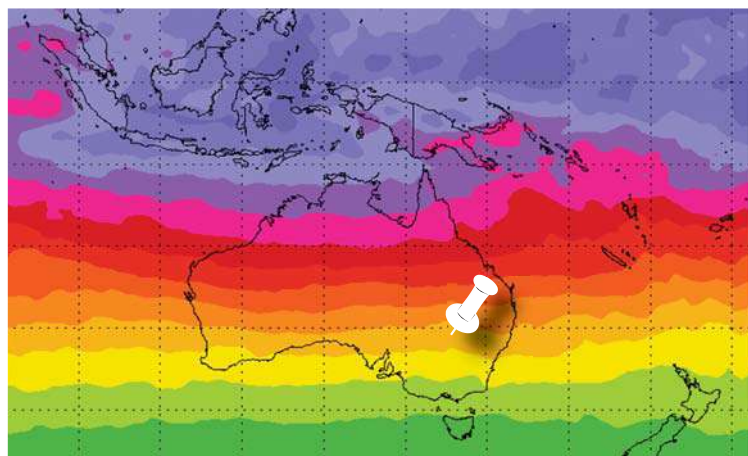


As an early signatory to the Montreal Protocol, Australia continues to be a leader in the phase-out of ozone depleting substances (ODS). Australia acceded to the Vienna Convention in 1987 and the Montreal Protocol in 1989, and has ratified each of the Protocol's five amendments.

Australia continues to take an active role in ongoing Montreal Protocol negotiations, ensuring that further actions to protect the ozone layer are scientifically based and technically feasible, and that developing countries are supported in their efforts to phase out ozone depleting substances.

Australia has met or exceeded all its phase-out obligations under the Montreal Protocol. With the exception of essential uses, Australia banned the import of Halon in 1992 and CFC in 1996. Australia's accelerated HCFC phase-out programme will see imports essentially phased out by 2016, apart from a small servicing tail. In doing so, Australia will exceed its Montreal Protocol obligations.

Australian scientists are also actively involved in the Technology and Economic Assessment Panel and the Scientific Assessment Panel.



Achievements

Australia successfully managed the phase-out of new Halon and continues to manage its stockpile of used Halon for essential uses. Under state and territory legislation, the continued use of Halon in non-essential equipment was banned in most jurisdictions from December 1995. The Australian Halon Management Strategy was developed to provide a framework for the responsible management of Australia's Halon stocks to 2030, and for the elimination of use. Development of the strategy was based on extensive consultation with industry, the community, state and territory governments, and other Commonwealth agencies.

In 2003, amendments were made to the Ozone Protection and Synthetic Greenhouse Gas Management Act 1989 bringing Halon end-use into the federal ODS management framework.

Critical to the success of this strategy is the ongoing operation and development of the National Halon Bank (NHB), a regional facility for the environmentally safe management of surplus and essential use stocks of halon. The NHB is well placed to provide a range of services, including halon management and essential uses, both in Australia and other countries in the region.

The NHB has also collected and destroyed in excess of 100 tonnes of waste refrigerants. The NHB also disposes of ozone depleting materials, which have either been seized or surrendered at the customs barrier.

Challenges

End-use control of ODS in Australia was originally dispersed through the states and territories with each having their own legislation concerning ODS. A unified, federal system has allowed for the effective and nationally-consistent control of end-use, such as licensing of refrigeration and air conditioning technicians as well as import and export controls. More stringent end-use controls lead to emission reduction and ensure Australia is able to easily meet its obligations.

Significantly, the federal government framework is also able to efficiently accommodate the NHB—a working, quasi-commercial facility—due to the effective management of government relationships.

Australia used a “grandfathered” quota system to manage the phase-out of CFCs and is using the same system to manage the accelerated phase out of HCFCs. The quota system ensures Australia is able to meet its Montreal Protocol obligations while providing business certainty for importers and manufactures.

The quota scheme complements end-use management controls for the refrigeration and air conditioning industry. End-use management comprises trading permits for businesses, and licensing and competency standards for technicians working in the refrigeration, air conditioning and fire sectors. The licences ensure all persons dealing with ODS do so responsibly in order to minimise Australia's emission of ODS.



Industry

Australia's approach to meeting its Montreal Protocol obligations has been based on a cooperative partnership between industry, community, and all levels of government. Industry is consulted throughout Australia's ODS policy development process. Australia's approach has resulted in an engaged industry driven towards best practice for the industry and environmental protection.

Australian industry has been active in supporting Montreal Protocol objectives, with many of the initiatives that go beyond the requirements of the Montreal Protocol initiated by the industry.

For example, the Australian Government worked closely with industry in the development of a product stewardship scheme that collects and disposes of used ODS and SGG, thereby minimising emissions of ODS and synthetic greenhouse gases. Refrigerant Reclaim Australia is an industry-run, not-for-profit product stewardship scheme that manages Australia's recovery, reclamation and destruction of ODS. It is supported by regulations which require importers of ODS and synthetic greenhouse gases, in bulk and in pre-charged equipment, to belong to a product stewardship scheme. The Australian government and industry worked closely together to develop Australia's HCFC phase out strategy.

Australia is well ahead of its Montreal Protocol obligations in the phase out of HCFCs. Australia will largely phase out consumption of HCFC by 2016, four years ahead of the schedule required under the protocol. In doing so, Australia will consume 61% less HCFC in the period up to 2020 than is permitted under the Montreal Protocol—even after the parties to the Montreal Protocol agreed in 2007 to advance HCFC phase out globally.

This year, Australia also banned the import of most HCFC air conditioning equipment, further reducing the amount of HCFC needed to service existing equipment. Coupled with the Mandatory Energy Performance Standards and product labelling, Australia is moving towards an ODS-free and energy efficient future.

BANGLADESH



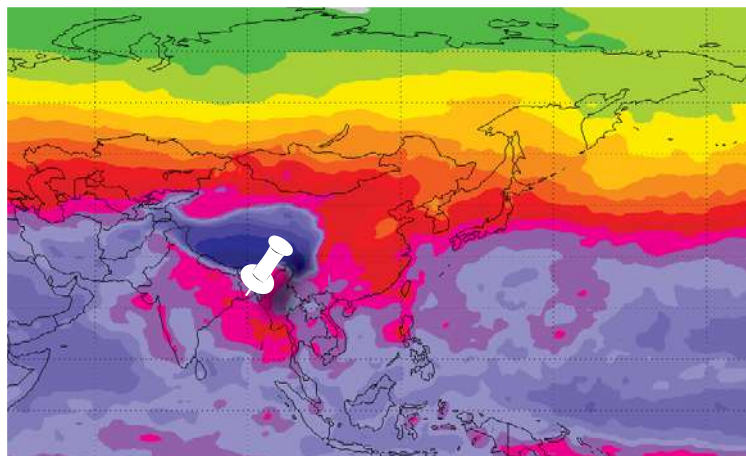
Bangladesh signed the Montreal Protocol in August 1990 and approved its London, Copenhagen, Montreal and Beijing amendments in 1994, 2000, 2001 and 2010 respectively.

Bangladesh falls under paragraph 1 of Article 5 of the Montreal Protocol, which makes it mandatory to phase out the import and consumption of CFCs, Halons and Carbon tetrachloride by 2010, Methyl chloroform by 2015 and HCFCs by 2030.

The Ministry of Environment and Forests provides policy guidelines, planning and overall management of the environment. The Department of Environment is the technical arm of the Ministry and has set up the National Ozone Unit to coordinate the country's response to meeting the control measures of the Montreal Protocol.

Achievements

The creation of the Ozone Cell and the Inter-Ministerial National Technical Committee on Ozone Depleting Substances (NTCODS) provides the necessary institutional mechanism to fulfill Montreal Protocol targets. The unit has worked to phase-out Halon, Methyl bromide, CFCs, CTC, and Methyl chloroform and a 50% reduction of ODS consumption in the aerosol sector. There has been an increase in the import and use of ODS-free appliances, an increase in awareness among importers and consumers and observation of National Ozone Day. In addition, implementation of the Refrigeration Management Plan (RMP), and Metered Dose Inhalers (MDI) Conversion Projects has assisted the country to meet with its commitments.



Challenges

The manufacture of CFC-based MDI in Bangladesh poses a unique problem in terms of the country's compliance with the Montreal Protocol since its production was only first identified in 2004 during the preparation of the Country Program Update and was not included in the country's National Phase-out Plan.

At its inception in 1997, the MDI manufacturing sector of Bangladesh comprised two manufacturing plants, which consumed 11.379 ODP tons of CFC and has since grown to 102.83 ODP tons in 2008.

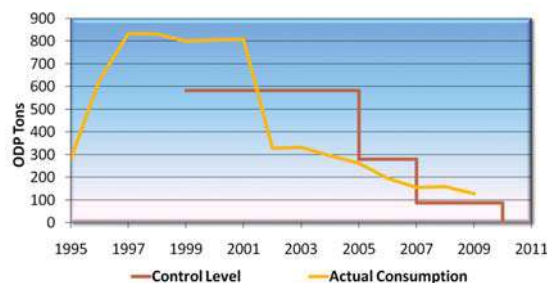
Three companies (Beximco, Square, Acme) have manufacturing plants, of which only Beximco upgraded its plant to manufacture two of its MDIs in HFA form (Salbutamol sulfate 100mcg, Beclomethasone 50cg and 100mcg). GSK and Eskayef contract manufacture their products at Beximco, and market them locally.

The use of CFCs in MDI is increasing due to increasing acceptance of MDI as a superior dosage form for the treatment of asthma and COPD. The government recognises the transition strategy to non-CFC MDIs as a key step in ensuring compliance with the Montreal Protocol commitment of the government to phase out CFC consumption in the manufacture of MDI.

The main elements of the transition strategy are:

- Evaluate the need to revise regulations in order to facilitate phase-out of CFC MDIs and promote adoption of CFC-free alternatives
- Implement awareness and capacity building among relevant stakeholders on the adoption of CFC-free alternatives

CFC CONSUMPTION



- Design and implement monitoring and verification protocols to confirm and report on the status of the phase-out program
- Implementation of conversion projects to phase-out CFC MDIs at the manufacturing facilities of Beximco, Acme, and Square Pharmaceuticals

Industry

ISPM 15 standards were introduced by the International Plant Protection Convention (IPPC) for compliance by exporters, who are using timber-packaging materials. Methyl bromide (MB) is recommended as a fumigant that could be used for this fumigation application for Quarantine Pre-Shipment (QPS).

New Dacca Industries Ltd, Bangladesh (NDI) is a jute-spinning mill that has discovered a cost-effective heat treatment method to comply with ISPM 15, which is free of any chemicals. NDI has been exporting 26,000 tons of jute yarn and twine per year. Mr Mohammad Humayun Kabir, CEO of NDI, received the National Environment Award 2010 for this outstanding innovation.

BEXIMCO's Transition

South Asia, home to 1.6 billion people, has low levels of awareness about ozone depletion. When it comes to the transition from CFC to CFC-free Metered Dose Inhalers for asthma patients, the lack of awareness translates into reluctance on the part of manufacturers and patients to switch to ozone-friendly inhalers.

Bucking this trend is Bangladesh's Beximco Pharmaceuticals Ltd (Beximco Pharma) which has been making a switch to HFA inhalers with assistance from UNDP and UNEP.

As a follow-up to UNEP's Langkawi Declaration on Public-Private Partnership Beximco Pharma and Bangladesh Lung Foundation, designed an effective awareness raising strategy for CFC-free MDIs by asthma and COPD patients. Seminars were held for doctors across Bangladesh to disseminate key clinical information. The partnerships is now regarded as a successful model of public-private partnership involving government, pharmaceuticals industries, doctors, environmental agencies and others stakeholders that could be replicated in other developing countries.

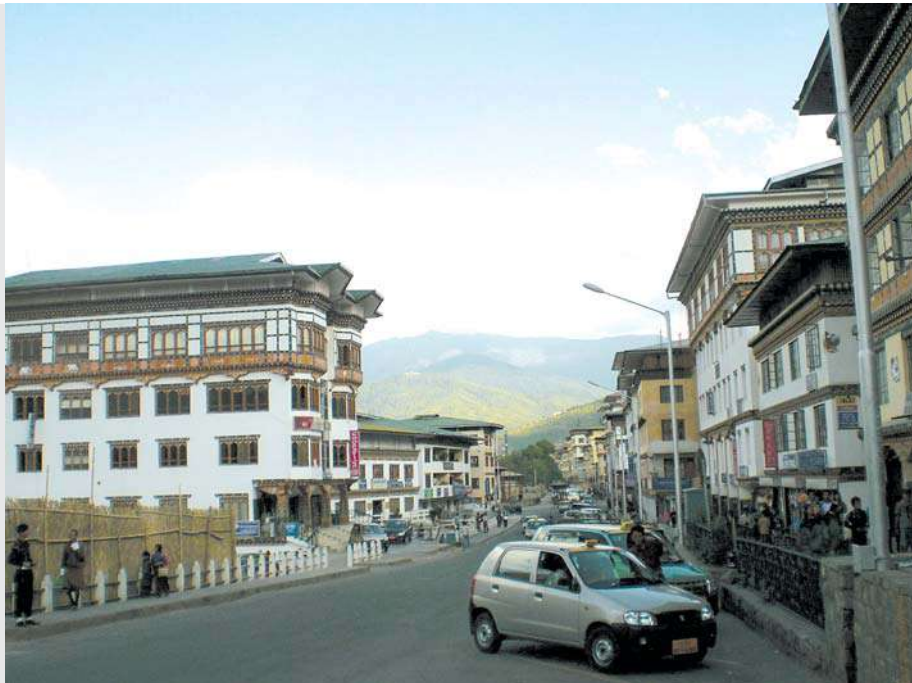
Beximco Pharma is a leading manufacturer of pharmaceuticals, and its state-of-the-art manufacturing facilities are certified by major global regulatory bodies. The company is a leading exporter of pharmaceuticals to 45 countries. It has received regulatory approvals from ANVISA, (Brazil), Therapeutic Goods Administration (TGA), Australia and Gulf Central Committee for Drug Registration (for GCC member states) for its manufacturing facilities. Approvals from UK MHRA, EMEA and USFDA are under process for its Oral Solid Dosage and Metered Dose Inhaler facilities.

In 2006, Beximco Pharma listed itself among the very few companies in the world who proactively converted CFC based formulations to ozone friendly HFA Inhalers in compliance with the Montreal Protocol. The company is now the single largest producer of MDIs in Bangladesh and with its current capability in manufacturing and supplying CFC free HFA inhalers for asthma and COPD patients, the country need not suffer for even a single day if the government decides to stop using CFC in inhalers from tomorrow.



Beximco Pharma remains as one of the very few companies in the world producing HFA inhalers with salbutamol and beclomethasone formulations. In 2009, it launched salmetrol/Fluticasone combination with HFA formulations for asthma management. Shortly after that, the company launched four more HFA inhalers to offer doctors a comprehensive portfolio of HFA inhalers to effectively manage Asthma and COPD.

BHUTAN



High street in the Bhutanese capital, Thimphu, reflects Bhutan's rising standard of living.

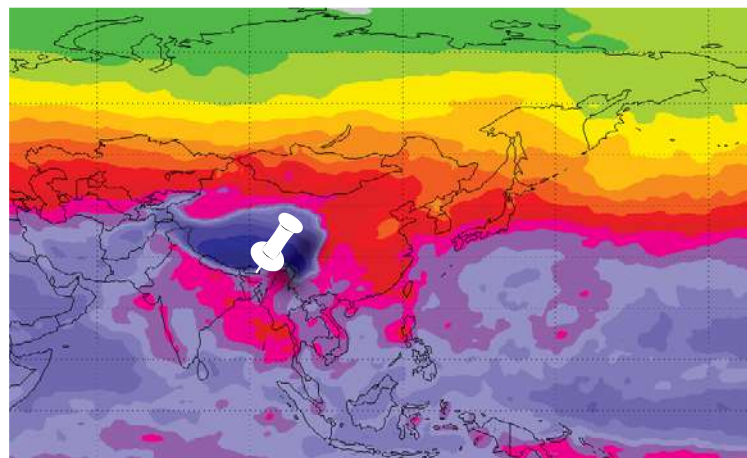
The Royal Government of Bhutan became a Party to the Vienna Convention as well as the Montreal Protocol and its four Amendments with ratification by the 82nd session of the National Assembly in 2004.

Since then, the country has committed to protecting the environment and human health through sound management of ODS, and to ensuring sustainable development and inter-generational equity in pursuit of Gross National Happiness.

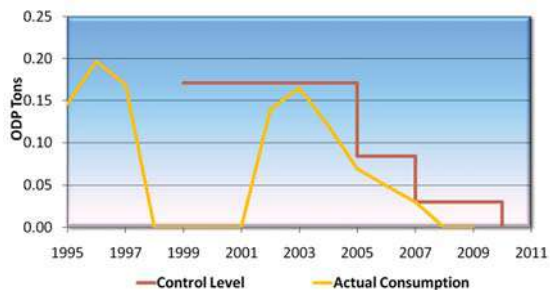
Achievements

The country has successfully met the requirement under the Montreal Protocol to phase out the use of CFCs, Halons and Carbon tetrachloride by 50%, in 2005, 85% in 2008 and completely in 2010. In 2005, the government banned the import of ODS as well as equipment/appliances based on these chemicals. Soon after, a regulation on ban of certain ODS was passed to enable effective control of ODS.

Bhutan was able to meet its compliance targets through a combination of activities including legal framework to reduce dependence on ODS with assistance from UNEP, UNDP and the MLF. Many stakeholders in the country were involved such as the Department of Revenue and Customs, Ministry of Labour and Human Resources, Ministry of Health, Ministry of Education, Ministry of Agriculture and the private sector. It is also recognized that regional cooperation will form a key component of the action plan that will help Bhutan achieve compliance for the new phase of the ODS phase out.



CFC CONSUMPTION



Bhutan's other achievements have been to:

- Attain 50% of CFC phase-out in 2005, 85% in 2007 and 0 in 2009 as per the timeline within a few years of ratification was a great accomplishment.
- The incorporation of refrigeration and mobile air-conditioning curriculum in the Vocational Training Institute (VTI) at Samthang.
- Establish a CFC free Secretariat of His Majesty the King of Bhutan's office in 2009 has set an example for other offices, agencies and ministries to follow.

Challenges

Bhutan did not have a strong service base in refrigeration and air-conditioning. Many technicians were not formally trained in this sector but had learnt the practice "on the job", making retrofitting a challenge. Technician training was carried out to enable the trainees to understand more of the concerns and issues. India and

Nepal under the South-South Cooperation Framework assisted in this regard. The other problem is still the need to strengthen customs. The need is seen for fully educating customs officers and providing the means of identifying banned goods. Numerous workshops have been conducted, and there is a need to keep them fully on board because ODS often are not a priority concern. Customs officers have also been trained as trainers so that a sustainable program can be in place for the future. India's National Academy of Customs, Excise and Narcotics (NACEN) has also played a pro-active role in raising the capacity of Bhutan Customs Office.

Consumer advocacy is the other challenge so they can choose a non-ODS appliance. This too depends on retailers who need to be informed of the concern in appliances that use ODS. Bhutan's challenge is to address the needs of communities and individual households that cumulatively make up a large population, but are geographically isolated. These numbers are essential to achieve full compliance, but being scattered they are difficult to reach.

Industry

With no production of ODS in the country, industries are the biggest consumers of ODS. But they have been fully cooperative in carrying out such retrofitting and advocacy. The Bhutan Chamber of Commerce is an active partner in the effort to phase out ODSs.

Gross National Happiness through HCFC Phase-out

In August 2010, Bhutan took the historic decision to further advance the phase-out of HCFCs in 10 years.

Bhutan is one of the few countries in the world where sustainable development is embedded in its constitution, and the phase-out has been accorded a priority because of the global warming and ozone-depleting properties of the chemical. HCFCs have a Global Warming Potential 2,000 times more than carbon dioxide.

In 2007, the international community took an important step for accelerated phase-out of HCFCs by 2030 in developing countries in order to advance ozone layer recovery by nearly four years and reduce the cumulative emissions of the green house gases by nearly 25 giga tons of the equivalent of CO₂.

The United Nations Environment Programme, Division of Technology, Industry and Economics (UNEP DTIE) OzonAction Programme along with UNDP has been working

closely with the National Environment Commission Secretariat in the development of the HPMP.

Bhutan has committed to phase out the consumption of HCFCs, mainly used in the air-conditioning and refrigeration servicing sector in its large industrial establishments, hotels and resorts, corporate offices, governmental sectors, as well as domestic servicing sector. The plan also involves policy and legislations, training and capacity building activities, as well as information outreach for HCFC phase-out.

“Our decision to phase out HCFCs will demonstrate to the world our determination to protect our planet, by benefiting from the low hanging climate benefit fruits from the Montreal Protocol and cutting carbon footprints and promoting energy efficiency and green economy.” says Peldon Tshering, Chief of Bhutan’s National Environment Commission Secretariat.



Ozzy Ozone in the Bhutan national dress, the *gho*.

This is an encouraging action that demonstrates to the global community that small countries like Bhutan can also be at the frontline in the battle against climate change and the protection of the ozone layer.

BRUNEI DARUSSALAM

If not us, who?
If not now, when?
HELP SAVE THE OZONE

Our Depleted Ozone Layer

Before you turn on the air-conditioner in your vehicle, stop and think about the last time it was serviced. Leaky systems and careless service practice can lead to the release of refrigerants known as Chloro Fluoro Carbons (CFCs) known to be destructive to the ozone layer. These refrigerants are also known as Ozone Depleting Substances (ODS).

A depleted ozone layer allows more UV radiation to reach the Earth's surface, where they could cause higher rates of skin cancer, cataracts and suppression of the immune system. Furthermore, excessive UV radiation could damage food crops and marine ecosystem.

1985 - 3.23 million square kilometres 1990 - 22.45 million square kilometres
2000 - 25.4 million square kilometres 2008 - 24 million square kilometres

high Total Ozone low
600 500 400 300 250 200 150 100

Satellite images of the Southern Hemisphere Ozone Hole area due to the release of CFCs to the air.

MONTREAL PROTOCOL

An international treaty designed to protect the ozone layer by phasing out the production of a number of substances believed to be responsible for ozone depletion.

MONTREAL PROTOCOL HISTORY

- 1930 - Research done
- 1970 - Ozone Depletion Concerns Increased
- 1977 - Efforts Begin
- 1985 - Vienna Convention
- 1985 - Scientists found Ozone hole under Antarctica
- 1987 - Montreal Protocol
- 1990 - Brunei joins Vienna Convention
- 1993 - Brunei joins Montreal Protocol
- 1994 - International Ozone protection Day
- 1997 - 191 nations joined
- 2005 - Brunei introduced Import Permit System
- 2006 - Brunei Customs Act on impact on ODS
- 2007 - 20th Anniversary for Montreal Protocol
- 2010 - Annex A CFCs Total Phaseout

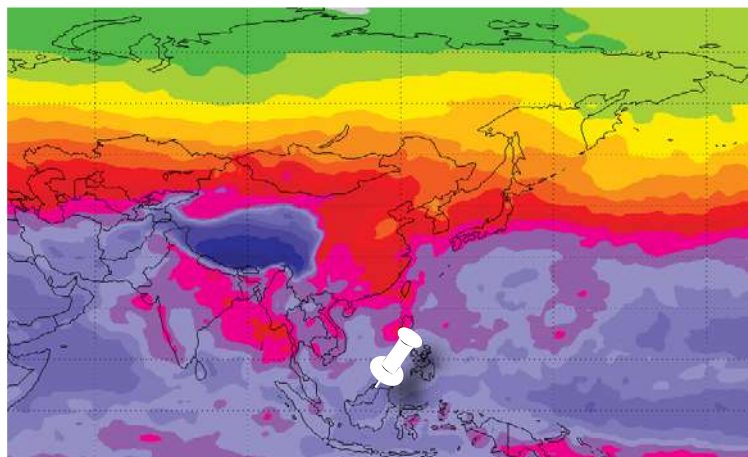
Important notice!!!

- The Ozone Depleting Substance normally used in Brunei is CFC-12, usually sold under the brand name Freon-12 or R-12.
- R-12 is an Annex A refrigerant controlled under the Montreal Protocol.
- Annex A refrigerants are now PROHIBITED from entering Brunei Darussalam under the Customs (Prohibition and Restriction) Order.

A poster in Brunei draws attention to the dangers of ozone depletion as a part of the country's awareness and outreach program.

Brunei Darussalam acceded to the Vienna Convention in 1990, and the Montreal Protocol in 1993. Initially, Brunei Darussalam was classified as a non-Article 5 country but in June 1997, it was classified as an Article 5 country, based on the submission of the 1994 ODS data and the ODS survey for 1995. Brunei Darussalam does not produce or export ODS, but it does import ODS from neighbouring countries for domestic consumption. In June 2005, a permit system was introduced to regulate the import of ODS.

Under the purview of the Royal Customs and Excise Department, the licensing act was introduced in April 2006. Brunei Darussalam also established a formal Prior Informed Consent arrangement with Singapore through the Brunei Darussalam and Singapore Bilateral Cooperation on Environment in 2008. Brunei Darussalam ratified the London Amendment, Copenhagen Amendment, Montreal Amendment and the Beijing Amendment in March 2009.

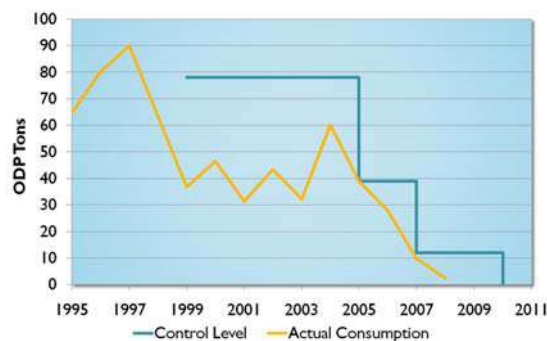


Achievement

Total phase-out of the CFC was successfully implemented and by January 2010, Brunei is free of CFCs with users opting for the use of ODS alternatives. Much of the success in controlling the import of ODS is attributed to the close link and relationship between the Department of Environment, Parks and Recreation (which serves as the National Ozone Unit) Ministry of Development and the Royal Customs and Excise Department and the Ministry of Finance. Consultation meetings and also joint ad hoc and random inspection at the entry check points are done regularly to monitor and control the imports of ODS.

In addition, the Department of Environment, Parks and Recreation also limits the amount of ODS entitled for each registered importer. These importers are given specific quotas on ODS imports based on their individual past record of imports. New importers are only allowed to import alternatives to CFCs.

CFC CONSUMPTION



A list of registered importers is maintained at the Department of Environment, Parks and Recreation, with regular updates provided to the Royal Customs and Excise Department to ensure quick and easy reference. The Royal Customs and Excise Department are also informed of any expected imports of ODS well before the shipment arrives at the entry check points, through the formalized Prior Informed

Consent established between the Department of Environment, Parks and Recreation, Ministry of Development, Brunei Darussalam and the National Environment Agency, Ministry of Environment and Water Resources, Singapore. This arrangement has thus far helped ODS Officers and Customs Officers to easily identify and keep a check-and-balance on the ODS imports to Brunei Darussalam.

The Department of Environment, Parks and Recreation also works closely with the Jefri Bolkih Engineering College, Ministry of Education to train local trainers and technicians in good refrigerant management practices. To date, the College has successfully trained more than 20 local trainers and 60 local technicians.

Challenges

The Department of Environment, Parks and Recreation was faced with the challenge of educating and engaging the relevant stakeholders in helping realise the successful phase-out of the CFCs.

The Department spent much time building rapport and inculcating trust and confidence of relevant stakeholders, by providing technical support through formal and informal training. The Department also established focal points and maintains good relationships and networking amongst the relevant stakeholders, as a collective and concerted effort to ensure compliance to the Montreal Protocol and the successful phase-out of CFCs. The engagement of UNEP experts as a third party has also helped to promote awareness and convince the relevant stakeholders.

The Department is also faced with the challenge of trying to target and promote awareness of Ozone to schools and higher learning institutions and also the public at large.

CAMBODIA



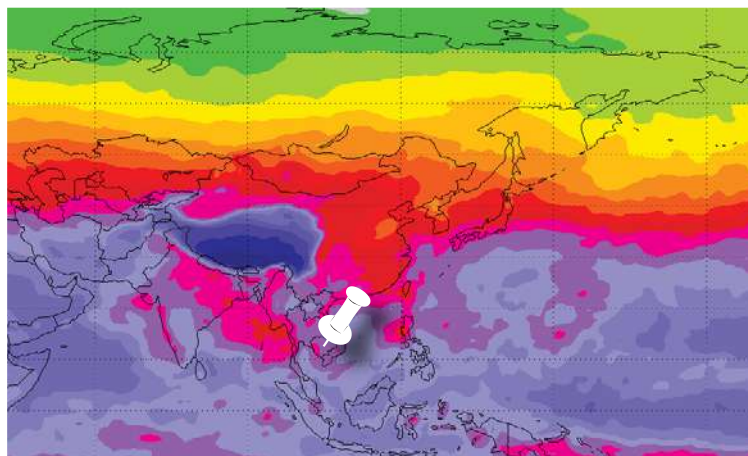
Cambodia's Angkor Wat is an inspiration for the region to meet its ODS phase-out challenge.

Cambodia acceded to the Vienna Convention and ratified the Montreal Protocol in 2001 and its London, Copenhagen, Montreal and Beijing Amendments in 2007. Cambodia is committed to reduce and eventually eliminate ozone depleting substances (ODS) in compliance with the Montreal Protocol control schedule.

Cambodia has been classified as an Article 5 country under the Montreal Protocol. This makes the country eligible to receive technical and financial assistance from the Multilateral Fund under Article 10 of the Montreal Protocol.

Following ratification Cambodia requested the Executive Committee of the Multilateral Fund to provide financial and technical support to formulate the Country Programme (CP) and Refrigerant Management Plan (RMP) to phase out ODS in Cambodia.

Cambodia's CP/RMP was prepared and submitted for consideration at the 41st Meeting of the Executive Committee of the MF and was approved at the same meeting in December 2003. Cambodia's consumption of CFCs in 2003 was 86.70 ODP tonnes. Thus, Cambodia was faced with a challenge to reduce this consumption to 47.13 ODP tonnes within just two years. After funding was approved, CP/RMP started implementing in 2004 and finished at the mid year of 2008.



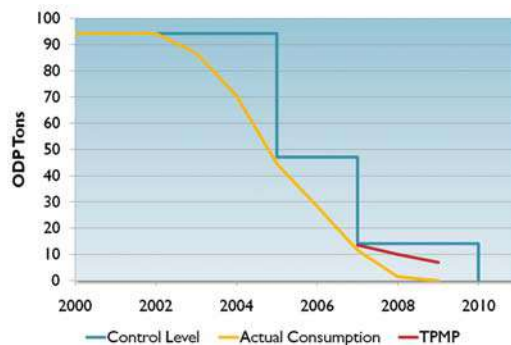
Subsequently, Cambodia prepared the Terminal Phase-out Management Plan (TPMP) with assistance from UNEP and UNDP to phase out any remaining use of CFC. Cambodia's 2008 consumption was 11.4 ODP tonnes which is lower than the TPMP and Montreal Protocol targets of 10 and 14.1 ODP tonnes, respectively. It is expected that Cambodia will achieve the 2009 targets and final phase-out in 2010 without any problem.

The TPMP's implementation is completely finished at the end of year of 2009 with achieving the target of Montreal Protocol, and the virgin CFC is prohibited to import into the country, that means Cambodia has zero consumption of CFC and will continue this beyond 2010. The HCFC Phase-out Management Plan (HPMP) has been prepared by Cambodia National Ozone Unit of the Ministry of Environment on behalf of the Royal Government of Cambodia. Many of these activities presume that financial and technical assistance for Cambodia's efforts will be provided from the Multilateral Fund.

Achievements

Cambodia's consumption of CFCs in 2003 was 86.70 ODP tonnes. The CP/RMP activities contributed to reduce the first reduction milestone of 50% of the baseline consumption by 2005 and achieve the target of 85% of the baseline consumption by 2007, and also complete phase-out of CFCs 2010, and to ensure the phase-out remains sustainable post-2010. The National

CFC CONSUMPTION



Ozone Unit (NOU), Ministry of Environment (MoE) of Cambodia, was responsible for the implementation of the CP/RMP/TPMP to reduce and phase-out CFC following a three-pronged approach:

- To enable Cambodia to meet its Montreal Protocol obligations related to consumption and management of CFCs, particularly the 2007 control target of achieving reductions of 85% of the baseline consumption.
- To eliminate consumption of virgin CFCs by January 2010, through development and implementation of a combination of investment, training, technical support and policy/management support components.
- To create the necessary institutional and other infrastructures to ensure sustainability of the phase-out post-2010.

The Royal Government of Cambodia promulgated a Sub-Decree on ODS Management in March 2005 to implement the Montreal Protocol. The training programme for government officials (customs and Camcontrol officials) to strengthen capacity to improve controlling and monitoring on the import and export of ODS and ODS-based equipment. The main consumption of CFCs is in refrigeration, especially in mobile air-conditioning service workshops. The recovery/recycling of CFC refrigerants and incentive programmes selected authorized service workshops, equipped them with recovery/recycling machines, accessories and some service tools, provided training to technicians to replace CFC-12 refrigerants with ozone friendly alternative HFC-134a.

Awareness workshops were conducted among the relevant institutions in the public and private sectors. The MoE published and distributed the Montreal Protocol Handbook in the Khmer language in January 2003. MoE established the National Steering Committee comprise of relevant ministries in order to coordinate at a policy level. At the operation level, the NOU works closely with General Department of Customs and Excise, Camcontrol on the enforcement of the Sub-Decree on ODS Management. Also, MoE cooperated with Ministry of Public Works and Transport to implement the joint-prakas inter-ministerial to control the vehicle with non CFC before registration.

Challenges

The relation with some stakeholders is still limited. Technicians have uneven education, have limited knowledge and have not got proper training. Many garages do not have the necessary income to spend on recovery equipment, and vent out the refrigerant during repairs. There is also the problem of fake and smuggled refrigerants in the local market. The procurement and support of equipment was late during project implementation, affecting project outcomes and workplans.

As said by Mr Rajendra Shende, Head, UNEP DTIE OzonAction, at a meeting for the Southeast Asia and the Pacific and the South Asia Network of ODS Officers in 2004 in Siem Reap, Cambodia: "To face ODS phase out challenges, we would be able to draw inspiration from the visit to Angkor Wat to witness what human dedication can achieve. You will be stunned by its vast size, soaring towers, dramatic carvings and endless courtyards, avenues and buildings. The 12th-century architects who built this temple brilliantly overcame technical difficulties and found architectural methods to construct a monument so large, so complex and yet with every smallest part so beautifully decorated and detailed. After a visit to Angkor Wat, meeting Montreal Protocol obligations may no longer seem too challenging."

Cambodia on phase-out target

Aing Thong points to a compact refrigerator at the back of his busy shop in Phnom Penh. A worn-out sticker on the front of the freezer says: “100% CFC Free”.

Elsewhere in Aing's shop in the Cambodian capital, old air-conditioners compete for space on the shelves with large canisters of refrigerants, ageing refrigerators sit imposingly in the middle of the shop floor. Shop assistants are hunched over on the sidewalk, disassembling a fridge motor as traffic rolls past on the street.

This small service shop in the heart of Phnom Penh underscores both the successes and challenges Cambodia faces in meeting its obligations as part of a landmark environmental treaty designed to phase out the production of substances that are potentially harmful to the ozone layer.

Since signing on to the Montreal Protocol in 2001, Cambodia has made rapid gains in cutting its consumption of ozone-depleting substances. In that time, the consumption of CFCs, fell from 94.2 tonnes



to zero in 2009, according to UNEP, which tracks data from signatory nations.

But while Cambodia has now banned the import of products containing CFCs, old appliances that use the substance are still common, as can be seen in repair shops in Phnom Penh.

“Old refrigerators have harmful gases that can damage the environment,” says Aing (*pictured*). “We tell the

customers how they affect the ozone. But they care more about the cost.”

For many in a country that remains one of the poorest in the region, owning a new environment friendly refrigerator or air conditioner isn’t high on a list of priorities for most customers, shop owners say.

“I tell my customers about how the new models are better for the environment,” said Bun Bonnath, who runs a small service and retail shop. “But many of them are not able to afford new ones. So people bring in their old ones to get repaired when they break down.”

This has compelled the authorities to focus on its public outreach efforts to make sure the gains made by banning CFC imports are not negated by the improper usage of old products that still contain the harmful substances.

UNEP and UNDP are helping Cambodia launch education drives for service shop employees. They are told about why certain chemicals are harmful to the environment and how to properly repair appliances so that the harmful gases don’t leak into the atmosphere.

“We need to do this training,” said Pak Sokharavuth, the deputy director of the Department of Pollution Control at Cambodia’s Ministry of Environment. “Some technicians here, they don’t learn their skills in a classroom or at university.”

So far, the program has train more than 1,000 technicians around the country. But the next challenge facing Cambodia will be its ability to phase out HCFCs, which are safer for the ozone layer but a very potent greenhouse gas. UNEP figures show the consumption of HCFCs has actually risen over the last decade in Cambodia, even as CFC consumption fell.

Like other developing countries, Cambodia is bound by a schedule to gradually reduce HCFC consumption, aiming for a 10 % reduction by 2015, a 67.5 % reduction by 2025 and a complete phase-out by 2040.

Pak Sokharavuth believes the phase-out is crucial: “Climate change is a global issue. It’s not just a Cambodian issue. We have to do our part and think globally.”

Irwin Loy in Phnom Penh (IPS)

CHINA



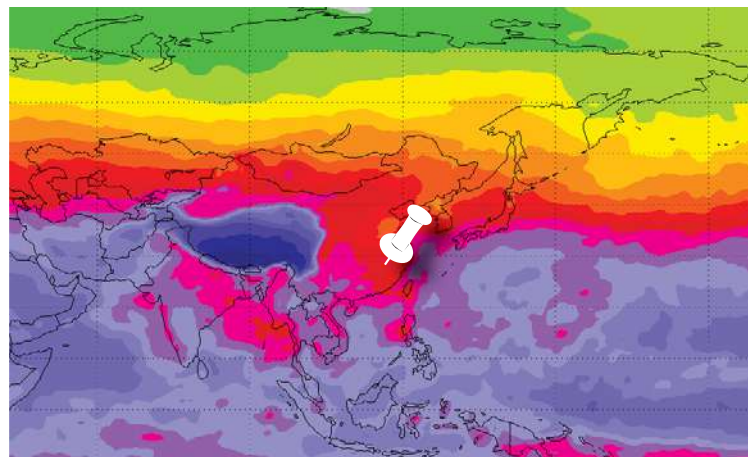
Phase-out of ozone depleting substances have to keep pace with rising affluence and aspirations of the region's population.

China ratified the Vienna Convention and the London Amendment to the Montreal Protocol in 1989 and 1991 respectively. It signed the Copenhagen Amendment in 2003 also accepted and ratified its Montreal Amendment and Beijing Amendment in 2010.

As the largest producer, consumer and exporter of ozone-depleting substances in the world, China also produces and uses more than 50% of the chemicals among developing countries. ODS phase-out involves chemical production, refrigeration, foam, solvent, tobacco, fire-fighting, agriculture, medical industry, etc.

Achievements

After joining the Montreal Protocol, China established the National Leading Group for the Protection of the Ozone Layer and developed China's Country Program for the phase-out of Ozone Depleting Substances as general guidance to the domestic implementation activities. More than 100 policies and regulations were developed and promulgated. Regulation on the Management of Ozone Depleting Substances will play a critical role in ensuring the fulfillment of the compliance targets during the first phase of the Montreal Protocol and promoting the phase-out of HCFCs at the next stage.



During the phase-out of ODS, China meanwhile established the quota management system on ODS production, consumption and foreign trade. A series of supporting policies such as standards on production quality control and environmental marking system were also issued.

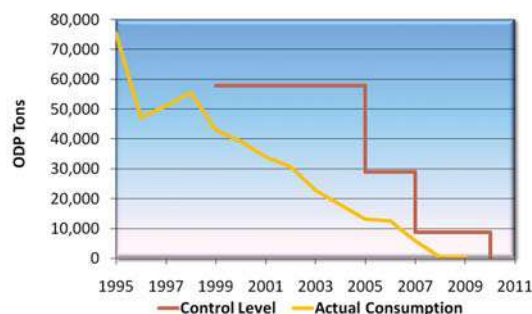
China was the first party that introduced the concept of sector phase-out planning into the Multilateral Fund and established the mechanism of ‘four synchronized steps’: the synchronization of production phase-out, consumption phase-out, substitute development and development of policies and regulations.

China has carried out phase-out activities in more than ten sectors eliminating more than 100,000 tons of ODS production and 110,000 tons of ODS consumption, half of the total phase-out in developing countries. The production and import of CFCs and Halons has ceased since July, 2007, two-and-half years ahead of the Montreal Protocol deadline. Starting from Jan. 1, 2010, the production and import of CTC and TCA have also been eliminated.

Challenges

The first few years of the 1990s witnessed a rapid growth in ODS production and consumption in China. China initiated the research on phasing out ODS at the sector

CFC CONSUMPTION



level in an effort to tackle the problem. The former State Environmental Protection Administration coordinated with the industries and worked out the drafts of sectorwise phase-out strategies back in 1995. In 1997, former State Environmental Protection Administration together with the Ministry of Public Security compiled the overall phase-out plan for halon in fire-fighting. This is the first ODS phase-out plan at sector level not only in China, but also in the world, which was implemented with a US\$ 62,000,000 grant from the Multilateral Fund. The CFC phase-out plan received US\$150,000,000 also from the Multilateral Fund. These two significant sector phase-out plans marked a new stage where China's compliance activities went on the state-led and performance-oriented track with plans and policy support.

China's ODS production and consumption in each sector in China has dropped and will come to an end in accordance with the set schedule.

Another challenge was to reduce the soaring growth of CTC products in 2004-2007. Production of CTC by-product resulting from the production of methane chloride in 2004-2007 in China reached around 50,000 tons in 2002 while 85% would have to be phased out by 2005. China faced the risk of defaulting on the Montreal Protocol deadline. But China took on a series of measures, including restricting the approval of projects on new production facilities of methane chloride products. Secondly, flexible quota management on the producers of CTC was implemented, allowing the trade of quota among companies. Third, China supported research institutions and CTC producers to develop CTC conversion facilities and CTC for stockpile use from the technological perspective. Fourth, incentives encouraged enterprises to set up conversion facilities for CTC. By 2007, 12 CTC producers all constructed their CTC conversion facilities and reduced greatly the risks of failing to meet the targets of the Montreal Protocol.

Since 2005, China has been stepping up its efforts in cracking down on illegal ODS activities. MEP had put a lot of work, including launching more publicity, training, law enforcement activities and implement local capacity building projects across the country.

Illegal ODS activities were closed down. In 2006, General Administration of Customs launched the "Patching Up the Sky" campaign, aiming to stop illegal ODS activities. Customs at local level reinforced the monitoring on ODS trade and tracked down several ODS-smuggling cases.

The Office for ODS Import and Export Management in China, in close cooperation with UNEP, made the trial operation of informal prior informed system on ODS import and export, strengthening the information communication and cooperation with other parties. In addition, the Regulation on the Management of Ozone Depleting Substances was issued by the State Council in April 2010 through four years of converted efforts.



The next generation of room air-conditioners are based on hydrocarbon R290.

HCFC

As the largest producer, consumer and exporter of HCFCs in the world, China will be faced with the difficulty and challenge of HCFC phase-out after the 2010. The scenario of HCFCs phase-out in China is more complex compared with previous phase-outs, because it involves much larger production and consumption amount, longer industrial chains, larger industrial size and more working population.

In 2008, HCFCs production for controlled use in China added up to more than 370,000 tons, accounting for 64% of the world total. Consumption of HCFCs domestically reached over 230,000 tons, accounting for 37% of the world total that year. China will be faced with a number of difficulties, including tight schedule, heavy workload, less mature alternative technologies, lack of funds, etc in accomplishing the targets of freeze in 2013 and 10% reduction in 2015.

China is undertaking the following steps to phase out HCFCs in accordance with the Montreal Protocol deadline:

- The compilation and submission of HPMP of each sector shall need to be speeded up
- Communication and coordination among sectors will need to be enhanced
- China will carry on the R&D of substitutes and alternative technologies for both ozone-friendly and climate-friendly technologies
- Policies and standards regarding safety and technology shall be worked out or revised to remove the obstacles
- China will put more work on publicity to raise the awareness of protecting the ozone layer of the public.

Industry contributions

China's industry has fully supported the government's goal of complying with the Montreal Protocol. With guidance of government departments and industrial associations, most enterprises have strictly abided by the policies and regulations issued by the state and fulfilled obligations, including submitting data. Enterprises have been putting efforts in introducing alternative technologies and eliminate outdated procedures.

During the past ten years, China shut down and dismantled production lines and production facilities in more than 200 companies. Hundreds of enterprises went through conversion and substitution of production lines and production facilities. Enterprises, universities and research institutions input a lot of labor, material resources and funds in developing ODS substitutes and alternative technologies.

Carrots and Sticks

After having closed down all its production plants for HCFCs much ahead of the schedule of the Montreal Protocol, the world's largest producer of ozone depleting substances (ODS) has enacted regulations to control consumption, trade, import, export and production of remaining chemicals.

Annual quota limits are now required for ODS producers and consumers. ODS servicing firms and recovery and recycling businesses must register with their local Environmental Protection Bureau. The regulation also increases the transparency of cross-border trade by strengthening ODS import/export license system.

"This ODS regulation further demonstrates the strong political commitment of the Government of China to the protection of the global environment. It will guide Chinese industry to ODS-free technology while minimizing other environmental impacts", says Wen Wurui, Director General, Foreign Economic Cooperation Office (FECO) affiliated to the Chinese Ministry of Environmental Protection. The regulations

will also involve high penalties of up to US\$150,000, for example, against facilities that illegally produce ODS. As many ODS are also powerful greenhouse gases, China's ODS Regulation will further contribute to climate protection effects by reducing the emissions of thousands of millions of tons of CO₂ equivalent.

"With these regulations, China is promoting industry and research institutes to research and develop ODS alternatives which are ozone and climate friendly" says Rajendra Shende of the UNEP DTIE OzonAction Programme that has provided policy assistance to China.

To address the dual threat that HCFCs pose to the ozone and climate systems, China and other developing countries are now building roadmaps, known as "HCFC Phase-out Management Plans (HPMPs)". This is in response to the accelerated phase-out schedule for HCFCs agreed to by the Parties to the Montreal Protocol in 2007. HCFCs are mostly used in the same sectors that consumed CFCs, and their global CO₂-weighted emissions having increased by 30% during the period 2004-2007.

The Beijing Statement

As part of the 2010 International Ozone Day celebration, the country representatives from South East Asia and the Pacific (SEAP) and South Asia (SA) signed the Joint Beijing Statement.

The Joint Meeting SEAP and SA Networks of Ozone Depleting Substances Officers in September 2010 in Beijing reaffirmed their resolve to continue their efforts till the ozone layer is fully recovered and get maximum climate mitigation. Following is the text of the Beijing Statement:

We, the Ozone Officers, representing National Ozone Units from South Asia and SEAP Network countries, Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer, on the Occasion of the 25th Anniversary of the Vienna Convention, are extending our thanks and appreciation to the Ministry of Environmental Protection/ Foreign Economic Cooperation Office (MEP/FECO) in organizing the network meeting and the international ozone day celebration,

Recognizing the Montreal Protocol as the most successful multilateral environmental agreement and the first international treaty to achieve universal ratification, having 196 parties,

Recalling the achievements made, to date, to phase-out Ozone Depleting Substances, while earnestly seeking to address the challenges we will face in the future, Being aware that countries will face challenges to ensure the sustainability of ODS phase out achieved beyond the 1 January 2010 and the new challenges as we have now entered into phase-out process of HCFCs.

Declare:

1. That we are pleased to note with appreciation that the region must achieve the 1st January 2010 control measures of the Montreal Protocol and we take this opportunity to express our sincere appreciation for the efforts made towards this achievements by the industries, experts, international organizations, and other relevant groups;

2. That we are further pleased to reaffirm our continued commitment to the protection of the ozone layer through a dedicated effort to achieve the accelerated phase-out targets of HCFCs under the Montreal Protocol, to protect the environmental well being of present and future generations;

*3. That we will continue to strengthen our south-south and regional cooperation, to share and take advantage of lessons learned during the ODS phase-out process in the past.
18 September 2010, Beijing, China*

FIJI



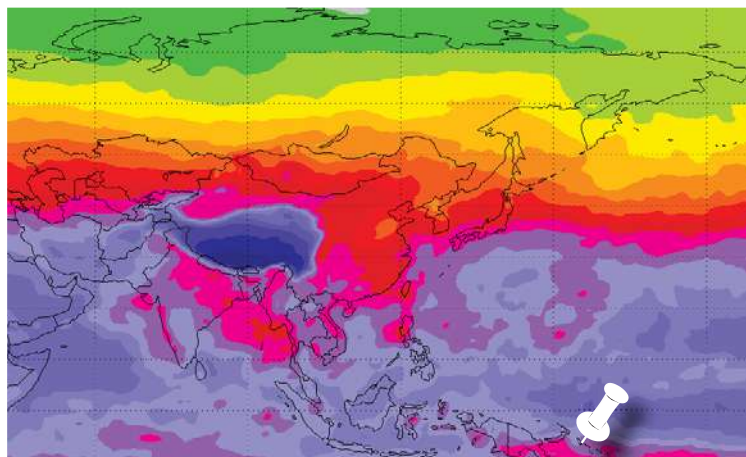
Fiji acceded to the Vienna Convention and the Montreal Protocol in 1989. The country operates under Article 5 (1) and was the first developing country among the Pacific Island Countries to become a party to the Montreal Protocol.

The National Ozone Unit (NOU) of the Department of Environment (DOE), Ministry of Local Government, Housing, Squatter Settlement and Environment was established in 1995. This unit is managed by an ODS Project Officer contracted under the UNEP Institutional Strengthening Project (IS). Phase-out is managed by the Country Programme (CP) which has a multi-sector, policy-based approach to meet the country's commitments.

Refrigeration and air-conditioning were the main ODS-consuming sectors and the national strategy prioritized them.

Fiji has achieved advance CFC phase-out since 2000 through strong enforcement of its ODS Act and technical assistance from the projects under the RMP. However, the phase-out effort met challenges including the prosecution of the first case involving violation to its ODS regulation which exposed shortcomings in the infrastructure to sustain compliance.

Fiji was unable to meet its compliance on Methyl bromide for 2003 and 2004. UNEP Compliance Assistance Programme (CAP) visited the country twice to meet importers and fumigators, and assisted the NOU to prepare a plan for a return to compliance.



Achievements

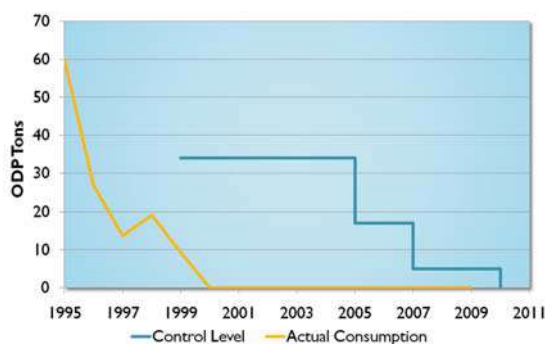
Fiji phased out CFC's in 2000, 10 years before target. The Ozone depleting Substances (ODS) Act came into effect in 1998 and the ODS Regulations in 2000. The Department signed a MOU with Fiji Islands Revenue and Customs Authority (FIRCA) on the 7th of May, 2003 to principally to detain imports and an export of any ODS or suspected to be ODS.

In collaboration with Training and Productive Authority of Fiji (TPAF), the Fiji Department of Environment facilitates the Good Practices in Refrigeration programme which is a mandatory requirement in order to obtain a licence.

The NOU has achieved the following:

- + Fiji is the first country in the Pacific to phase out methyl bromide in the tobacco sector
- + A licensing system is being established for individual technicians, company/facility permits to store, import and export
- + Fiji is one of the first few countries in the world to implement a Refrigerant Management Plan (RMP), and was nominated to sit on a steering committee for to advise the South East Asia Pacific Network on RMP development and customs related projects.

CFC CONSUMPTION



Fiji has also been awarded:

- 2003 - "Outstanding National Ozone Unit Award-" from United National Environment Programme
- 2007- "Montreal Protocol Certificate of Recognition" by UNEP
- 2008- Ozone Layer Protection Award from the US Government Environmental Protection Agency.
- 2010 - ODS Regulations 2010 repealing ODS Regulations 2000
- 2010 - Formation of 3 RAC Association in 2010 (Central, Eastern and Northern Division)

Challenges

Effective enforcement of ODS legislations was initially a challenge. This was resolved by signing an MOU with the Fiji Islands Revenue and Customs Authority (FIRCA) to increase awareness to customs officers and strengthen border control.

Training was provided by the Department of Environment to customs officers to enable them to efficiently identify controlled substance (ODS), to correctly profile in the asycuda system and track down possible illegal trade of ODS

From 2003 to 2004, there has been few cases of illegal import of ODS in the country as well as a number

of unauthorized releases of the hazardous ODS to importers without permit issued from the Department of Environment.

A lot of publicity and awareness has been done to address such challenges throughout the past years.

Industry

Industries were moving faster in terms of technology change which contributed significantly to the prompt phase-out of CFC's. The government and RAC industries have formed an excellent working relationship. Now, the Department is looking forward to working with three associations on the successful phase-out of HCFC's.

Customs Vigilance

The Fiji Islands Revenue and Customs Authority (FIRCA) was established as a statutory body in 1998 for the operations of the former Fiji Islands Inland Revenue Services and the Fiji Islands Customs Service.

FIRCA's Customs Division plays a vital role in the expansion of the new global economy, which now refers to the new architecture where high productivity methodologies have been adopted for the conduct of electronic commerce across all sectors of the economy. Businesses want simplifications of procedures, efficient processing of shipments and predictable sets of rules and regulations. They also want to minimise any unexpected loss of time so that they can compete in launching products into the consumer market.

After the Fiji Government ratified the Vienna Convention and the Montreal protocol, the National Ozone Unit of the Department of Environment formulated an MOU with FIRCA in 2003 for the implementation of border control of ozone-depleting substances. Customs thus has played a vital role in the implementation of effective border controls on imports of the harmful chemicals.



Detained 197 cylinders
of R22 imported in to
Fiji without permit

Vehicles being imported without permit from Department of Environment because of CFC have been detained. No vehicles with CFC have been imported since 2000. The Department of Environment along with Customs have always worked hand-in-hand to stop the import of vehicles containing ODS. R22 and Carbon Tetrachloride cylinders have also been detained at the wharf when companies importing such consignments did not have an import permit approved by the Department of Environment.

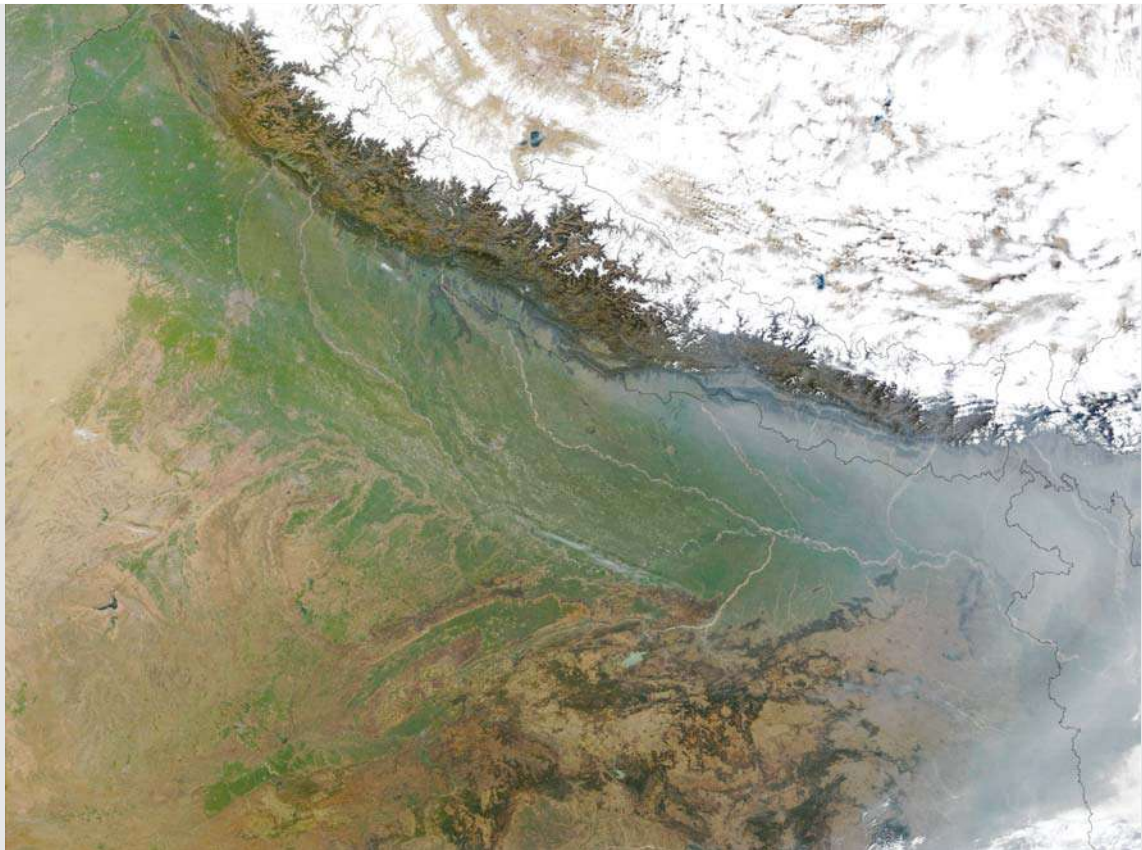
Customs has cooperated with the National Ozone Unit of the Department of Environment in awareness training for Customs Officers on ODS border control. Officials are told about the importance of the ozone layer, the impact of ozone depletion, how to identify ODS and Customs Checklists on inspecting ODS. The illegal trade of ODS and the need to maintain a stricter and effective border control are highlighted during these sessions.

The future challenge for the customs authorities is to enforce international environmental agreements such as the Basel Convention, CITES, Kyoto Protocol, and the Rotterdam Convention with training for customs authorities.



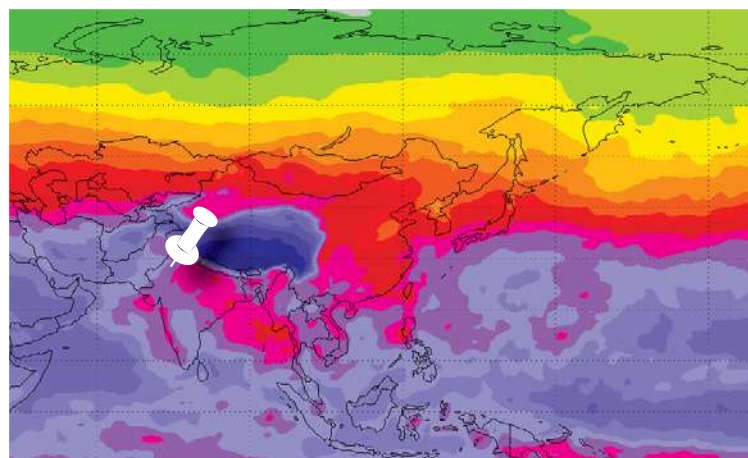
A Customs Officer holds a bottle of CTC (20 x 500ml) that was detained in 2006.

INDIA



India became a Party to the Vienna Convention for Protection of the Ozone Layer in 1991 and the Montreal Protocol in 1992. Work relating to the ozone layer protection and implementation of the Montreal Protocol was entrusted to the Ministry of Environment and Forests (MoEF) which set up an Ozone Cell as a National Ozone Unit (NOU). The MoEF has also established an Empowered Steering Committee (ESC) which is supported by the Technology and Finance Standing Committee (TFSC) and the Standing Committee on Monitoring. The ESC is the apex body responsible for overall policy formulation and implementation of the phase-out of ozone-depleting substances in the country.

India prepared a detailed Country Programme (CP) in 1993 to phase-out the ODSs in accordance with its National Industrial Development Strategy. The CP was updated in 2006 in consultation with Indian industry and other stakeholders.





Inauguration of a high level segment of 18th MOP by Indian Prime Minister Manmohan Singh in November, 2006

India has successfully phased out the production and consumption of CFCs, CTC and Halons as per the Montreal Protocol, except the use of pharmaceutical grade CFCs in the manufacturing of Metered Dose Inhalers (MDIs) for treatment of Asthma, Chronic Obstructive Pulmonary Disease and other respiratory ailments.

India extended help and support under the South-South Cooperation Framework to Bhutan, Nepal and Iran in the training of their technical personnel, exchange of visits and equipment support for implementation of phase-out of ODSs in their countries.

The Ozone Cell, MoEF received The Montreal Protocol Implementers Award in 2007 for its contribution to protect the ozone layer. The Stratospheric Ozone Protection Award, 2008 was also conferred to Dr A Duraisamy, Director of the Ozone Cell by the United States Environmental Protection Agency. In 2009, India launched a Roadmap for HCFC Phase-out of HCFCs.

The eighteenth Meeting of the Parties (MOP-18) to the Montreal Protocol on Substances that Deplete the Ozone Layer took place in November 2006, in New Delhi. After an intense week of plenary meetings, contact groups, bilateral talks and behind-the-scenes negotiations, the meeting ended with the adoption of 37 decisions.

Achievements

India is one of the Article 5 parties which produces ODSs not only to meet the domestic demand, but also for export to many countries, especially Article 5 parties.

India developed and put in place a comprehensive Ozone Depleting Substances (Regulation and Control) Rules, 2000 under the Environment (Protection) Act 1986 that set deadlines for phasing out of various ODSs. The unique fundamental feature of these Rules was banning the use of CFCs and Halons in the manufacturing of new equipment as early as 1 January,



Inauguration of the preparatory segment of 18th MOP by India's Minister of Environment and Forests A. Raja in October, 2006

2003. This not only achieved the early phase-out of ODSs, but also reduced the inventory of ODS based equipment which resulted in reduction of servicing requirements.

Other successes were phase-out of production and consumption of virgin Halons as early as 2002 and accelerated phase-out of production of CFCs with effect from 1 August 2008, 17 months ahead of the Montreal Protocol schedule.

India handled the phase-out of ODSs in Small and Medium Enterprises (SMEs) with umbrella projects in the foam and refrigeration sectors.

Challenges

The most critical challenge India encountered in the phase-out of ODS was the sustainability of accelerated phase-out of production of CFCs from 2008, considering that the use of CFCs in refrigeration and air-conditioning (RAC) servicing and in manufacturing of MDIs was still continuing. The RAC servicing sector was one of the major consumers of CFCs because of a large inventory of CFC based equipment/appliances which were in operation and still had useful working life. This sector was spread all over the country, involved a large number of individual and institutional users handled by skilled/semiskilled service technicians, mostly from informal sector. Information dissemination and awareness was of high importance to ensure sustainability.

Another critical challenge was to phase out the use of CFCs in manufacturing of MDIs. A National Strategy for Transition to Non-CFC MDIs and Plan for Phase-out of CFCs in the Manufacture of Pharmaceutical MDIs was approved by the Multilateral Fund in 2008 and is

being implemented at an accelerated pace. The complete phase-out of CFCs in MDI manufacturing will take place earlier than the scheduled target of 2013.

The National CFC Consumption Phase-out Plan (NCCoPP), responsible for phase-out of CFCs in servicing sector played a key role in addressing the critical challenging situation phased by the servicing sector. The NCCoPP and its preceding projects namely the Indo-Swiss Project 'Human and Institutional Development for Ecological Refrigeration (HIDECOR)', and the Indo-Swiss-German Project "Ecological Refrigeration (ECOFRIG)" had established a training set-up including well developed excellent

training modules and a pool of trained trainers throughout the country. Training also included a module on retrofitting of CFC based appliances/equipment to non-CFC alternatives. These projects trained more than 20,000 technicians in the country. The NCCoPP provided equipment support to the servicing enterprises and established the reclamation centres in the country.

These measures played a key role towards the sustainability of accelerated phase-out of CFCs in the servicing sector. ECOFRIG, HIDECOR and the NCCoPP received the Montreal Protocol Exemplary Project Recognition Award on the occasion of 20th Anniversary of the Montreal Protocol in 2007.

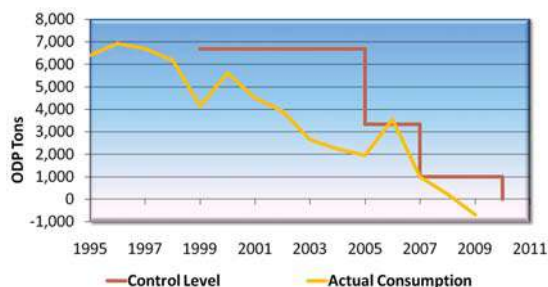


Mr A Raja, Minister for Environment and Forests, commemorates the closure of ozone depleting substances production sites in March 2005.



Launching of the Roadmap for HCFC Phase-out in India by the Minister of State for Environment and Forests, Mr Jairam Ramesh in October 2009.

CFC CONSUMPTION



Industry

Indian industry has been on board from the beginning of the ODS phase-out activities in the country. The industry has played a key role since 1993 and was represented and even led sectoral working groups on refrigerant manufacturing, refrigeration and air-conditioning, foam manufacturing, aerosol and fire extinguisher sectors. There was complete ownership and commitment of industry to phase out ODSs.

Industry associations actively participated in the process of policy formulations related to ODS phase-out and were members of the ESC, TFSC and the High

Level Task Force of the MoEF. The industry willingly accepted the challenging task of stopping the use of ODSs in new manufacturing of appliances/equipment as early as in 2003.

The choice of non-ODS technologies was left to individual enterprises. Indian industry developed technologies using in-house research and development facilities in close cooperation with other institutions in the country. Indian refrigerant manufacturers developed manufacturing technologies for HFC-134a in collaboration with a leading chemical research institutes. The Indian domestic refrigeration industry evaluated low global warming potential hydrocarbon both as foaming agents and refrigerants in association with research institutions under the trilateral ECOFRIG (Indo-Swiss-German) project.

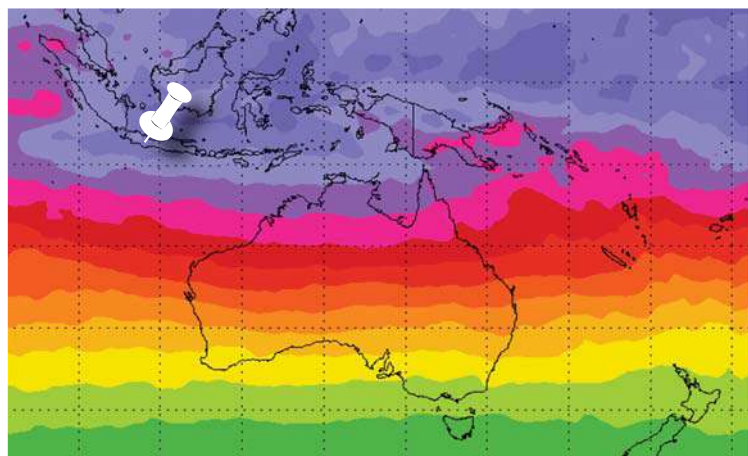
India was one of the first Article 5 countries to introduce hydrocarbon technology in domestic refrigeration sector since 2003. One of the compressor manufacturing industries in the country developed HFC-134a compressor technology through in-house research in the early stage of the implementation of phase-out of ODSs. Kirloskar Copeland and Satya Deeptha Pharmaceuticals received the Montreal Protocol Exemplary Project Recognition Award in 2007.

INDONESIA



Indonesia ratified the Vienna Convention and the Montreal Protocol in June 1992. ODS consumption in Indonesia is less than 0.3 kg/capita/year, putting it under Article 5 of the Montreal Protocol. In 1994, Indonesia prepared a Country Program with a national strategy and action plan to phase out ozone-depleting substances in line with the Montreal Protocol control schedule. The action plan designed to address each of the ODS consuming industry sectors, through institutional, regulatory, incentive and disincentive measures, awareness and information dissemination, investment and technical assistance and monitoring.

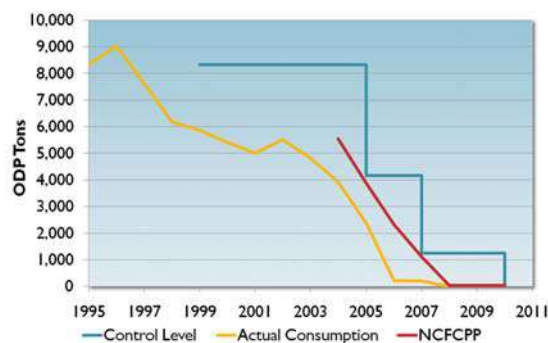
Indonesia initiated the preparation of the Country Program Update in 1998 with the assistance of the World Bank, UNDP and industry under which ODS consuming sectors were resurveyed. The updated country program renewed and reinforced Indonesia's commitment, strategy and action plans to eliminate ODS and is intended to serve as a guideline for future activities related to meeting Indonesia's obligations under the Montreal Protocol. Realising the needs of the industry and the economy, the updated Country Program revised the target date for complete ODS phase-out to the end of 2007.



To provide regulatory and policy support for enabling the industry to eliminate ODS, the Government of Indonesia has taken the following initiatives:

- Establishing a licensing system for import of ODS from 1998 and the latest revision in year 2006 which include licensing system for HCFCs importer.
- Ban on imports of goods containing CFC and Halons from 1998.
- Monitoring the use and import of ODS to minimize illegal trade and enhancing capacity of custom officers. As a result illegal import of ODS has been successfully seized in some major ports.
- Monitoring progress of implementation of projects funded by MLF to ensure phase-out targets achieved timely with control schedule
- Formulating guidelines and regulations as necessary for policy implementation, including regulation to prohibit the used of banned ODS in the manufacturing sector, technician certification and registration of servicing workshops for retrofiting

CFC CONSUMPTION



- and recycling refrigerants and halon management
- Carry out public awareness initiatives and campaigns for promoting ozone layer protection at the consumer level, related governmental institutions and local government

- Regular interaction with other ministries and departments, industry representatives and implementing agencies for information dissemination related to impact of policy measures
- Promoting development and use of ozone-friendly technologies

Achievements

Government of Indonesia adopted policy to accelerate phase-out of CFC, Halon, CTC, TCA and MBr by 2009, ahead of the Montreal Protocol deadline. Indonesia had successfully reduced ODS consumption from 8,989 metric tonnes as the baseline to zero by 2008 two years ahead of the Montreal Protocol schedule.

Challenges

Some priority challenges that are yet to be addressed include:

- Sustain the achievement of ODS phase-out
- Manage ODS banks
- Lack of funding sources to destroy ODS
- Illegal imports of CFCs possibly entering the country
- Inflow of old ODS using equipment that may negate the country's early ODS phase-out achievements
- HCFC phase-out

Industry

The success of Indonesia's ODS phase-out programme is the result of good partnership with industries, government agencies at national and local levels as well as the relevant stakeholders. As recognition of their contribution, the government gave ozone awards to individuals, private companies and local government. Private sector has contributed significantly to support the programme such as the establishment of the Halon Bank in cooperation with the national airline Garuda and the destruction facility in cooperation with the cement Kiln company.

Small Ways to Make a Big Difference

Stepping out of a conference room at the Jakarta Convention Centre in Jakarta, 60-year-old Syamsiaar Yusuf made a mental list of ways she can adapt some lifestyle habits to helping protect the ozone layer.

“I really liked the seminar and I will share what I learnt with my neighbours,” the grandmother of eight from Riau Islands, said of the session organised by the Indonesian Women Congress.

Forty-four-year old Novilia Syarief echoed a similar sentiment: “It broadened our knowledge about climate change and gave us practical measures to prevent further destruction of the ozone layer.”

What seemed to be very theoretical discussions about the ozone layer were broken into everyday issues, with people like Environment Minister Gusti Mohammad Hatta urging women to be more critical consumers in their roles as the key decision-makers.

For instance, he said, women can help try to have refrigerators and airconditioners repaired at certified shops in addition to choosing more environment-friendly products. They could use ozone friendly, CFC-free products and tell others about how that will help restore the earth’s protective ozone layer.

“The anti-ozone layer depletion campaign should start with ourselves,” the minister stressed at the seminar co-organised by the Ministry of the Environment.

Some 350 other members of Kowani, a federation of 82 women’s groups, were briefed on the causes of ozone-layer depletion and its health impacts, as well as simple, practical measures to help address it.

Indonesia’s per capita consumption of ozone-depleting substances is estimated to be less than 0.3 kg annually, but this adds up because the country’s population is 240 million.

In 1992, Indonesia ratified in 1992 the Vienna Convention, Montreal Protocol, and London Amendment on ozone-layer protection. It is required to develop a national ozone-layer protection programme, phase out the use of ozone-depleting substances, and refrain from trading ozone-depleting substances with countries that have not signed ozone-protection convention and protocols.

With the support of the protocol's Multilateral Fund, Indonesia reduced the consumption of CFCs from 9,000 tonnes in 1996 to 2,000 tonnes in 2005. Since 2008, Indonesia also stopped importing Halon, Carbon tetrachloride, Methyl chloroform, and CFCs. The government, however, still allows the import of Methyl bromide for fumigation and pre-shipment purposes.

However, Sulistyowati, Director for Climate Change Impact Control at the Ministry of Environment, admitted

that certain banned substances were still circulating in the country, particularly among small enterprises.

The Ministry has trained owners of at least 2,000 repair shops around Indonesia on how to burn and recycle CFCs of household and car air-conditioners. "We taught them how to clean household and car air-conditioners, including how to clean and recycle freons," Sulistyowati says.

While clamping down on illegal imports, the Environment Ministry is also spreading awareness about newer, cleaner technologies, like the seminar with the women. Indonesia is planning to reduce HCFC consumption by 10 % by 2013. "We are now talking to all stakeholders, particularly users and distributors and offering them alternatives such as hydrocarbons," Sulistyowati said.

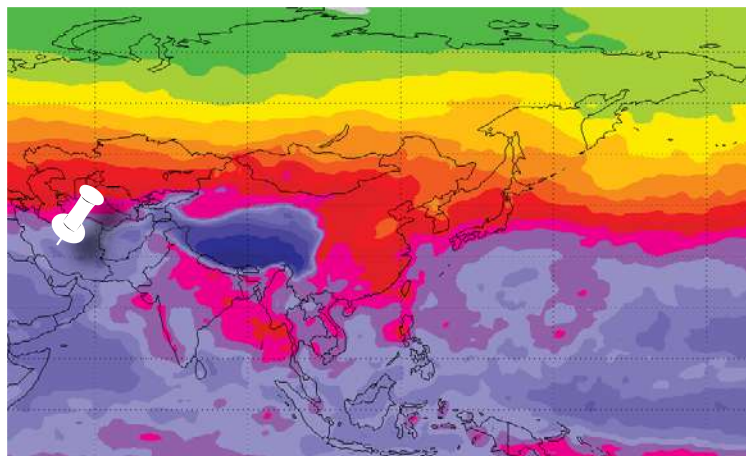
IRAN, ISLAMIC REPUBLIC OF



A satellite image of the salt flats in the Iranian desert looks like an artist's palette.

Iran ratified the Vienna Convention and its Montreal Protocol in 1990.

Policy initiatives for the phase-out of ozone-depleting substances started with the original Country Programme (CP) and the establishment of the National Ozone Unit (NOU) within the Department of Environment (DoE). Since then the country has made substantial efforts in establishing a policy framework, which encompasses institutional, regulatory, fiscal, and legislative measures. A National Ozone Committee has been acting as a high-level decision making body supervising performance of the country's compliance with the provisions of the Montreal Protocol.



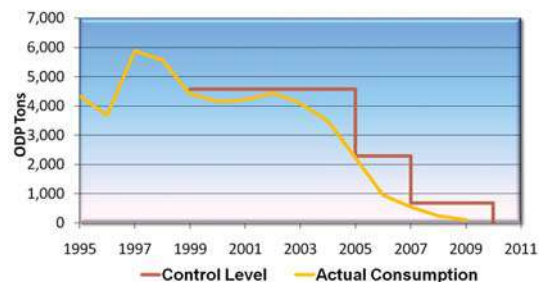
Achievements

Thus far, Iran has been in complete compliance with its commitments to the Montreal Protocol control targets. Employment of appropriate technologies under the approved conversion projects has resulted in a complete phase-out of total CFC consumption by sectors in the country.

Several factors influenced the country's compliance with the provisions of the Montreal Protocol, among which is the successful enforcement of strict control measures for the import of ODSs through an established ODS import/export licensing system. Under the ODS import quota system, all registered and eligible ODS users are currently permitted to import their ODS requirements subject to specified restricting regulations.

Another strategy employed to comply with the scheduled ODSs-phase out is to constitute the National Ozone Committee (NOC) as the highest policy and decision-making authority. A National Ozone Network has also been created and has been operational since

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2006 for the decentralisation of the activities of NOU and NOC to the provinces and a comprehensive monitoring plan has also been adopted, which is being implementation through the National Ozone Network with the aim of tracking the performance of phase-out activities.

The country has also established a collaborative relation with neighboring countries in its efforts to control illegal trade of ODSs, and ODS containing equipment through the UNEP CAP led Tehran Dialogue.

Challenges

One of the most important obstacles that the country has encountered is customization, indigenization and extension of technical knowledge of the proper use of the new environmentally sound technologies that have been so far transferred to the Article 5 countries under their country-specific Montreal Protocol programmes. Sustaining these activities still remains a major challenge in the country, taking into account that further capacities and resources are required to be built and empowered to enable effective use of the available resources in the future.

Industry

Industry has helped in complying with Montreal Protocol targets by facilitating the transfer of technology through active involvement in the process of project's implementation, active engagement in selection and sustained utilization of alternative technologies, and supporting domestication of the selected alternative technologies and substances.

The experiences learnt from the ODS Phase-out projects and inputs from the stakeholders from the industries and other relevant organization, have created a basis for the preparation of Iran's national strategy for the phase-out management of HCFCs.

Iran's Great Success with CFC-based MDI Phase-out

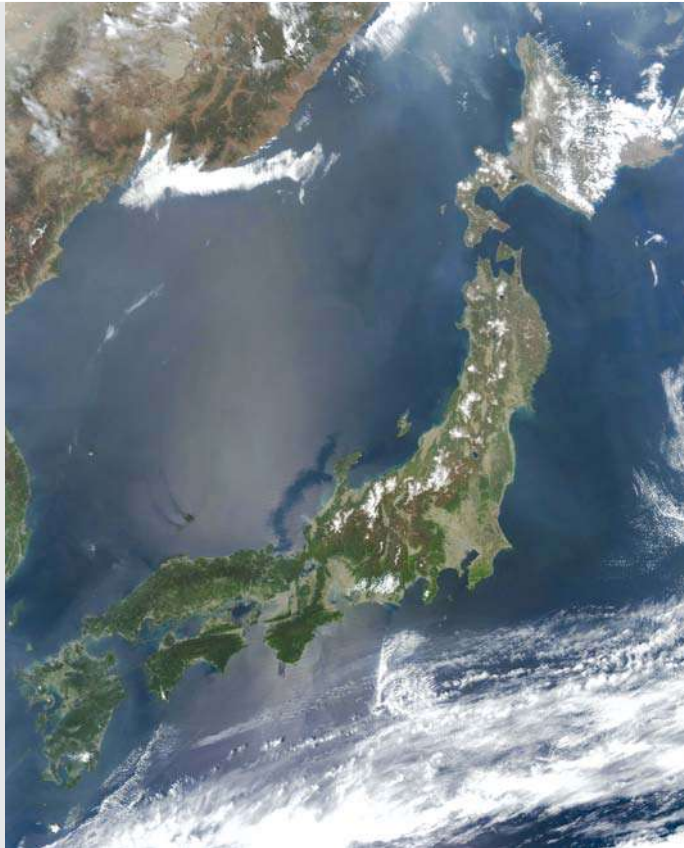
The Islamic Republic of Iran has successfully produced the first batches of new HFA-based Metered Dose Inhaler products under the approved project for the phase out of CFC-based MDIs in Sina Daru Laboratories company in Iran. The achievement was a result of close collaboration of all stakeholders including the industry sector, healthcare authorities, implementing agencies, medical society and the department of environment. To ensure that the new CFC-free products would meet the specific needs of the asthma and COPD patients, the products formulation and performance of the newly established alternative technology was consensually authenticated and approved by the beneficiary enterprise, the supplier of machineries and the technology provider. The products have also been put under the stability tests for legal authorization of the product stability by the Ministry of Health of Iran.

In light of the above achievement, Iran has completely phased out CFCs from the manufacturing of MDI products in the country and has requested the Ozone Secretariat to withdraw the country's essential use nomination for the year 2011 from consideration by the 22nd Meeting of the Parties in November 2010.

This success is another major step for Asia and the Pacific region to phase out CFC MDIs and increase market penetration of alternatives in the region.

Download "Transition to CFC-free Inhalers: Awareness Package for NOUs in Developing Countries" at http://www.unep.fr/ozonaction/information/mme/lib_detail.asp?r=5310

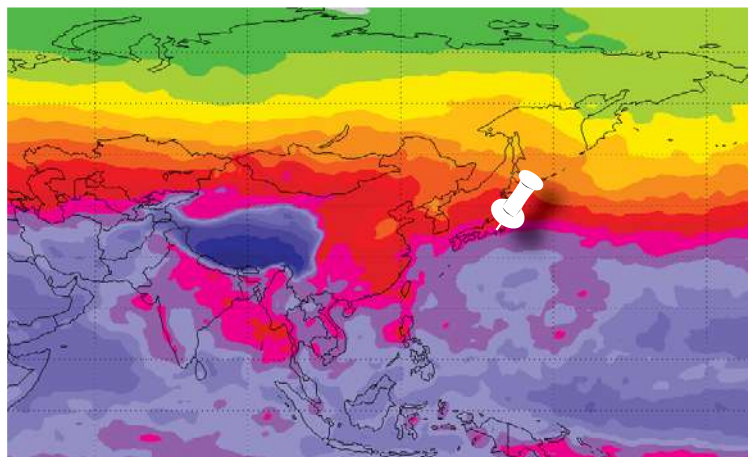
JAPAN



Since the ratification of the Vienna Convention and the Montreal Protocol in 1988, Japan has contributed US\$ 5.5 billion to the Multilateral Fund for the phaseout of ozone depleting chemicals, making it the second largest donor.

Japan itself passed the 'Law Concerning the Protection of the Ozone Layer through the Control of Specified Substances and Other Measures' in 1988, and the phase-out of production and consumption of Ozone Depleting Substances (ODS) has been successfully implemented under this law.

In addition, Japan has also contributed to ozone layer protection by strengthening recovery and emission restriction measures of fluorocarbons (CFCs, HCFCs and HFCs) contained in household, commercial and vehicle equipment. Recovery became mandatory in 2001 for domestic refrigerators and air conditioners, and in 2004 for freezers ('Law for the Recycling of Specified Kinds of Home Appliances') in 2002 for commercial refrigeration and air conditioners ('Fluorocarbons Recovery and Destruction Law'), in 2005 for mobile air conditioners ('Law for the Recycling of End-of-life Vehicle').



Achievements

Japan has reduced ODS production and consumption under 'Law concerning the Protection of the Ozone Layer through the Control of Specified Substances and Other Measures', complying with the Montreal Protocol.

Production and consumption of CFCs, Halons, carbon tetrachloride, 1,1,1-trichloroethane and Methyl bromide have already been phased out, and consumption of HCFC has been reduced to less than 20% of the baseline, accelerating the schedule of the Montreal Protocol.

In accordance with the decision of Meeting of the Parties, Japan established a National Halon Management Strategy in 2000, CFC Management Strategy of Japan in 2001 and Japan National Management Strategy for Phase-out of Critical Uses of Methyl bromide in 2006.

The Japanese government is moving to establish a collaborative relationship among industry, government and academia for promoting the observation and monitoring of the state of the ozone layer and the atmospheric concentrations of ODS, technological development of the conversion to the alternatives focusing on low-greenhouse potential substances, broad-ranging public awareness of the ozone layer and its effect in filtering harmful ultra-violet rays.

Challenge

Since ozone-depleting substances, especially CFCs, have been used in various ways in many industries, control authorities and industrial groups covering this issue are also diversified. The meeting of promotion of the ozone layer protection among relevant ministries and agencies has been periodically held to implement cross-sectoral approaches (e.g. follow-up of CFC Management Strategy of Japan) and share information. Environmentally sound recovery and destruction of CFC that was contained in equipment was also strengthened.

Industry

Japan used to be the world's leading producer and consumer of CFCs, but has achieved the phase-out of CFC by proactive contribution from industries. This success was based on the effort made by Japanese industries which had deep understanding and took an ambitious approach, especially through the development of alternative substances, promotion of the use of alternative products, promotion of the recovery, reclamation, and the destruction of CFCs.

Moreover, the Japan Industrial Conference for Ozone Layer and Climate Protection (JICOP) was organized for close information exchange. JICOP serving as the liaison between the government and industries.

KOREA, DEMOCRATIC PEOPLE'S REPUBLIC OF

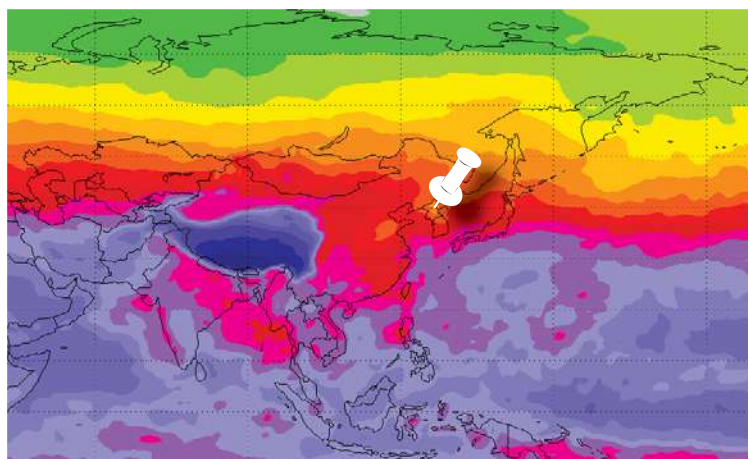


DPR Korea acceded to the Vienna Convention and the Montreal Protocol in 1995 and since then the country has also ratified the London, Copenhagen, Montreal and Beijing Amendments.

The country is qualified as an Article 5 country under the definition of the Protocol based on its per capita consumption of ODS, which in 1995 was 0.032 kg.

In the DPRK, ozone depleting substances are mainly used as foaming blowing agents, refrigerants, in fire extinguishers, pesticides, fumigants, and as process agents.

The 2.8 Vinalon Complex produced ODS to meet domestic demand, and had a large annual production capacity of CFC-11, CFC-12, CFC-113, CTC, Methyl chloroform and Methyl bromide. The alternative to CFCs, HCFC, is now being produced in the Hamhung Refrigerants Manufacturing Factory which has a production capacity of 600t/yr.



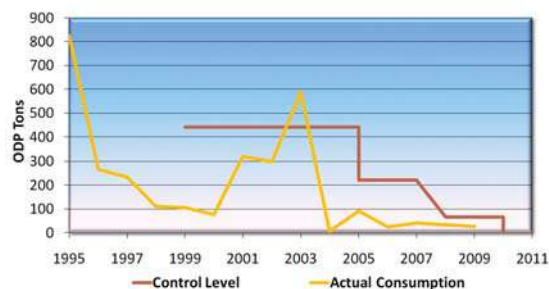
Achievements

To fulfill its commitment to the Montreal Protocol and its amendments, the DPRK prepared a Country Program in 1997, and set up National Ozone Unit (NOU) the next year. The country has a centralised planned economy which makes it easier to control the production and consumption of ODS. Since a quota system for the production and consumption of ODS and a licensing system for import and export were imposed phase-out has been implemented in a smooth way.

Specific laws and regulations were promulgated and enforced to control ODS. Equipment still using ozone depleting chemicals were banned, and the import of ODS was strictly controlled.

The country stopped the production of ODS and phased out production facilities and encouraged the ODS producers to convert to ozone-friendly technology and processes, and gave tax incentives to ozone-friendly facilities.

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After the closure of production facilities most ODS were imported, so training programs were enhanced for customs officials with introduction of ODS-identifiers. Ozone-friendly technologies were also disseminated and public awareness of the need to protect the ozone layer was introduced through a new curriculum in the vocational training schools.

Challenges

DPR Korea is now confronted with the serious dilemma of HCFC phase-out. The delay in the formulation of the HCFC phase-out and management plan has affected the compliance of the phase-out time schedule. The country is not fully ready for the phase-out of HCFC and there doubt about whether the country can repeat what it did for CFC phase-out. What is needed is legal control on HCFC import and consumption, a quota and licensing system for HCFCs.

Industry

DPRK industries made a remarkable contribution to ODS phase-out in the country. Methyl bromide which was produced in the 2.8 Vinalon Complex was used in fumigation and the plant had an annual production capacity of 200t. This production line was phased out in 1995, soon after the country ratified the Vienna Convention and the Montreal Protocol despite the growing demand in the agriculture sector even though the country had no alternative to the chemical. The phase-out of Methyl bromide therefore clearly demonstrated the country's commitment to the Montreal Protocol.

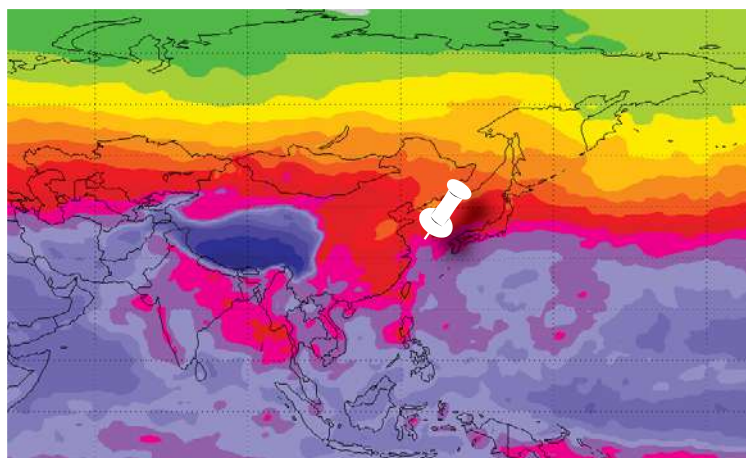
KOREA, REPUBLIC OF



Republic of Korea ratified the Montreal Protocol and the London Amendment in 1992, the Copenhagen Amendment in 1994, the Montreal Amendment in 1998 and the Beijing Amendment in 2004 and is classified as a party operating under Paragraph 1 of Article 5 of the Protocol.

The country successfully phased out production and consumption of CFCs, Halons and CTC by end of 2009 without any funding support from the Multilateral Fund.

To meet the control measures for CFCs, Halons, CTC, Methyl chloroform, the Republic of Korea created a local fund imposing fees on producers and importers of ODS (excluding HCFCs) in 1992, which was managed by the Korea Specialty Chemical Industry Association. This fund was used to develop technologies to use alternatives and replace ODS facilities in small and medium enterprises using alternative substances. A license system for production, import and export of ODS and the National Phase-out Plan (NPP) also played a critical role in the successful implementation of the Montreal Protocol.



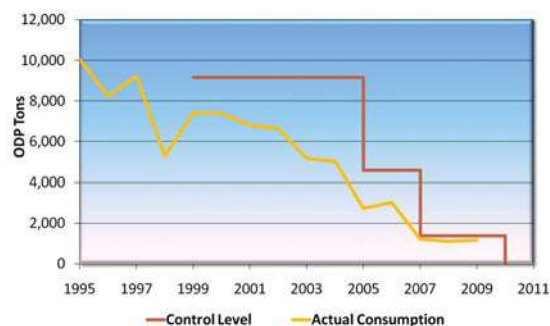
Achievements

The total amount of consumption and reduction of ODSs (CFCs, Halons, CTC, 1,1,1-TCE) from 1998 to 2010 through the National Phase out Plan (NPP) exceeded 42,000 ODP tons, which is equivalent to 200 million tonnes CO₂ emission reduction.

In accordance with Decision XIX/6 on HCFCs adopted in the 19th MOP, developing countries including the Republic of Korea need to freeze HCFC production and consumption at the base level (average of 2009-2010) by 1 January 2013, and reduce 10% of its baseline production and consumption by 1 January 2015. The final phase out date has also been moved up 10 years from 2040 to 2030.

Republic of Korea is not only a producer of HCFC and HCFC-22 but also a consumer of HCFC-22, HCFC-

CFC CONSUMPTION



123, HCFC-124, HCFC-141b, HCFC-142b, HCFC-225. The consumption base level (average consumption of 2009-2010) of HCFCs is expected to be 2,017 ODP tons.

As a part of South-South cooperation and expedited CAP assistance initiatives, the following major activities were undertaken during the year 2007, Republic of Korea agreed to continue exchange of information with Pakistan on exports of CTC to Pakistan from Samsung. This facilitated achievement of compliance of Pakistan with their CTC phaseout plans.

Among 6 kinds of HCFCs that are consumed in the country, 3 HCFCs (HCFC-22, HCFC-141b, HCFC-142b) account for more than 98%.

Most HCFCs are used as foaming agents and refrigerants in HCFC refrigeration and air-conditioning equipment. A small portion of HCFC is used for solvent and fire extinguishing. Republic Korea is also a major exporter of the HCFC gas and HCFC-based equipment.

Challenges

It is expected that HCFC phase-out will be more challenging in comparison with the phase-out of CFCs, as the consumption level of HCFCs is 3 times more than that of CFCs, and the time for the industry to take action is much less than what was available for CFCs phase out. Republic of Korea is an exporter of gas and HCFC based equipment as well.

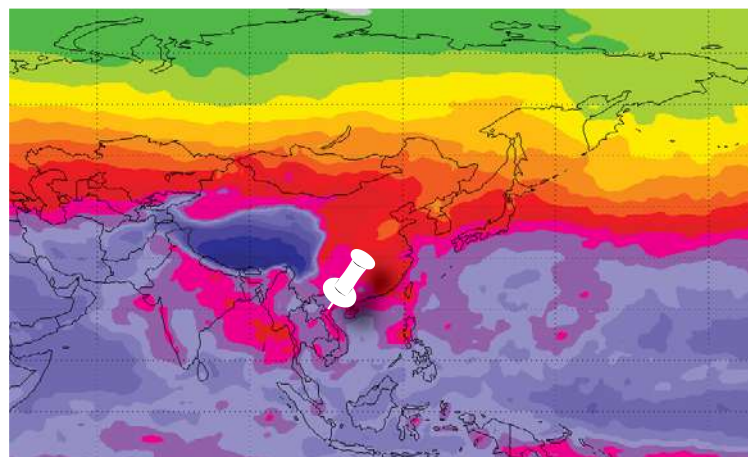
LAO PDR



The Lao People's Democratic Republic acceded to the Vienna Convention and Montreal Protocol in 1998 and to the London, Copenhagen, Montreal and Beijing Amendments in 2006. The country is classified as an Article 5 Party to the Montreal Protocol and is eligible for financial assistance under the Multilateral Fund.

Laos has completed its Country Programme implementation which includes awareness activities to various targeted groups throughout the country and strengthening the National Ozone Unit. Various activities of the Refrigerant Management Plan were successfully carried out. The foam sector alone was consuming 30 ODP tonnes of CFC-11 and the balance was CFC-12 in refrigeration and MAC servicing. With support from the Multilateral Fund, the conversion of one plant to Methylene chloride resulted in the phase-out of 16.3 ODP tonnes of CFC-11. Other plants followed suit even without grants and there has been no CFC consumption since 2005.

Lao PDR's Terminal Phase-Out Management Plan has phased out CFC refrigerants completely. The TPMP includes activities designed to tackle residual uses of ODS in the various refrigeration sub-sectors and to meet the Montreal Protocol phase-out obligations.

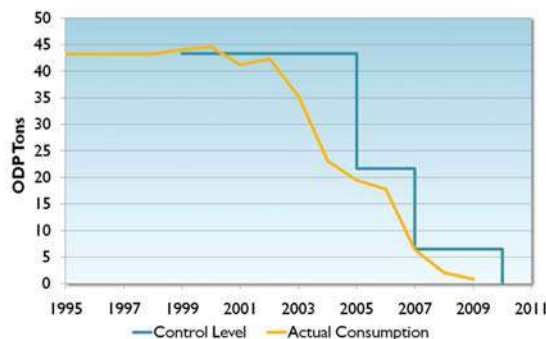




Achievements

The National Ozone Team consisting of various representatives from various ministries has been involved in the implementation of the Country Programme and RMP as well as preparation and implementation for TPMP. This has resulted in internal solidarity and improvements in national coordination. ODS issues have thus been incorporated in the new version of the National Environmental Protection Law which will be passed by the National Assembly by the end of 2010.

CFC CONSUMPTION



Challenges

It has been issues with the lack of local human resources and delays in funds transfers. The number of technicians to be trained throughout the country has not been met because it is not cost effective. There has also been turnover of customs officials, and there needs to be more sustained training. Enforcement of the Decree and Regulation on the Import-Export of ODS in Laos is still not properly working, and could be incorporated into other ASEAN procedures for crossborder transportation. Due to delay of starting TPMP implementation, the activities related to the legal instrument updating and the set up of technicians Association are still going on and will be also completed by December 2010 as expected.

Industry

The one domestic manufacturer of foams already converted to ozone-friendly technology. Others in the service industry have also partnered in awareness and conversion of air-conditioning and refrigeration equipment.

In 2001, Lao PDR has imported around 16 MT of ODS for consumption and planned to reduce, in 2005, the ODS consumption rate by 50% from the baseline data of 1995-1997. The government also expects to achieve 100% eradication of CFC-12 consumption in 2010. This plan is stipulated in the Country Programme on the Reduction and Phase-out of ODS which was approved by the Lao government in February 2001.

In 2002, the CFC-12 consumption increased from 16.01 MT to 26.3 MT because at this time, equipments existing throughout the country such as refrigerators, water coolers, and mobile air conditions (MAC), etc. were still designed for CFC-12. However, this trend decreased in 2003-2004 due to the low demand for importation due to the existing CFC-12 stocks imported in the previous years. Also, some equipment/appliances imported during this time have been configured to use R134a that are considered to be non-CFC products. Since the customs officers' training was conducted in the middle of 2006, the rate of CFC-



12 imports in 2007 dramatically decreased because more stringent rules on controls at the borders were enforced and Refrigerant Identifiers were then used at the International borders to check cargo suspected of carrying refrigerants.

The increase in building Vientiane in the past several years have led to the installation of HCFC-22 based air-conditioning, which will subsequently lead to larger consumption. Without proper management, Lao PDR may be in a difficult situation to meet the freeze obligation in 2013 as well as other deadlines. With financial and technical assistance from the Multilateral Fund, however, HCFC Phase-out Management Plan will be an important tool to assist Lao PDR to overcome this challenge.

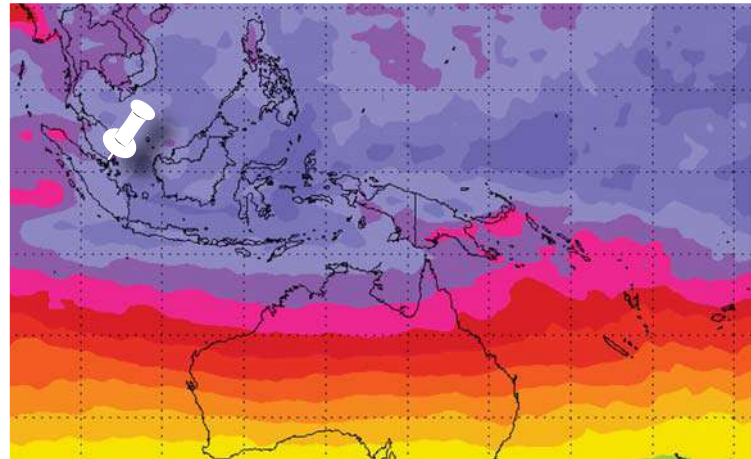
MALAYSIA



Malaysia joined the rest of the world in saving the ozone layer by ratifying the Vienna Convention and the Montreal Protocol in 1989, the London Amendment and Copenhagen Amendment in 1993 and the Montreal and Beijing Amendments in October 2001.

Achievements

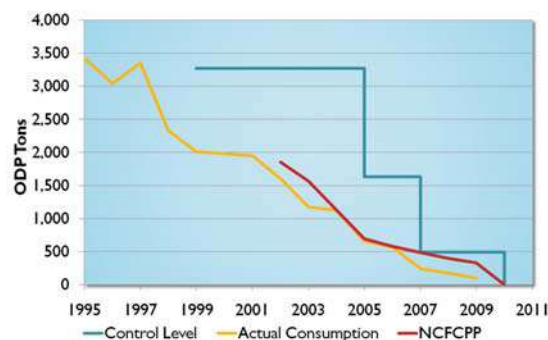
Among the developing countries, Malaysia leads the way in phasing out the use of Ozone Depleting Substances (ODS). Malaysia was an early participant in the global effort to preserve the ozone layer by taking a proactive role in formulating strategies and policies in phasing out ODS. Legal measures had been in place since 1993 to restrict the use of ODS that brought Malaysia way ahead of the time-frame.



Malaysia has successfully reduced consumption of ODS of 4,193.6 MT in 1990 to 107.717 MT in 2009. To facilitate phase-out, Malaysia implemented an import control and licensing system in 1994 which cut down the imports of ODS by 15-20% and increased the import duty. Prohibitions on the use of CFCs in foam production and as a propellant in aerosol were enforced in 1993. The use of CFCs in new installation of refrigeration systems and Halons in fire-fighting equipment were prohibited in 1999. Besides control measures, the grant received from the Multilateral Fund of the Montreal Protocol for the first Country Programme (1992-2001) amounting to US\$36.5 million made it possible for Malaysia to meet her mandated reduction obligations.

The EXCOM, in December 2001, approved the second phase of Malaysia National CFCs Phase-

CFC CONSUMPTION



out Plan (NCFCP) with a ceiling grant of US\$11.5 million. This grant was disbursed between 2002-2010 through the World Bank to phase out the remaining consumption of 2,092 ODP tonnes CFCs in residual manufacturing activities in foam, solvent and CFCs

usage in the servicing sector. The main concern of the NCFCP was in the service sector that involved the public since CFCs were largely used in mobile air-conditioners, domestic and commercial refrigeration systems and building chillers. The reduction strategy that had been carried out successfully in the servicing sector was by offering subsidised voucher to service workshops of mobile air-conditioning and refrigeration systems for purchasing recovery and recycling machines. In addition, technicians that handle CFC refrigerants were required to attend a training course on ozone protection. These activities are in line with the requirements under the Environmental Quality (Refrigerant Management) Regulations 1999 that prohibits venting of refrigerants into the atmosphere. Besides investment projects, other activities such as capacity building for Custom officers, National Transition Strategy for Metered Dose Inhalers (MDI),

awareness programmes, monitoring and enforcement activities were carried out to ensure compliance to the Protocol by 1 January 2010. Import licences for CFC MDI stopped being issued from that date.

Malaysia is proud of its ODS phase-out achievements, and its success was a result of the implementation of sound policy, legislations and building smart partnerships with other government agencies, like the Customs Department, the Fire and Rescue Department, the Ministry of Industry and International Trade, the Ministry of Agriculture and also with industries. The Multilateral Fund and implementing agencies such as the World Bank, UNDP, UNEP and UNIDO also played their roles as providers of financial and technical support in making the Montreal Protocol a success in Malaysia and internationally.

Smart Partnerships

Not only does Andrew Lam, a British-educated accountant, use products that are labelled “ozone friendly” but he has also started a refrigerant recovery and recycling program at his workplace in northern Kedah state of Malaysia. He is also trying to get his son’s school to raise awareness about the issue, and to initiate local level action at his native Alor Star town.

“I became keenly aware of the great stress the environment faces while studying Australia and later in Britain where the health of the environment is a major concern,” he explains. “We must work to change consumer attitudes to the environment especially in protecting the ozone layer.”

“Only when we change our lifestyles can we make the earth safer and healthier,” the 32-year-old accountant says, adding that people should stop using primary chemicals and switch to substitutes that do not cause ozone damage.

Similar sentiments had long been the norm at the Malaysia’s

Ministry of Natural Resources and Environment, where there are cheers about the country’s success in meeting its obligations under the 1989 Montreal Protocol.

“We have done very well at meeting our international obligations,” said Minister Douglas Unggah Embas. “We should congratulate ourselves and work harder to meet other challenges.” Malaysia had successfully reduced its consumption of ozone-depleting substances (ODS), especially CFCs, from 4,193 metric tonnes in 1990 to 173 metric tonnes in 2008, and zero emission by 2010.

Embas attributes this success to smart partnerships between Malaysia and the United Nations, local agencies, industries, learning centres and local communities. Under Phase One (1992 to 2000) of Malaysia’s ODS phase-out programme, the country eliminated about 5,000 tonnes of ODS in the refrigerant, air-conditioning and industrial solvent sectors. Under Phase Two (2002 to 2010), the focus was to reduce 50 percent in 2005, 85 percent in 2007 and then complete phase-out of ODS such as CFCs and halons in 2010.

Malaysia had also enacted laws to control the importation and replacement of ODS technologies. It does not produce ODS and rely fully on imports. In the service sector, thousands of workshops service domestic refrigerators and mobile air-conditioners in cars, as well as Malaysia's estimated stock of 4 million CFC-12 refrigerators. These are expected to be phased out by 2016, based on 20-year service expectancy.

"Malaysia has a major ODS phase-out accomplishment and played a pivotal role in saving the ozone layer. The success of Malaysia's ODS phase-out plan was a result of the implementation of sound policy, good legislation and smart partnerships with others," environmental activist and opposition lawmaker Murugesan Kulasegaran explains.

"Government agencies like the Customs, Fire and Rescue, Ministry of Industry and International Trade, Ministry of Agriculture and other industries were all involved," he says.

Now, a new challenge has emerged: to phase out hydrofluorocarbons or HCFCs, classified as a controlled substance under Annex C Group-1 of the Montreal Protocol. Their use has to be controlled and eventually phased out by 2030. Malaysia has committed itself to freezing the production and consumption of HCFCs from January 1, 2013 onwards at the average base levels of 2009 and 2010. This is followed with step-down reduction starting from 2015, which government officials say is achievable.

"The main challenge is to meet the freeze in 2013 by curbing the growth of HCFC consumption at base level," points out Hajah Rosnani Ibrahim, director general of the environment department at the Ministry of Natural Resources and Environment. "We have to play a proactive role to face this challenge. We are currently promoting and preparing our industries to make adjustments to adapt to the obligated phase-out schedule."

Baradan Kuppusamy in Kuala Lumpur (IPS)

MALDIVES

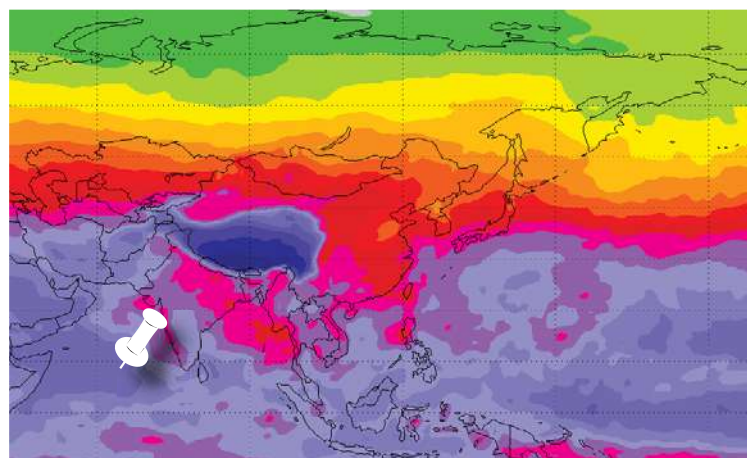


The Maldivian capital of Male shows just how vulnerable the country is to sea-level rise caused by global warming, and the country is committed to carbon neutrality to set an example for the rest of the world.

Maldives is classified as an Article 5 country of the Montreal Protocol and has ratified all its amendments. The country is actively involved in meeting its treaty obligations and has successfully implemented several projects and phased out consumption of ozone depleting substances (ODS) to meet the targets set by the Protocol. It is also one of the first countries to phase out CFC consumption two years earlier than the target phase-out date set by the Montreal Protocol, January 2010.

Achievements

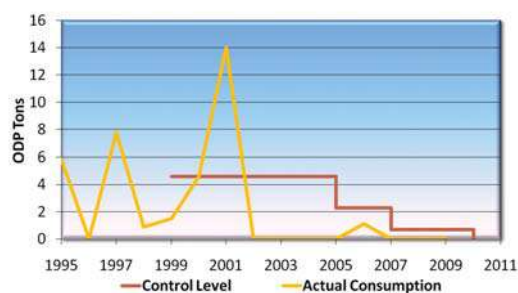
Maldives was able to phase out CFCs by increasing awareness on taking action to convert to non-ODS based technologies, reducing the availability of CFC based equipment and by conversion of CFC based equipment to non-CFC alternatives. As a result of this, the Maldives was able to phase out CFCs as per the plan, two years before the schedule set by the Montreal Protocol.



Financial assistance from the Multilateral Fund and technical assistance from UNEP and UNDP paved the way for the implementation of ozone related projects successfully. Excellent co-operation received from enforcement authorities like Maldives Custom Service, Maldives National Defense Force, Ministry of Economic Development and Maldives Police Service greatly attributed to achieve the phase-out targets in a timely manner.

Maldives is recognised for its important role in protecting and safeguarding the environment. With limited resources and capacity, Maldives is perhaps the most vulnerable country in the world as a number of scientists have warned that if nothing is done to reduce global carbon emissions, the country will soon sink beneath rising seas. Yet, Maldives has taken the leadership and become an example to all, to step up to save the planet. The decision of the Maldives to phase out HCFCs and its declaration to go carbon neutral by 2020 demonstrates to the world its determination to save the planet for humanity.

CFC CONSUMPTION



Mr Achime Steiner the Executive Director of UNEP has said that Maldives has become visible to the world for its leadership role not only for its internal boundaries but also for global role. The HCFC accelerated phase-out plan is a testimony on how the Maldives has taken the responsibility for its own development and shows how the countries can take over the leadership on how nations can address issues relevant to national and international community, he said.

Maldives has also become the first country in the world to receive the funding from the Multilateral Fund for the implementation of HCFC Phase-out Management Plan (HPMP) to completely phase out HCFCs by 2020. This decision was taken in line with the broader carbon neutral policy of the Maldives.

To kick start HPMP activities in the Maldives, the Ministry of Housing and Environment in collaboration with UNEP's OzonAction programme and UNDP organized a High Level Round Table Meeting on HCFC Phase-Out and its linkages with carbon neutrality in June 2010. Phasing out HCFC will be more challenging than the phasing out of CFC. HCFC phase out plan will go hand in hand with the carbon neutralization target of the government providing it with the full fledged support from the government.

The task ahead is to bring necessary policies, laws and enforcement mechanism along with technical support from international organization as we received during the CFC phase-out plan.

Challenges

Phase-out was not an easy task. The journey was uneven, enforcement authorities had to face many challenges. On one occasion the Maldives, in its attempt to phase



President Nasheed of the Maldives chairs an underwater cabinet meeting to raise awareness about sea-level rise caused by global warming.

out CFC, was found to be in non-compliance with the obligations towards the Montreal Protocol, and yet instead of penalizing the country, UNEP supported the country and the Multilateral Fund and others to strengthen its capacity. One of the most significant lessons learnt from CFC phase-out was the effectiveness of existing institutional arrangements in cooperating and working together to achieve the goal. Like many countries, the frequent change of the ozone officers was one of the big challenges faced.

Maldives Takes the Lead

Perhaps now other country in the world represents the planet's environmental predicament as closely as the Maldives. The low-lying atoll archipelago of 1,000 islands is the Earth in microcosm.

But the Maldives is a country that “walks the talk” as it raises its tiny island voice in the global climate change discourse. It has launched an action plan to phase out HCFCs by 2020, or 10 years ahead of other countries and the target set by the Montreal Protocol.

The government said work has begun on measures needed to effect this change, which includes bringing in legislation for a course of action that would reduce, minimise and eventually end the use of greenhouse gases and ozone depleting chemicals in air conditioners and refrigerants. The Maldives will be carbon neutral by 2020, again years ahead of other countries.

Minister of Transport, Housing and Environment Mohamed Aslam says some of the steps being taken to begin the phase-out process includes providing directions to government agencies and preparing a database on HCFC equipment.

“We are also targeting small industry and preparing guidelines for enforcement,” says Aslam. “All these measures would be included in a detailed programme of work to ensure targets are met by 2020.”

Industry has confirmed its support for this government initiative. Representatives of companies, attending a recent conference here on the phase-out process, say they were working alongside the government in phasing out the use of HCFCs. Used mostly in air conditioners, HCFCs deplete the ozone layer and contributes to global warming. In 2007 the international community took an important step towards phasing out these refrigerant gases.

President Mohamed Nasheed is the man behind the Maldives's success on the world stage as a campaigner for environmental change, while making that change happen at home.

“Foreign governments are now listening to me fairly intensely and also inviting me to speak more often on the environment,” Nasheed says. “Europe is supportive of our environment efforts, but we have a long way to go with the US”

The Maldives is the first country to receive United Nations funding under the Montreal Protocol to implement the phase-out of HCFCs. The lowest country on the planet, with islands just 1.5 m above water, is leading the way in climate change, with Nasheed campaigning on behalf of all small island states, saying this is a “human rights and a right to live” issue. “Going green is not only ecologically sound but also economically beneficial,” he says.

Across the Maldives, everyone is clued into global warming and sea level rise. Fathimah Reema, assistant director at the Environmental Protection Agency, cites a survey conducted by the agency showed sea erosion topped the list of public awareness of environmental issues, followed by waste, the ozone depletion and climate change.

“Regular reporting of these issues by the media has helped make people aware of these concerns,” she says.

Mifzal Ahmed, an advisor on investments at the Ministry of Economic Development, says the government is promoting only sustainable development projects. “The government policy is that that all investments should be sustainable. We don’t want someone to come and put up a coal power plant for example.”

“We want to give a positive message on climate change. We don’t want to be all doom and gloom. We want to say the technology exists to solve these problems, it’s just a matter of investing in these technologies.”

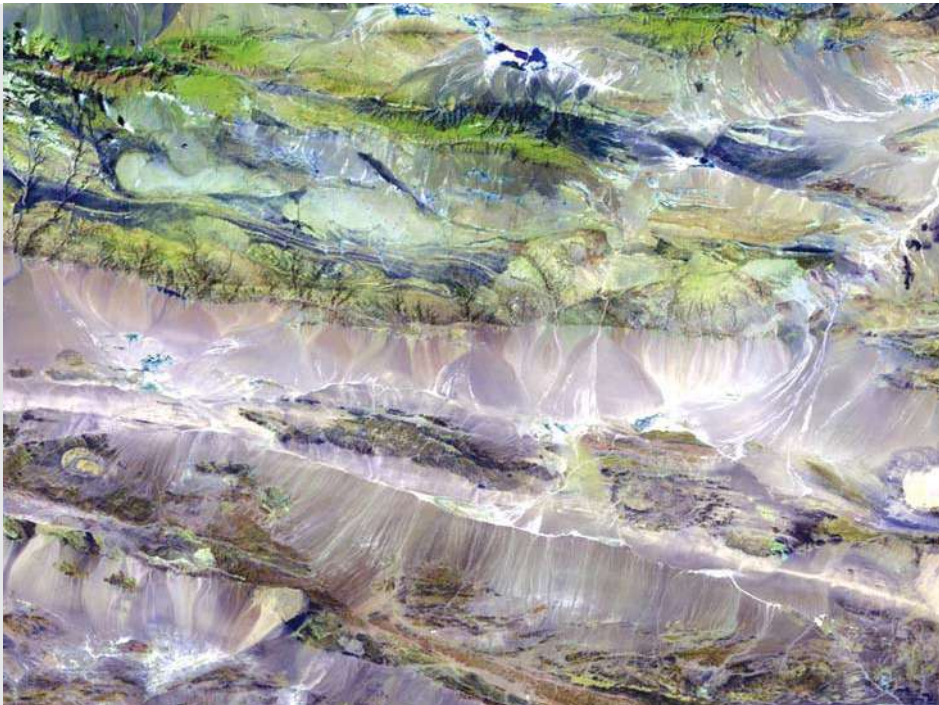
He says the Maldives wants to showcase these technologies, and any company can come and invest in these environment-friendly technologies. “If you want to make the Maldives your poster chart, by all means do so,” he adds. Maldives is the first country to achieve so much out of the 145 countries that have agreed to the HCFC phase-out programme. It shows the efficiency of the government and the public-private partnerships in industry.

“We can’t go on forever with small steps,” argues Minister Aslam, referring to his country’s urgency and speed in dealing with climate change and its adverse effects on the environment.

He adds: “The Maldives is where we have lived for generations and where we will continue to be. You can’t think of relocating to other countries. No one wants to leave,” he noted.

Feizal Samath in Male (IPS)

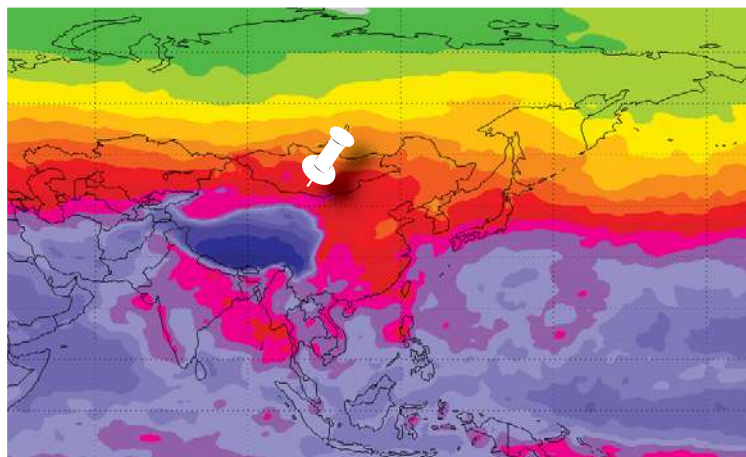
MONGOLIA



The edge of the Gobi Desert
in Mongolia from space shows
dramatic colours and textures.

Mongolia became a Party to the Vienna Convention and the Montreal Protocol including its London Amendment and Copenhagen Amendment in March 1996. Other amendments were ratified in 2008. As an Article 5 country, Mongolia developed its Country Programme in 1996 with the assistance of UNEP to set the strategy for the phase-out of ozone depleting substances and an institutional, policy and management framework.

Its Refrigerant Management Plan (RMP) was completed by 2003. The same year, Mongolia prepared its Country Programme Update (CPU) with Japanese assistance and UNEP to provide a roadmap for the total phase-out of ODSs. A Terminal Phase-out Management Plan laid the groundwork for phasing out import of CFCs by 2010.



Achievements

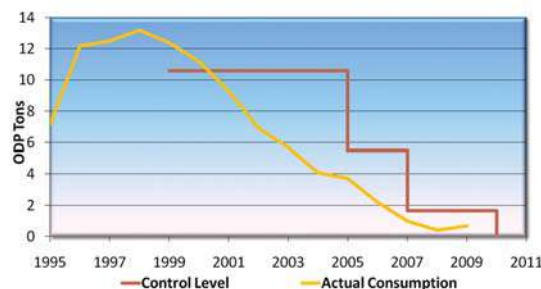
The Government of Mongolia approved the National Programme on Protection of Ozone Layer in 1999. A system was created to limit the consumption and import to targets set by licenses, which would be controlled by customs.

The Customs General Administration monitors total imported ODSs and equipment from all the border points and these are provided to the NOA/MNE at the end of each year. There are no current cases of smuggling of ODS into Mongolia. A licensing system was introduced in February 2000 followed a year later by a quota system.

In 1999, Mongolia consumed (used) approximately 21.2 metric tonnes of ODS, including imported CFC (12.8 MT) and stockpiled CFC (8.4 metric tonnes). Of it, almost 96% was used in the refrigeration and air-conditioning servicing sector.

NOA has also been involved in awareness raising on the need to protect the ozone layer and on the state-art technology of the non-CFC refrigerants, alternatives as well as energy-efficient freezers, both ozone and climate friendly refrigerants.

CFC CONSUMPTION



Challenges

Mongolia does not produce any HCFCs or HCFCs-based equipment in its territory, and depends upon their imports from neighboring countries, China and Russia. The installation of air-conditioning and commercial and industry refrigeration based on HCFCs has seen a sharp increase over the past five years.

With the support of the TPMP, the Mongolian Refrigeration Association (MRA) was established in 2007 with 13 members which include the ODS importers, ODS equipment importers, servicing

workshops, as well as some large end users. The MRA could play a positive role in the promotion of new technologies and improve the healthy operation of the refrigeration sector in Mongolia.

A Pledge Agreement between the NOU/Government and 7 major ODS importers were signed on 15 September 2000 with the following objectives:

- To comply with Montreal Protocol including its Amendments and the National Programme on Protecting Ozone Layer in Mongolia
- To reduce the import of ODSs and introduce alternatives such as HFC 134a, HCFC 22

The NOU has also been working with the MRA to introduce a regulated certification scheme. A nationwide Recovery and Recycling (R&R) programme for the refrigeration servicing sector has been established with 15 recovery machines with auxiliary equipment for the 2 recycling centers and 3 MAC service centers. The total consumption of ODS has thus been reduced 0.73 MT in 2009, which amounted to 100 % of the phase-out.

In addition, Mongolia has successfully controlled the use of other ODS, such as Halon, CTC, TCM and Methyl bromide. Since the consumption of HCFC has dramatically increased, reducing its consumption would be more challenging as compared with the phase out of the CFC in Mongolia.

Increasing of consumption of HCFC has links to the establishment of several Mongolian-Chinese foam factories that increased the consumption of HCFC . It is expected that HCFC could be on the rise as the economy recovers.

Industry

The Pledge Agreement between the NOU and seven major ODS importers in 2000 and the establishment of the Mongolian Refrigeration Association with support of the TPMP shows that public private partnership has worked well in Mongolia. As result of close cooperation with MRA, new importers of HCFC have been timely registered in the list of ODSs importers.

MYANMAR

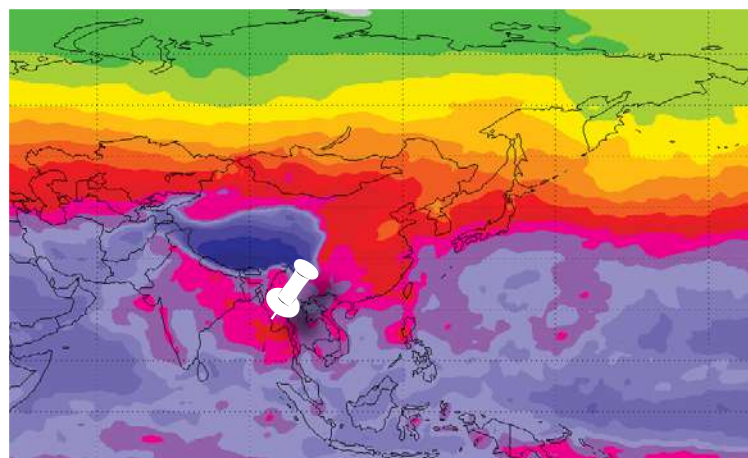


Myanmar, as one of the parties to the Montreal Protocol, has acceded to its amendments. Actually, Myanmar is a net importer of ozone depleting substances and its per capita ODS consumption is less than 0.3 kg. Myanmar formed the National Ozone Unit in 2005 and the committee holds meeting on ozone layer protection on regular basis.

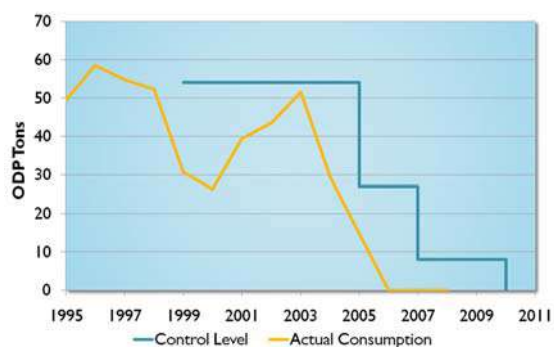
Achievements

The most fundamental success in phasing out ODS in Myanmar was the fact that the country has not imported CFC since 2006: four years ahead of the target date prescribed by the Montreal Protocol. Myanmar has also hosted several international ozone conferences, commemorated the International Ozone Day and spread awareness about the need to protect the ozone layer.

Alternative refrigerants to replace ODS at a cooling storage for marine products was made as far back as 1994. The Ministry of Hotel and Tourism issued a departmental instruction in 1994 which does not allow installation of CFC-based refrigerators and air-conditioners. The Ministry of Industry has also banned the use of CFC-based mobile air conditioners in its car production since 2000.



CFC CONSUMPTION



Challenges

As a net ODS importer, Myanmar has to import some refrigerants for her domestic consumption. There is leakage of CFC in the service sector through leakage of older air-conditioners and refrigerators. Repair workshop owners also do not readily use recycle machines. The solution is to provide gas identifiers to officers of the Customs Department. It must also be made const-effective and safer for owners to use alternatives to CFCs.



Myanmar's commemorative stamp for the 25th Anniversary of the Vienna Convention for the Protection of the Ozone Layer in 2010.



Industry

The production of refrigerators in Myanmar jointly with Daewoo Cooperation was terminated in 1996 in Myanmar. Traders and repairing workshop owners for refrigerators met at the behest of the National Ozone Unit and decided to set up a Refrigeration Association.

NEPAL



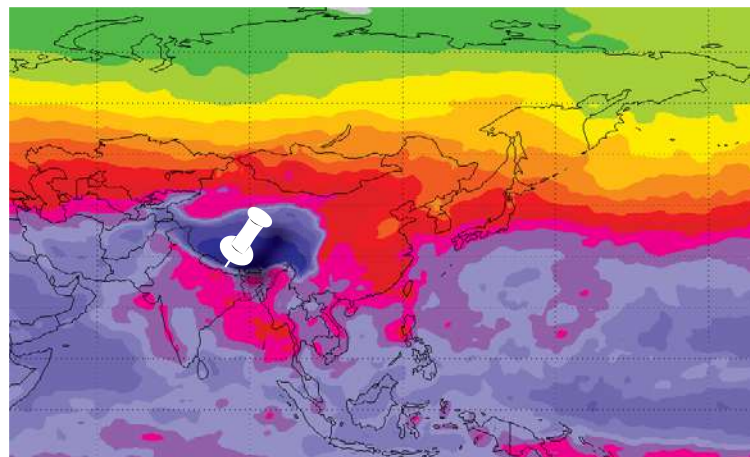
The Himalayan mountains are seeing three times faster melting of permafrost than in the Arctic Circle due to global warming. How the rest of the world and Asian countries phase out alternatives to ozone depleting chemicals like HCFCs will determine the pace of future meltdown.

Nepal ratified the Vienna Convention, Montreal Protocol and its London Amendment in July 1994 and is committed to reduce and eventually eliminate ozone depleting substances in compliance with the Montreal Protocol control schedule.

Following the ratification of the Montreal Protocol, the government established a high level Steering Committee for its implementation in Nepal with its secretariat in the Nepal Bureau of Standards and Metrology (NBSM) within the then Ministry of Industry, Commerce and Supplies. The Committee initiated its work by conducting a country-wide survey of ODS use, since there is no manufacturing. Refrigeration and air-conditioning sector were the two main areas of ODS consumption, mainly in repair and maintenance of equipment.

Nepal's Country Program for ODS phase-out was approved in 1998 and looked into:

- Availability of alternate refrigerants
- Residual economic life of CGF containing equipment
- Training and technical assistance for transitioning to non CFC alternatives

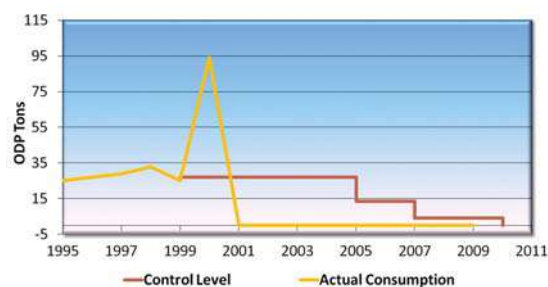


Nepal Refrigerant Management Plan worked to promulgate regulation covering registration of importers, establishing maximum permissible annual limits on import quantities and prohibition on import of CFC based equipment. It trained customs officers in monitoring and enforcement of ODS controls. Two recovery and recycling centers were set up, and awareness raising activities implemented.

The Plan also sought to strengthen the national enforcement capacity through enhanced cooperation with neighboring countries, improving border controls. It also aimed to reduce Nepal's dependence on CFCs in refrigeration servicing by promoting retrofitting and replacement of CFC based equipment.

Nepal's Terminal Phase-out Management Plan enabled the country to meet its Montreal Protocol obligation to eliminate the consumption of virgin CFCs by January 2010. Domestic demand is met through controlled release of CFCs from the seized consignments.

CFC CONSUMPTION



Nepal's international partners are helping the country to have policy, regulatory and institutional frameworks in place to ratify the remaining Copenhagen, Montreal and Beijing Amendments. Technical assistance and equipment support for a proposed National Refrigeration and Air-conditioning Training Centre is also sought.

Achievements

Promulgation of the laws for ODS phase-out by 2010 and the exercise of powers conferred by Article 24 of the Environment Protection Act 1996 was instrumental in Nepal meeting its Montreal Protocol targets. It involved the mandatory licensing and registration of ODS imports, prohibition on the re-export of ODS, phase-out of CFCs by 2010 and a freeze on maximum annual import quantity of HCFcs until 2015.

In 2004, 74 ODP tons of CFCs were confiscated as it was imported without import licenses and the quantity was more than the legitimate consumption level under the Montreal Protocol. Nepal reported it as an illegal trade, and with further guidance of the Meeting of Parties (MOP), Nepal prepared a plan of action to manage the release of the seized CFCs as per its Montreal Protocol obligations. There is still 12 MT of the CFCs still in custody of Nepal Customs, and Nepal is considering the destruction of the substance.

UNEP Regional Office for Asia and the Pacific (ROAP) have worked with the National Ozone Unit, Nepal on designing the most feasible solution to destroy the confiscated and used ODS available in Nepal. This is a first of its kind project anywhere in the world and is expected to provide lessons which can be emulated by most of the other developing countries.

Challenge

In 2001, as an immediate consequence of the new regulations, 74 MT CFC-12 were imported into Nepal without licenses were seized by customs. The prevailing regulations did not allow the export of these illegal CFCs, while the prevailing MP rules did not allow Nepal to release the seized substances in the domestic market. Therefore the Government of Nepal, pending resolution of the issue, disallowed any future CFC import from 2002 onwards. In 2004, in accordance with decision XVI/27 of the Meeting of the Parties to the MP, Nepal was authorized to release these seized CFCs in the domestic market in a controlled manner.

The Nepal Connection

Situated between the two Asia giants, India and China, Nepal stands to benefit from their economic growth. But the two Asian countries are also the world's biggest producers and consumers of ozone-depleting substances and Nepal is often used as a trans-shipment point for the illicit trade in banned chemicals.

Nepal's consumption of CFCs is very low and the smuggled chemicals are usually bound for India through Nepali re-exporters who use the porous border.

"The illegal trade in ozone-depleting substances if left unchecked could undermine global efforts to phase out these chemicals," says Sita Ram Joshi of Nepal's National Ozone Unit.

In 2002, environmental journalists went undercover along the Nepal-India border to investigate the trade. They infiltrated the businessmen importing and storing CFCs, refilling them in innocent looking cylinders and transporting them across the border in rickshaws at night and are taken in tractors to northern Indian towns.

Custom officials have cracked down on the smugglers but they change their routes and methods frequently

and hard to catch. In 2001 Nepali customs seized an illegal shipment of 74 tons of India-bound CFCs. The impounded shipment were brought illegally into Nepal to be smuggled to India and the government hadn't issued any import license.

Nearly ten years later, the issue of what to do with the seized chemicals is still a vexing problem. There are still 12 MT of CFCs in leaky cylinders in warehouses in the border town of Birganj. By destroying them, Nepal would also achieve benefits of compliance and GHG emission reduction.

UNEP Regional Office for Asia and the Pacific (ROAP) have worked with the National Ozone Unit, Nepal on designing the most feasible solution to the destroy the confiscated ODS and also other harmful agro-chemicals in warehouses in Nepal.

This would be the first of its kind project anywhere in the world and is expected to provide lessons which can be emulated by other developing countries. Other options are to retrofit cement kilns for ODS destruction, import mobile destruction technologies or re-export the chemicals for destruction elsewhere.



Border Meeting of Enforcement Officers Monitoring and Controlling Trade in ODS and Training in Pokhara, Nepal, 28-29 October 2010. The meeting, organised by Nepal's Department of Standards and Metrology and UNEP DTIE OzonAction, brought together officials fighting environmental crime from Bangladesh, Bhutan, India and Nepal.

Meanwhile, UNEP has also been bringing together police and customs officials from India, Nepal and other countries in region to address the challenge of illegal ODS trafficking. India and Nepal are cooperating in a Green Customs Initiative facilitated by UNEP. The latest meeting of customs officials from Nepal, Bhutan, India and Bangladesh was held in Pokhara, Nepal in October 2010.

Indian ambassador to Nepal, Rakesh Sood told a regional conference in Kathmandu on the trade in contraband ODS in 2009: "Solving this crisis and minimizing its economic and industrial upshot requires close cooperation among nations as well as industry partnership in controlling illegal trade."

Rita Adhikari in Kathmandu (IPS)

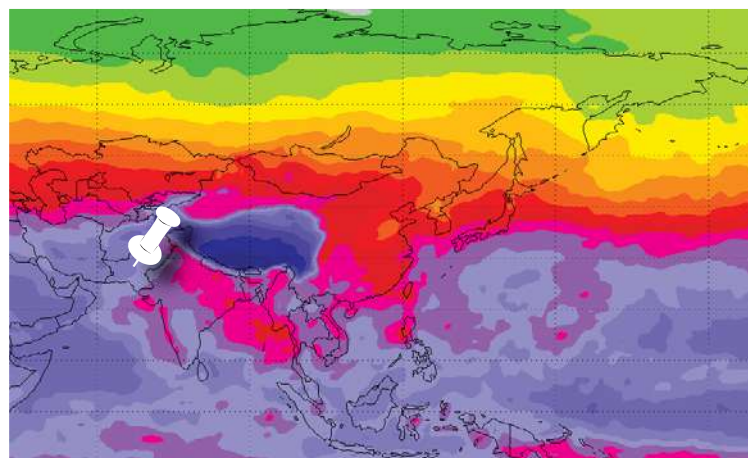
PAKISTAN



Pakistan has met its obligations under the Montreal Protocol and achieved its targets for the phase-out of ozone depleting chemicals. It has developed and put in place effective rules and regulations towards their phase-out and also ensured their implementation through appropriate bodies.

Achievements

Pakistan has commonly used 10 out of the 96 substances controlled under MP including CFC-11, CFC-12, CFC-113, CTC, TCA, Halon-1211, 1301, Methyl bromide, HCFC-141b and HCFC-22. Pakistan has already implemented 29 investment projects to phase out 2,195 ODP tons of these substances. These projects include the phasing out of CFC11 from the foam industry, CFC12 in air conditioning and refrigeration, solvents such as CFC-113, CTC and TCA in metal cleaning industries like surgical instruments, cutlery, light engineering and textiles and pharmaceutical industry where the solvents were used as process agents. Pakistan has also established the Halon Bank that ensures recovery, recycling, storage and refilling of Halons for essential end-users

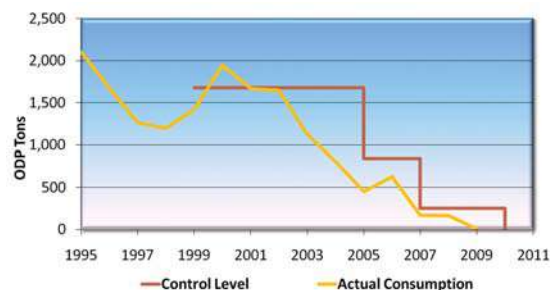


Challenges

One of the challenges for Pakistan was to ensure proper systems in custom to identify banned chemicals. Pakistan has long borders with several entry points where imports can enter. This challenge was met by through providing identifiers and training for custom staff.

The HS codes to each of the ODSs imported in Pakistan were not assigned, and data was being captured under limited codes. This challenge was met through assignment of appropriate codes to most of ODSs for data capturing. As a result of this training, the customs authorities seized two consignments of CFC-12 weighing 540 kg while being smuggled from the western border. The Collectorate of Customs in Faisalabad also confiscated 63.9 metric tones of CFC-12 imported by an unauthorized importer.

CFC CONSUMPTION



UNEP initiated between Pakistan and South Korea to control illegal import of carbon tetrachloride, and this has been achieved with the cooperation of the National Ozone Unit of the Republic of South Korea. CTC was mainly used as cleaning agent in the cutlery and surgical industry and had been an area of concern for Pakistan due to its excessive import over and above the country's allocated quota under the provisions of the Montreal

Protocol. UNEP and the National Ozone Unit of the Republic of Korea also helped Pakistan through the informal Prior Informed Consent System (iPIC) that helped curb unauthorized imports of CTC, which remained at zero in 2007-2008.

Another challenge was to determine the number of technicians training program size and supply of recovery and recycling equipment. A survey of existing workshops was carried out and over 3,000 technicians were trained in recovery and recycling equipment.

The CFC phase-out from the refrigeration industry was more challenging because the price of CFCs were lower than HFCs and the industry was not decisive in selecting the alternative technology. This delayed the conversion in the refrigeration industry which took a “wait and see” approach. However, with strict quota system imposed on commercial and industrial importers

and with higher duties on CFCs, these projects became feasible and were implemented later.

In pursuance of the National ODS Phase out Policy 2000 approved by the Cabinet, Ministry of Environment (Ozone Cell) is effectively monitoring and regulating import of various ODS in the country to fulfill international commitments. A licensing system for ODS imports introduced through the Ministry of Commerce is already in place and is being enforced through custom departments.

The national HCFC phase-out management plan is a continuation of the ODS phase-out. The HPMP aims to phase out HCFCs from the industrial and service sectors through a package of technical assistance (equipment, comprehensive training and consultancy services) as well as using incentives programme and a combination of regulatory and enforcement measures.

PHILIPPINES



The Philippines has seen a remarkable shift from CFCs to alternatives in the manufacturing sector because of support from the Multilateral Fund for investment projects.

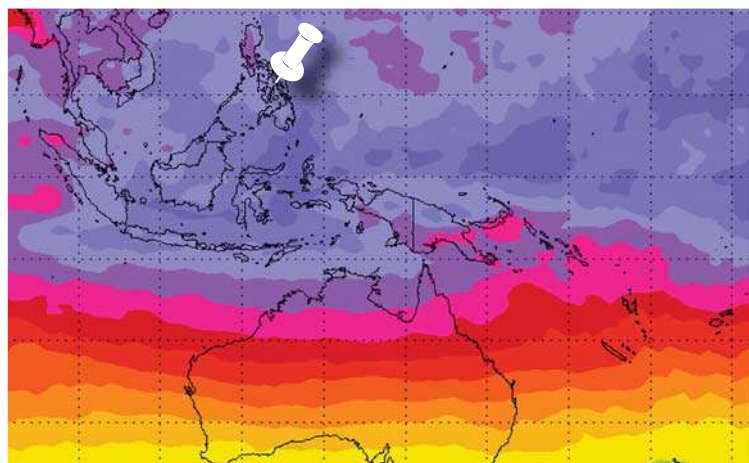
The Philippines ratified the Montreal Protocol in 1991, and since then the Environmental Management Bureau (EMB) of the Department of Environment and Natural Resources (DENR) has acted as the national coordinator to implement its provisions. The National Ozone Unit (NOU) called the Philippine Ozone Desk (POD) facilitates and coordinates the phase-out of ozone depleting substances.

Since the Philippines is neither a producer nor an exporter of ODS, its consumption is equal to its imports of ODS. CFC accounted for the largest share of total ODS use in the country. Total registered CFC import in 1998 was 2,106 MT.

Achievements

The Philippines has been able to comply with the schedule of the Protocol. The total ODS consumption has steadily declined since 1992, and efforts led to the total phase-out of Methyl chloroform by 1997, and most other CFCs by 2010.

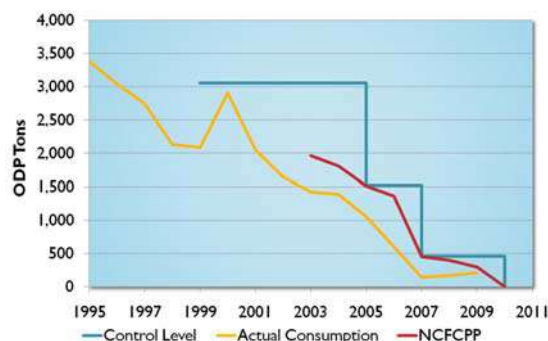
In 1998, CFC 11 and 12 had a combined share of 98.9% of total ODS imports. The implementation of the first tranche of investment projects under the Multilateral Fund significantly reduced CFC demand so that by 2003 the manufacturing sector accounted for 25% of CFC consumption, while the servicing sector accounted for 75%.



The reduction and eventual elimination of imports of ODS has been done through the import clearance mechanism of the DENR-EMB in cooperation with the Bureau of Customs.

The refrigeration and air-conditioning (RAC) and mobile air-conditioning (MAC) servicing sectors have the largest demand for CFCs accounting for 75% of total CFC usage in 2003. Through the Philippines' National CFC Phase-out Plan (NCPP), thousands of ODS handlers and service technicians nationwide were trained and certified for a Voucher System to purchase tools and equipment for proper servicing, maintenance, and installation of refrigeration and air-conditioning systems.

CFC CONSUMPTION



Challenges

Because of the continuing reduction of CFC supply and the remaining demand for the substance, CFC and adulterated refrigerants have been found to be illegally imported into the country and sold at a lower price. A strategy was put into place for a licensing system law enforcement by training customs officers and other enforcement agencies, the National Police and Regional

EMB Offices. Awareness was also raised among refrigerant traders, the servicing sector and the general public.

Another challenge faced by the Philippines is the collection, storage and disposal of unwanted ODS. A proposal for a Collection and Storage Facility has been forwarded, and a project for ODS destruction is being explored.

Industry

There has been a remarkable shift from CFC to alternatives in the manufacturing sector because of the first tranche of investment projects under the Multilateral Fund. There was a 100% shift to non-CFC alternatives due to phase-out projects in household manufacturing, commercial manufacturing, building insulation, flexible foam, rigid foam and tobacco. By 1999, 34 investment

projects funded by the Multilateral Fund have phased out 1,640 MT of ODS in various industry sectors. Without the active participation of the industries, this would not have been possible.

For instance, Fortune Tobacco received a US\$4.3 million grant to eliminate 300 MT of ODS in their tobacco expansion system and Philacor received a US\$1.7 million grant to eliminate 311 MT of ODS in their foam blowing processes. Under the NCPP, three investment projects were approved in the flexible foam sector. Under its umbrella sub-project, three rigid foam companies also acquired equipment under the project.

Other companies in the manufacturing sector voluntarily shifted to CFC-free technologies because of government regulations banning the use of CFC in the manufacturing of new products/equipment and prohibiting the use of CFC as a blowing agent. Moreover, alternatives to CFC-11 in the foam sector had lower prices, encouraging the industry to shift to non-CFC alternatives.

SINGAPORE



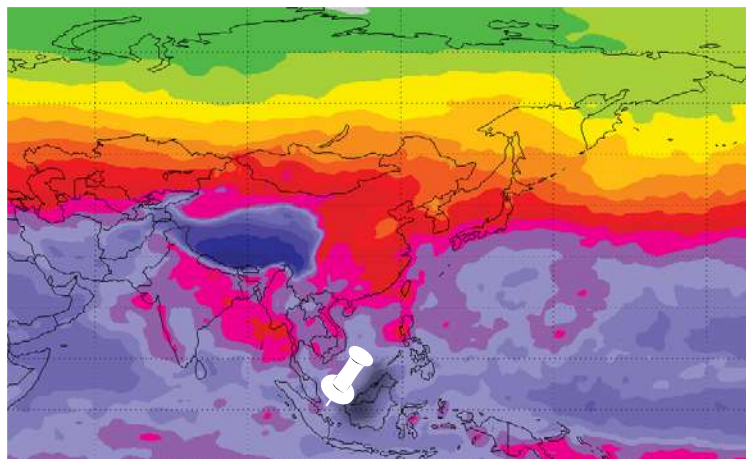
Singapore, a major regional transportation hub, doesn't produce any ozone depleting substances, and has phased out their use in its electronics industry.

Singapore shares worldwide concern in reducing consumption of ozone-depleting substances and helping to preserve the stratospheric ozone layer, for a safe and healthy environment. To signify her commitment to protect the ozone layer, Singapore became a party to the Montreal Protocol in 1989, acceded to all four of its amendments.

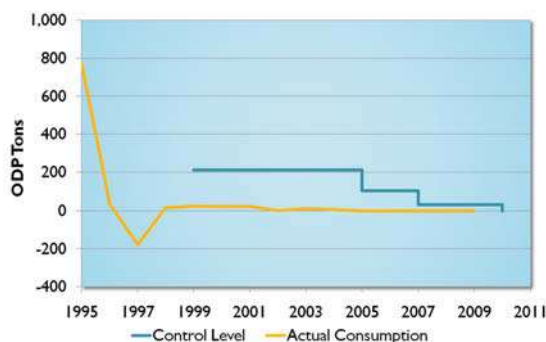
Although Singapore has never produced any ODS, significant quantities were used in electronics manufacturing operations, refrigeration and air conditioning applications in the late 1980s. In 1989, Singapore was classified as a non Article-5 Party as its consumption of ODS exceeded the 0.3 kg/capita requirements. Adopting a multi-pronged approach, Singapore reduced her consumption of controlled ODS under Annexes A and B to 0.27 kg/capita and 0.051 kg/capita respectively by 1994. Subsequently, Singapore was reclassified as an Article-5 Party in March 1995.

Achievements

From 1989 to 1995, Singapore successfully phased out the consumption of Annex A (CFCs and Halons) and Annex B (CFC, Carbon tetrachloride, and Methyl chloroform) ozone-depleting substances: well ahead of the time frame set for developing countries. For these contributions, Singapore received the Outstanding National Ozone Unit Award by UNEP in Montreal in 1997.



CFC CONSUMPTION



This success is attributed to the multi-pronged approach adopted by the Singapore government to reduce and eventually phase out the consumption of ODS. Various agencies of the government were involved in a coordinated effort to meet the Montreal Protocol obligations. The strategy for phasing out ODS includes adoption of regulatory and non-regulatory approaches, increasing awareness among industries and public, setting up a tender and quota allocation system to cap availability of ODS, and providing technical consultancy services to industries to recycle controlled ODS or switch to ODS alternatives were among the measures implemented. Tax and financial incentives were also provided to industries to assist them further in switching to CFC-free equipment and systems.

Date	Measure
5 Oct 1989	Tender and Quota Allocation System implemented for Chlorofluorocarbons (CFCs).
5 Feb 1991	Prohibit the import and manufacture of non-pharmaceutical aerosol products and polystyrene sheets/products containing controlled CFCs.
1 Jan 1992	(a) Prohibit the use of Halon 1301 for new fire protection systems. (b) Prohibit the import of Halon 2402.
1 Jan 1994	Prohibit the import of Halon 1211 and Halon 1301.
1 Jan 1993	Prohibit the import of new air-conditioning and refrigeration equipment using CFC 11 and CFC 12.
15 Apr 1994	Prohibit the import of fire-extinguishers filled with Halon 1211.
1 Jan 1995	All new cars must be equipped with non-CFC air-conditioning systems.
1 Apr 1995	Prohibit the import of HBFCs.
1 Jan 1996	Prohibit the import of CFCs, Carbon tetrachloride and 1,1,1-trichloroethane (Methyl Chloroform).
1 Jan 2002	Freeze the consumption of Methyl Bromide (MeBr) for non-quarantine and pre-shipment (non-QPS) applications.

Various policies were also introduced and implemented to curb the use of ODS in the industries. The control measures implemented by Singapore are summarised in the table (left).

Challenges

It had been a challenge to phase out ODS as Singapore's economy is highly dependent on the electronics and chemical industries and therefore, policies implemented to phase out these ODS had to be handled with care. The government adopted an innovative, integrated and holistic approach to tackle the issue. It was through pragmatic policies coupled with cooperation from the industry that Singapore was able to overcome hurdles which seemed insurmountable initially. International organizations such as UNEP provided invaluable help.

Singapore's transitional experience was rather unique as it depended strongly on market-based and voluntary approaches rather than traditional command-and-control regulations. The Tender and Quota Allocation System, in particular stood out as an effective way of using market mechanisms to regulate the consumption of ODS in the industries. The system ensures equitable distribution of the controlled supply of ODS to registered distributors and end-users.



Singapore received the Outstanding National Ozone Unit Award for phasing out controlled ODS from its industries well ahead of the target set for developing countries

Tax and financial incentives were also integral in helping companies phase out the ODS. Under the Investment Allowance Scheme, up to 50% equipment cost could be offset against taxable income. The Local Enterprise Technical Assistance Scheme helped subsidise 50% of consultancy costs when SMEs hired experts for phasing out ODS.

The industries then were also quick to respond to the government's call. With the strong industry cooperation, Singapore had successfully phased out the consumption of Halons and CFCs by 1994 and 1996 respectively.

SRI LANKA

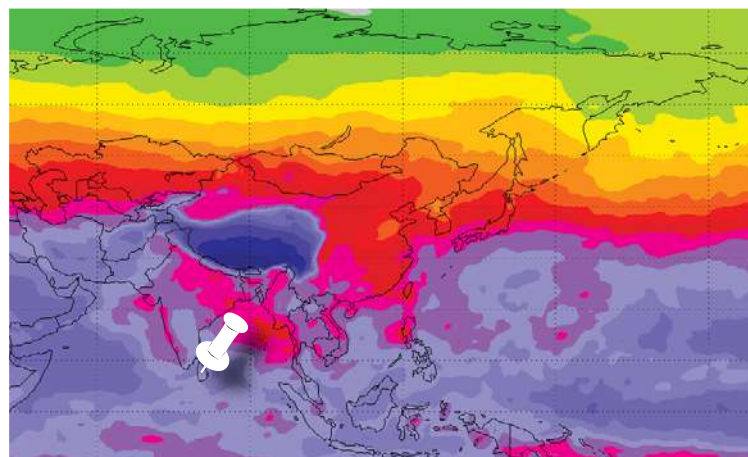


By phasing out Methyl bromide used in fumigating the soil in its tea plantations, Sri Lanka now offers the world ozone-friendly Ceylon Tea.

In order to contribute the global effort in conserving and protecting the ozone layer, Sri Lanka signed both the Montreal Protocol and Vienna convention in 1989. To achieve targets and fulfill the obligations of the protocol, government established the National Ozone Unit (NOU) under the Ministry of Environment.

Since Sri Lanka's consumption of ozone-depleting substances is less than 0.3 kg/capita and is classified as an Article 5 country. Sri Lanka neither export nor produce ODS, but the NOU recommends for issuing licenses to importers of ODS (except MeBr) and the import of used or reconditioned refrigerators and air conditioners, etc.

For implementation of the regulations and policies of Montreal Protocol effectively, a coordinating committee has been set up and it assists the National Ozone Unit in formulating policy issues. Further, a taskforce has been setup as a permanent solution to the problems of illegal import of used equipment under licenses issued. The NOU works in close cooperation with Sri Lanka Customs, Import and Export Control Department, Department of Agriculture, Ministry of Internal and External Trade, as well as with private sector stakeholders who play a key role in implementing the Montreal Protocol.



Achievements

Sri Lanka was able to reduce consumption of ODS by 72% and 80% in 2006 and 2007 respectively. With this early achievement it was possible to accelerate phase-out of CFC and to complete it 2 years prior to the deadline set up by Montreal Protocol. Sri Lanka does not use any CFCs in manufacturing sector and all manufacturing sectors have converted to non-CFC technologies. The Montreal Protocol target for Halon phase-out is 2010, but Sri Lanka reduced the Halons consumption by 100% in 2000.

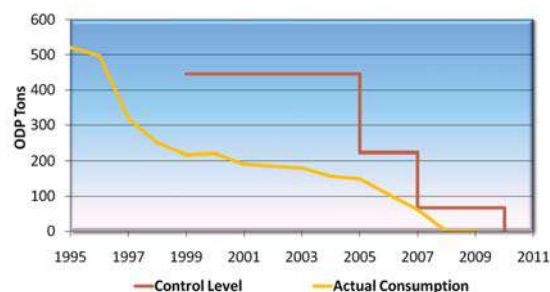
Sri Lanka's National Ozone Unit received the prestigious Implementers Award of the Montreal Protocol in 2007 for its dedication, effort and innovative approaches on Montreal Protocol activities.

Challenges

The most used ozone-depleting substance in Sri Lanka was CFCs in refrigeration and air conditioning service, and the phase-out was a major challenge. The incentive payment scheme was not attractive to industrialists due to following reasons:

1. The incentive payment was limited to US\$ 10,000 which the oretically subsidized only 15-50% of the total cost of retrofitting and replacement of equipment
2. Incentive payment was calculated based on CFC consumption of previous 3 years where many applicants found it difficult to submit documentary evidence because purchase invoices were not kept. After consultation with implementation agencies, the percentage of incentive payment was increased to 65%

CFC CONSUMPTION



and equipment maintenance data were accepted to verify CFC consumption as solutions.

Promoting alternatives to CFCs was a problem due to varying cost and energy efficiency factors of alternatives that discouraged end users from making the technology transfer. However, with the implementation of the control measures for importing CFCs at early dates these problems were overcome.

The mobile air-conditioning (MAC) sector was one of the main consumers of CFC 12. Program to retrofit 200 government vehicles was initiated under National Compliance Action Plan (NCAP) to tackle this problem as well as to educate public about the possibility of retrofitting. Because of the vehicles are spread all over the country, 12 MAC workshops were established under NCAP to carryout this program effectively and meaningfully. Through this, NOU has supported government institutions to retrofit 416 vehicles which is more than 200% of the target.

In order to phase out ODS from the refrigeration sector, trainings on good practices in refrigeration were provided to technicians with the assistance of UNEP. Over 3,000 technicians had been trained as of April 2009. Aforementioned activities helped Sri Lanka for the successful implementation of the Montreal Protocol regulations on specific time targets.

Industry

The issue of economic viability is often the primary concern at the enterprises level when phasing out of substances use in industrial process. Technological support and incentives provided by the Multilateral Fund helped industrialists in conversion their equipments and refrigeration systems. The sectors that were mainly benefited from the assistance are the refrigeration and air conditioning sectors especially in the dairy, food processing and aerosol industries.



To commemorate 25 years of the Vienna Convention, Sri Lanka issued this postage stamp in September 2010.



Sri Lanka also received funds for the air-conditioner and refrigerator service sectors to recover and recycle of refrigerants. Industry used this opportunity widely, and as a result the dependency on virgin refrigerant was reduced.

Carbon tetrachloride-based industries in Sri Lanka took initiative in phasing out the chemical without financial assistance from any agency. Research and development for alternative test methods for activate carbons were carried out using their own resources.

One of the uses of Methyl bromide in Sri Lanka was soil fumigation in tea industrial sector. It has phased out and therefore Sri Lanka offer ozone-friendly Ceylon Tea to the world market.

The Halon Bank Management Plan is one of the projects completed successfully and the Sri Lanka Air Force maintains a Halon Bank for its critical use in fire extinguishing.

SWEDEN



The landmark first-ever Workshop For CFC Officers (First Network Meeting) on March 30-2 April 1992 in Bangkok. This meeting laid the foundation for the successful regional networks that facilitated the efforts of the countries and agencies to phase-out CFCs in Asia and the Pacific and globally.

The Swedish concept of networking has been effective in controlling ozone depleting substances.

The Swedish Government decided in May 1997 to provide direct bilateral assistance to developing countries through the Swedish Ozone Layer Protection (OLP) programme.

Sweden itself began to phase-out ODSs in the 1980s, and successfully achieved this without the problems of illegal import or economic disruptions. Cooperation between key stakeholders including government, industry, research and development institutions proved to be a key factor. The Swedish bilateral programme was started with the purpose to build on these experiences by supporting developing countries in a sustainable and cost-efficient phase-out of ozone depleting substances.

The focus has been on building capacity and projects that enable Article 5 countries to plan strategically for ODS phase-out. In the Asian region, a number of projects on networking for regional cooperation evolved to be a Swedish focus area.

Based on the successful Swedish experience of a network for ODS officers in Nordic countries during the 1980s, Sweden took the initiative to start a similar network for South-East Asia and the Pacific (ODSONET/SEAP). The Network was initiated in 1992, and there are now ten networks covering all Article 5 countries. Each network also has one or two developed countries as members. Developed country partners in the SEAP network are now Sweden and Australia.

The idea of the network was to enhance collaboration and experience sharing between regional ozone officers, further South-South and North-South cooperation through knowledge transfer.

Network formation needs the following prerequisites:

- Recognition of the importance of informal collaboration and experience sharing between regional ozone officers,
- A desire to further North-South and South-South cooperation through knowledge transfer
- The belief that valuable lessons and success stories can be extracted and passed on from those that had already started the phase-out to those who are about to do so.



Ingrid Kökeritz, who laid out the inspiration for networks, receives the Visionaries Award at the Montreal Protocol 20th anniversary meeting.

Sweden financed the cost of operating the ODSONET/SEAP until 2009, while the Multilateral Fund financed the remaining nine. Sweden's funding was through Sida's regional development assistance programme, and was additional to the Swedish financial contribution for implementing of the Montreal Protocol. It was thus not part of the 20% quota for bilateral projects. All ODS networks are today supported through UNEP regional offices, with UNEP DTIE in Paris providing co-ordination and technical assistance.

Some of the original structure has changed over time. As the importance of the networks in general has achieved a wider recognition, the number of participants has also grown. With the phase-out dates for several types of ODS coming closer there has been a growing need to incorporate new elements such as explanations of the decisions by the Executive Committee of the Multilateral Fund and the Meetings of the Parties. With an increasing need for presentations by external experts less time has become available for free discussions.

But ODS officers in the countries now know each other well, and the SEAP network is geared to continue to strengthen regional efforts to eliminate the use of ODS and by-pass HFCs where possible. Sweden has shown that the Network idea is needed and that it works.

SEAP and SA Customs Network

Controlling ODS effectively is an issue that needs to be addressed at the national, regional and international level. While import/export licensing systems and customs training must be implemented at the national

level there is a need for coordination and information exchange at the regional level. Trade in ODS is a cross border phenomenon, therefore it is not possible to control it effectively in isolation or simply on a country-by-country basis.

With this realisation, and building on the experiences and needs identified within the ODSONET/SEAP Network, Sweden in 2001 and together with UNEP initiated a project for customs and ODS officers in the SEAP region to meet regularly to exchange experiences and discuss informally around the issue of monitoring and control of ODS trade. The network was extended to include South Asia (SA) in 2003.

The project objective was to initiate regional cooperation between countries in South Asia and South East Asia/Pacific that would enable the participating countries to gain better control over their import and export of ODS by promoting further regional co-operation for the control of transboundary movement of ODS.

The underlying concept was that experiences gained in one country in the region could be used to abate crime in others. Illegal trade actors are usually active in more than one country in the region and smugglers often use similar methods. Countries could compare their records of import and export to see if the names of importing and exporting entities registered matched up. In addition, the tracking of shipments in the region could be facilitated when the customs authorities in the various countries established regular contacts with each other.

The Swedish project on regional networking between ozone and customs officers was pioneering and proved to be an effective method for curbing illegal trade. This unique project was recognised by a MLF- funded evaluation of customs officers training and licensing system projects in 2005.

The regional project on preventing illegal trade complemented the national activities to establish import and export licensing systems and customs training by providing a forum where intelligence experts from customs and NOUs in the region could meet regularly to network and exchange information and experiences for the analysis and control of transboundary movement of ODS.

At first, the idea was to have two separate Customs Networks for the SEAP and SA regions respectively since Sweden was worried that the network otherwise would grow too large to be truly effective. It was later realised that it was a strength to include both SEAP and SA in the same network since the whole of Asia was

clearly influenced by the ODS producing countries in the region (China and India), as they have been the main trading partners for all countries in the region and have common borders with countries from both networks. Thus both SEAP and SA benefited from exchanging information with each other on ODS trade.

Enabling customs officers and ozone officers to work together regionally to prevent illegal trade was a strong enforcement effort against those who tried to gain an unfair advantage at the expense of the environment and the end-users/country. Experiences in other regions including the USA (the North American CFC Enforcement Initiative) and the EU (the EurOzone project) have also shown that building information network for illegal trade is an effective tool to prevent its occurrence.

Katarina Axelsson is with the Stockholm Environment Institute (SEI) and Maria Ujfalusi is with the Swedish Environmental Protection Agency (SEPA)

Networking for Multilateral Environmental Agreements

After having worked successfully with the Customs Network for a number of years, the Swedish International Development Cooperation Agency (Sida) as well as a number of network member countries, proposed that the Customs Network ought to be extended to include also other Multilateral Environmental Agreements (MEA) with trade implications.

In 2007 Sweden decided to fund the MEA/REN project in collaboration with UNEP. It aimed to extend existing regional cooperation between countries in North East, South and South East Asia on control of trans-boundary movements of ODS to include other hazardous chemicals and chemical waste covered by the Rotterdam, Stockholm and Basel Conventions. The project supported the participating countries to continue to improve the control of illegal trade of ODS and to gain better understanding and control over the import and export of other hazardous chemicals, including chemical waste by promoting further regional cooperation for the control of transboundary

movement of those chemicals.

Through this project, the participating countries have gained better control over the chemicals trans-boundary movements in the region and this has allowed them to enforce their control strategies more efficiently. The project has also enabled the countries to integrate control strategies for hazardous chemicals, building on the achievements so far on control of ODS. This has further meant an optimization of the use of available resources within the countries. Through integrating ODS within the overall chemical management policy of the countries, the project also aimed to minimise the loss of political attention to the Montreal Protocol issues after 2010.

Although networking is difficult to evaluate in numerical terms, the fact that the concept of regional ozone networks has spread to cover virtually the whole globe from this original Swedish initiative can be seen as a ringing endorsement of its perceived value.



How to get individual home owners and industries in a region with one-third of the world's population to use chemicals that are ozone-friendly and climate-neutral is the big challenge for the future.

SIDA Receives the USEPA Montreal Protocol Award 2010

Many innovative projects with support provided by Swedish International Development Cooperation Agency (Sida) has significantly contributed to the successful implementation of the Montreal Protocol. The following are some of Sida's projects:

- At the beginning of the Montreal Protocol in early 1990s, the idea of the Network was not widely embraced. On a pilot basis, the South East Asia and Pacific Network of ODS Officers (ODSONET/SEAP) was set up in 1992 to provide institutional structure supporting continued sharing of experience and ideas on ODS phase-out measures. This network idea originated from the experience of the Nordic countries which had formed an informal and highly productive network of their ozone officers. There are now ten regional networks comprising of 148 developing and 14 developed countries
- In early 2000s, developing countries were concentrating their efforts to carry out national plans to phase out CFCs. Illegal trade of CFCs, however, could undermine all their efforts if steps are not taken to strengthen the control and monitoring of

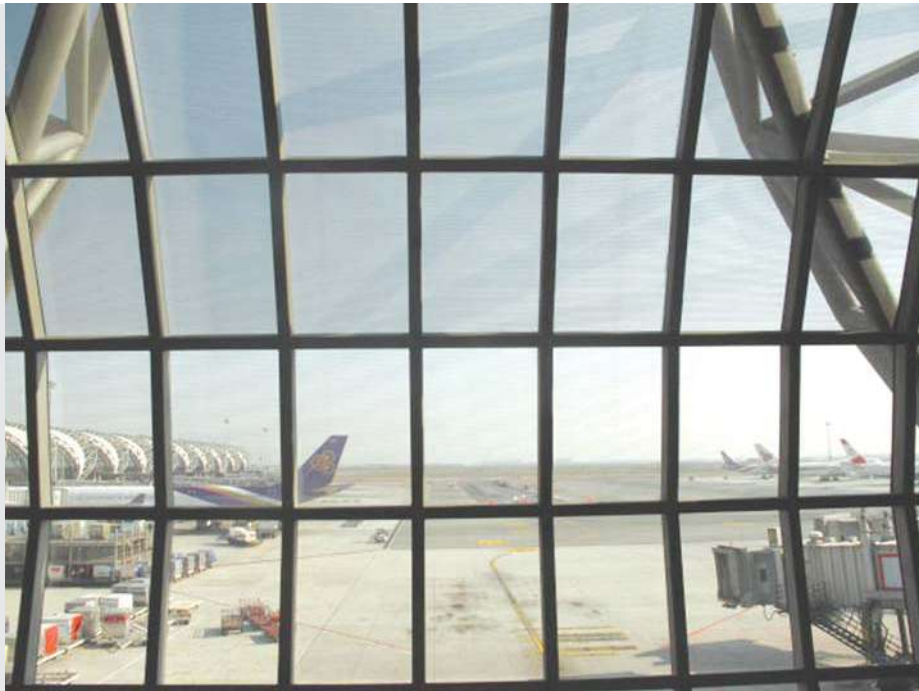
ODS trade. With support from Sida, the Stockholm Environment Institute and UNEP teamed up to start a regional project to improve monitoring and control of ODS in the South East Asia and the Pacific (SEAP) region. This project was later expanded to include South Asian countries. This project has led to improved cooperation between the customs and National Ozone Units and increased effort by customs to address environmental crime.

- Based on strong cooperation between customs and the National Ozone Units, Sida further supported the "Multilateral Environmental Agreements Regional Enforcement Network" (MEA-REN) to expand the efforts on strengthening control of transboundary trade of ODS to include hazardous chemical and waste. This project brings in the Secretariats from other chemical conventions (Basel, Rotterdam and Stockholm) to jointly address the growing problem illegal dumping of hazardous waste and chemicals.



Contribution by Sida of these innovative projects was recognized by the US EPA with its 2010 Montreal Protocol Award.

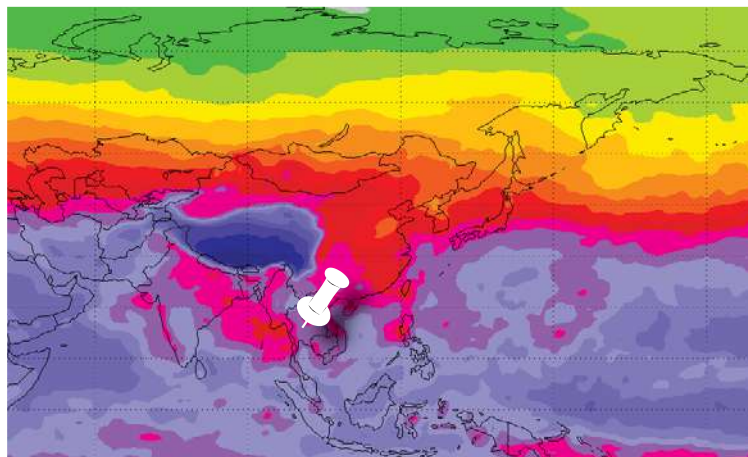
THAILAND



The region's growing affluence and reliance on transportation increases the urgency for ODS phase-out not just to protect the ozone layer, but also to curb global warming.

Thailand, is an early and continuing active participant in the global effort to protect and preserve the ozone layer. The country ratified the Vienna Convention and the Montreal Protocol in 1989, the London Amendment in 1992, Copenhagen Amendment in 1993, the Montreal Amendment in 2003 and the Beijing Amendment in 2006. Thailand is an Article 5 Country.

The Thai government has assigned the Department of Industrial Works (DIW) to be the national focal point to administer and implement its comprehensive and complex ODS phase-out program. Thailand does not produce CFCs, and in 2010 completely phased out CFC imports.



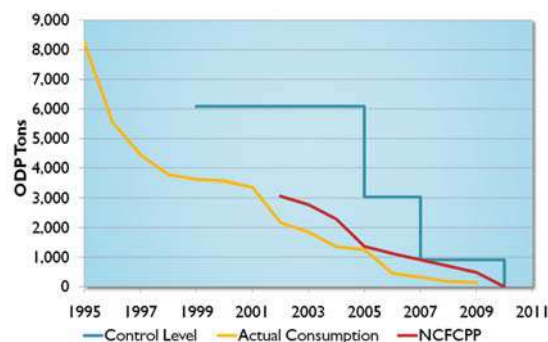
Achievements

The Department of Industrial Works, as the focal point has worked with industrial entrepreneurs in implementing ODS phase-out in Thailand. There have been a number of successful projects in the refrigerator, aerosol spray, foam, solvent, fire extinguishing and agricultural sectors.

The most successful story is from refrigerator sector that consists of many sub-projects in production, servicing, and some individual projects such as chiller replacement.

Household and commercial refrigerators and mobile air-conditioner manufacturers obtained technical and financial assistance for conversion to non-CFC technology which improved their manufacturing process and enhanced their competitiveness in the world market.

CFC CONSUMPTION



In the servicing sectors, technicians of mobile air-conditioners and refrigerator service shops were trained to improve and maintain refrigerator and air-conditioning systems without damaging the ozone layer, using non-CFC equipment.

Thailand is the first country to implement the pilot project of a CFC-chiller replacement program. The project, which has been endorsed by a Concessional Loan from the Multilateral Fund and Global Environment Facility (GEF), has decreased the demand of CFC-chiller servicing sector. The money in the form of decreased electricity cost was returned to the Fund.

By implementing the ODS phase-out program, both manufacturing and servicing sectors of the Thai refrigerator industry have advanced their business capacity with financial and technical assistance. Thailand is thus ready for the phase-out of CFCs and its industry is more competitive in the global market.

Challenges

During the implementation period of the ODS phase-out project under the Montreal Protocol, a number of practical problems were evident: mainly because of the resistance to change.

During the implementation period (1993-1994) of the Demonstration of Recovery and Recycling (R&R) refrigerant machine as the pilot project in Thailand, mobile air-conditioning service shops initially did not have confidence in the project and its outcome at all. They believed that there was no such thing as a free lunch, and didn't believe that someone would subsidize them for this kind of machine that did not seem interested at that time. Even some officers of the Department of Skill Development (DSD), a partner of Thai NOU in this project, had this attitude.

To overcome this problem, a "champion" was identified in the management level, an executive of DSD who was willing to take charge of the project. At the implementation level, the "champion" was a trainer of DSD training center who has direct door-to-door contact with the shop owner. The trust of the shop owners was thus won that led to their participation in the project.

Keeping Cool

It has been 10 years since Thanawat Kittinanwattana stopped using R-12 as a refrigerant for the air-conditioning units of older-model cars that his customers bring to him for repairs and maintenance.

"I have encouraged the owners to replace old air-conditioning technology for which R-12 is needed, with new ones that use R-134 a," he explains.

R-12 is listed as ozone depleting substance under the Montreal Protocol, an international agreement established in 1987 to protect ozone layer. As a signatory nation, Thailand has an obligation to phase out the consumption of chlorofluorocarbons, or CFCs, ozone depleting chemicals, in January 2010.

To achieve this goal, the Department of Industrial Works (DIW), a state agency that acts as a focal point of the implementation of the Protocol in Thailand, has launched several measures. Among those is a training programme and financial support for Thai enterprises to replace CFC-related manufacturing and servicing sector to Ozone friendly substance.

"We can't just shift the burden to protect the ozone layer to the industrial sector. We have to support them," said Somying Kunanopparat, director of the Treaties and International Strategy Bureau of the DIW.

According to Somying, Thailand has received financial support from the Multilateral Fund (US\$53.3 million in grants and US\$4.97 million as concessional loans) for the support of the industrial sector so it can replace old technology with new ones that use non-CFCs.

Thanawat's Ekachat Auto Air is one of mobile Air conditioning service shop throughout the country that DIW has supported. Since joining the training workshop jointly implemented by Department of Skill Development for retrofit CFC-12 system to R-134a and receiving financial subsidy for basic tool for R-134a system in November 2000, Thanawat has encouraged his customer to replace old MAC system which use CFCs to non-CFCs system.

"Frankly, the main decision factor (for car owners) to switch their technology, which costs between 6,000

to 9,000 Thai baht (200 to 300 dollars), is not their environmental concern, but the fact that the refrigerants for their old mobile air-conditioning technology are harder to buy day by day,” he said.

Together with the training programme and financial support for enterprises to convert their technologies to more ozone-friendly ones, DIW controls the availability of CFCs in the market by controlled licensing and quota system of importing CFCs from 2,560 tonnes in 2003 to 1,364 tonnes in 2005 to 704 tonnes in 2008, and to zero in 2010.

“We can’t limit the use of CFCs in the MAC system in old cars or other household refrigerators. However, the limit on CFCs in the market does help in reducing the use of CFCs,” explained Somying.

She says she is certain that many cars older than 14 years, which are registered with the Department of Land Transportation, have already converted their MAC system to non-CFCs system today.

Thanawat endorsed her assumption. Saying he was “unable” to give an estimate of how many older cars still use the older technology, Thanawat said: “I only can say that many old car owners brought their automobiles to change the refrigerating system at my shop.”

Thailand’s success in reducing the use of CFCs makes the country confident it can also eradicate Hydrochlorofluorocarbons (HCFCs). Once used as a replacement to CFCs, HCFCs also have small ozone depleting effects, so that the Montreal Protocol calls for their complete phaseout in 2030. The DIW is currently joining hands with World Bank in drawing up an action plan for their step-by-step phaseout in the country.

“Thai industrial sector, both manufacturing and servicing sector, understands that they have to abide by the Protocol,” Somying points out. “But we have to give them time to switch their technologies.”

Pennapa Hongthong in Bangkok (IPS)

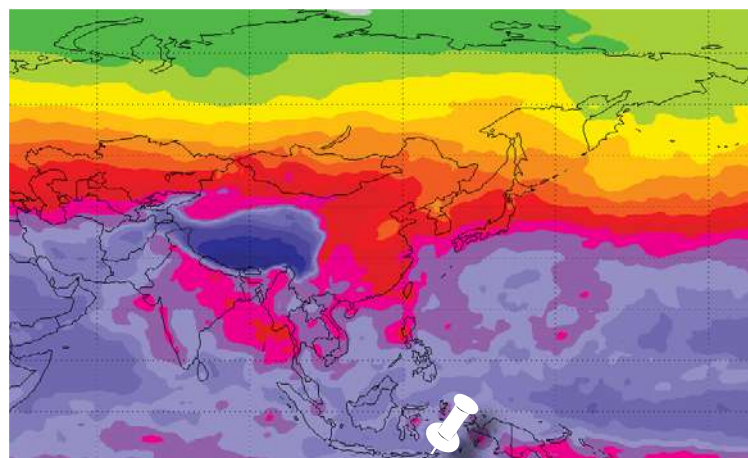
TIMOR-LESTE



Timor-Leste, strongly committed to environmental issues at national, regional and global levels, ratified the Kyoto Protocol in 2008 and the Montreal Protocol with all its amendments in September 2009.

The country does not manufacture any ozone depleting substances, and its requirements are imported from other countries, such as Indonesia, Australia and Singapore. The Montreal Protocol definition of consumption is import + production – export. In Timor-Leste's case, all consumption is imported.

There is still import and use of CFC-12 in Timor-Leste for servicing, and some older equipment using CFC are still around, but are small in number. The use of HCFC-22, however, is growing every year because of the increase in demand for air-conditioning. The use of HFCs which is not controlled is also gradually increasing in car air conditioning. As Timor-Leste sets out to advance its economic growth and improve social conditions, it may need to import ozone depleting substances (ODS) to service equipment that depends on these substances to function.

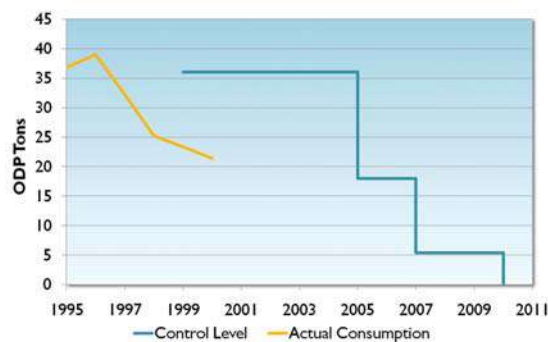


Achievements

Since becoming a Party to the Montreal Protocol Timor-Leste established the National Ozone Unit (NOU) under the Secretariat of State for Environment, Ministry of Economy and Development. It has received financial assistance from the Multilateral Fund for Institutional Strengthening for the first two years.

The National Ozone Unit is tasked with developing a detailed legislative system to control ODS and ODS-based products and a licensing and quota system. It will ensure that the legislative framework is in place and enforced, provide information on the Montreal Protocol, phase-out schedules, regulations and general information to achieve the goals outlined in the country

CFC CONSUMPTION



programme and project documents. It will also develop and implementing capacity building and awareness programmes as well as information sharing mechanisms on non-ODS technologies.

The National Ozone Unit Steering Committee has members from the Ministry of Economy and Development, Ministry of Finance, Ministry of Tourism, Trade and Commerce, Secretariat of State for Defence, Ministry of Foreign Affairs and Cooperation, Ministry of Education and the Ministry of Agriculture and Fisheries.

A regular survey has been conducted to identify ODS imports to the country and service workshops across the country that import and sell ozone depleting substances. There have been workshops carried out for stakeholders, mainly companies for refrigerator and AC services workshops on issues related to the protection of the ozone layer.

Challenges

Timor-Leste will be formulating a licensing system for the export and import of ODS to stop illegal entry of banned chemicals. The licensing system is an urgent necessity for the Country Program and HCFC Phase-out Plan.

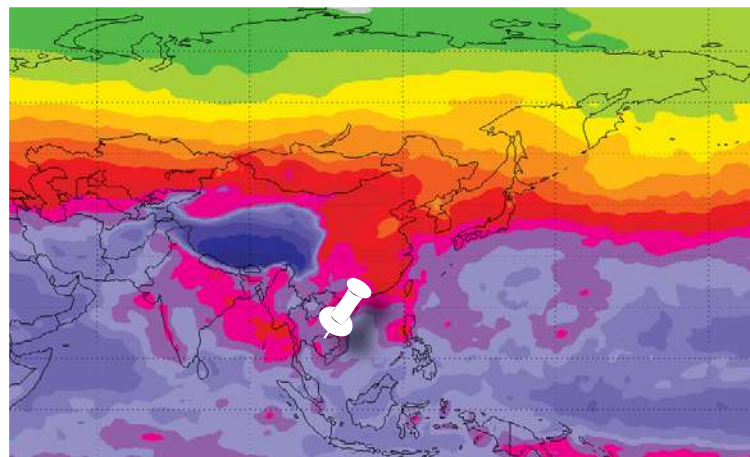
Coordination between key agencies of government is vital in implementing Montreal Protocol targets. Spreading awareness about protection of the Ozone Layer is also a challenge.

VIETNAM



Vietnam ratified the Montreal Protocol in 1994 and has signed all its amendments. With assistance from the Multilateral Fund through United Nations Environment Programme (UNEP), the Vietnam Country Programme for phasing out ozone depleting substances was developed. The Country Programme was endorsed by the government in 1995 and the Multilateral Fund has also approved an Institutional Strengthening Project for Vietnam which led to the establishment of the National Ozone Office, which is now under the Ministry of Natural Resources and Environment.

Vietnam is classified as an Article 5 Country and is thus eligible for financial and technical assistance from the Multilateral Fund. Vietnam does not produce any ODS controlled by the Montreal Protocol or ODS alternatives, and all domestic demand is met through imports.

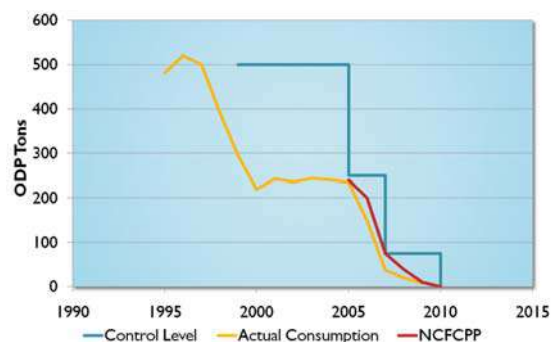


Achievements

Vietnam has made its major efforts to meet the the phase out target and one of these was setting up the quota system that came into force in July 2005, for CFC, Halon and CTC. This meant that the reduction of these chemicals were achieved well ahead of target.

The successful ODS phase-out has been achieved by implementing a combination of effective measures, but would not have been possible without valuable financial and technical assistance provided by the Multilateral Fund totaling nearly US\$6.5 million. These projects have contributed in part to Vietnam's success in reducing

CFC CONSUMPTION



CFC consumption from its peak in 1996 from 520 ODP tons to 0 ODP tons in 2010.

Vietnam has also established a regulatory framework for ODS phase-out. As such, halons have been banned from fire-extinguishers, CFC-based refrigeration equipment have been removed from the fisheries industry since 1995 and CFC-based refrigeration equipment has been totally banned since 2006. The quota system for ODS import to ensure Vietnam's full compliance with the Montreal Protocol and to preempt any undue economic burden to the country.

One major challenge is HCFC-phaseout. Consumption has increased in the last five years with HCFC-22, 123 and HCFC-141 used in refrigeration, air-conditioning

and foam. It is expected that the consumption of HCFCs will increase about 13% per year, meaning it could reach 243 ODP tons by 2012 before the first control measures enter into force in 2013. This is a significant challenge for the country since any consumption exceeding the baseline level will not be considered eligible for funding from the Multilateral Fund.

To cap consumption and bring about a 10% reduction target, Vietnam is working with its partners to jointly develop the HPMP and sector phase-out projects.

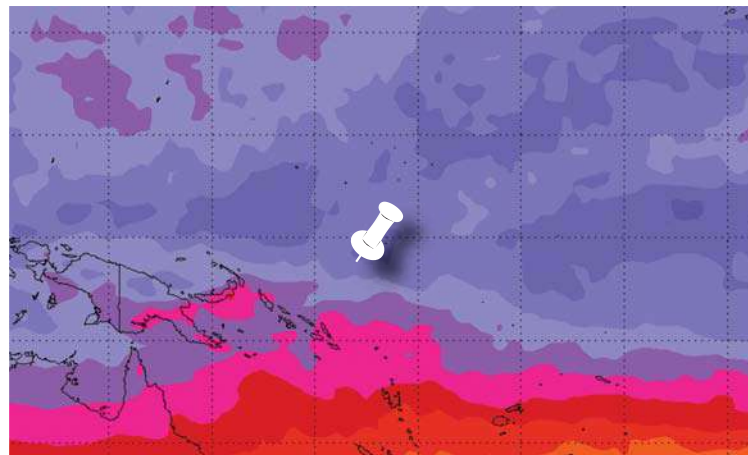
PACIFIC ISLAND COUNTRIES



The Multilateral Fund's Executive Committee established the Regional Network for Pacific Island Countries (PICs) in 2008. Based on UNEP DTIE OzonAction's networking approach successfully employed for more than a decade in other regions, has been modified to take into account the special conditions of small island developing states. Its main objective is to strengthen the capacity of National Ozone Units in the PIC region for compliance with the Montreal Protocol and sustained, permanent reduction in the use of ozone depleting substances.

The Network covers 13 Article 5 countries in the Pacific:

- Cook Islands
- Kiribati
- Republic of Marshall Islands
- Federated States of Micronesia
- Nauru
- Niue
- Palau
- Papua New Guinea
- Samoa
- Solomon Islands
- Tonga
- Tuvalu
- Vanuatu



The core participants of the Network are:

- Ozone Officers from each Article 5 country in the PIC region responsible for managing the National Ozone Unit and the national strategy to comply with the Montreal Protocol.
- The Ozone Officer of Fiji (which belongs to the South-East Asia and Pacific Network for historic reasons) participates in the PIC Network as a resource person, due to its long and proactive experience in the implementation of the Montreal Protocol. Fiji also acts as a “bridge” to share best practices from other networks.
- Australia and New Zealand, two non-Article 5 countries, participate in the network as bilateral agencies.
- The Ozone Secretariat, Multilateral Fund Secretariat and the Implementing Agencies (UNDP, UNEP, UNIDO, World Bank) are invited to participate in network meetings and activities.
- South Pacific Regional Environmental Programme (SPREP), and other regional organizations.

The PIC Network is managed by the Compliance Assistance Programme (CAP) in UNEP’s Regional Office for Asia and the Pacific. Resource for its operations come from the annual budget of UNEP OzonAction’s Compliance Assistance Programme (CAP), and in-kind contributions from Australia. Fiji has joined the South East Asia and the Pacific (SEAP) Regional Network of Ozone Officers since the beginning of the SEAP Network.

Challenges

As small island developing states, the PICs have unique social, economic and environmental characteristics, including geographic isolation, small land area, limited natural resources, small economies with low diversification, poorly-developed infrastructure, and the paucity of human and financial resources. Compared to most other Article 5 countries, therefore, the PICs face specific problems. Five countries (Kiribati, Samoa, Solomon Islands, Tuvalu and Vanuatu) are classified as least developed.

The PICs are among the most isolated countries geographically.

They include thousands of mainly small coral and volcanic islands scattered across the Pacific Ocean from Palau in the west to Easter Island in the east. They are spread over a vast area and the distances amongst islands are great. Because of the long distances and the small populations, travel within the island group is difficult and expensive.

While the Pacific Island countries have very low or zero consumption of ODS, they still faced similar problems and have to implement phase-out measures and activities as other parties. More specifically, the

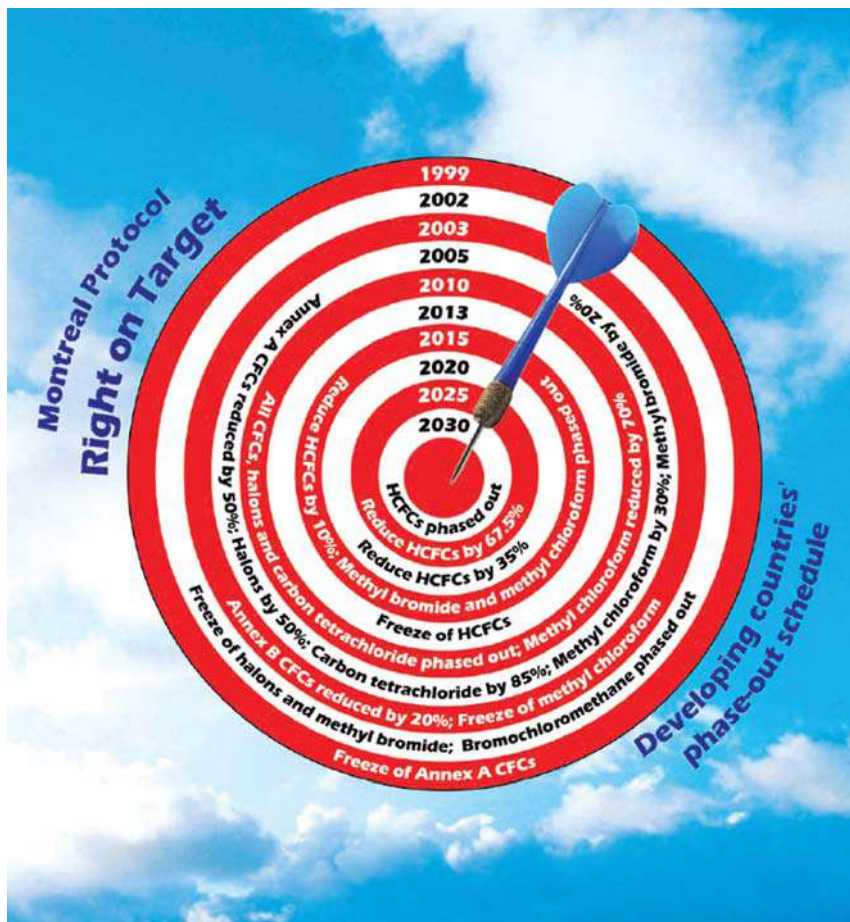
Pacific Island countries are facing these issues:

- Remoteness. Because of their remoteness and lack of a Regional Network until 2009, the PICs have to a certain extent left out of the mainstream of the Montreal Protocol implementation and have not benefited from sharing with their peers and learning about best practices in other regions that other Article 5 countries have enjoyed.
- 2010 compliance targets. There is an urgent need to provide focused assistance to specific PICs to support their effort to sustain compliance to the 2010 phase-out targets.
- Policy setting and enforcement. Some countries have ODS regulations in place, but others need further assistance with licensing systems, legislation and regulations. All of the countries need guidance

on effective enforcement of the licensing system, legislation and regulations.

- Data reporting. Pacific Island countries have historically had trouble complying with data reporting under Article 7 and reporting progress for the implementation of their country programmes to the Multilateral Fund. The network is encouraging and assisting the countries to report their data to the Ozone Secretariat and the Multilateral Fund Secretariat on time.
- HCFCs. The accelerated HCFC phase-out schedule poses challenges to the PICs in establishing reliable baseline data and to meet the freeze and 10% reduction in 2013 and 2015, respectively.
- Sustainability of phase-out. The countries need support to design and implement measures to ensure the long-term sustainability of the Montreal Protocol by incorporating ozone protection objectives into national agendas, policies and institutions. The participation of the NOUs in the annual PIC network meeting will help keep decision-makers aware of the ongoing needs to comply with the obligations of the Montreal Protocol.
- Illegal ODS trade. With many small islands and open spaces, PICs are particularly vulnerable to illegal trade in ODS which could undo the ODS phase-out successes already achieved and threaten sustained compliance.
- ODS banks. PICs need assistance with management of residual ODS banks to ensure adequate supplies for servicing and critical uses.

ODS Phase-out Schedule



Source: UNEP DTIE OzonAction

Stand Up for the Ozone Layer and the Millennium Development Goals

END POVERTY
2015
millennium campaign



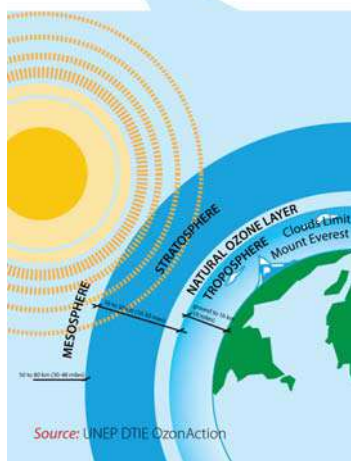
STAND UP
for the
Ozone Layer!
and the
Millennium
Development
Goals

What is the *Ozone Layer*?

The *ozone layer* is a protective layer of molecules that filter out harmful UV radiation from the Sun before it can reach the surface of the planet. Without the *ozone layer*, human health, ecosystems, and life on Earth are threatened.

Why do we need the *Ozone Layer*?

The *ozone layer* protects humans, animals and plants from the damaging effects of UV-B radiation.



Source: UNEP DTIE OzonAction

A Hole in the *Ozone Layer*- What Harm Can It Cause Us?

A hole in the *ozone layer* means that Earth's shield to the sun has been damaged. We are exposed to more UV radiation which leads to increased skin cancer, chronic eye problems, cataracts, malignant melanoma, and other health hazards.

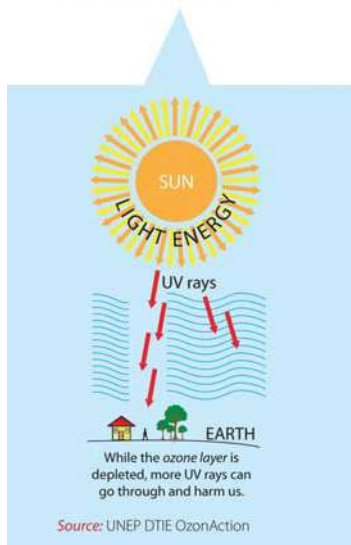
Increased UV radiation also affects the essential ecological processes of our environment which is detrimental to crop yield and agricultural productivity.



Source: UNEP DTIE OzonAction

What are *Ozone Depleting Substances* (ODS)?

In the early 1970s, scientific evidence had accumulated showing that manmade substances called chlorofluorocarbons (CFCs), were damaging the *ozone layer* in the stratosphere and increasing the amount of ultraviolet B (UV-B) radiation reaching Earth's surface. CFCs and a group of more than 90 related chemicals known as ODS were identified as the culprits.



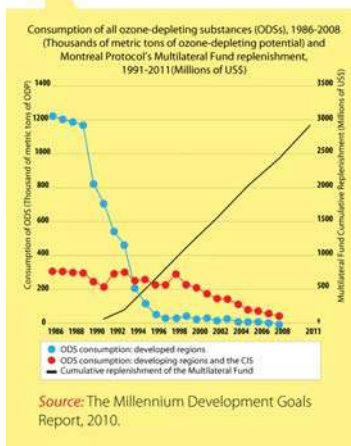
What are *Ozone Depleting Substances* (ODS)? (continued)

ODS were used worldwide in manufacturing and in consumer goods like refrigerators, air conditioners, aerosols, and fire extinguishers. The discovery of the huge ozone hole over Antarctica (the Ozone Hole) helped focus public attention on the need to do something about CFCs and other ODS.



What Role does the Montreal Protocol Play in Protecting the *Ozone Layer*?

The Montreal Protocol on Substances that Deplete the Ozone Layer (1987) is a landmark international environmental agreement that continues to be remarkably successful in meeting its time targeted deadlines. Production and consumption of the most damaging ODS were eliminated, except for a few critical uses, by 1996 in developed countries and should be phased out by 2010 in developing countries (data reporting is still underway for 2010).



6

Subsequent
generations
will know
about these
chemicals only
from the
history books



7

Montreal Protocol and Millennium Development Goals (MDGs)

Most of the actions associated with the Montreal Protocol, particularly the work done through the Protocol's Multilateral Fund supports the implementation of the Millennium Development Goals, especially **Goal 7: Ensure environmental sustainability.**



8

What are the **Millennium Development Goals**?

The Millennium Development Goals (MDGs) are eight goals to be achieved by 2015 that respond to the world's main development challenges. The MDGs are drawn from the actions and targets contained in the *Millennium Declaration* that was adopted by 189 nations-and signed by 147 heads of state and governments during the *UN Millennium Summit* in September 2000.

9

MDGs

1. Eradicate extreme poverty and hunger;
2. Achieve universal primary education;
3. Promote gender equality and empower women;
4. Reduce child mortality;
5. Improve maternal health;
6. Combat HIV/AIDS, malaria and other diseases;
7. Ensure environmental sustainability; and
8. Develop a global partnership for sustainability.



10

How does the *Ozone Layer* Stand Up for the Achievement of the Millennium Development Goals?

Through specific initiatives, UNEP Division of Technology, Industry and Economics (DTIE), OzonAction Programme contributes to the implementation of the Millennium Development Goals.



UNEP

United Nations Environment Programme

**STAND UP
TAKE ACTION**
End Poverty Now!

11

Ozone and Climate Linkages

Most ODS such as chlorofluorocarbons (CFCs) and Hydrochlorofluorocarbons (HCFCs) are also global warming gases which contribute to climate change.

The Montreal Protocol has made significant contributions to protecting the *ozone layer* and delaying dangerous climate change. Between 1986 and 2008, global consumption of ODS was reduced by 98 percent. Furthermore, from 1990 to 2010, the Montreal Protocol's control measures on production and consumption of such substances will have reduced greenhouse gas emissions by the equivalent of 135 gigatons of CO₂.

The Millennium Development Goals Report, 2010.

12

**The
Unparalleled
Success of
the *Montreal
Protocol* Shows
that *Action on
Climate Change*
is within our
Grasp.**

*The Millennium Development Goals
Report, 2010*

13

Without the action prompted by the ***Montreal Protocol*** and its Vienna Convention, atmospheric levels of ozone-depleting substances would have grown 10-fold by 2050.

The resulting exposure to the sun's ultraviolet radiation would likely have led to up to 20 million additional cases of skin cancer and 130 million more cases of eye cataracts; it would also have caused damage to human immune systems, wildlife and agriculture.

*The Millennium Development Goals
Report, 2010*



© Eleanor Hanzel

14

Accelerated *HCFC* Phase Out

Parties to the Montreal Protocol are now examining ways to use the treaty's vigorous implementation regime to promote even greater climate change benefits.

In 2007, they took an important step by accelerating the *phase-out of Hydrochlorofluorocarbons (HCFCs)*, replacement chemicals that contributes to *Ozone Depletion and Climate Change*.



15

Which Products Contain HCFCs?

HCFCs, potent ODS and Global Warming Gases are found in refrigeration units, air conditioning units, fire extinguishers, foams, feedstock and solvents.



© David Readman



© David Readman



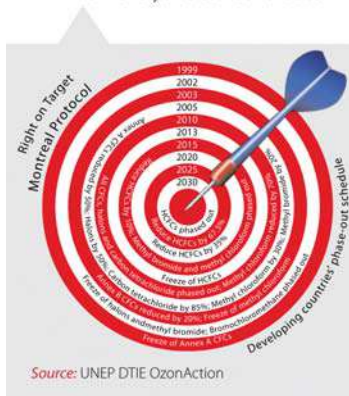
© Zoli Plosz

16

What are Developing Countries Doing to Ensure HCFC Phase Out?

Developing countries are gearing up to formulate an HCFC Phase-out Management Plan with the following components:

1. Projects to phase out HCFCs in HCFC producing and consuming enterprises;
2. Policies and legislations for HCFC phase-out;
3. Training and capacity building activities for facilitating HCFC phase-out; and
4. Information outreach on HCFC phase-out, its benefits, technical options available and how everyone can contribute.



17

Examples of Successful Initiatives in Asia and the Pacific Region under the Montreal Protocol which Contribute to the achievement of the MDGs by 2015.



18

Preventing Illegal Trade in ODS:

UNEP DTIE OzonAction Programme collaborates with the World Customs Organization, Customs authorities and various international organization partners to carry out initiatives to prevent Illegal Trade in ODS.

These include:

- **Green Customs Initiative** which encourages coordinated intelligence gathering, information exchange, guidance and training amongst the partner organizations.
- **Project Sky Hole Patching** which established a monitoring and notification system among member administrations to keep track of the movement of suspicious shipments of ODS and dangerous waste.

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Regional Partner's Forum on Combating Environmental Crime which helps curb illegal trade in environmentally sensitive commodities.

Preventing Illegal Trade in ODS *Stands Up* for the MDGs:

Goal 7: Ensure environmental sustainability

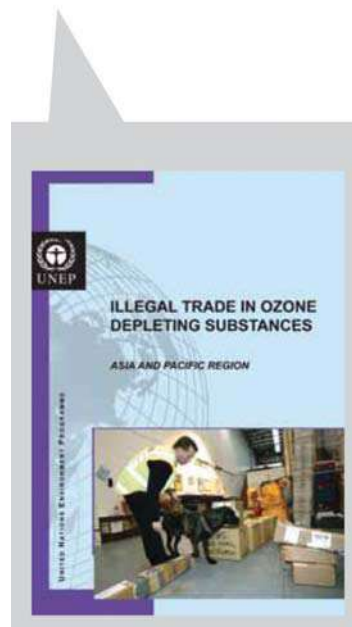
Illegal Trade in ODS is a substantial and increasingly lucrative business. It directly threatens the environment and seriously undermines the effectiveness of multilateral environmental agreements (MEAs). Preventing illegal trade in ODS is one of the key bases to ensure that the *ozone layer* will regain its health.

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For more information: See publication *Illegal Trade in Ozone Depleting Substances: Asia and Pacific Region*: www.unep.fr/ozonaction/information/mmcfiles/6075-e-illegal-trade-asia.pdf

and

Green Customs Initiative website: www.greencustoms.org



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Phasing Out **CFC Metered Dose Inhaler** (MDI):

Montreal Protocol shows how the sustained effort of 196 countries can reverse environmental damage and benefit health. UNEP DTIE OzonAction Programme is working together with governments, the private sector and NGOs for the benefit of respiratory patients, to instigate a successful transition to CFC-free inhalers in Asia and the Pacific region.



© Marlena Zagajewska

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Phasing Out **CFC MDI** Stands Up for the MDGs:

Goal 8: Develop a global partnership for development

In cooperation with pharmaceutical companies, governments and NGOs, UNEP DTIE OzonAction is assisting countries to have a successful transition to CFC-free inhalers in all countries, so that all respiratory patients will have access to affordable essential drugs which are also ozone-friendly.

For more information:

See publication: *Transition to CFC-free Inhalers package for National Ozone Units*:
www.unep.fr/ozonaction/information/mmc/lib_detail.asp?r=5310



23

Phasing Out **ODS** in Military Establishments:

In collaboration with defense officers, publication "Ozone Protection and National Security: A military Perspective- Toolkit for Defense Forces" has been developed to provide information to defense establishments across the globe. It is a guideline for them to design and implement ozone- friendly approaches in their regular equipment operation and maintenance activities.

Some of the useful phase out strategies include:

- Announcing policies restricting purchase of new ODS using equipment once alternatives are available.
- Monitoring ODS bank, reviewing deposits and withdrawals.
- Using national and international forums on military issues to address ODS phase out issues.

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Phasing Out *ODS* in Military Establishments Stands Up for the MDGs:

Goal 7: Ensure environmental sustainability

UNEP DTIE *OzonAction* is working with military establishments in developing detailed summaries of military applications using ODS in their respective country and seek to find the best solutions in adopting environmentally and ozone friendly policies and practices.

For more information:

www.unep.fr/ozonaction/information/mmc/lib_detail.asp?r=5325



25



Examples of Successful Global Initiative under the *Montreal* *Protocol* which Contribute to *MDGs*



26

The *Ozone* and *Climate* Safe Solar Chill Initiative

Solar Chill is a global initiative that is developing a climate and ozone friendly vaccine cooler that is powered by solar energy, which will directly improve the health of children in developing countries.



© Dragana Djerovic

27

The Solar Chill Initiative Stands Up for the **MDGs**:

Goal 4: Reduce child mortality

Solar Chill Initiative helps deliver vaccines and refrigeration to regions of the world without electricity or with inadequate electrical supply. It will therefore help save children's lives in remote areas.



© Ruedee Arunkhajohnsak

28

Goal 7: Ensure environmental sustainability

SolarChill is a versatile refrigeration technology that is environmentally sound, battery-free, technologically-reliable, affordable and multi-source powered.

Goal 8: Develop a global partnership for sustainability

The Solar Chill Project bridges health, development and environmental issues through cooperation between major international organizations, research institutes and industry. Refrigerants, Naturally! Initiative

For more information:

UNEP DTIE OzonAction Website:
www.unep.fr/ozonAction/partnerships/solarchill.htm

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Refrigerants, Naturally!

Refrigerants Naturally Initiative! is a global initiative of companies committed to combat *ozone layer* depletion and climate change by substituting harmful fluorinated gases ("F-gases", such as CFCs, HCFCs and Hydrofluorocarbons -HFCs) in the food and drink, food services and retail sectors with **natural refrigerants** (carbon dioxide, hydrocarbons and ammonia).

The Refrigerants, Naturally! Initiative Stands Up for the MDGs:

Goal 7:

Natural refrigerants have a low climate impact and do not harm the Earth's *ozone layer*.

30

Goal 8:

The partners share a commitment to eliminate HFCs in point-of-sale cooling applications. This is driven a conviction that **natural refrigerant technologies work efficiently and reliably, offer environmental benefits (including being more energy-efficient than the F-gas alternatives) and are, or are becoming, commercial available.**

Refrigerants, Naturally! is open to discussing options with policy-makers that could **encourage the emergence of more ozone and climate-friendly practices in the future.**

For more information:

Refrigerants, Naturally Website:
www.refrigerantsnaturally.com



31

**Ozone Layer Protection
 Provide Great Benefits to
 the Economies**

By being in compliance with the Montreal Protocol, countries have avoided significant future human health costs, agricultural loss, and biodiversity loss. The Protocol has also contributed to improved industrial competitiveness of developing countries through industry conversions and access to markets.



© Stephen Vanhorn

32

**Who Can Contribute to
 Ozone Layer Protection?**

We are all responsible for the consumption of ODS and together, we can all stop the production of ODS.

The Montreal Protocol shows what can be achieved **through international cooperation - mobilization of international agencies, governments, businesses, communities and individuals.**



© Lucian Coman

33

The United Nations Environment Programme (UNEP), along with other international agencies like World Bank, United Nations Development Programme (UNDP) and United Nations Industrial Development Organization (UNIDO), has been working with developing countries and countries with economies in transition to help achieve and sustain compliance with the Montreal Protocol on Substances that Deplete the ozone layer.



34

Montreal Protocol provides funding to help developing countries comply with obligations under the Protocol - i.e., to phase-out the use of ozone-depleting substances at an agreed schedule. To date, more than US \$ 2.5 billion has been disbursed to developing countries mainly to the industries for phasing-out Ozone Depleting Chemicals.



35



**Every Action
Counts!**

What Can We Do?

Protect yourself,
Protect the *ozone layer*.



36

As Responsible *Citizens*

- Buy only those products that are labeled "ozone friendly", "CFC-free" or "HCFC-free".
- The seller should be consulted in case of doubt.
- Maintain appliances containing ODS regularly to prevent the release of ODS into the atmosphere, hiring trained personnel for all servicing of existing equipments to ensure efficiency and prevention of leakage.
- Replace ODS in appliances with ozone friendly substance wherever possible.
- Dispose of old appliances responsibly, making sure the ODS are removed carefully by technicians and submitted for recycling or re-use.
- Inform other people about the importance and ways of protecting the ozone layer.



37

As *farmers*

- Eliminate methyl bromide as pesticide and soil fumigant, and switch to safer and more effective alternatives available today (such as integrated pest management).
- Eliminating Methyl bromide and protecting the ozone layer will benefit everyone, including the farmers.
- Too much UV radiation can harm crop development which means less vegetable and fruit productivity.



38

As servicing *technicians*

- Regularly check and fix leaks, and ensure that refrigerants recovered from air conditioners, refrigerators, or freezers are not accidentally release into the atmosphere
- Inform consumers about alternative environment-friendly technologies available today, and encourage their use
- Start a refrigerant recovery and recycling programme in your community



39

As company or office *workers*

- Identify existing equipment that use ODS and develop plans to replace them with cost-effective substitutes. Suppliers should be consulted to make this process more effective. Companies might be eligible for financial and technical assistance from the Multilateral Fund.
- Inform other staff members and stakeholders about the harmful effects of using ODS, and encourage alternative technologies where available.
- Ask what your office is currently doing to help protect the *ozone layer*, and how they can get involved in such replacement or retrofit programmes.
- Start a comprehensive environmental programme in the office.



© Jiang Daohua

40

Ban Ki-moon**Secretary-General of The United Nations**

Message on the International Day for the Preservation of the Ozone Layer, 16 September 2010

The Montreal Protocol could not have delivered such profound achievements without robust governance and compliance structures put in place by its Parties, both collectively and individually... I encourage Parties to the Montreal Protocol to continue to build on this model and to explore synergies that could help to address other environmental challenges, especially climate change. Let us use the governance tools contained in the existing ozone and climate treaties to reduce environmental threats to sustainable development and human well-being.



© Markwaters

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Achim Steiner**UN Under-Secretary General and Executive Director of UNEP**

"...the lessons we have learnt in the Montreal Protocol are equally valid for the negotiations leading up to Copenhagen and I think have already influenced the nature of the deal. [...] The big prize is to have a deal in Copenhagen that allows the North-South partnership to transition towards a low carbon economy."

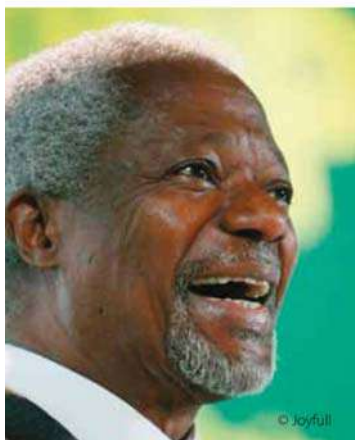


42

Kofi Annan

Former Secretary General of the United Nations

"The effects of pollution driven by economic growth in some parts of the world are now driving millions of people into poverty elsewhere. At the same time, decades-old aid pledges continue to go unmet. The Millennium Development Goals are endangered. And the poor lack capacity to make their voices heard in international arenas, or attract public and private investment. For those living on the brink of survival, climate change is a very real and dangerous hazard. For many, it is a final step of deprivation."



© Joyfull

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Developing Countries' actions and contributions towards the Success of the Montreal Protocol

H.E. Mohamed Nasheed

President of the Maldives

"We believe that going green isn't just ecologically sound but also economically beneficial. The Maldives is famed for its luxury resorts, whose refrigeration systems are the source of most of the country's HCFC emissions. Moving early to phase out the use of HCFCs not only helps protect the beautiful tropical environment tourists come to see but also positions Maldives as a strong eco-destination."



© Presidency Maldives

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Private sector and celebrities are contributing to ozone layer protection

Emirsyah Satar

President & CEO Garuda Indonesia

The question for Garuda Indonesia in the future, is not the additional costs of being a green or environmentally aware airline, but to consider the long term benefits to our passengers, partners, stakeholders, and the planet as a whole, of being a "green" airline.

Note: Garuda Indonesia is the leader in Halon Bank Management in Indonesia and in Asia and the Pacific Region.



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Li Bing Bing

UNEP's National Goodwill
Ambassador in China

We can change our planet's destiny one country at a time... one community at a time... one individual at a time... one action at a time.

An easy suggestion? Next time you are shopping, reach for a product marked *Non-HCFC* or *Ozone-friendly*, your grandchildren will thank you.



46

Dilhan C. Fernando

Marketing Director of Dilmah

Sri Lanka has implemented various measures to comply with environmental-related international conventions and agreements where Sri Lanka is a signatory including the Montreal Protocol. To comply with the Montreal Protocol, usage of methyl bromide, which is used as a soil fumigant in the tea sector, was halted as it is known to be an ozone-depleting chemical. This measure was introduced to all Dilmah owned and affiliated plantations with facilitation and subsequent monitoring by the Sri Lanka Tea Research Institute (TRI). Dilmah tea gardens now use Basamid-Granular for soil fumigation. Although the new methodology is cumbersome, our plantations have adopted it unreservedly in order to reduce the damage to ozone layer.



47

Tata Young

Thailand's International
Recording Artist

We will use the power of music to capture people's heart and encourage them to take action to protect the ozone layer and prevent climate change. There is a saying in Asia, people can be like bamboo when it comes to change... we must teach the old bamboo to bend to new ideas but the young bamboo is our future as they are the most flexible and will shape in new ways to protect and preserve our planet's ozone shield.



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Where Can We **Find** More
Information on How to
Protect the Ozone Layer and
the Stand Up Campaign?

For more information, please visit
our websites:

UNEP DTIE OzonAction website:

- www.unep.fr/ozonaction
- www.unep.fr/ozonaction/about/mdgs.htm

UN Millennium Campaign Asia
Pacific Website:

- www.asiapacific.endpoverty2015.org

Stand Up Campaign Website:

- www.standagainstopoverty.org

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Protect Yourself Protect the *Ozone Layer*



Source: UNEP DTIE OzonAction

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STAND UP **TAKE ACTION** **End Poverty Now!**

Unified Global Action 2010: **"Make Noise for the MDGs"** designed to grab public, political and media attention and to make sure that the global movement in support of the MDGs is seen and heard in every corner of the globe. For more information please go to:
www.standagainstopoverty.org





UN Millennium Campaign

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 Fax: +66 2 288 1052
 Email: mc-asia@un.org
<http://asiapacific.endpoverty2015.org>



United Nations Environment Programme

**UNEP Division of Technology, Industry and
 Economics (UNEP DTIE)**

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 Programme,
 Regional Office for Asia and the Pacific (CAP ROAP)
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 Tel: +662 288 1662
 Fax: +662 288 3041
 Email: Atul.Bagai@unep.org
<http://www.unep.fr/ozonaction>

About the UNEP Division of Technology, Industry and Economics

The UNEP Division of Technology, Industry and Economics (DTIE) helps governments, local authorities and decision-makers in business and industry to develop and implement policies and practices focusing on sustainable development.

The Division works to promote:

- > sustainable consumption and production,
- > the efficient use of renewable energy,
- > adequate management of chemicals,
- > the integration of environmental costs in development policies.

The Office of the Director, located in Paris, coordinates activities through:

- > **The International Environmental Technology Centre - IETC** (Osaka, Shiga), which implements integrated waste, water and disaster management programmes, focusing in particular on Asia.
- > **Sustainable Consumption and Production** (Paris), which promotes sustainable consumption and production patterns as a contribution to human development through global markets.
- > **Chemicals** (Geneva), which catalyzes global actions to bring about the sound management of chemicals and the improvement of chemical safety worldwide.
- > **Energy** (Paris and Nairobi), which fosters energy and transport policies for sustainable development and encourages investment in renewable energy and energy efficiency.
- > **OzonAction** (Paris), which supports the phase-out of ozone depleting substances in developing countries and countries with economies in transition to ensure implementation of the Montreal Protocol.
- > **Economics and Trade** (Geneva), which helps countries to integrate environmental considerations into economic and trade policies, and works with the finance sector to incorporate sustainable development policies.

*UNEP DTIE activities focus on raising awareness,
improving the transfer of knowledge and information,
fostering technological cooperation and partnerships, and
implementing international conventions and agreements.*

*For more information,
see www.unep.fr*

UNEP, UNEP DTIE

OzonAction, Compliance Assistance Programme

UNEP as an Implementing Agency of the Multilateral Fund of the Montreal Protocol has a unique regionalized programme that delivers compliance assistance services to countries to assist them meet the international commitments under the Protocol. The compliance regime requires countries to: achieve and sustain compliance, promote a greater sense of country ownership and implement the agreed Executive Committee framework for strategic planning.

UNEP through the Compliance Assistance Programme (CAP) has moved from project management approach to a direct implementation initiative through its specialized staff. Consistent with the above approach the Regional Office for Asia and Pacific (ROAP) CAP team has developed to be the centre for policy advice, compliance guidance and conduct training to refrigeration technicians, customs officers and other relevant stakeholders on compliance issues, promote bilateral and multilateral cooperation and promote high-level awareness by utilizing UNEP's staff.

Montreal Protocol on Substances That Deplete the Ozone Layer

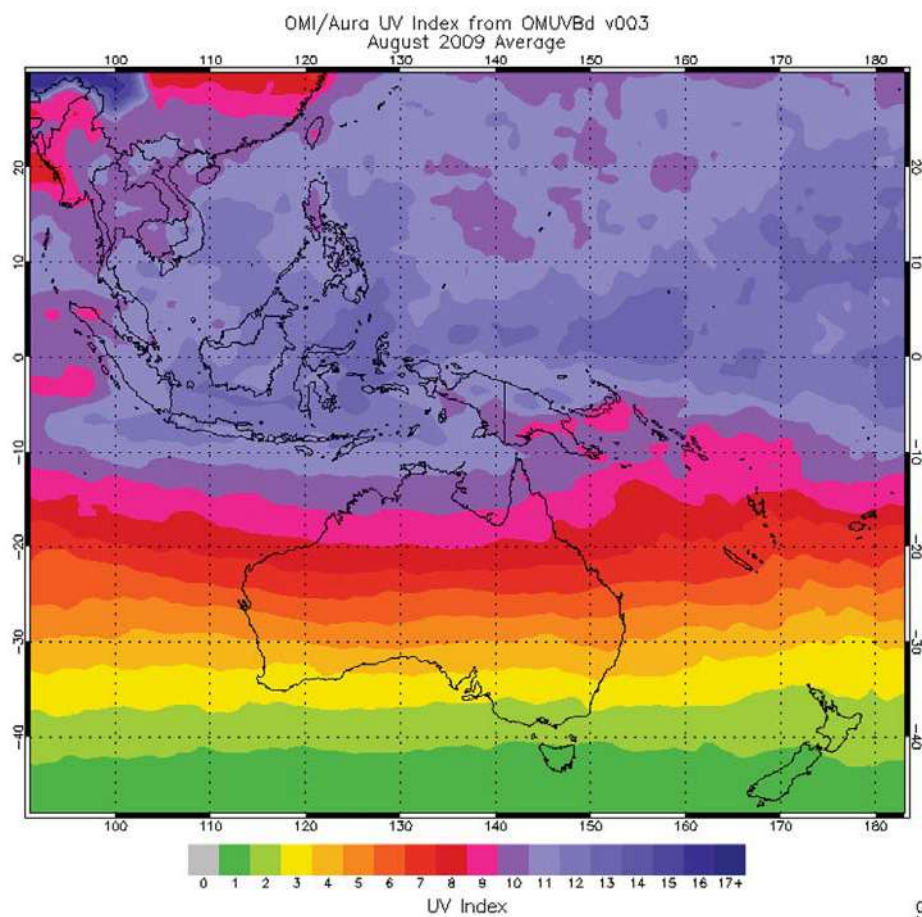
The Montreal Protocol on Substances That Deplete the Ozone Layer is an international treaty designed to protect the ozone layer by phasing out the production and consumption of a number of substances believed to be responsible for ozone depletion. The treaty was opened for signature on September 16, 1987 and entered into force on January 1, 1989. Since then, it has undergone five revisions, in 1990 (London), 1992 (Copenhagen), 1995 (Vienna), 1997 (Montreal), and 1999 (Beijing). Due to its widespread adoption and implementation it has been hailed as an example of exceptional international cooperation "Perhaps the single most successful international agreement to date..."

For more information:

UNEP DTIE OzonAction Programme website: www.unep.fr/ozonaction

Multilateral Fund website: www.multilateral.fund.org

Ozone Secretariat website: www.ozone.unep.org



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This book contains the stories of the hard work of the past 20 years that went into making the Montreal Protocol work. As the biggest producer and consumer of ozone depleting substances, the Asia-Pacific region has shown that it is possible to work together when faced with a global environmental threat.

The Compliance Assistance Programme of the Regional Office of Asia and the Pacific of the United Nations Environment Programme, with other implementation agencies, bilateral partners, the Ozone Secretariat, the Multilateral Fund Secretariat and industry, has helped countries in the region to phase out harmful chemicals through technology transfer, financial assistance, policy enforcement and cooperation.

This publication can serve as a guide for other multilateral environmental agreements to also think globally and act locally.

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