

《保护臭氧层维也纳公约》 及《关于消耗臭氧层物质的 蒙特利尔议定书》履约

Implementation of
The Vienna Convention for the
Protection of the Ozone Layer and
The Montreal Protocol on Substances
that Deplete the Ozone Layer



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01 基本情况 Introduction

1.1 公约和议定书简介

Introduction of the Convention and Protocol

《保护臭氧层维也纳公约》缔结于1985年，公约针对人为活动对臭氧层产生的影响进行系统的监测、研究和信息交流，为《关于消耗臭氧层物质的蒙特利尔议定书》缔结奠定了基础。中国于1989年加入公约。

The Vienna Convention for the Protection of the Ozone Layer was signed in 1985 for Parties to promote cooperation by means of systematic observations, research and information exchange on the effects of human activities on the ozone layer. It laid foundation for the conclusion of the Montreal Protocol on Substances that Deplete the Ozone Layer. China acceded to the Convention in 1989.

为保护臭氧层，国际社会于1987年签订了《关于消耗臭氧层物质的蒙特利尔议定书》（以下简称《蒙特利尔议定书》），商定开展保护臭氧层的全球行动，逐步停止生产和使用消耗臭氧层物质（ODS）。中国于1991年加入《蒙特利尔议定书》，目前全球198个国家地区已经全部成为《蒙特利尔议定书》的缔约方，议定书被誉为全球环保合作的典范。



1987年，蒙特利尔议定书首次会议在加拿大蒙特利尔召开
In 1987, the first conference of Montreal Protocol was held in Montreal, Canada

The international community agreed on the Montreal Protocol on Substances that Deplete the Ozone Layer (hereinafter referred to as the Montreal Protocol) to protect the ozone layer in 1987, deciding to take global action to phase out Ozone Depleting Substances (ODS) production and consumption. China acceded to the Montreal Protocol in 1991, and till now 198 countries and regions have become the parties to the Montreal Protocol. The Montreal Protocol is praised as a model of global environmental cooperation.

1.2 公约和议定书成就

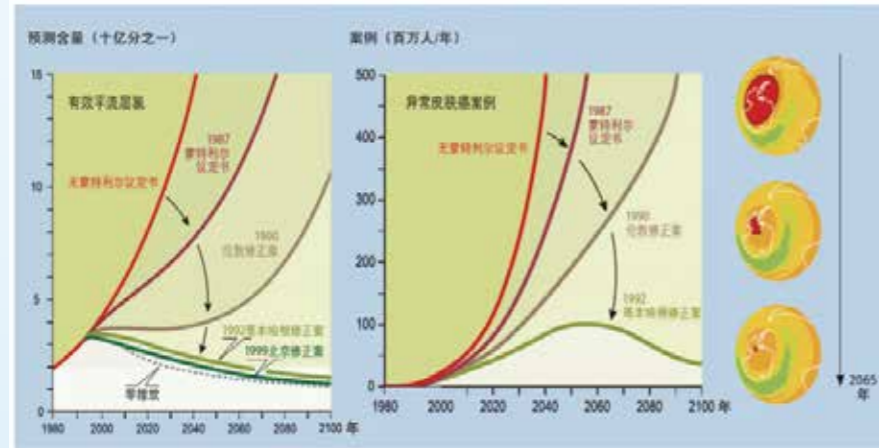
Achievements of the Convention and Protocol

迄今为止，全球淘汰了近99%的ODS生产和使用，臭氧层损耗得到了有效遏制，议定书还显著减缓了气候变暖。

Up to now, almost 99% of ODS production and consumption have been phased out globally, the depletion of ozone layer is effectively contained. The Montreal Protocol has also considerably reduced climate warming.

根据联合国环境署报告，预计到本世纪末将至少避免1亿例皮肤癌和数百万例白内障。

At least 100 million cases of skin cancer and millions of cases of cataracts are expected to have been avoided by the end of this century according to UN Environment Programme.

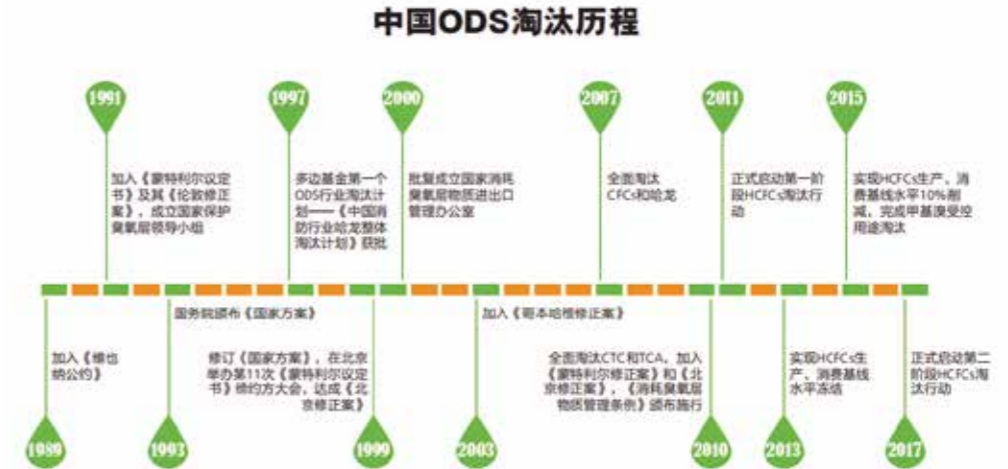


南极地区臭氧层将在本世纪中叶恢复到1980年的水平。

The ozone layer of the Antarctic region is expected to recover to the 1980s level by the mid of this century.

1.3 中国消耗臭氧层物质淘汰历程

Milestones of ODS Phase-out in China



Milestones of ODS Phase-out in China



■ 1.4 国家履约机制

National Implementation Mechanism

中国作为发展中国家最大的ODS生产国和使用国，履约任务十分艰巨。为加强履约工作，国务院批准了《国家方案》，组建国家保护臭氧层领导小组。在履约过程中，建立了国家牵头，省、市、县三级联动的履约管理机制。

As the largest ODS producer and consumer among developing countries, China faces great challenges in achieving ODS phase-out targets. The State Council approved China's Country Program for Ozone Depleting Substances Phase-out and established the National Leading Group for the Protection of the Ozone Layer. During the implementation of Montreal Protocol, China developed a compliance mechanism led by the state and with province-city-county three tier coordinated implementation.



2019年9月16日，国际臭氧层日纪念大会在山东济南举行，生态环境部部长李干杰出席会议并致辞

The Meeting to Commemorate the 2019 International Ozone Day was held in Jinan, Shandong Province. Mr. Li Ganjie, Minister of the Ministry of Ecology and Environment, attended and addressed the meeting.

生态环境部、商务部和海关总署联合成立国家消耗臭氧层物质进出口管理办公室，负责ODS进出口日常管理工作，对ODS实行进出口许可证管理。

Jointly established by MEE, Ministry of Commerce and General Administration of Customs, the National Import and Export Management Office of Ozone Depleting Substances is in charge of daily management of ODS import and export, including licensing management.

“保护生态环境、推动可持续发展是各国的共同责任。中国愿与国际社会一道，一如既往地认真履行包括《蒙特利尔议定书》在内的各项国际环境公约，切实维护履约成果，推动绿色低碳和可持续发展，为保护人类共同的地球家园、共建清洁美丽世界做出应有的贡献。”

“Environmental conservation and sustainable development are the common responsibility of all countries. China is willing to work with the international community to earnestly implement the international environmental conventions including the Montreal Protocol, safeguard the achievements, promote green, low-carbon and sustainable development, and make due contributions to the protection of the Earth, the common home of human and the building of a clean and beautiful world.

■ 1.5 行业计划实施

Implementation of Sector Plans

从1996年编制全球第一个ODS行业整体淘汰计划——《中国消防行业哈龙整体淘汰计划》起，先后在化工、制冷、泡沫等十多个行业，实施了31个行业计划，关闭100多条生产线，对上千家企业开展ODS淘汰和替代。

Since the compilation of the Phase-out Plan for Halon in China Fire-fighting Sector, the world's first ODS sector phase-out plan, in 1996, China has implemented 31 sector plans in more than 10 sectors including chemical production, refrigeration and foam, etc., with over 100 production lines closed down and over a thousand enterprises carrying out phase-out and substitution.

行业 Sectors	时间 Year	淘汰物质 Phase-out Substances	淘汰量 (公吨) Phase-out Amount (MT)
哈龙行业 Halon	1997-2007	哈龙	23,729
化工生产行业 Chemicals Production	1999-2009	CFCs	51,321
	2013-2016	HCFCs	71,242
四氯化碳生产和化工助剂行业 CTC Production and PA	2002-2009	CTC	47,420
TCA行业 TCA	2004-2010	TCA	1,128
家用制冷行业 Domestic Refrigeration	1994-2007	CFCs	13,087
房间空调器行业 RAC	2011-2021	HCFCs	36,815
工商制冷行业 ICR	1995-2005	CFCs	4,973
	2011-2021	HCFCs	18,583
汽车空调行业 MAC	1995-2001	CFCs	1,659
制冷维修行业 Refrigeration Servicing	2004-2009	CFCs	-
	2011-2021	HCFCs	-
烟草行业 Tobacco	2000-2006	CFCs	1,090
泡沫行业 Foam	1991-2007	CFCs	30,448
聚氨酯泡沫行业 PU Foam	2011-2026	HCFCs	55,135
挤出聚苯乙烯泡沫行业 XPS Foam	2011-2026	HCFCs	48,776
清洗行业 Solvent	1992-2010	CFCs/CTC/TCA	10,435
	2011-2026	HCFCs	4,800
气雾剂行业 Aerosol	1997, 2007-2015	CFCs	808
甲基溴行业 Methyl Bromide	2002-2015	MBr	3,106



2 阶段成果 Present Progress

2.1 淘汰取得积极进展

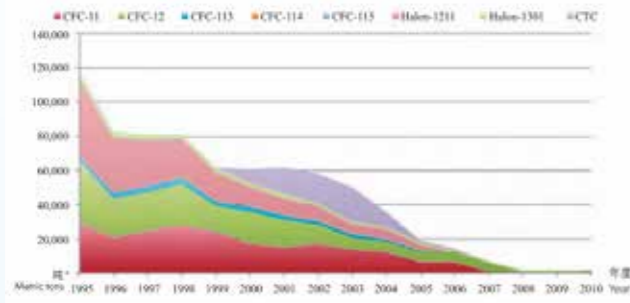
Positive Progress achieved in Phasing out Ozone-depleting Substances

淘汰消耗臭氧层物质约28万吨

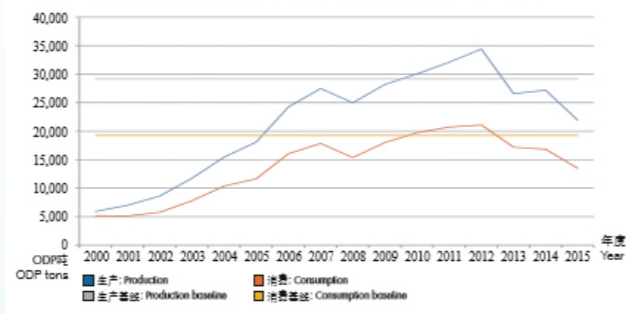
Approximately 280,000 Tons of ODS Phased out

中国已全面停止全氯氟烃、哈龙、四氯化碳（CTC）、甲基氯仿和甲基溴五大类物质受控用途的生产和使用，超额完成第一阶段含氢氯氟烃淘汰任务，如期实现议定书规定的各阶段履约目标，并逐步停止必要用途和关键用途豁免。截至目前，中国已累计淘汰ODS约28万吨，占发展中国家淘汰量一半以上。

China has stopped the production and use of five major categories of ODS for controlled purposes, namely CFCs, Halons, CTC, TCA and MBr, exceeded the HCFCs phase-out tasks for the first phase, completed the implementation goals required by the Protocol as scheduled, and gradually ceased essential use and critical use exemption. Till now, China has phased out some 280,000 tons of ODS, accounting for more than half of the ODS phased out by developing countries.



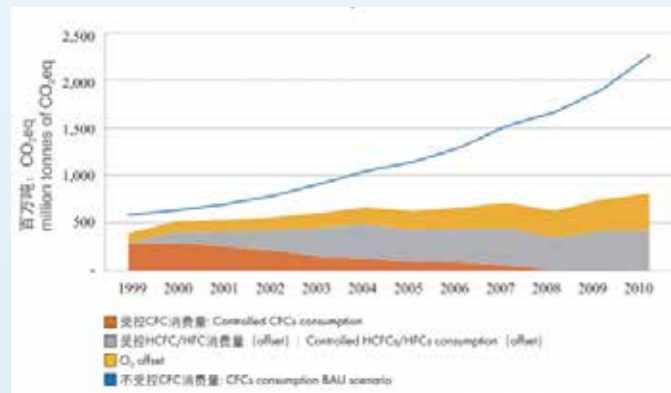
中国1995-2010年主要ODS消费量
Consumption of Major ODS from 1995 to 2010 in China



中国HCFCs生产和消费数据
HCFCs Production and Consumption in China

经北京大学评估, 相比没有《蒙特利尔议定书》的情景, 仅2010年一年中国就减少了15亿吨二氧化碳当量的排放, 占全球减排贡献的13.6%。HCFCs第一阶段中国消费行业76%的项目采用了环保低碳的替代技术, 将实现年均8,630万吨二氧化碳当量的温室气体减排协同效益。

According to the calculation of Peking University, China avoided the emission of 1.5 billion tonnes of CO₂ equivalent compared with business-as-usual (BAU) scenario in 2010, accounting for 13.6% of the world total. 76% of the HCFCs phase-out projects in Stage I adopted low carbon technologies, which will eliminate 86.3 million tonnes of CO₂ equivalent per year.



中国ODS削减实现的温室气体减排效益
Climate benefits achieved by ODS reduction in China

2.2 政策法规不断完善 Continuous Improvement of Policies and Regulations

中国政府先后颁布和实施《消耗臭氧层物质管理条例》及其配套管理规章等100多项政策法规, 为ODS履约建立了较完善的法律法规体系, 对受控物质的生产、使用和进出口实施总量控制和配额管理, 逐步减少受控用途的生产和使用。2019年启动《条例》修订工作, 完善全链条管理, 强化违法处罚措施, 形成对违法行为的有效震慑。

The Government of China issued and implemented the Regulation on the Administration of Ozone Depleting Substances and over 100 supporting management rules and regulations, which provides a comparatively sound legal system for meeting ODS phase-out goals of the Protocol. China conducts total amount control and quota management on the production, use, import and export of controlled substances and gradually reduce the production and consumption for controlled uses. In 2019, the revision of the Regulations was launched to improve the ODS life-cycle management and reinforce penalty and punishment measures on illegal behaviors, so as to form more effective deterrence measures.



2010年3月24日, 国务院第104次常务会议通过了《消耗臭氧层物质管理条例》
On March 24th, 2010, the Regulation was approved at the 104th standing meeting of the State Council

类别 Classification	政策 Policy
新改扩建管理政策 Management on new construction, reconstruction and expansion projects	关于生产和使用消耗臭氧层物质建设项目管理有关工作的通知（环大气[2018]5号） Circular on Management of Construction of ODS Production and Consumption Facilities
生产消费配额管理 Production and consumption quota management	关于实施哈龙灭火剂生产配额许可证管理的通知（环发[1997]764号） Circular on Implementation of Quota License for Production of Halon Extinguisher
	关于加强含氢氯氟烃生产、销售和使用管理的通知（环函[2013]179号） Circular on Strengthening Management of HCFC Production, Sales and Consumption
进出口管理 Import and export management	消耗臭氧层物质进出口管理办法(部令第7号) Management Measures of ODS Import and Export 中国受控消耗臭氧层物质进出口清单（六批） China Import and Export list of Controlled ODS (six batches)
监管文件 Supervision and Management	关于在非必要场所停止再配置哈龙灭火器的通知（公通字[1994]94号） Circular on the Ban of the Re-deployment of Halon Fire Extinguishers in Non-essential Places
	关于在气雾剂行业禁止使用氯氟化碳类物质的通告（环控[1997]366号） Circular on the Ban of CFCs in Aerosol Sector
	关于中国汽车行业新车生产停止使用氟利昂物质（CFCs）的通知（机汽发[1997]099号） Ban on the Use of CFCs in New Automobile Production in China's Automobile Sector
	关于加强地方环保部门在保护臭氧层工作中监督管理职能的通知（环控[1997]115号） Circular on Strengthening the Supervision and Management of Local Environmental Protection Bureaus in the Protection of the Ozone Layer
	关于禁止使用四氯化碳作为清洗剂的公告（环函[2003]69号） Announcement on the Ban of Use of CTC as Solvent

类别 Classification	政策 Policy
监管文件 Supervision and Management	关于禁止使用三氟三氯乙烷作为清洗剂的公告（环函[2004]449号） Announcement on the Ban of Use of CFC-113 as Solvent
	关于禁止生产和使用消耗臭氧层物质三氟三氯乙烷的公告（2005年第60号） Announcement on the Ban of Production and Use of Trifluorotrchloroethane
	国家粮食局、国家环境保护总局关于粮食仓储行业全面停止使用甲基溴的公告（2006年第4号） Announcement of the State Grain Administration and the State Environment Protection Administration on the Complete Cessation of the Use of Methyl Bromide in the Grain Storage Industry
	关于加强消耗臭氧层物质淘汰管理工作的通知（环发[2007]40号） Circular on Strengthening the Management of Phase-out of Ozone Depleting Substances
	国家环境保护总局关于禁止生产全氯氟烃（CFCs）的公告（2007年第43号） Announcement on the Ban of Production of CFCs
	国家环境保护总局关于禁止使用氯氟烃（CFCs）物质作为发泡剂的公告（2007年第45号） Announcement on the Ban of Use of Chlorofluorocarbons (CFCs) as Foaming Agents
	关于发布《消耗臭氧层物质（ODS）替代品推荐目录（修订）》的公告（环函[2007]185号） Announcement on Issue of Catalogue of Recommended ODS Alternatives (Revised)
	国家环境保护总局、国家发展和改革委员会、商务部、海关总署、国家质量监督检验检疫总局关于禁止生产、销售、进出口以氯氟烃（CFCs）物质为制冷剂、发泡剂的家用电器产品的公告（环函[2007]200号） Announcement on the Ban of the Production, Sale, Import and Export of Household Electrical Appliances with Chlorofluorocarbons (CFCs) as Refrigerants and Foaming Agents
	关于禁止生产和使用1,1,1-三氯乙烷(TCA)的公告(公告2009年第39号) Announcement on the Ban of Production and Use of TCA
	关于禁止使用全氯氟烃类物质生产药用非吸入气雾剂的公告（2013年第9号） Announcement on the Ban of Use of CFCs in the Production of Non-inhaled Medicinal Aerosols
关于禁止生产以一氟二氯乙烷（HCFC-141b）为发泡剂的冰箱冷柜产品、冷藏集装箱产品、电热水器产品的公告（部2018年第49号） Announcement on the Ban of Production of Refrigerator Freezer Products, Refrigerated Container Products and Electric Water Heater Products with Fluorodichloroethane (HCFC-141b) as Blowing Agent	



■ 2.3 监管执法持续强化 Strengthened Supervision and Law Enforcement

“零容忍”态度严厉打击ODS非法行为"
“Zero Tolerance” Attitude toward Illegal ODS Behaviors

中国政府把严格执法作为巩固履约成果的重要保障，始终以“零容忍”态度严厉打击涉 ODS 非法生产、销售、使用行为，不断加强 ODS 监管执法，对违法行为，一经发现，严厉查处。

The Government of China takes strict law enforcement as an important guarantee to consolidate the achievements of the implementation of the Protocol, and always cracks down on illegal ODS production, sales and use with a zero-tolerance attitude. Supervision and law enforcement has been strengthened continuously. Violations, if spotted, will be severely punished.



上海市组织企业检查，进行普法宣传
Law enforcement officer explaining legal provisions to enterprise staff during an inspection in Shanghai



2018年，辽宁省丹东市召开ODS执法行动会议
ODS law enforcement meeting held in Dandong, Liaoning Province in 2018

持续开展ODS执法检查，确保履约成效

Continuous ODS Inspection to Ensure Implementation Effectiveness

自2004年起，生态环境部要求各地生态环境部门将 ODS 履约监管执法纳入生态环境保护日常工作。自2019年起，生态环境部每年至少组织开展一次由中央和地方执法人员共同参与的专项联合执法行动，保持打击违法行为的高压态势。建立实施 ODS 进出口许可证制度，开展打击ODS非法贸易专项行动，并加入非正式出口前预先知情机制核查进出口贸易，有效打击 ODS 非法贸易。

The Ministry of Ecology and Environment has required that all local Ecology and Environment Bureaus incorporate ODS supervision and law enforcement into their daily work since 2004. The MEE will organize a joint special law enforcement action at least once a year with participation by both central and local law enforcement officers starting from 2019, exerting the utmost pressure for combating illegal behaviors. China establishes and implements ODS import and export licensing system, carries out special action against ODS illegal trade, and joins the informal Prior Informed Consent (iPIC) mechanism to monitor import and export and effectively combat ODS illegal trade.

通过国家12369执法平台，大力发动全社会参与监督。此外，10家HCFC-22生产企业于2019年联合出资成立ODS非法行为有奖举报基金，对提供非法信息的个人或组织，给予5万元至50万元不等的奖励。

China mobilizes the public to participate in supervision through the national 12369 law enforcement platform. 10 HCFC-22 production enterprises jointly set up a reward fund for reporting illegal ODS activities in 2019. Individuals or organizations providing information on illegal ODS behaviors will be given monetary reward between RMB 50,000 to RMB 500,000 yuan.

强化源头管控

Intensifying Source Control

自2010年CTC生产使用受控用途全面淘汰以来，生态环境部对甲烷氯化物企业实行严格管理。2019年，对副产CTC企业实施更为严格的管控措施，6月起，对全部16家副产CTC企业实施不间断现场监督，并要求企业全部安装可核查、可量化的CTC在线生产监控系统。在线监控系统安装已于2019年底完成，2020年实现对所有在产甲烷氯化物企业副产CTC的生产情况进行在线监控。

The MEE has been implementing strict management on chloromethane producers since the complete phase-out of CTC production and consumption for controlled use in China in 2010. The MEE has imposed additional control measures on all 16 enterprises generating CTC as by-product since 2019, conducting continuous daily on-site supervision on these enterprises since June and requiring them to install a verifiable and quantitative CTC online production monitoring system. The installation of online production monitoring system was completed at the end of 2019. Online monitoring of CTC as by-product in all chloromethane enterprises in production will be in place starting from 2020.



2019年，浙江省开展驻厂监督
On-site supervision in Zhejiang Province in 2019

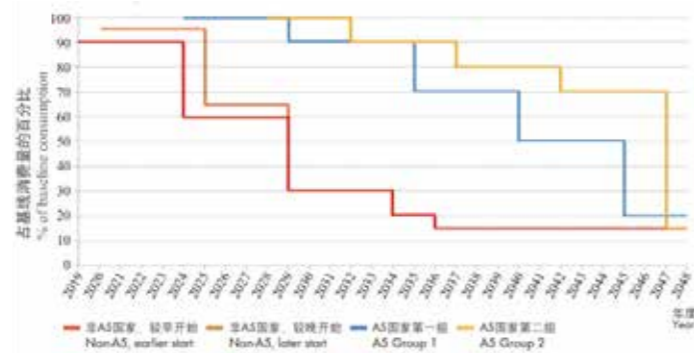
3 下一步工作 Future Work Plan

中国在公约和议定书履约方面，面临第二阶段含氢氯氟烃加速淘汰、《基加利修正案》批约以及已淘汰ODS后续监管等新挑战，将重点做好以下工作：

China is faced with new challenges to accelerate HCFCs phase-out for the second phase, ratify the Kigali Amendment and conduct follow-up supervision on the eliminated ODS. The following work will be prioritized in the future:

完善协作机制和政策法规体系，强化履约保障。强化国家保护臭氧层领导小组各部门、中央和地方、政府和企业间的沟通协作机制。推动《基加利修正案》批约进程。修订《消耗臭氧层物质管理条例》，提高非法ODS行为的违法成本。

Improve coordination mechanism and legislation system to strengthen guarantee for implementation. Coordination shall be reinforced among departments under the National Leading Group for the Protection of the Ozone Layer, between the central administration and local authorities, governments and businesses. The ratification of Kigali Amendment shall be accelerated. We will amend the *Regulation on the Management of Ozone Depleting Substances*, increasing the penalty of illegal ODS behaviors.



HFCs削减时间表
Kigali Amendmend HFCs Phase-Down Schedules

持续推动ODS淘汰，实现履约目标。淘汰7.7万吨HCFCs生产量和4.3万吨消费量，确保2020年实现削减35%的目标。

Make continuous efforts to phase out ODS to achieve implementation goals. China will phase out 77,000 tons of HCFCs production and 43,000 tons of HCFCs consumption to ensure the 35% reduction by 2020.

加大监管执法力度，确保履约成效。建立涉及全品类ODS的信息管理系统，继续定期开展执法检查，强化四氯化碳源头管控，加大打击非法贸易力度。

Strengthen supervision and law enforcement to ensure implementation effects. An information management system that covers all the ODS categories shall be established. We will continue to carry out inspection on a regular basis, strengthen source control on CTC and step up efforts to crack down on ODS illegal trade.

强化科技支撑和能力建设，夯实履约基础。加快ODS大气监测网络建设，加强ODS替代品和替代技术研发，加强执法人员培训，配备快速检测设备，加快ODS产品检测实验室建设。

Intensify scientific and technological support and capacity building to consolidate implementation foundation. We will accelerate the construction of ODS measuring network, enhance R&D of ODS alternatives and alternative technologies, improve training for law enforcement personnel, and equip them with instant identifiers and accelerate the construction of ODS product testing laboratories.

深入开展国际合作与交流，形成履约合力。与国际社会共同研究推动形成持续履约的体制和长效机制。

Deepen international cooperation and exchange to create implementation synergy. We will work together with the international community to study and develop a system and long-term mechanism for the sustainable implementation of the Protocol.