2023 Ozone2Climate Technology Roadshow and Industry Roundtable
2023 臭氧气候技术路演及工业圆桌会议

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Shanghai New International Expo Centre, China
中国•上海新国际博览中心

Concept Note

Background
背景

The "Ozone2Climate" (O2C) Technology Roadshow & Industry Roundtable" is a flagship initiative of UN Environment Programme (UNEP) OzonAction established to promote ozone and climate friendlier technologies through knowledge and information exchange via a global and/or regional platform. Since its inception in 2011, Ozone2Climate Roadshows and Roundtables has been organized in various countries all around the world. UNEP, United Nations Development Programme (UNDP), Foreign Environmental Cooperation Center (FECO) & China Refrigeration and Air-Conditioning Industry Association (CRAA) have been continuously organizing the Ozone2Climate Roadshow and Roundtable in China since 2012 with its last event held in Chongqing in 2022. The China Ozone2Climate Roadshow and Industry Roundtable has developed into a major global government-industry information exchange platform for ozone and climate friendly technologies used across various Heating, Ventilation, Air-Conditioning and Refrigeration (HVAC&R) applications.

联合国环境臭氧行动创办的"臭氧气候"（O2C）技术路演是一个旗舰计划，旨在利用全球或者区域的平台通过知识和信息共享推广臭氧气候技术。自 2011 年创办以来，其已在世界各地举办。联合国环境规划署（UNEP）、联合国开发计划署（UNDP）、中国生态环境部对外合作与交流中心（FECO）和中国制冷空调工业协会（CRAA）自 2012 年起已连续多年在中国组织举办臭氧气候技术路演和圆桌会议，最近一次是 2022 年在中国重庆举办的。中国臭氧气候技术路演和圆桌会议已发展成为全球制冷、空调和暖通行业（HVAC&R）关于臭氧气候友好技术进行政府—行业信息交流的最主要的平台之一。

The Asia-Pacific region is the largest producer and consumer of hydrochlorofluorocarbons (HCFCs), and China accounts for over 70% of global production and consumption of these chemicals. HCFCs are primarily used as refrigerants and foam blowing agent in the HVAC&R sector. The Asia Pacific region, in particular China, is the largest manufacturer of HVAC&R equipment and also one of the biggest markets. HCFCs are ozone depleting substances (ODS) and are controlled under the Montreal Protocol on Substances that Deplete the Ozone Layer (Montreal Protocol).
亚太地区是最大的 HCFCs（氯氟烃）生产和消费地区，以中国为主，HCFCs 类化学品的生产和消费占全球的 70%。HCFCs 主要用于制冷、空调和暖通（HVAC&R）行业的制冷剂和发泡剂。亚太地区特别是中国，是最大的制冷、空调和暖通设备制造基地，

同时也是最大的市场之一。由于 HCFCs 具有消耗臭氧层的潜力（ODS），其已被列入《蒙特利尔议定书》的管控范围。

In September 2007, the Article-5 (A5) Parties to the Montreal Protocol agreed to an accelerated phase-out schedule for HCFCs, wherein the baseline freeze on production and consumption of HCFCs started from 1 January 2013 and will be effectively phased-out by 2030 (with a small (2.5% of baseline) allowance for a "servicing tail" from 2030 to 2040). As of 2020, A5 Parties have reduced 35% of their HCFCs consumption & production from their respective baseline levels and are preparing to meet a reduction target of 67.5% by 2025.
2007 年 9 月，《蒙特利尔议定书》第 5 条款（A5）国家达成了 HCFCs 加速淘汰计划，即到 2013 年 1 月 1 日将 HCFCs 的生产和消费量冻结在基线水平，到 2030 年仅保留 2.5%的维修用量，且到 2040 年将全部淘汰。截止 2020 年，A5 国家已经淘汰了 HCFCs 生产和消费基线水平的 35%，而且正在努力完成到 2025 年削减 67.5%的目标。

Hydrofluorocarbons (HFCs) are the most commonly used alternatives to HCFCs and do not have any ozone depletion potential (ODP), but most HFCs are potent climate pollutants with high global warming potential (GWP). Decision XIX/6 of the Meeting of the Parties called for efforts "To minimize environmental impacts, in particular impacts on climate" while phasing out HCFCs, however, transitioning from HCFCs to ozone and climate friendly technologies poses some technical and commercial challenges depending on the application. In 2016, the 28th Meeting of Parties to the Montreal Protocol held in Kigali, Rwanda agreed to amend the Protocol to phase-down HFCs due to the common concerns of uncontrolled growth of HFCs that could risk reversing the climate benefits of the ODS phase-out under the Protocol, and further contribute to climate change. The Kigali Amendment was achieved through several years of negotiations and unremitting efforts of the Parties, industries and relevant stakeholders.
HFCs（氢氟烃）是 HCFCs 最常见的替代物，其 ODP 为 0；但由于大部分 HFCs 具有高 GWP（全球变暖潜值），因此是潜在环境污染物。缔约方会议第 19/6 号决议号召在 HCFCs 淘汰过程中努力"减少环境影响尤其是气候影响"。然而在从 HCFCs 向臭氧气候友好技术转化的过程中，许多应用领域遇到了一些技术和商业方面的严峻挑战。2016 年，在基加利召开的第 28 届缔约方大会上，由于担心不受控 HFCs 的迅速增长会威胁到《蒙特利尔议定书》淘汰 ODS 物质而取得的气候效益，而进一步恶化气候变化问题，缔约方达成了旨在削减 HFCs 的修正案。这项修正案是在缔约方、工业界和利益相关方多年的谈判和不懈努力下达成的。

The Kigali Amendment provides a clear market signal to Parties and industry on HFC phase-down targets that is expected to be achieved by 2047. The Kigali Amendment also provides flexibility to the Parties in choosing their strategy and alternate technologies to meet the compliance requirement since it is a phase-down instead of a phase-out. According to the Kigali Amendment compliance schedule, developed countries need to phase down HFCs from 2019; A5 Group 1 countries needs to freeze the consumption of HFCs by 2024; and A5 Group 2 countries needs to freeze their HFC consumption by 2028. By 2047, the consumption and production of HFCs in every country cannot exceed 15-20% of its baseline level. The Kigali Amendment is considered a major achievement of the international community by putting control measures in place to limit the consumption and production of high GWP HFCs to address climate change challenges. With its full implementation, it is estimated to avoid up to 0.4°C of global warming.
基加利修正案向各缔约方和工业界给出了明确的信号，到 2047 年实现 HFCs 削减目标。

基加利修正案也为各缔约方选择不同的削减战略和替代技术以实现履约目标提供了灵活机制。根据基加利修正案的时间表，发达国家将从 2019 年开始削减 HFCs，一部分发展中国家要在 2024 年冻结 HFCs 的消费量，另一部分发展中国家在 2028 年实施冻结。到 2047 年，各国的 HFCs 消费量不得超过其基线水平的 15-20%。基加利修正案的达成是国际社会应对气候变化问题上的一个主要的成果，其通过实施管控措施限制高 GWP 值 HFCs 物质的消费和生产以应对气候变化。通过基加利修正案的实施，预计可避免 0.4℃的全球升温。

HFCs and their blends such as HFC-134a, R-410A, R-407C, R-404A etc. are widely used refrigerants in well-established HVAC&R equipment. Ozone and climate friendly alternatives to these commonly used HFCs are mostly lower GWP HFCs, HFOs (unsaturated HFCs), hydrocarbons (HC), ammonia (NH_3) and carbon dioxide (CO_2). The transition to such ozone and climate friendly alternatives depends on the application and may have technical and commercial challenges such as lack of cost effective supply chains for the manufacture of final cooling products, policy/regulation barriers due to the flammability, toxicity, and/or high working pressure of the alternatives. The Kigali Amendment has provisions for Parties to explore their strategies and consider sector-based approaches and technology choices. These provisions for the phase-down of HFCs under the Kigali Amendment cover areas such as:
HFCs 例如 HFC-134a, R-410A，R-407C，R-404A 等都是被广泛应用于制冷空调设备中国的成熟制冷剂技术。而那些常用于替代这些 HFCs 的臭氧气候友好技术大部分是低 GWP 值的 HFCs、HFOs（不饱和 HFCs）、碳氢（HC）、氨（NH3）和二氧化碳（CO2）。向臭氧气候友好替代物质过渡取决于实际应用领域而且面临技术和商业挑战，例如对于制造终端产品的制造商缺乏经济的供应链，替代制冷剂的可燃性、毒性、高工作压力等造成了政策法规障碍。基加利修正案对其缔约方探索应对策略，研究不同行业的解决方案和技术选择都有条款规定。基加利修正案中 HFCs 削减的规定覆盖了如下领域：

- High Ambient Temperature Exemptions 高环境温度豁免
- Safety Standards 安全标准
- Energy Efficiency 能效
- Servicing Sector Capacity Building 维修行业能力建设
- Conversion Projects in Refrigeration & Air Conditioning (R&AC) Manufacturing and Refrigerant Production 制冷空调生产及制冷剂产品转换项目
- Destruction Technologies 销毁技术

The Kigali Amendment has already entered into force since 1 January 2019 for the countries that ratified the Amendment. Many countries are consulting with their key industries, line ministries, customs, importers, servicing sector and other relevant stakeholders to prepare for the ratification and/or implementation of the Kigali Amendment. As of October 2022, over 66% of the Asia Pacific network countries and 140Parties globally have ratified the Kigali Amendment. The role of information dissemination, awareness and knowledge sharing has played a critical role in the success of the Montreal Protocol and its journey towards ozone and climate friendly technology transitions.
基加利修正案对于已经批准的国家于 2019 年 1 月 1 日起正式生效。许多国家正在同他们的关键行业、工业部门、消费者、进口商、制冷维修行业和其他相关利益方进行磋商，为基加利修正案的签署和/或实施做准备。截止到 2022 年 10 月 31 日，超过 66%的亚太国家和已有 140 个缔约方批准了基加利修正案。信息传播、认知和知识分享在《蒙特利

尔议定书》的成功及其向臭氧气候友好技术转型的过程中发挥了关键作用。

China's Refrigeration and Air-Conditioning Sector
中国制冷空调行业

China's R&AC industry currently accounts for more than 60% of national HCFC consumption. Under the HCFC Phase-out Management Plan (HPMP) Stage-I, China R&AC sector has successfully complied with the target of reducing HCFC consumption by 10% from its baseline level by 2015. The HPMP Stage-II for industrial and commercial refrigeration/air conditioning sector (ICR), room air conditioning sector (RAC), refrigeration servicing sector (RSS) were approved at the 77th Meeting of the Executive Committee in November 2016. In 2020, China has updated the second-stage industry plan for 2021-2026, and which has been approved. The main applications under the ICR sector HCFC phase-out were: unitary air conditioner, freezer, cold storage & condensing unit, and water chillers (heat pump). The servicing sector capacity building activities will be continued under the updated HPMP Stage-II to train servicing technicians in the HVAC&R sector on good servicing practices to reduce HCFCs emissions and the safe-use of alternatives. Capacity building and awareness amongst customs and enforcement agencies and government stakeholders on HCFC trade monitoring and control will also be continued.
目前中国制冷空调行业的 HCFCs 消费量超过全国总消费量的 60%。随着中国第一阶段 HPMP 的实施，到 2015 年底，中国制冷空调行业已成功实现淘汰 10% HCFCs 消费量的目标。工商制冷空调、房间空调器、制冷维修和能力建设项目三个行业的第二阶段 HCFCs 淘汰行业计划于 2016 年 11 月召开的《蒙特利尔议定书》多边基金执委会第 77 次会议上获批。2020 年中国对第二阶段行业计划进行了更新，编制了 2021-2026 年的行业计划，并于 2020 年 12 月获批。工商制冷空调行业更新的第二阶段行业计划淘汰涉及的产品主要有单元式空调机、冷冻冷藏设备和压缩冷凝机组、冷水（热泵）机组、热泵热水机等。同时还在继续面向全行业公开征集生产线改造项目。维修行业能力建设也将在更新的 HPMP 第二阶段继续开展，将在制冷、空调和暖通行业培训维修技术人员的良好操作技能以减少 HCFCs 排放和制冷剂的安全使用。同时也在继续开展执法机构和政府利益相关方的能力建设和意识提升工作，以及对 HCFC 贸易监测及管控工作也在持续开展。

China had already implemented the conversion of manufacturing lines to lower-GWP alternatives, mainly ammonia,CO_2, and HFC-32. At the same time, China has been undertaking several activities related to the development of safety standards and equipment/product standards using alternative refrigerant technologies. Chinese national standard GB 9237 was adapted from ISO-5149 and has been in effect since 1 July 2018. The GB 9237 sets the charge limit for using flammable refrigerants and lays the foundation for the promotion and application of environmentally friendly alternative refrigerants. On 17 June 2021, China ratified the Kigali Amendment to the Montreal Protocol and it entered into force to China from 15 Sept 2021. An HFC licensing system became effective on 1 November 2021.
在 HPMP 实施过程中，中国制冷空调行业开展了生产线改造活动，主要采用了更低 GWP 值的替代品例如 NH3、CO2 等。除此之外，还开展了许多替代技术相关的安全和产品标准的修订和制订工作。等效采用 ISO 5149 的中国国家标准 GB 9237 已于 2017 年 12 月 31 日正式发布，并于 2018 年 7 月 1 日正式实施。GB/T 9237—2017 规定了可燃性制冷剂使用的门槛，该标准的实施为促进环保型替代制冷剂的市场化应用和推广奠定了

基础。2021 年 6 月 17 日，中国向联合国秘书长交存了中国政府接受《基加利修正案》的接受书。该修正案已于 2021 年 9 月 15 日对中国生效。中国也正式进入 HFCs 削减阶段。

Global developments in policies and technologies will affect the adoption of ozone and climate friendly technologies in China. At the same time, as one of the biggest manufacturing hubs for global R&AC equipment, the technology development trends of China's R&AC industry are significant in shaping the global alternative technology landscape.
全球的政策和技术趋势将会对中国制冷空调行业臭氧和气候友好技术的选择和应用产生影响。同时，作为全球制冷空调行业最大的制造中心，中国制冷空调行业的技术发展趋势对于塑造全球替代技术格局具有重要意义。

UNEP, UNDP, FECO and CRAA collaboration
UNEP、UNDP、FECO 与 CRAA 的合作

China Refrigeration and Air-Conditioning Industry Association (CRAA) is manufacturers' liaison with the government and has been devoting itself to providing its members and the whole industry with valuable multifaceted services. CRAA are co-organizers of the International Exhibition for Refrigeration, Air Conditioning, Heating and Ventilation, Frozen Food Processing, Packaging and Storage known as CRH, which is held annually in China. UNEP has collaborated with CRAA for the organization of the Ozone2Climate (O2C) technology roadshow and industry roundtable yearly as a part of CRH since 2012, and it is usually held alternately between Beijing and Shanghai. FECO in 2015 and UNDP in 2017 also joined as a co-organizers of the O2C events. The objective of the partnership is to jointly promote and exhibit global advancements in ozone and climate friendly technologies. Along with the technology roadshow, an industry roundtable is also organized as a part of the event where policy makers and industry representatives discuss practical issues surrounding policy and technology selection that will promote both ozone and climate benefits.
中国制冷空调工业协会（CRAA）是连接企业与政府的纽带，致力于为会员和全行业提供全方位、高价值的服务。CRAA 是国际制冷、空调、供暖、通风及食品冷冻加工展览会（即中国制冷展）的主办方之一。联合国环境规划署和中国制冷空调工业协会自 2012 年开始合作，在制冷展期间组织臭氧气候技术路演和工业圆桌会议，多年来该活动已成为中国制冷展的固定特色单元。自 2015 年开始 FECO 参与联合主办，2017 年开始 UNDP 也参与联合主办，共同合作宣传和展示臭氧气候友好制冷剂技术的发展。路演的同时，作为活动的一部分，也将组织召开一个工业圆桌会议，政策制定者及行业代表们将围绕臭氧和气候友好的制冷空调技术和政策选择等问题展开讨论。

In 2022, an exhibition space of nearly 900 sq. meters was specially allocated for the Ozone2Climate Roadshow during the CRH in Chongqing. More than 40 enterprises and organizations joined this Roadshow to exhibit their Ozone2Climate technology and products. An Ozone2Climate industry roundtable with three themes that focused on policy and challenges, air-conditioning and cold chain, and good practices in servicing sector.
2022 年主办方在重庆中国制冷展期间设置了一个近 900 平米的路演展区，邀请了行业内 40 余家企业和组织参与展示，同期还在路演展台举办了圆桌会议系列活动，包括政策与挑战、空调与冷链技术以及维修良好操作三个主题。

Building on the success and momentum of the previous O2C events, UNEP, UNDP, FECO

and CRAA will co-organize the 12th Ozone2Climate Technology Roadshow and Industry Roundtable as a part of the CRH 2023 in Shanghai. The aim of the events is to continue the engagement of industry and policy makers to review the trends in alternative technology developments since the inception of the Kigali Amendment, and discuss approaches and strategies for overcoming challenges in adopting Ozone2Climate alternatives. We welcome prominent international, regional and national organizations to be partners of our two events as joint organizers and/or supporting organizers.
继前十一届活动成功举办之后，主办方将继续在 2023 年上海制冷展期间组织第十二届臭氧气候技术路演和工业圆桌会议。活动的目的是继续推动行业和决策者评估后基加利时代替代品的发展趋势，讨论克服臭氧气候替代技术挑战的措施和策略。主办方欢迎更多有影响力的国家、地区和国内组织参与和支持举办这两项活动。

2023 Ozone2Climate Technology Roadshow and Roundtable
臭氧气候技术路演和圆桌会议

The 2023 O2C Roadshow will be organized in an exhibition hall of nearly 800 sq. meters. The products/technology that will be exhibited in the Roadshow will include those relating to zero-ODP, lower-GWP alternatives, and products/technology with improved energy efficiency compared to HCFC-based technology. All manufacturers, research institutions, universities, non-governmental organizations (NGOs) that manufacture and/or own these technologies will be invited to display their products/technology either through sample products and/or display boards.
2023 年的路演将在中国制冷展展厅内进行，设置一个近 800 平方米的独立特装展台。在路演上展示的产品和技术将包括零 ODP、更低 GWP 替代制冷剂相关的且能效改善的产品和技术。生产这些产品或拥有相关技术的制造商、研究机构、院校和非政府组织都将被邀请来参加，通过样品或展板来展示他们的成果。

The Roundtable had been arranged in the roadshow area on different themes in an orderly manner in 2022 for the first time, and it will follow the same pattern in 2023.
圆桌会议 2022 年第一次有序地就不同主题全部安排在路演区域进行取得了成功，2023 年也将采取同样的形式开展。

The next generation of refrigerants should be more environmentally friendly, i.e. zero ODP, low/lower GWP and have improved energy efficiency. Therefore, alternatives to HCFCs and HFCs with high GWPs will not be included in this Roadshow. Also, the roadshow would like to showcase innovative technologies such as solar cooling/refrigeration which is not only ozone friendly but also has climate and energy-use benefits. The Industry Roundtable will complement the Roadshow for industry and policy makers to explore development trends, contributions to Sustainable Development Goals, and challenges and opportunities, etc. The objective of the Roadshow is to assist the industry to make an informed decision in selecting ozone and climate-friendly alternatives for the phase-out of HCFCs and phase-down of HFCs. The Roadshow and roundtable will not endorse any specific technology.
主办方一致认为未来的替代制冷剂将是更加环境友好型：零 ODP、更低 GWP、更高能效。因此，高 GWP 的 HCFCs 替代物质将不会出现在本次路演上。本次路演还希望展出创新技术，例如太阳能制冷等，这些技术不仅是臭氧友好的，而且也是对气候和节能有益。工业圆桌会议将作为路演的补充，以使行业和政策制定者探索其发展趋势，以及对可持续发展目标、挑战和机遇的贡献。路演的目的是希望帮助行业在淘汰 HCFCs 选取臭氧和气候友好替代技术时能够做出明智的决定，同时兼顾考虑基加利修正案下

的 HFC 的削减。但是路演和圆桌会议将不涉及对任何特定替代技术的认可与支持。

UNEP, UNDP, FECO and CRAA in cooperation with the Organizing Committee of China Refrigeration Expo (CRH), will provide free space for the invited exhibitors of 2023 CRH to exhibit their products and/or display boards. The invited exhibitors, however, will be responsible to cover the following costs: travel costs, product/display transportation, designing/printing of display board and brochures/materials.
UNEP、UNDP、FECO 和 CRAA 与中国制冷展组委会开展合作，将向每个被邀请参加路演的本届制冷展的展商免费提供在路演展台上展示样品或宣传展板的机会。但是参展商需要自己承担包括展品的运输、展品或展板, 宣传册设计、印刷以及运输等工作以及相关费用。

UNEP will widely outreach this event through its OzonAction Newsletter/website and encourage National Ozone Units from the Asia Pacific network and industry experts to join this event as well. The CRAA will also promote the event through its website.
为了推广这个活动，UNEP 会通过臭氧行动时事通讯/网站传递路演和圆桌会议的相关信息，并将邀请国家臭氧机构和其相关行业参加此次展会。CRAA 也将在官网对此活动进行宣传。

Main Objectives of the Ozone2Climate Technology Roadshow and Industry Roundtable
臭氧气候技术路演和工业圆桌会议的主要目标

- To explore options for a roadmap for the development of the cooling industry while aligning with and contributing to sustainable development goals.
  探索符合可持续发展目标的制冷行业路线图。
- To outreach the latest ozone and climate-friendly technologies to R&AC industry and professionals participating in CRH 2023, and to showcase the leading role of industry pioneers that have developed or adopted ozone and climate-friendly technologies.
  通过技术路演和展会，向参加 2023 制冷展的制冷空调行业和专业观众推广可行的臭氧气候友好技术，展示开发和采用气候臭氧友好的制冷空调技术的行业领军企业。
- To engage industry decision makers in a discussion on the availability, affordability and need for zero-ODP, low/lower-GWP and more energy efficient alternatives in R&AC sector while considering complimentary climate and energy-use benefits.
  引导制冷空调行业决策者在考虑最终产品整个生命周期的气候影响时，讨论零 ODP、零或更低 GWP 和更节能的替代品的可能性、经济性和需求。

Theme for Ozone2Climate Industry Roundtable discussions
臭氧气候工业圆桌会议讨论的主题

Taking the opportunity of the presence of leaders of the cooling industry and other stakeholders, the Industry Roundtable will focus on promoting investment, research and development in zero-ODP, low GWP and higher energy efficient technologies for the R&AC sector. Any innovative discussion themes that can inspire the Ozone2Climate event are welcome. The potential theme/multi theme options of the roundtable are as follows:
行业的主要力量以及利益相关方将会出席圆桌会议，借此机会，会议将重点讨论制冷空调行业在推进零 ODP、更低 GWP 和更高能效技术方面的投资、研究和发展的相关问题。任何能够启发臭氧气候保护的创新理念和技术都欢迎。圆桌会议可以关注一个单独的主

题，也可以是涉及到多个主题的综合解决办法。议题如下：

- The development of global policies related to the phase-down of HFCs and the phase-out of HCFCs
  全球削减 HFCs 和淘汰 HCFCs 相关政策的发展；
- Domestic and foreign management and control of toxic, high-pressure, and/or flammable alternatives such as NH_3, CO_2, R290, R32, etc., as well as development trends in the formulation and revision of safety regulations and standards, safety risk assessment and solutions;
  国内外针对有毒、高压、可燃替代制冷剂例如 NH3、CO2、R290、R32 等应用的管控，以及安全法规标准的制修订发展趋势、安全风险评估和解决方案；
- The latest developments in alternative refrigerants and equipment relying on these alternatives;
  制冷剂替代技术最新进展；
- Prospects for the development of green and efficient technologies in cooling industry under China's "Dual-Carbon Goals";
  "双碳"目标下制冷空调行业的绿色高效技术发展展望；
- The challenge of adopting alternative refrigerants in the refrigeration servicing industry and its strategy
  制冷剂替代对维修行业的挑战及其应对策略。

Target Audience
目标嘉宾

UNEP, UNDP, FECO and CRAA will send invitation letters to the potential exhibitors to participate in the Roadshow. Finally, UNEP, UNDP, FECO and CRAA will jointly select at least 40 exhibitors to participate in the Roadshow based on the technologies that they will be showcasing. Only the invited exhibitors will be allowed to exhibit their products or displaying board in the Roadshow.
UNEP、UNDP、FECO 和 CRAA 将会给潜在的路演参展商发送邀请函，并将基于他们所要展示的技术联合挑选至少 40 家参展商参加路演，只有被邀请的展商可以在路演展台上展示样品或展板。

UNEP, UNDP, FECO and CRAA will further separately invite other international organizations, NGOs, as well as government departments from bilateral agencies like GIZ, Japan, and the United States who are interested in setting up their exhibition to display their efforts, projects, and policies in promoting zero-ODP, low/lower GWP and energy efficient alternatives. UNEP, UNDP, FECO and CRAA will also invite the industry associations from other countries such as Australia, Brazil, Canada India, Japan, Republic of Korea, the EU, Thailand, and United States , , and for their participation in the Roadshow as well as the roundtable.

UNEP、UNDP、FECO 和 CRAA 将分别邀请其他的国际组织，非政府组织以及来自双边机构（如德国国际合作机构、日本、美国）等有兴趣的政府部门，来展示他们在推广零 ODP 值、更低 GWP 值和高能效替代品方面的成就、工程项目以及政策。主办方还将邀请来自澳大利亚、巴西、加拿大、印度、日本、韩国、欧盟、泰国和美国的行业协会参

加路演和圆桌会议。

The audience expected for the event is as follows:
活动期待的观众：

- Technical and business managers from chemical and equipment manufacturing industries producing and/or consuming HCFCs/alternatives;
  生产或使用 HCFCs/替代品的化工和设备制造行业的技术经理和业务经理；
- Decision makers from the R&AC industries and equipment manufacturers，purchasing department, users;
  来自制冷空调行业或设备制造商、采购部门、用户等的决策者；
- Technical experts engaged in technology research and development as well as assessment;
  从事技术研究、推广以及评估的技术专家；
- Representatives from key importing and exporting companies and industries in the region.
  领域内主要进出口企业和行业代表；
- The Technical and Vocational Education Training Institutions, authorities as well as refrigeration and air conditioning servicing industry
  职业教育培训机构和制冷空调维修行业代表。

The Roundtable will be organized in the Roadshow area on different themes in an orderly manner.
圆桌会议将首次在路演展区的会议区举办，将根据不同的主题有序开展。

Expected Outcomes of Roadshow and Roundtable
路演和圆桌会议的预期成果

- International regulations and policies to phase-down HFCs while phasing out HCFCs
  国际社会削减 HFCs 的法规政策；
- Update the policy development trends for the cooling industry linked with the SDG;
  更新与可持续发展目标有关的制冷空调行业政策发展趋势；
- Green and efficient technology in the refrigeration and air-conditioning industry under China's "Dual-Carbon Goals";
  中国“双碳”目标下制冷空调行业的绿色高效技术
- Strategies for China's SMEs to phase out HCFCs;
  中国中小企业淘汰 HCFC 的策略；
- The development direction of alternative refrigerants with zero-ODP, lower GWP and higher efficiency;
  零 ODP 值、更低 GWP 值和更高效能制冷剂替代品的发展方向；
- Regulations for the application of toxic and flammable alternatives in various countries;
  有毒、可燃替代制冷剂应用的国内外安全法规；
- Discuss barriers for the adoption of HCFC and HFC alternative technologies and discuss potential business opportunities.
  讨论采用 HCFC 和 HFC 替代技术的障碍以及潜在的商机；
- Better understanding of the capacity building needs of the servicing sector and the options/approaches that countries could consider;
  对维修行业发展的挑战，以及国家加强维修行业管理的政策措施；

Dates and Venue
路演及圆桌会议的时间和地点

Date: 7-9 April 2023
时间：2023 年 4 月 7-9 日

Venue: Shanghai New International Expo Centre, China
地点：中国•上海新国际博览中心