2024 High-Level Political Forum on Sustainable Development

Reinforcing the 2030 Agenda and eradicating poverty in times of multiple crises: the effective delivery of sustainable, resilient and innovative solutions

Contributions from the Vienna Convention on the Protection of the Ozone Layer and the Montreal Protocol on Substances that Deplete the Ozone Layer

March 2024

Introduction

1. The Secretariat for the Vienna Convention on the Protection of the Ozone Layer and its Montreal Protocol on Substances that Deplete the Ozone Layer in full consultation with the Presidents of the twelfth meeting of the Conference of the Parties to the Vienna Convention, Mr. Ndiaye Cheikh Sylla, Senegal, and the Thirty-Fifth Meeting of the Parties to the Montreal Protocol, Ms. Azra Rogović-Grubić, Bosnia and Herzegovina, submits this report to the 2024 High-Level Political Forum on Sustainable Development (HLPF), in response to the invitation from Ms. Paula Narvaez, President of the United Nations Economic and Social Council.

2. The report outlines the work carried out under the Vienna Convention and the Montreal Protocol up to the end of 2023, in relation to the theme of the 2024 High-level Political Forum *"Reinforcing the 2030 Agenda and eradicating poverty in times of multiple crises: the effective delivery of sustainable, resilient and innovative solutions"*. It highlights the relevant contribution of the international ozone regime to the Sustainable Development Goals (SDGs) under in-depth review by HLPF in 2024 of: SDG 1. End poverty in all its forms everywhere; SDG 2. End hunger, achieve food security and improved nutrition and promote sustainable agriculture; SDG 13. Take urgent action to combat climate change and its impacts; SDG 16. Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels; and SDG 17. Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development.

About the Vienna Convention and the Montreal Protocol

3. The 1985 Vienna Convention for the Protection of the Ozone Layer (Vienna Convention) and its 1987 Montreal Protocol on Substances that Deplete the Ozone Layer (Montreal Protocol), referred to as the “ozone treaties” were established to protect human health and the environment from the threat of ozone depletion. Both treaties have achieved universal ratification with 198 parties. The Vienna Convention calls on parties to cooperate on scientific research and observations. The Montreal Protocol controls 96 manufactured ozone-depleting substances (ODSs) plus their isomers, most of which are also potent greenhouse gases. To date, the global implementation of the Montreal Protocol has led to the phase-out of 99 per cent of ODSs, or 1.8 million ozone depletion potential (OPD) tonnes, globally. This corresponds to the reduction of approximately 12.5 billion tonnes of carbon dioxide (CO2) equivalent since most of ODSs are also powerful greenhouse gases. The remaining 1 per cent is largely hydrochlorofluorocarbons (HCFCs). Global phase-out of these substances is expected by 2030.

4. The 2016 Kigali Amendment to the Montreal Protocol, which entered into force on 1 January 2019, added 18 hydrofluorocarbons (HFCs) to the list of controlled substances. While HFCs do not destroy ozone, they are potent greenhouse gases. Parties to the Montreal Protocol have emphasised the importance of pursuing energy efficiency and sustainability of equipment in the refrigeration, air-conditioning and heat pump sector (RACHP) while phasing down HFCs.

5. By helping to restore the stratospheric ozone layer, the Vienna Convention and Montreal Protocol help mitigate against the effects of damaging ultra-violet (UV) radiation on living organisms and thus maintain the health of the planet on which the achievement of all

sustainable development objectives ultimately depends. In addition, the implementation of the Montreal Protocol has led to significant climate benefits.

6. In 2023, four global in-person meetings were convened, enabling parties to discuss and take decisions on many issues, namely during the forty-fifth meeting of the Open-ended Working Group of the Parties to the Montreal Protocol (OEWG45), Workshop on strengthening the effective implementation and enforcement of the Montreal Protocol, and the Thirty-Fifth Meeting of the Parties to the Montreal Protocol (MOP35), and Workshop on Energy Efficiency. Significant progress was made on many substantive matters that contribute to **(SDGs 1, 2, 13, 16 and 17),** some of which are presented below.

Ozone Treaties and the Sustainable Development Goals

7. The table below summarizes how the ozone treaties contribute to meeting the SDGs. This submission is based on this summary and highlights how work in the past year contributed to the SDGs being reviewed in-depth at HLPF 2024.

OZONE TREATIES CONTRIBUTIONS TO THE GOALS	SUSTAINABLE DEVELOPMENT GOALS														
	1	2	3	4	5	7	8	9	10	11	12	13	14	15	17
Universal ratification						√		√	√			√			√
Partnerships with all stakeholders at all levels						√		√				√			√
Funding to all developing countries	√					√	√	√	√		√	√			√
Increased investment in green alternatives								√			√	√			
Technology and knowledge transfer	√						√	√	√		√	√			√
Promoting the use of greener, safer chemicals								√			√				
Promoting technology innovation							√	√	√		√	√			√
Institutional strengthening and capacity building	√							√	√		√				√
Promoting science education and mainstreaming gender				√	√					√					√
Promoting food security/safety and reducing FLW[1]	√	√						√		√	√			√	
Avoided damage to crops, fisheries and materials	√	√								√	√		√	√	
Protection from harmful UV radiation			√							√			√	√	
Avoided diseases (skin cancers and eye cataracts)			√							√					
Energy efficiency enhancements						√		v		√	√	√			
Climate change mitigation and adaptation						v		v		√	√	√			√

Table: Schematic overview of how the Ozone Treaties contribute to SDGs. The goals of relevance for the 2024 review are highlighted in orange[2].

Submission to High-Level Political Forum 2024

(a) Impacts of multiple crises on the implementation of SDGs 1, 2, 13, 16 and 17 from the vantage point of your intergovernmental body

The multiple global crises disproportionately affect developing countries and the most vulnerable communities, exacerbating existing inequalities and enhancing environmental degradation. They present a complex challenge to the progress of the SDGs, including from the perspective of the Montreal Protocol and its implementation. The SDGs under review in the current HLPF cycle are directly threatened by these crises. These challenges necessitate proactive and adaptive approaches to tackling them based on strong collaboration. Stakeholders should recognize the interdependence among environmental protection, climate action, and socio-economic development requiring an integrated approach taking into account trade-offs.

With its focus on phasing out ozone-depleting substances, the Montreal Protocol has been successful in this respect, but it may face other challenges against the backdrop of these multiple crises. This is because the Montreal Protocol is part of a broader environmental and socio-economic landscape currently under stress. The escalating demand for air-conditioning due to climate change, as witnessed in 2023 by the record-breaking high temperatures, can impact the Protocol's

[1] Food loss and waste.

[2] Goal 16 is linked only indirectly to the ozone treaties' work.

implementation. While the use of ozone-depleting substances in air-conditioning units has been significantly reduced across the world, the refrigeration and air conditioning sector still relies heavily on hydrofluorocarbons (HFCs), which are not ozone-depleting, but are potent greenhouse gases. The increase in the use of air conditioners could lead to a rise in HFC emissions and remaining ozone-depleting substances, such as HCFCs, as well as a corresponding increase in energy consumption and associated indirect CO_2 emissions, contradicting current efforts to mitigate climate change and protect the ozone layer under the Montreal Protocol. **(SGD 13, and 17)**

To address this, the implementation of the Montreal Protocol's Kigali Amendment, which aims to phase down HFCs, becomes more critical. By early 2024, 156 parties ratified the Amendment. By doing so they commit to using low- and zero-global-warming-potential (GWP) refrigerants and promote energy efficiency in the refrigeration and air-conditioning sector. The surge in cooling needs highlights the importance of integrating climate change mitigation with ozone layer protection in policy and practice.

At the same time, there is a large disparity in air conditioning accessibility between developed and developing regions. For example[3], while more than 90 percent of households in the USA and Japan have air conditioners, only 15 per cent do in Southeast Asia, with the figure dropping to 5 percent in India and less than 1 per cent in Africa. Just one in ten individuals residing in the hottest regions of the world have access to indoor cooling. Aside from the human health risks from heat stress, lack of thermal comfort also impacts human productivity and the economies of the countries most vulnerable to climate change. As these regions legitimately strive to improve social standards, the demand for more cooling presents a significant developmental challenge for governments: how to sustainably meet the cooling needs of their populations. **(SGD 1, 13, 16 and 17)**

To ensure the Protocol's further effectiveness as a global instrument of cooperation and environmental protection, it is crucial to continue supporting the transition to ozone and climate friendly refrigerants, and adoption of energy-efficient refrigeration and air-conditioning technologies. This can be achieved through financial assistance, technology transfer, and capacity development in addition to developing and adopting other sustainable cooling solutions (such as effective building designs, passive cooling solutions in urban planning) that align with the Montreal Protocol's and Paris Agreement's objectives. There has been significant progress on these fronts as described in the following sections of this report.

The multiple crises, including the effects of the COVID-19 pandemic, have presented both challenges and opportunities. While they have disrupted progress in some areas such as the implementation of some projects for the phase-out of remaining ozone-depleting substances, ratification of the Kigali Amendment and adoption of the important policy documents that guide funding of the HFC phase down, they have also highlighted the importance of cooperation, resilience, adaptability and flexibility - key elements of the Montreal Protocol's story **(SDG 17)**.

(b) Three key areas where sustainable, resilient and innovative solutions for achieving the SDGs are being effectively delivered, especially related to the cluster of SDGs under review in 2024, bearing in mind the three dimensions of sustainable development and the interlinkages across the Goals and targets

1) Cooling sector

Enhancing Energy Efficiency in Cooling Technologies

The Kigali Amendment to the Montreal Protocol underscores the importance of enhancing energy efficiency of refrigeration and air-conditioning equipment during the phase down of HFCs. At the request of the parties set out in decision XXXIV/3 adopted in 2022, the Secretariat of the Montreal Protocol organized a global workshop on energy efficiency in 2023.The aim of the workshop was to

[3] Data is taken from this source: International Energy Agency, "Keeping cool in a hotter world is using more energy, making efficiency more important than ever" (2023).

share information, experiences and lessons learned, and to assess challenges related to ways of improving availability and accessibility of energy-efficient refrigeration, air-conditioning and heat pump equipment and equipment using low- or zero-GWP alternatives during the implementation of the Kigali Amendment. At the workshop, parties noted the potential for near-zero emissions by 2050 in this sector by adopting low- and zero-GWP refrigerants, improving energy efficiency and reducing cooling loads of buildings. However, challenges include limited accessibility of already available efficient equipment, lack of coordination and financing barriers hindering the sector's potential. To address these issues, an integrated policy approach with strong stakeholder engagement and integrated approach to financing (i.e. leveraging all available sources of finance) is essential for progress on both the Montreal Protocol as well as the Paris Agreement **(SDG 13 and SDG 17).**

According to the latest 2023 quadrennial assessment report 'Scientific Assessment of Ozone Depletion', limiting the production and consumption of HFCs with high global warming potentials is projected to avoid 0.3°C to 0.5°C of global warming over the current century.[4] Furthermore, improvements in the energy efficiency of equipment in the refrigeration and air-conditioning sectors during the transition to low-GWP- alternative refrigerants could potentially double the direct climate benefits of the Kigali Amendment. **(SDG 13)**

The Global Cooling Pledge launched at COP28

The United Arab Emirates as hosts of the 2023 United Nations Climate Change Conference (COP28), launched the Global Cooling Pledge. The initiative commits to sustainable cooling through a range of concrete actions[5]. Specifically, the Pledge aims to elevate ambition and international cooperation by setting collective targets. These include reducing cooling-related emissions by 68% by 2050, significantly increase access to sustainable cooling by 2030, and raise the global average efficiency of new air conditioners by 50% with the ultimate objective of upholding the 1.5 goal of the Paris Agreement. As of now, the pledge has been signed by 68 countries and over 50 various public and private sector organizations. It outlines concrete actions including the accelerated ratification and implementation of the Kigali Amendment to the Montreal Protocol, putting in place National Cooling Actions Plans, setting minimum energy performance standards and labelling programmes and establishing building energy codes. **(SDG 1, 13 and SDG 17).**

2) Effective International Cooperation and Decision-Making

Montreal Protocol Pavilion at COP28

The international cooperation fostered by the Montreal Protocol has led to significant progress in restoring the ozone layer with direct impact on public health from reduced harmful effects of ultraviolet radiation. The shift towards more environmentally friendly refrigerants and technologies demonstrates the commitment of its 198 parties to reducing greenhouse gas emissions. This not only mitigates climate change but also adapts to it, since most ozone-depleting substances are also potent greenhouse gases. To recognize the important climate benefits of the Montreal Protocol, the partners of the Montreal Protocol under the coordination of the Secretariat of the Montreal Protocol came together to host the first ever pavilion at COP28. The aim was to offer a platform for the Montreal Protocol and the cooling community to demonstrate their ambition and contribution to climate action. The Ozone to Cool Zone pavilion helped to spread awareness, scale current efforts, and increase ambition for more solutions that minimize the cooling sector's negative climate impacts, advance its sustainability goals and scale available solutions **(SDG 13 and 17)**.

The 35th Meeting of the Parties of the Montreal Protocol

[4] Ross J. Salawitch and others, Twenty Questions and Answers about the Ozone Layer: 2022 Update: Scientific Assessment of Ozone Depletion (World Meteorological Organization, United Nations Environment Programme, United States Department of Commerce, United States National Aeronautics and Space Administration and European Commission, 2023), p. 62.

[5] The pledge constitutes one of the non-negotiated key outcomes for the COP28 Presidential Action Agenda.

The Thirty-Fifth Meeting of the Parties (MOP35) to the Montreal Protocol on Substances that Deplete the Ozone Layer was held on 23 to 27 October in Nairobi, Kenya. 640 delegates and observers considered an extensive agenda with several items relating to emerging challenges identified in the 2022 quadrennial assessment reports prepared by the Montreal Protocol's three independent assessment panels. A total of 27 decisions were adopted that should allow the parties and stakeholders to advance in various areas related to the implementation of the Montreal Protocol. Among emerging issues, parties discussed stratospheric aerosol injection (SAI), a promising solar radiation management method to limit Earth's temperature rise, concerns over very short-lived substances (VSLS) affecting ozone, increasing use of controlled substances as feedstock in chemical production and other insights of the Montreal Protocol Assessment Panels. The concerns regarding the potential impact of some policies and regulations in relation to the management of controlled substances and their alternatives such as per- and polyfluoroalkyl substances and breakdown products such as trifluoroacetic acid (TFA) were also raised and will be also included in the next quadrennial assessment. For the first time, the parties also formally considered life-cycle refrigerant management to address leakages of controlled substances throughout the refrigeration and air-conditioning value chain.

The meeting outcomes show parties' proactive engagement with new scientific evidence which is the basis for a robust and responsive framework for informed policy-making established under the Montreal Protocol **(SDG 17)**.

In 2023, the Secretariat organized a workshop at the request of the parties to discuss further institutional strengthening of the Montreal Protocol to ensure the sustainability of its results and adaptability to new challenges. The workshop focused on combating illegal trade in controlled substances, licensing and quota systems under the Montreal Protocol, and the need for interagency collaboration and effective implementation, and challenges related to the Kigali Amendment compliance measures. Also, the workshop addressed the need for atmospheric monitoring and research on emissions from feedstock uses, management of substance banks and coordination across environmental agreements. The importance for a multi-faceted integrated approach for addressing the challenges and managing the achieved results was emphasized. The outcomes of the workshop will require follow-up from parties on many fronts, which will help the Protocol with its long-term effectiveness and relevance **(SDG 17)**.

3) Financing activities in developing countries

The Multilateral Fund, established in 1991, has been the testimony of the parties' commitment to equity and shared responsibility in the global protection of the ozone layer. The Fund has been providing financial support to 148 Article 5 (developing) parties and contributing both directly and indirectly to the delivery of the sustainable development goals. The funded activities include the operation of national ozone offices, development of regulatory frameworks, advancement of energy-efficient technologies using zero ozone-depleting and low to zero global-warming potential refrigerants and capacity building of key stakeholders. In 2023 alone, the Executive Committee of the Multilateral Fund approved 348 projects (136 projects for continued implementation of HCFCs phase out, 101 projects for HFCs related activities and 111 for other projects related to institutional strengthening, energy efficiency and management of the existing banks and unwanted controlled substances). This amounts to a total of US $129,821,368.

The fund is replenished every three years through contributions of 50 A2 (developed) parties based on a careful projection of the implementation needs of Article 5 parties. At the last Meeting of the Parties to the Montreal Protocol held in October 2023, the Multilateral Fund was replenished for the period of 2024-2026 by an additional USD965,000,000. Such unprecedent funding level is due to the recognition of complex challenges faced by developing countries in the initial implementation of the Kigali Amendment, while still phasing out ozone-depleting hydrochlorofluorocarbons. Since the air-conditioning and refrigeration sectors represented a substantial and increasing percentage of global electricity demand, the substantial funding is also in recognition of additional opportunities in

pursing improvements in the energy efficiency of RACHP products and equipment during the HFC phase down **(SDGs 1, 2, 13, 16 and 17)**.

In addition, there are ongoing discussions at the Executive Committee of the MLF on a possible operational framework on institutional aspects and projects and activities that could be funded by the Multilateral Fund for maintaining and/or enhancing the energy efficiency of replacement technologies and equipment in the manufacturing and servicing sectors when phasing down HFC. This potentially could expand the scope and funding modality of the MLF, traditionally focused on compliance measures of the Montreal Protocol, indicating an interest and need for a broader, more integrated approach to environmental sustainability, recognizing the double importance of addressing both ozone layer protection and climate change mitigation through energy-efficient cooling technologies **(SDGs 1, 2, 13, 16 and 17)**.

(c) Three examples of specific actions, policies and measures that are most urgently needed to effectively deliver sustainable, resilient and innovative solutions to eradicate poverty and reinforce the 2030 Agenda, building on interlinkages and transformative pathways for achieving the SDGs

From the perspective of the Montreal Protocol and its progress in 2023, the following actions, policies, and measures align with the broader objectives of the 2030 Agenda for Sustainable Development.

1) Strengthening global atmospheric monitoring and scientific research:

As per the discussions and decisions of the parties at global meetings of the Protocol in 2023 – namely OEWG45 and MOP35 – there is the need for continuous focus on scientific assessments and global and regional atmospheric monitoring. This includes tracking the state of the ozone layer, understanding its interactions with the climate system and evaluating the effectiveness of the measures of the Montreal Protocol. Scientific understanding guides policy-making and helps in identifying emerging environmental threats, which are crucial for ozone layer protection and climate action under the Montreal Protocol. Parties discussed the need to roll out an operational framework for regional monitoring of atmospheric concentrations of controlled substances and the sources of emissions, establishing new monitoring capacity in regions like South America, Africa, and South Asia with a view to filling in gaps in monitoring, leveraging existing infrastructure.

Under a European Union-funded pilot project, the Secretariat works with global experts to identify suitable locations for monitoring controlled substances and greenhouse gases in developing countries, implementing pilot flask sampling, and developing collaboration plans for scientific observations and data sharing to ensure the availability of critical data alongside scientific capacity development and technology transfer to developing countries **(SDGs 1, 13, and 17).**

2. Addressing the banks of the controlled substances

There is currently a significant inventory of ODS banks – which is defined as the total amounts of controlled substances still contained in equipment, stockpiles and products not yet released into the atmosphere – which represents a significant challenge due to their high ozone depleting and global warming potential. The Protocol's assessment panels estimate that in 2022, the inventory in active (still in use) and inactive (e.g., destined for disposal) banks is equivalent to 16 GtCO2e.

A multifaceted strategy is needed to effectively manage these banks in an environmentally sound manner. This includes the monitoring of products containing the substances, lifecycle refrigerant management focusing on leakage prevention, recovery (proper extraction of substances from equipment), recycling (processing for reuse), and reclamation (refining the recovered substances to meet original standards) and finally, the safe destruction of obsolete substances. Such destruction of ODS can contribute to carbon offset credits under the Paris Agreement, utilizing national and voluntary carbon trading mechanisms, thus turning a climate liability into an environmental and monetary asset.

There is heightened interest among parties about lifecycle refrigerant management with the first ever decision adopted at the last meeting of the parties, specifically dedicated to this approach. In the decision, parties request for more detailed analysis, technical insight and policy guidance. In 2024 the Secretariat will hold a global meeting for all parties to discuss available information and experience with the lifecycle refrigerant management approach. **(SDGs 13 and 17).**

3. Integrated policy approach to cooling

The Kigali Amendment under the Montreal Protocol with its focus on reducing high-GWP refrigerants and enhancing energy efficiency of incumbent cooling technologies for added climate benefits is at the centre of the action around sustainable cooling. Its successful implementation will also depend on other factors such as building efficiency, integration of passive and nature-based cooling solutions and decarbonization of the power grid. However, the rising need for cooling and air-conditioning due to global warming complicates the task, underscoring the necessity for reducing the need for cooling while also increasing its accessibility. This requires an integrated coordinated approach, including towards financing, with a vision and actionable solutions.

Since India launched its India Cooling Action Plan in 2019, it has become a blueprint for integrated policy planning and coordination, showing how to go about it, what to aim for and how stakeholders can do it together. Similar cooling action plans have been now developed to a varying extent in at least 40 countries around the world, playing a crucial role in identifying comprehensive measures to improve energy efficiency in the cooling sector, meet energy demand and reduce emissions in the cooling sector while improving living standards of citizens. **(SDGs 1, 2, 13, 16 and 17).**

(d) Follow-up actions and measures being undertaken by your intergovernmental body or forum to support implementation of the Political Declaration of the SDG Summit

The Montreal Protocol's actions and outcomes achieved in 2023 align well with the goals and objectives outlined in the Political Declaration of the SDG Summit. By focusing on financial support, scientific research, emission reduction and global cooperation, the Protocol contributes significantly to the broader agenda of sustainable development and environmental protection. These efforts demonstrate the Protocol's commitment to supporting the implementation of the SDGs, particularly in relation to poverty reduction, climate action and partnerships.

In 2024, the first control measure of the Kigali Amendment commences for 134 A5 countries. National implementation will build on a solid foundation established by the 36 years of the Protocol’s implementation history. Lessons learned from phasing out of CFCs and HCFCs will be applied to the HFCs phase-down and innovative solutions (some mentioned in this report) will be also sought and continuously applied.

(e) Recommendations and key messages for inclusion into the Ministerial Declaration of the 2024 HLPF:

The implementation of the Kigali Amendment to the Montreal Protocol, which aims to phase down highly climate-warming hydrofluorocarbons (HFCs), should be a global priority. Member States that have not ratified the Amendment are encouraged to consider ratification and commit to full implementation. This involves transitioning to refrigerants with lower GWP and making energy-efficient refrigeration and air-conditioning technologies more available and adopted as widely as possible. These steps are critical, not only for the economies and developmental opportunities of countries, but also for climate mitigation and adaptation.

However, the rising demand for cooling in response to global warming presents challenges beyond simply supplying and adopting energy-efficient equipment with low- or zero-GWP refrigerants. It becomes equally important to manage the overall need for cooling to lower energy consumption and lessen environmental impacts. Many countries still lack adequate refrigeration, air-conditioning, and cold chain facilities, which are essential for food security, health, productivity and development.

Therefore, decision-making regarding the implementation of the Kigali Amendment must also consider these complexities. Implementing the Amendment necessitates **an integrated approach** that encompasses ozone layer protection, climate change mitigation and sustainable development goals. Successful implementation depends on the cooperation of various stakeholders, including governments, industries and financial institutions. The collaboration's results will contribute to achieving Sustainable Development Goals 1, 2, 13, 16, and 17.
