United Nations Development Programme

Project title: Implementation of the Hydrofluorocarbons phase-down strategy of Kyrgyzstan under the Kigali Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer		
Country: Kyrgyzstan	**Implementing Partner:** *National Ozone Centre of Kyrgyzstan (NOC) under the Ministry of Natural Resources, Ecology and Technical Supervision of the Kyrgyz Republic*	**Execution Modality***: Assisted National Implementation Modality (Ass.NIM)*

Contributing Outcome (UNSDCF/CPD, RPD, GPD):

UNSDCF for Kyrgyzstan 2023-2027 Outcome 3: By 2027, the Kyrgyz Republic has started the transition to low-carbon development and risk-informed climate resilience, contributing to people's fair and equitable access to ecosystem benefits and to the empowerment of vulnerable communities in the governance of natural resources and disaster prevention.

Outcome Indicator 1. Kyrgyz Republic communicated the establishment or operationalization of an integrated policy/strategy/plan that increases their ability to adapt to the adverse impacts of climate change and foster climate resilience and low greenhouse gas emissions development in a manner that does not threaten food production (including a national adaptation plan, nationally determined contribution, national communication, biennial update report or other SDG).

Output 3.1: National and subnational governments improved capacities to implement low carbon, people-centered climate change mitigation and adaptation actions, utilizing efficiency-enhancing measures in access to clean sustainable energy and water.

Output Indicator 3.1.1: Low-carbon and adaptation objectives incorporated in national, sub-national, and sectoral development plans and policies to promote green growth.

Output Indicator 3.1.2: Low-carbon development and adaptation solutions and mechanisms introduced.

UNDP Social and Environmental Screening Category: *Moderate.*	**UNDP Gender Marker:** *GEN2.*
Quantum Award ID: 1400442	**Quantum Project/Output ID: 01004736**
Project duration in months: 48 months	
Planned start date: August 2025	**Planned end date: July 2029**

Brief Description

The XXVIII Meeting of the Parties to the Montreal Protocol on October 14, 2016, in Kigali, the capital of Rwanda, approved a new, climate amendment to the treaty, aimed at combating a significant increase in the production and consumption of HFCs with the associated increase in its emissions during the operation of equipment based on their use.

The Kyrgyz Republic ratified the Montreal Protocol on Substances that Deplete the Ozone Layer on May 31, 2000, the London, Copenhagen, and Montreal amendments on May 13, 2003, the Beijing Amendment on October 5, 2005, and Kigali amendment on July 7, 2020.

The basis for Kyrgyzstan's overarching HFC phase-down strategy is its policy commitment to comply with and, if possible, accelerate the phase-down schedule set for Article 5 Group I countries in the Kigali Amendment ratified in 2018. More specifically, this means freezing the HFC baseline consumption defined in Section II.2 in 2024 and then meeting reductions of 10% by 2029, 30% by 2035, 50% by 2040, and 80% by 2045.

The project's overall objective is to support the Government to meet that commitment through implementing a KIP program undertaken in four stages as well as a pilot project on energy efficiency. Stage 1, encompassing the period 2024-2029 covered by this project, Stage II would cover the period 2030-2035, and Stage III would cover the period 2036 -2040. Stage IV would cover the period 2041-2045. Relative to the 2024 baseline of 450,257 CO2 Eq. tonnes, the targeted amounts of HFC consumption in the completion year of each stage would be: i) Stage I – 405,231 CO2 Eq. tonnes; ii) Stage II – 315,180 CO2 Eq. tonnes; iii) Stage III – 225,126 CO2 Eq. tonnes and iv) Stage IV – 90,051CO2 Eq tonnes.

The Kigali HFC Implementation Plan of the Kyrgyz Republic consists of three components 1) Legal and Regulatory Action, 2) Technical Capacity Building, 3) Pilot project on energy-efficiency. In close coordination with UNEP on implementation of the KIP program, through this project UNDP will be responsible for the implementation and delivery of the Component on Technical Capacity Building which is complementary to the activities supported under the Sub-Component 2.2 Strengthening capacity in the RAC sector, through provision of equipment of training facilities and technician tools for servicing workshops. This component will also aim to support the provision of technical consultancy support for the procurement activities, expansion of trainings, technical studies on alternative solutions to be considered for future pilot and demonstration projects as well as on overall monitoring and reporting of project activities.

FINANCING PLAN	
Multilateral Fund	USD $130,000
UNDP TRAC resources	USD $0.00
(1) Total Budget administered by UNDP	**USD $130,000**
CO-FINANCIERS THAT WILL DELIVER PROJECT RESULTS INCLUDED IN THE PROJECT RESULTS FRAMEWORK (FUNDS NOT ADMINISTERED THROUGH UNDP ACCOUNTS)	
(2) Total confirmed co-financing to this project not administered by UNDP	**USD $456,000**
(3) Grand-Total Project Financing (1)+(2)	**USD $586,000**

SIGNATURES:

Signature: Mr. Meder Mashiev Minister of Natural Resources, Ecology and Technical Supervision of the Kyrgyz Republic	**Agreed by Government Development Coordination Authority**	**Date/Month/Year:** 14/10/2025
Signature: Ms. Alexandra Solovieva Resident Representative, UNDP in the Kyrgyz Republic	**Agreed by Implementing Partner**	**Date/Month/Year:** 09/10/2025

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ABBREVIATIONS and ACRONYMS

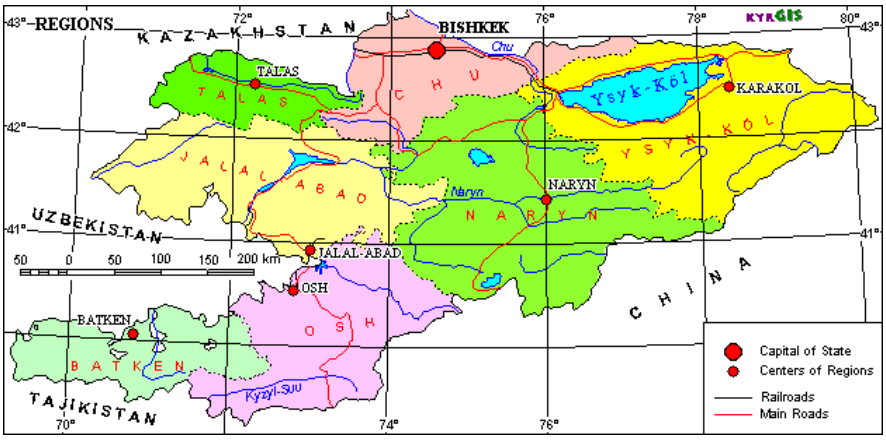
A/C	Air Conditioning
BAU	Business as Usual
CCAC	Climate and Clean Air Coalition
CCO	Climate Change Office
CFC	Chlorofluorocarbon
EEU	Eurasian Economic Union
EACU	Eurasian Customs Union
EE	Energy Efficiency
EOL	End of Life
EU	European Union
ExCom	Executive Committee of MLF
GDP	Gross Domestic Product
GHG	Green House Gases
GIZ	German Agency for Technical Cooperation
GWP	Global Warming Potential
HC	Hydrocarbon
HCFC	Hydrochlorofluorocarbon
HFC	Hydrofluorocarbon
HFE	Hydrofluoroether
HFO	Hydrofluroolefin
HPMP	HCFC Phase-out Management Plan
iPIC	Informal Prior Informed Consent
IPCC	Intergovernmental Panel on Climate Change
KIP	Kigali Implementation Plan
MAC	Mobile air conditioning
MEC	Ministry of Economy and Commerce of Kyrgyzstan
MEPS	Minimum Energy Performance Standards
MLF	Multi-Lateral Fund
MLFS	Multi-Lateral Fund Secretariat
MNRETS	Ministry of Natural Resources, Ecology and Technical Supervision
MOE	Ministry of Energy
MOP	Meeting of Parties
MP	Montreal Protocol
NOC	National Ozone Centre of Kyrgyzstan
NOU	National Ozone Unit
NR	Natural Refrigerants
ODP	Ozone Depleting Potential
ODS	Ozone Depleting Substance
PCR	Project Completion Reports
PU	Polyurethane
RAC	Refrigeration and Air Conditioning
RACHP	Refrigeration, Air Conditioning and Heat Pumps
RRR	Refrigerant Recovering, Recycling and Reclaiming
tonne, mt	Metric ton
VAT	Value Added Tax
TEAP	Technology and Economic Assessment Panel
U4E	United for Energy
UNEP	United Nations Environmental Programme
UNDP	United Nations Development Programme
UNFCCC	UN Framework Convention on Climate Change

I. DEVELOPMENT CHALLENGE

The Kyrgyz Republic is located in the center of the Asian continent, in the north-east of Central Asia between 39° and 43° north latitude and 69° and 80° east longitude. The Republic borders on Kazakhstan in the north, on China in the south-east and east, on Tajikistan in the southeast and on Uzbekistan in the west. The length of the Kyrgyz Republic's border is 4,508 km, its total area is 199,900 km2. The country is divided into 9 administrative units: 7 regions (Batken, Djalal-Abad, Issyk-Kul, Naryn, Osh, Talas and Chui) and its two major cities, Bishkek and Osh are also standalone administrative units.

The highest point in the country is Pobeda peak (7,439 m) and the lowest is 350 m above sea level. About 94% of the territory is located above 1,000 m, 90% - above 1,500 m, and 40% - above 3,000 meters above sea Level. Figure I-1 provides a map illustrating elevations. The country's predominantly high mountain ecological system generally defines the country's climate, landscapes, soils, water resources, flora and fauna, as well as social and economic conditions of life. It also creates conditions susceptible to natural and anthropogenic influence, including earthquakes, landslides, mudflows, floods and avalanches.

Figure I-1 Kyrgyzstan: Administrative Boundaries



The Kyrgyz Republic is a typical high mountain country with a generally arid continental climate and large temperature range. Four climatic zones are clearly distinguished: North and Northwest Kyrgyz Republic, Southwest Kyrgyz Republic, the Issyk-Kul basin, and the Internal Tien-Shan. Up to four vertical climatic zones can be distinguished: lowland (from 500-600 to 900-1,200 m above sea level), middle mountain (from 900-1,200 to 2,000-2,200 m), high mountain (from 2,000-2,200 to 3,000-3,500 m), and nival (3,000-3,500 m and above).

Kyrgyz Republic's population by the end of 2022 was 7.0 million people. The average increase in population for the last 10 years was approximately 1.0 % per year. Sixty-five (65) % of the population officially lives in rural areas. However, significant rural to urban population migration has occurred in recent years with Bishkek particularly having an overall increase of 50%. The age structure shows a relatively young population. Overall, population density (24 persons per km^2) is relatively low, compared to that of other countries but is concentrated (75%) in the valleys that make up about 25% of the land area but where the country's main agricultural and industrial production are located.

The country has a high level of literacy rate - more than 98% with more than 61% of the population having post-secondary education and 10% older than 15 years of age possessing a graduate degree. The officially registered unemployment rate is 9.1 percent in 2021, of which 62% are women. According to the main medical indicators of health (sickness and mortality rates, number of doctors and medical institutions, etc.), the Kyrgyz Republic is about average among the Central Asian republics.

I.1 Policy/legislative/regulatory and institutional frameworks related to HFC

A. Policy/legislative/regulatory framework

Montreal Protocol ratification status: Kyrgyzstan acceded to the Vienna Convention and the Montreal Protocol in May 2000, has ratified all amendments to the Montral Protocol including the Kigali Amendment in July 2020, and is in compliance with all control measures in effect under the Montral Protocol and its amendments.

HFC legislative and regulatory framework: The current and regulatory framework applicable to HFCs falls under that developed, updated, and implemented since acceding to Vienna Convention and the Montreal Protocol in May 2000. This has been successfully applied to the phase out of controlled substances under the Montreal Protocol starting with CFCs, halons, methyl bromide and, most recently in 2020, HCFCs. **Specific to HFCs, as triggered by ratification of the Kigali Amendment, import licences for HFCs were implemented in 2021 and application of quotas based on Kigali Amendment compliance requirements will be applied effective January 1, 2024.** Other facilitating regulatory measures related to the application of import duties and VAT exemptions for low GWP based RACHP technologies and labeling requirements covering imported HFC chemicals and HFC containing products have been introduced in 2022. Additional planned regulatory requirements applicable to Stage I as detailed in Section III.3 below include expansion of the import licensing System for HFCs transit transactions inclusive of provision for mandatory Prior Informed Consent (PIC) procedures to be in effect coincident with quotas in 2024. Based on phase down performance assessed throughout Stage I, additional measures in future KIP stages may include: i) controlling the import of used HFC equipment, HFC based domestic A/C equipment, and installation of new large commercial HFC A/C equipment; and ii) banning the use of non-refillable containers.

Operational licensing and quota system: With the endorsement and submission of this KIP, the Government reconfirms its commitment to meet the HFC phase-down targets of the Kigali Amendment and to enforce annual import quotas designed to ensure this commitment. This system has been demonstrated with CFC and HCFC phase out. The Ministry of Economy and Commerce (MEC) has authority for licensing and import/export matters with related controls and enforcement and reporting with this responsibility assigned to the State Customs Committee under it. Ministry of Natural Resources, Ecology and Technical Supervision (MNRETS) has responsibility within the government structure for overall legislative and regulatory authority related to the Montreal Protocol. Within MNRRETS, the State Service of Ecological and Technical Supervision, with National Ozone Center (NOC) support, have responsibility in monitoring the implementation of environmental legislation related to ODS/HFCs substances including enforcement related to licensing and quotas. The NOC provides each of these authorities with administrative and technical support in establishing quotas. The quota allocated in 2024 will be set at the compliance baseline of 450,257 CO2 Eq. mt as defined in Section II.2 (baseline freeze).

Other HFC-related policies: Beyond what is indicated above, the country with the support of UNEP OzonAction will continue to upgrade existing measures and introduce new ones through the implementation of the Stage I KIP as described in this proposal based on phase down experience gathered. This will be measured by established monitoring practice and guided by global best practices including measures related to targeted additional import and trade controls, further enhancement of the current mandatory reporting system, additional regulations on containers, and measures to restrict HFC use. This will generally use EU regulatory practice and OzonAction guidance material as a basis for such initiatives.

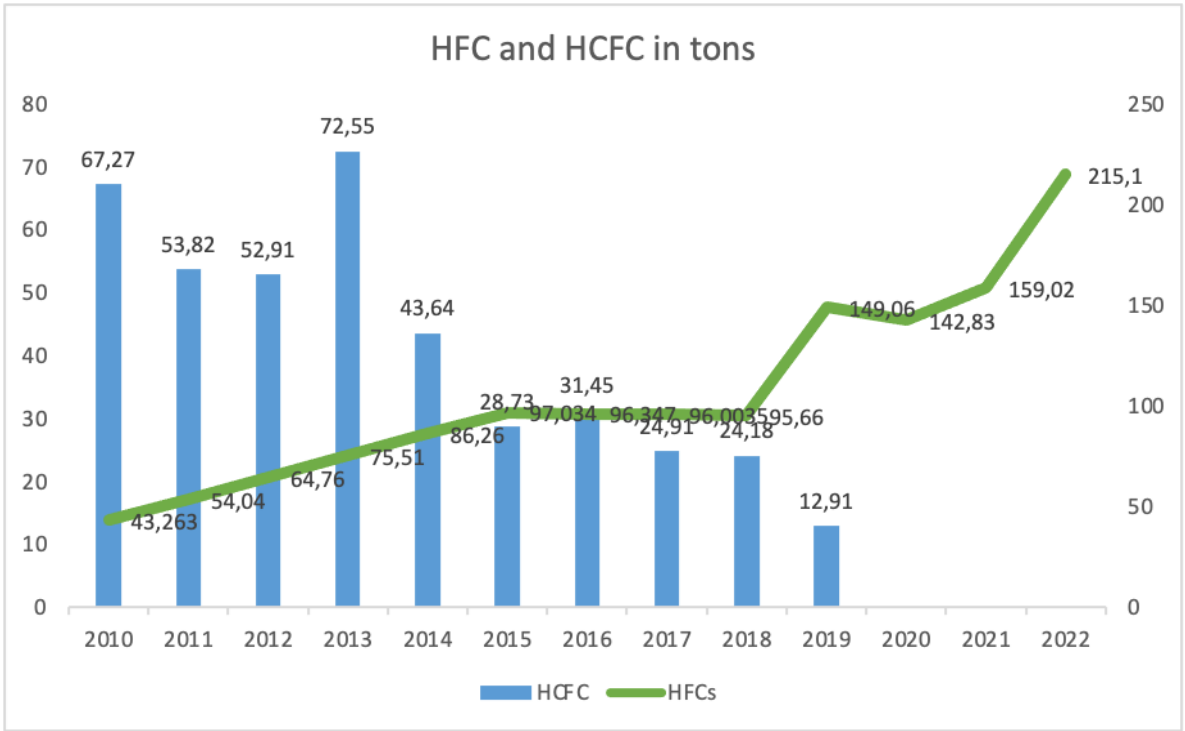
Regulations, codes of practice, and standards: As is reflected in the documentation outputs primarily originating with the NOC over the course of ODS phase out activities, the country has a basic adopted framework of detailed regulations, codes of practice and standards built on the adoption of international precedents. Access to this knowledge is largely the result of international support. Assuming a continuation of this kind of support, this approach will continue during HFC phase down and is reflected in the technical capacity strengthening and promotion of technology awareness aspects provided for in this Stage I KIP proposal. Specific aspects addressed will be i) implementation of advanced refrigeration servicing and maintenance instructions on practices and standards covering registration of installations, updating existing equipment service history log-books, mandatory leakage checking and repair, banning of venting of refrigerant, and required technician qualification and certification

requirements; ii) practical instructions on labelling and designations of controlled goods; iii) training curricula for customs and environmental enforcement officers; iv) dissemination and promotion of international best practice and standards applicable to low GWP refrigerants particularly in relation to flammability, higher pressures and toxicity; and v) the development of a national minimum energy performance standards or MEPS (initially for small scale RAC appliances).

I.2 Overview of the HCFC phase-out management plan implementation

Kyrgyzstan successfully met its HCFC phase out obligations under the Montreal Amendment in 2020 after having initiated a Stage I HPMP in 2011and Stage II HPMP in 2016 with UNDP and UNEP acting as lead and supporting Implementation Agencies respectively. Figure I-2 below illustrates the phase out of HCFCs consumption from 2011 to its effective phase out in 2020. This also illustrated the growth of HFC consumption over this period which reflects both the replacement of HCFCs with HFCs through replacement of HCFC based equipment with HFC based technology as well as the rapid growth in demand for RACHP equipment inventories generally. As detailed in Section II.2, HFC-134a, HFC-404A, HFC-410A and HFC-507A are the primary alternatives replacing HCFCs and utilized in incremental growth of refrigeration equipment, with limited introduction of hydrocarbon refrigerants in domestic refrigeration.

Figure I-2: HCFC Consumption 2010-2021 compared with HFC consumption (with a table) in RAC



mt	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
HCFC	67.37	58.82	52.91	72.55	43.64	28.73	31.45	24.91	24.18	12.91	-	-	-
HFC		43.26	54.04	64.76	75.51	97.0	96.3	96.0	95.7	149.1	142.8	159.0	215.1

Project Completion reports for the Stage I and Stage II HPMPs were submitted to the MLFS by UNDP in 2016 and 2022 respectively and are registered in the MLFS data base[1]. These reports contain detailed descriptions of the

[1] http://multilateralfund.org/hpmppcr/PCRProjets.aspx

HPMP implementation, activities and equipment funded as well as results achieved. The following provides a brief summary of this material in terms of highlights and lessons learned.

Technical assistance and capacity building activities supervised by UNEP involved total funding from the MLF of USD 347,200 and covered the following activities through the two HPMP stages.

- *Regulatory measures:* The principal measures undertaken early in the HPMP (2012) were to apply and operationalize the licensing system with the quota-based HCFC controls. Import/export licensing of ODSs and ODS containing equipment (including HCFCs) was introduced in 2002. Supporting this, a special methodology for the issuance of quotas was developed. Additionally, the State Program on the ODS phase-out for the period 2022-2025 has been adopted, five laws and one regulation were amended, 7 additional regulations were prepared for the government for approval including one on "Safety requirements for the operation of refrigeration equipment" including current EU provisions concerning the training and certification of personnel directly built into the regulation. A mandatory refrigeration technician certification scheme was adopted by the Government resolution № 419 dated July 29, 2016. The Government banned the import and use of HCFC-14Ab and HCFC-142a in July 2016 as well as implemented a ban on imports of HCFC-based equipment in June 2015, and on the use of single-use refrigerant containers below 13.6 kg from January 2016. During the period 2015-2021, 29 regulatory laws and sub-laws were amended and became effective as well as 12 draft Resolutions were developed and submitted to the Government. Additionally, 12 regulatory manuals and methodological guides were prepared and disseminated.
- *Strengthening import controls:* 46 seminars were conducted for the staff of State Customs, State Border Service, State Ecological and Technical Inspection, and Financial Police involving 230 participants. Relevant adjustments were made to the legislation including introducing a unified system to account for the usage of ODS. A multilateral agreement on the movement and recording of HCFCs and HCFC-based equipment in the trade operations with the member states of the Eurasian Customs Union was developed in 2016. Guidelines on strengthening of ODS import/export system according to iPIC allowing implementation of informal prior informed consent mechanism on ODS import/export was developed. Finally, various publications (500 booklets, posters and leaflets, 1,000 quick summaries on HS nomenclature, and 50 copies of guidance materials) have been distributed. Materials included Instructions to Customs Office on national ODS regulations, 2012 HS nomenclature (a Green Customs publication), Illegal Trade Cases (mis-labelling options, common trade names), and other supporting visual aids.
- *Refrigeration technician training:* Training and educational activities for the RAC sector, particularly technicians and refrigeration professionals in the period 2011-2021 involved i) conducting 71 training seminars involving 381 participants, ii) development and national accreditation of a certification program as a partnership between the NOC, national refrigeration association and National Technical University which has trained 511 new technician mechanics and 30 A/C mechanical engineers and set up a technician certification centre with required training equipment, tools and technology stands. Additionally, the NOC and national refrigeration association arranged for fifty-four (54) students to be to Moscow State University (Faculty of Cooling Technologies), on state budget scholarships at expense of the Russian Federation.
- *Awareness materials and events*: The NOC maintained an extensive awareness program that covered dedicated workshops for specific stakeholder groups and general awareness products in the form of technical documents, brochures and posters covering a wide range of topics associated with HCFC phase out. Specific workshops arranged included: i) workshop for managers and employees of construction companies, design organizations and specialists of the refrigeration industry; ii) a special workshop on “Experience in Designing Energy-Efficient Buildings with Modern Engineering Infrastructure”; and iii) 2 training workshops for architects and designers

"Innovations for energy-efficient buildings. In total, 30 specific literature products were widely circulated along with 10 posters covering project related topics (listed in the above referenced PCRs)

Investment related activities supervised by UNDP involved MLF funding of USD 452,800 and covered the following activities through the two HPMP phases.

- *Supply of technician servicing equipment*: A total of one hundred and twelve (112) sets of servicing tools/equipment were purchased then distributed to technicians directly or through service centres along with seventy (70) refrigerant recovery and recycling machines,
- *Supply of support equipment for refrigeration servicing operators and workshops:* Six (6) sets of gas analysers and two (2) gas holders for storage were supplied.
- *Supply of refrigeration demonstration low GWP equipment:* The following demonstration equipment was supplied to end users: i) three (3) chillers with a unit operating on refrigerant R290; ii) thirty-three (33) commercial sector refrigerating chambers operating on R290; iii) eight (8) sets to control the air conditioning system in cellular stations were installed as demonstration projects to demonstrate the reduction of energy consumption at mobile stations; and iv) three (3) refrigeration units and three (3) refrigeration chambers, and six (6) display cases were purchased for demonstration projects on replacement of compressor units with R290 units to demonstrate the safe handling of propane as a refrigerant for refrigeration technicians and end users.
- *Supply of support equipment for training institutions and customs authorities:* Support equipment supplied to training institutions included: i) tool kits and equipment; and ii) ten (10) sets of multimedia equipment (interactive board, projector, laptop, printer).

With respect to lessons learned during the implementation of the HPMP the following summarizes the principal ones identified which have been incorporated into the KIP through the HFC Phase Down Strategy and Stage I Implementation Program contained in Section III.

- *Legislative and regulatory control measures:* The need for progressive adoption of legislative and regulatory control measures, specifically application of import quotas, licensing, and progressive bans on HCFCs and associated product imports was demonstrated all of which resulted in reduction of dependence on HCFC based equipment and in consumption of HCFCs in the country. This experience will be utilized for HFC phase down while recognizing the need that these measures also must be balanced against the impacts such measures have on the economy and population's understandable expectation of having affordable modern goods and services available to them as the economy develops.
- *Technical assistance and capacity building activities:* Overall, non-investment activities have been successful having increased the overall national institutional and technical capacity related to management of controlled substances, but these activities requires regular renewal and updating noting the reality of changing institutions and stakeholders, turnover of people, changes in technology, and evolution of global priorities and trade dynamics related to the expand scope associated with the increased number of controlled substances and applications that need to be addressed in HFC phase down.
- *Refrigeration Technician Training:* Programs related to training and equipping of refrigeration technicians were considered highly effective and provide a useful platform for HCFC phase out. Training of refrigeration servicing technicians was particularly effective in enhancing the ability of practical experts in achieving general improvements in both reducing refrigerant emissions and increasing cost effectiveness of servicing, as well as initiating familiarity with to non-ODS equipment and its acquisition. This was achieved by the almost full coverage of all qualified technicians and availability of refresher training and the basis this provided for sustaining training in the national education system. However, the main limitations that remain is ensuring that more than a relatively low proportion of technicians are properly equipped and training is expanded to current low GWP alternatives within a sustainable national training system. Similarly, progress to having a universal

certification system and development of the refrigeration association contribute to this, although both need further development. In this regard, it is recognized that a larger degree of technical sophistication is required to achieve HFC phase down depending on the change to and continued advancement of low GWP and high energy efficiency technologies than was the case for the transition from CFCs to HCFCs and HCFCs to HFCs.

- *Strengthening Import Controls and Customs Training:* Programs related to strengthening import controls and enforcement of the licensing system were effective in the context of what could be achieved in a country like Kyrgyzstan with extensive borders and a limited ability to cover them, hence exposure to illegal trade. While training of the customs' officers was considered effective, it is apparent that the coverage was not yet sufficient to fully support import control measures and guarding against illegal trade, particularly with rapid increase in HFC demand. Additionally, since accessing EEU, the country has reduced ability to control imports of controlled substances, and it is crucial to establish additional measures to monitor their trade and movement within the country. These aspects represent continuing priorities which need to be addressed in relation to HFC phase out.
- *Linkage between non-investment and investment activities:* Non-investment activities are only effective and sustainable if supported by investment in the form of physical tools to support enforcement of control measures, servicing infrastructure, and capital replacement or retrofit of equipment where appropriate. With respect to the latter, demonstration of replacement technologies was critical to the success of the HPMP and needs to be repeated in undertaking HFC phase down in the KIP which will involve greater and more diverse changes in technologies associated with transition to low GWP refrigerants.
- *Servicing Sector investment*: The strong emphasis in the HPMP on providing recovery and recycling equipment and tools to the servicing sector both at the level servicing technicians as well as the centralized sector workshops and training institutions was a major factor in facilitating HCFC phase out and reduction in emissions. Sustaining, upgrading and expanding the provision of this capability will be an important component in HFC phase down involving a larger volume of equipment and wider range of alternative technologies well as supporting parallel initiatives associated with End of Life (EOL) refrigerant management and enhanced energy efficiency (EE).
- *Retrofit and Replacement:* Activities associated with piloting and demonstration of refrigeration equipment retrofit and replacement and associated awareness initiatives among the end users of commercial and industrial refrigerating equipment achieved planned coverage with the funding available, noting that greater coverage would have been achieved with additional resources. However, lessons were learned particularly respecting piloting incentive programs for accelerated equipment replacement noting that a lesson learned was the need to simplify the procedures of preparation of applications for incentive payments so that smaller end users may participate and utilizing technologies that may subsequently be subject to control measures, all of which will be incorporated into implementation of the KIP.
- *Stakeholder awareness*: Continuing awareness of the importance and benefits of HCFC phase out within the government, major stakeholders (particularly end users of refrigeration equipment), and the general population is critical to obtaining and sustaining government policy commitment for adoption of future control measures, and providing advance warning of phase out needs and impacts to those using controlled substance. This priority needs to be maintained and strengthened for HFC phase down where greater challenges exist in meeting Kigali phase down requirements.
- *Sustained institutional leadership:* The existence of institutional capacity in the form of the National Ozone Centre operating across government agencies has been a successful model for which will require continued international assistance for the more complex HFC phase down process.

I.3 Implementation status of HFC-related activities

Kyrgyzstan and particularly the NOC initiated planning HFC-related activities as their significance in relation to global climate change priorities and the role that the Montreal Protocol would play in in addressing them became apparent. Specific work undertaken which serves to supported embarking on HFC phase down and more directly this Stage I KIP proposal are summarized as follows:

- NOC efforts ensuring that national policy makers and stakeholders generally were aware and prepared early for the inevitability of the country having to undertake HFC phase down essentially as it was replacing HCFCs with HFCs.
- Undertaking an early “bottom up” survey in 2015-2017 with the support of the Climate and Clean Air Coalition (CCAC) entitled “National HFC Inventory and Identification of Opportunities for Introduction of Low-GWP Alternatives” that provided an initial estimate of the developing bank of HFC based equipment and potential consumption growth (undertaken jointly with a MLF funded project entitled “ODS alternatives survey”).
- Inclusion of demonstration replacement investments of available low GWP technologies in HPMP work to assist in direct conversion from HCFCs (see Section 1.2).
- Introduction of HFC import licenses in 2021 which facilitates rapid introductions of quotas effective in 2024 as a primary control mechanism for Stage I compliance.
- Preparation of a Resolution on the exemption of import fees for the use of "green" technologies that includes heat pumps and air conditioners based on natural refrigerants in the list of goods for fees exemption which has been adopted (2022) and in the process of approval by EAEU.
- Updating Tax Code of the Kyrgyz Republic in 2022 to provide VAT exemptions for technologies, equipment and their components that meet the requirements of energy and resource efficiency (Article 284).

II. HFC CONSUMPTION BY SUBSTANCE AND SECTOR

This section documents Kyrgyzstan's historical and current consumption of HFCs by substance and application sector or category. This information provides the inputs for the determination of the Kigali Amendment phase down baseline and the starting point for consumption forecasts into the future. As such this information establishes the primary factual basis for the development and prioritization of the KIP strategy and action plan required to achieve and maintain compliance with phase down targets.

II.1 Methodology and validation

The development of current HFC consumption is based on two methodologies overlayed by comparative analysis of the results to produce a consolidated set of consumption data adopted for use in this KIP as well as for 2022 Article 7 and MLF Country reporting. The two primary methodologies for data collection as applied independently are: i) a "top down" methodology based on data derived primarily from official import information required by national regulation, noting that the country has neither production or export; and ii) a "bottom-up" methodology based on a fact-finding and data-gathering survey/interview process covering importers, distributors, and end users of HFCs and their alternatives carried out from June to October 2022. These are described in more detail as follows.

i) **Official HFC import (Top Down) data**: This methodology is based directly on data collected in accordance with national procedures established under licensing and reporting regulations applicable to Montreal Protocol controlled substances. This covers data on import of HFCs and products containing HFCs obtained from the State Customs Service and the register of the importers of ODS alternatives from the Ministry of Economy and Commerce of the Kyrgyz Republic.

While generally considered an accurate measure of actual imports and by extension consumption in the absence of national production and export, the approach has acknowledged limitations. As in any country, the accuracy and comprehensiveness of this type of data will be a function of the capacity of the responsible institutions to identify imported HFCs and potentially HFC containing equipment/products through the licensing system, customs data, and its level of physical enforcement. It will also be a function of the degree to which importers, distributors and end users of such equipment voluntarily comply with reporting and control measures and what economic and structural factors may exist to discourage such compliance.

Specific to Kyrgyzstan, there remain a number of institutional, geographic, product packaging, and economic factors that could impact on the accuracy and comprehensiveness of current customs data-based reporting. These are noted individually below:

- *Import Identification:* There is a basic systemic issue related to the ability of current customs codes to differentiate HFCs and HFC containing products in that a number of different categories that also cover other chemicals and equipment may apply. This has largely been resolved in practice but requires continuing coordination, monitoring and training at a practical level. It is also understood that this needs to be addressed internationally with unified customs codes for specific controlled chemicals and associated labelling standards.
- *Geographical Constraints:* Kyrgyzstan while a relatively small country has extensive borders with four neighbouring countries (China, Kazakhstan, Tajikistan, and Uzbekistan). In total, 67 official border points exist with formal customs inspection. However, there are also numerous unofficial border crossing points, often in remote areas, that allow uncontrolled access to the country.
- *Product Packaging Factors:* Presently, the import of most HFCs occurs in relatively small single use containers, a departure from the historical practice of import of HCFCs in larger containers directly from producers in China. Container sizes typically range in size from 0.250 to 13.6 kg. It is also known that there is substantial variation in the accuracy of labelling in terms of reflecting what the contents are. This is a particular issue with refrigerants originating in China.

- *Economic Factors:* Currently, the main economic factor that might promote illegal trade and avoidance by importers and end users of licensing/registration requirements is the application of sales taxes and import duties, common to any imports. The current rate of import duty is 5 % for HFCs, and a sales tax of 12 % is applied. Informal evaluation of HFCs prices of legally and illegally imported material indicates that HFCs prices are typically US$15-18/kg which roughly corresponds to the taxes/import duty applied.

ii) **Survey (Bottom Up) data:** This methodology is based on developing consumption data from the inventory of the stock of equipment within the overall RACHP sector, calculating the bank of HFCs it contains, and then applying appropriate leakage rates to determine the annual servicing demand that should apply. The leakage rates used were gathered for various equipment types identified in the inventory process as compared for consistency with reported experience-based data. Where in-country assembly of equipment in the country is involved, the filling of such new equipment is considered a servicing requirement in these calculations. In the case of imported pre-blended polyol used in foam applications, data is collected as required in Article 7 reporting but is not considered consumption in the country.

The inventory data was obtained through a survey process undertaken between June and October 2022 involving data collected directly at the enterprise level, including import/distribution enterprises, end users of HFCs and HFC containing equipment, and refrigeration servicing organizations. Additionally, statistical data from official sources related to the amount of HFC containing equipment in the country was collected. The survey work utilized the extensive network of contacts maintained by the NOC generally and particularly in the refrigeration sector, including involvement of the national refrigeration servicing association. Additional contacts among end-users generally were obtained through relevant national and local government agencies, as was the statistical data related to estimated total inventory of operating HFC containing equipment.

Given the relatively small size of the country as well as the general concentration of refrigeration and air conditioning equipment in several regions and urban centres, the number of survey targets while significant was of a size that surveys could be conducted by direct contact from experts, either using telephone, electronic communication and/or visits. Appendix D provides copies of the survey forms used as the basis for information collection. Respondents were asked to respond verbally with the national experts completing the forms. Responding enterprises were then asked to verify information in writing or by e-mail, where possible and practical.

In collecting end-user data as well as data from the refrigeration servicing sector, the equipment involved was further sub-divided into domestic refrigeration, commercial/industrial refrigeration equipment above and below 3000-watt cooling capacity, stationary and mobile air conditioning (MAC) equipment, and transport refrigeration equipment. The survey also covered consumption associated with RACHP equipment assembly operations in all potential consumption sectors and imported pre-blended polyol insulation products. In total, more than 1580 end-users (including 8 equipment assembly enterprises), 10 importers/distributors, 107 refrigeration service providers, and 6 foam sector enterprises were contacted. The response rates were 87%.

The survey results were supported by the use of statistical data available from the National Statistics Committee related to the inventory of refrigeration equipment of various categories in the country and estimation of numbers of households, commercial trade and food establishments, institutional buildings and facilities, the latter being used to estimate the number of smaller domestic and commercial refrigeration units and A/C units.

The proportion of units of each category using HCFCs, HFCs and natural refrigerants (NR) by category was estimated based on current inventory experience are:

Equipment Application Category	**HCFC**	**HFC**	**NR**
Domestic refrigeration equipment	0%	37%	63%
Commercial refrigeration equipment, with cooling capacity up to 3000 watt	12%	83%	5%

Industrial refrigeration equipment, with cooling capacity above 3000 watt	12%	88%	0%
Stationary and mobile air conditioners	10%	90%	0%
Refrigerators on trucks	10%	90%	0%
Assembly of equipment	0%	95%	5%

The average HFC equipment charge, and annual servicing requirements applied are listed below based on the distribution of equipment and reported service frequencies and leakage rates in derived from inventory information. Average charge and leakage rates used are generally consistent with published global estimates of equipment emission rates[2],[3] as adjusted for the mixture of equipment sizes observed in the country.

RACHP Sub-Sector	Av. Charge (kg.)	Av. Leakage rate (%/yr.)
Domestic refrigeration equipment	0.12	0.5%
Commercial refrigeration equipment < 3000 watt	2	35%
Industrial refrigeration equipment > 3000 watt	25	25%
Domestic air conditioners	0.8	10%
Commercial air conditioners	5	10%
Industrial air conditioners	50	10%
Heat pumps	80	10%
Chillers	100	15%
Transport refrigeration	1.5	50%
Mobile air conditioners (MAC)	0.8	20%

iii) **Validation:** The process of data validation was built into the survey work applicable to estimates of servicing consumption. The assumptions made for purposes of statistical analysis based on banks of equipment being checked for consistency by actual enterprise specific survey information that confirmed correlation with equipment inventories and typical leakage rates (overall annual service demand). The comparison of overall consumption for 2022 being used in the KIP (as described in Section II.2) as determined by the "bottom up" survey/statistical approach (236.3 MT including pre-blended polyol) correlates well with the "top down" consumption obtained from the import license/customs data information which was 236.1 MT including pre-blended polyols. The relatively small difference between the adopted bottom-up data and top-down import data is thought to be attributable to the recording of imports in 2022 but which are held in inventory and not consumed until the following year. Additionally, Kyrgyzstan's Article 7 reported consumption is generally consistent with current per capita consumption estimates available for a number of similar countries in the CIS region when normalized with GDP. Table II-1 below illustrates this.

Table II-1: HFC Consumption Per Capita Comparison for Similar CIS Countries

Country	Population (Millions)	GDP US$/ person	Estimated 2022 HFC Consumption (mt)	Consumption per Capita (mt/Million)	Consumption per Capita per GDP (mt/Million/$)
Kyrgyzstan	7.00	1,951	215.1	30.73	0. 015
Armenia	2.97	4.670	157.6	53.06	0.01
Tajikistan	9.75	897	181.4	18.61	0.02
Moldova	4.01	5,314	215.3	53.7	0.01

[2] "2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories" at https://www.ipcc-nggip.iges.or.jp/public/2019rf/pdf/3_Volume3/19R_V3_Ch07_ODS_Substitutes.pdf

[3] "Guideline to Conduct an ODS Bank Inventory" GIZ, 2017, https://www.giz.de/en/downloads/giz2017-en-no1-guideline_-ods-banks-inventory.pdf

II.2 HFC consumption data

HFC Consumption: Tables II-2 and II-3 provide Kyrgyzstan's HFC consumption profile by HFC substance for the period 2015 through 2022 in mt and CO_2eq. respectively. The data for the 2015 is based on HFC specific survey work conducted in 2016 funded by the Climate and Clean Air Coalition (CCAC). The years 2016 and 2017 were estimated by statistical extrapolation of the 2015 survey-based inventory results. In 2018, Regulation No. 594 of 09/19/2009 on Import and Export of ODS and ODS-containing Products was updated to add HFCs to the annexes to the Resolution as unlicensed substances but required their import to be reflected in quarterly reports from Custom's authorities. From 2018 through 2021, the data is based on official data on HFC imports from Customs supported by the required importer reporting which then was used for Article 7 and Country Programme reporting. As described above, the 2022 data is based on the bottom-up detailed survey work and associated statistical analysis undertaken as part of the KIP preparation project.

The principal observations noted in reviewing this data are summarized as follows:

- HFC consumption remained generally constant from 2015 through 2018 but then showed a significant increase between 2019 and 2022, noting that it was relatively stable between 2019 through 2021 but then showed a large increase in 2022 (35%).
- The predominant HFCs currently being consumed are HFC-134a and R-404A both of which track the 2015-2022 growth pattern noted above and in terms of CO_2 eq. each account for 36% of 2022 consumption. R-410A and R-507A accounted for 12% and 16% of 2022 consumption respectively.

The observation of relatively constant HFC consumption up to 2018 and then its variable but significant increase through 2022 is primarily attributable to the impact of the country's accelerated phase out of HCFC forcing conversion and coincident increase in economic growth driven demand in the refrigeration and A/C sectors. The stabilization of consumption in demand in 2020 and 2021 is attributed to the economic uncertainty and slow down associated with the COVID-19 pandemic. Based on observations made during the bottom-up survey work, the substantial increase in servicing demand in 2022 is attributed to the compensating recovery of this as deferred maintenance was addressed and key demand sectors for high use/GWP HFCs (HFC-134a, R-404A, R-507A) such as commercial/ industrial/mobile air conditioning, and commercial and transport refrigeration transport rebounded. No evidence was observed that there was a stockpiling in anticipation of pending Kigali related control measures. The NOC is monitoring trends in 2023 imports and user demand with the observation that trends indicate that is stabilizing back to lower levels in these years followed by anticipated growth as well as an increase in switching to lower GWP HFC in some applications.

Table II-2: HFC Consumption in mt between 2015 -2022

Substance (MT)	2015	2016	2017	2018	2019	2020	2021	2022
HFC-32	0.0	0.02	0.03	0.04	0.06	0.62	0.0	0.0
HFC-134a	49.9	54.3	56.5	58.7	91.3	85.8	34.7	122.4
R-404A	29.0	26.7	25.5	24.3	26.6	25.0	15.8	44.4
R-407C	0.5	1.8	2.5	3.1	2.7	4.0	34.1	1.0
R-410A	16.1	12.0	9.9	7.8	25.6	24.1	63.2	27.7
R-507A	1.5	1.6	1.7	1.7	2.8	3.3	11.2	19.6
Total RACHP	**97.0**	**96.3**	**96.0**	**95.7**	**149.1**	**142.8**	**159.0**	**215.1**
HFC-365mfc	16.6	23.5	26.9	30.4	34.7	20.8	14.4	17.6
HFC-245fa	16.6	10.6	7.6	4.6	5.2	3.5	3.3	3.4
Total Pre-Polyol	33.3	36.1	34.5	35.0	39.9	24.3	17.7	21.0
Total HFC	**130.2**	**130.4**	**130.5**	**130.7**	**189.0**	**167.2**	**176.8**	**236.1**

Table II-3: HFC Consumption in CO_2 Eq. tonnes between 2015 -2022

Substance	GWP	2015	2016	2017	2018	2019	2020	2021	2022
HFC-32	675	0	14	20	27	41	419	0	0
HFC-134a	1,430	71,353	77,647	80,734	83,941	130,559	122,694	49,678	175,032
R-404A	3,921.6	113,817	104,556	99,925	95,295	104,515	98,158	61,992	174,199
R-407C	1,773.85	930	3,214	4,357	5,499	4,789	7,147	60,506	1,774
R-410A	2,087.5	33,651	24,967	20,625	16,283	53,440	50,246	131,972	57,824
R-507A	3,985	5,858	6,356	6,605	6,854	11,158	13,071	44,473	78,106
Total RACHP		**225,607**	**216,753**	**212,326**	**207,899**	**304,302**	**291,736**	**348,550**	**486,855**
HFC-365mfc	794	13,169	18,653	21,395	24,138	27,552	16,531	11,450	13,990
HFC-245fa	1,030	17,083	10,910	7,824	4,738	5,356	3,605	3,4230	3,518
Total Pre-Blended Polyol		30,251	29,563	29,220	28,876	32,908	20,136	14,880	17,508
Total HFC		255,858	246,316	241,546	236,775	337,210	311,872	363,430	504,363

HFC Baseline: The HFC phase down compliance baseline calculated from the establish 2020, 2021 and 2022 Article 7 and matching Country program consumption HFC data in Tables II-2 and II-3 above and the previously established HCFC baseline is as illustrated in below. The established compliance baseline applicable to the 2024 freeze compliance requirement is 450,257 CO_2 Eq. tonnes.

HCFC baseline in CO_2 Eq tonnes	114,681
65% of the HCFC baseline in CO_2 Eq tonnes	74,543
Average 2020/2021/2022 HFC consumption in CO_2 Eq tonnes	375,714
HFC Compliance Baseline in CO_2 Eq. tonnes	**450,257**

HFC Importers: Kyrgyzstan initiated extended licencing provisions to HFCs in 2021. Table II-4 below provides a list of these for 2021 and 2022 along with licenced amounts imported.

Table II-4: Refrigerant Imports by Licensed Importer for the Period 2021 – 2022 (mt)

Licenced Importer	2021	2022
Kholod KG Ltd.	27.9	55.8
Karibe South LLC	3.7	4.4
IE Storozhenko	49.2	28.1
Promkholod LLC	51.5	
Dix Group LLC		20.3
Union Cage Group LLC		39.3
Smart Logistics Group LLC		9.3
Well Group LLC		21.0
Trans Service KG LLC		0.2
Kudaiberdiev LLC		1.5
IMPULS INVEST LLC		20.9
IP Podkopaeva E.A.		5.7
Kholod Service LLC	27.2	8.8
Total	**159.5**	**215.1**

Source: NOC

Availability and Cost of Alternatives: *Low GWP alternatives are commercially available for all current large volume HFC applications globally but only on a limited basis in Kyrgyzstan. In some high-capacity cooling applications such as installations with capacities of more than 3 kilowatts in the southern part of the country where summer temperatures are high, commercial availability of non-HFC replacements typically with specific various proprietary HCs is absent. While it is*

anticipated that wider application of other natural refrigerants in new equipment such as CO_2 and NH_3 will occur in the future these alternatives are not currently offered in the local market, this will likely occur only after these products are established in developed countries. All alternatives have affordability barriers either in terms of the capital cost of non-HFC equipment and the cost of refrigerant, or in some cases both. The Table II-5 below illustrates representative local market price ranges for refrigerants in use currently, as well as international prices for a number of alternatives not currently available locally. Table II-6. provides comparative prices for various common types of equipment using HFCs and alternatives.

Table II-5. Comparative Indicative Chemical Price Ranges (USD/kg)

HFC-134a	R-404A	R-407C	R-410A	R-507A	HC-600a	Ammonia	HC-290a
11.10	16.00	14.90	13.90	17.10	12.00	3.00	18.60
C-Pentane	**N-pentane**	**HFC-245a**	**Forane 427**	**HFC-422d**	**HFC-417a**		
2.75-3.30	1.95-2.20	8.90-9.60	17.00	35.00	51.00		

Table II-6: Comparative Indicative RAC Equipment Cost Ranges (US$/Unit or System)

Equipment Description	HFC	Other
Domestic Refrigerators (360 l)	200-1,000 (HFC-134a)	200-1,000 (HC-600a)
Split System A/C (3 kW)	520-630 R-410A	n/a
A/C units/Heat Pumps (5kW)	630-890 R-410A	n//a
Condensing Units (10-16 kW)	2,300-2,800 (R-404A)	n/a
Cold Rooms (10-15 kW)	5,000-7,000 (R-404A)	n/a
Chillers (120 kW)	16,000 (Any suitable HFC blend)	n/a

II.3 Sectoral distribution of HFCs

Table II-7 below provides the overall sectoral distribution of HFC and HFC blend consumption all attributed to RACHP servicing including the initial filling of equipment assembled in the country. Also included as a separate category from servicing demand is the use of HFC contained in imported pre-blended polyol used for construction insulation.

Table II-7: HFC Consumption for 2020-2022 by Sector Application/HFC in mt/ CO_2 eq. tonnes

Sectors	HFC	GWP	2020		2021		2022	
			mt	CO2 Eq t	mt	CO2 Eq. t	mt	CO2 Eq. t
Domestic refrigeration	HFC 134a	1,430	8.580	12,269.40	3.474	4,967.82	6.120	8,751.60
Commercial refrigeration < 3000 watt	HFC 134a	1,430	12.870	18,404.10	5.211	7,451.73	6.120	8,751.60
	R 404A	3,921.60	10.012	39,263.06	6.316	24,768.83	20.930	82,097.10
	R 507A	3,985	1.148	4,574.78	3.906	15,565.41	6.860	27,337.10
Industrial refrigeration > 3000 watt	HFC 134a	1,430	12.870	18,404.10	5.211	7,451.73	6.980	9,976.82
	R 404A	3,921.60	15.018	58,894.59	9.474	37,153.24	23.470	92.021.91
	R 507A	3,985	2.132	8,496.02	7.254	28,907.19	12.740	50,768.90
	HFC 134a	1,430	12.870	18,404.10	4.169	5,961.67	7.344	10,501.92

Domestic air conditioning	R 410A	2,087.50	7.221	15,073.84	18.966	39,591.53	8.310	17,347.13
	HFC 32	675	0.217	146.48	0	-	0	-
Commercial air conditioning	HFC 134a	1,430	12.870	18,404.10	6.253	8,941.79	4.896	7,001.28
	R 410A	2,087.50	7.221	15,073.84	18.966	39,591.53	8.310	17,347.13
	HFC 32	675	0.248	167.40	0	-	0	-
Industry air conditioning	HFC 134a	1,430	4.290	6,134.70	1.737	2,483.91	1.591	2,275.13
	R 410A	2,087.50	4.814	10,049.23	12.644	26,394.35	5.540	11,564.75
	HFC 32	675	0.155	104.63	0	-	0	-
Heat pumps	R 410A	2,087.50	3.611	7,536.96	9.483	19,795.76	4.155	8,673.56
	R 407C	1,773.85	1.612	2,859.45	13.644	24,202.41	0.4	709.54
Chillers	R 410A	2,087.50	1.204	2,512.35	3.161	6,598.59	1.385	2,891.19
	R 407C	1,773.85	2.418	4,289.17	20.466	36,303.61	0.6	1,064.31
Transport	HFC 134a	1,430	4.290	6,134.70	1.737	2,483.91	18.360	26,254.80
MAC	HFC 134a	1,430	17.160	24,538.80	6.948	9,935.64	70.992	101,518.56
Total HFCs in RACHP in mt and Co2 eq t			**142.83**	**291,735.69**	**159.02**	**348,550.64**	**215.10**	**486.854.64**
Construction Insulating Foams	HFC 365mfc	794	20.820	16,531.08	14.420	11,449.48	17.620	13,990.28
	HFC 245fa	1030	3.500	3,605.00	3.330	3,429.90	3.415	3,517.45
Total Pre-Blended Polyol in mt and Co2 eq t			**24.32**	**20,136.08**	**17.75**	**14,879.38**	**21.03**	**17,507.73**
Total: Consumption of HFCs in mt and Co2 eq t			**167.15**	**311,873.86**	**176. 77**	**363,430.02**	**236.13**	**504,362,37**

The data for estimating servicing consumption by application above was based on the "bottom up" methodology described in Section II.1 (i) using a survey questionnaire and direct interview contact with importers, distributors, serving companies and particularly end users. It involved building servicing demand based on the inventory of equipment in each sector supplemented with official statistical data related to the amounts of the various types of equipment in service. The assumptions used respecting unit charge and leakage rates are likewise provided in Section II.1 (i) above. Table II-8 below provides the estimated inventory of RACHP HFC based equipment and the bank of HFC they contained used in the analysis.

Table II-8: Estimated RACHP HFC Based Equipment and HFC Bank

Refrigeration and AC servicing subsectors	Estimated Units	Average Charge (kg,)	Estimated HFC Bank (mt)
Domestic refrigeration	590,150	0.12	70.82
Commercial Refrigeration	224,289	2	448.58
Industrial refrigeration	31,340	25	783.50
Residential AC	204,537	0.8	163.63
Commercial AC	121,772	5	608.86
Industrial AC	9,358	50	467.90
Heat pumps	2,797	80	223.76
Chillers	2,153	100	215.30
Transport	104,854	1.5	157.28
Mobile air-conditioning (MAC)	914,637	0.8	731.71

Total (mt)			**3,871.34**

HFC consumption analysis: As illustrated above, the tabular summary of servicing consumption by RACHP sector indicates that the predominate current servicing demand sectors based on 2022 consumption of HFC are mobile A/C, commercial refrigeration, industrial refrigeration, and transport. Table II-9 below shows the % of annual demand in mt and CO_2 Eq. tonnes from all sectors for 2000, 2021 and 2022.

Table II-9: Total Servicing Demand % by Sector in mt and CO_2 Eq. tonnes for 2000-2022

Sector	2020 %		2021 %		2022 %	
	mt	CO_2 eq. t	mt	CO_2 eq. t	mt	CO_2 eq. t
Domestic refrigeration	6.01	4.21	2.18	1.43	2.85	2.00
Commercial Refrigeration < 3000 Watt	16.8	21.3	9.71	13.71	13.76	19.98
Industrial Refrigeration >3000 Watt	21.0	29.4	13.80	21.09	17.41	27.45
Domestic A/C	14.2	11.5	14.55	13.07	7.28	6.36
Commercial A/C	14.2	11.5	15.86	13.92	6.14	5.56
Industrial A/C	6.5	5.6	9.04	8.29	3.32	3.16
Chillers	3.7	3.6	14.54	12.62	2.12	2.14
Heat Pumps	2.5	2.3	14.86	12.31	0.92	0.90
Transport	3.00	2.1	1.09	0.71	13.21	9.28
Mobile A/C	12.01	8.4	4.37	2.85	33.00	23.18

In 2022, the distribution of demand expressed as mt for the predominate sectors were mobile A/C (33%), industrial refrigeration (17%), commercial refrigeration (14%), and transport (13%) accounting for 77% of servicing demand. Expressed in CO_2 eq. tonnes servicing demand in the predominate sectors (79% of demand) was mobile A/C (23%), industrial refrigeration (27%), commercial refrigeration (20%), and transport (9%). Over the last three-year period, this illustrates trends in demand by sector a gradual increase in demand in commercial and industrial refrigeration attributable to modernization and growth in food distribution and retail operations, a significant 2022 increase in mobile A/C and transport likely attributable to general economic growth and COVID recovery.

HFC-based pre-blended polyols: Tables II-2 and II-3 above provide consumption of HFC-365mfc and HFC-245a from 2015 through 2022 in construction related insulation foam applications. Up to 2019, this consumption was a significant contributor to total HFC consumption, but both its contribution and absolute amount has declined since that time. Based on current practice it is not included in the HFC baseline but may be considered as part of the Kigali phase down programming in the future as ExCom decisions may provide for.

A. HFC-based manufacturing sector

Kyrgyzstan has no HFC-based manufacturing at the present time and this KIP is presented on the basis that the country is a servicing only country.

B. Refrigeration servicing sector (including refrigeration and air-conditioning)

All consumption in Kyrgyzstan is for servicing RACHP equipment inclusive of initial filling of locally assembled equipment (accounting for 10-15% of RACHP servicing consumption). This section provides a profile of the servicing

sector in the country with cross reference to methodologies and consumption data described above in Section II.1, II.2 and II.3 as appropriate.

Estimated population of equipment: Table II-8 in Section II.3 provides the estimated population of equipment by RACHP sector applications as determined by the bottom-up survey/statical data methodology described above including number of HFC-based units and estimated bank of HFCs. The average charge assumed in this analysis discussed in Section II.1 and the % of consumption in each application sub-sector us provided in Table II-9. This overall consumption data by RACHP sub-sector is summarized in the format specified in Appendix A of the updated interim guide issued by the MLF Secretariate (July 2023) for presentation of Stage I KIPs.

Non-HFC-based alternatives: The proportion of units of each application category using HCFCs, HFCs and natural refrigerants (NR) by category was estimated based on current inventory experience is provided in Table II-10.

Table II-10: Estimated distribution of refrigerant use in RACHP equipment in use

Equipment Application Category	HCFC	HFC	NR
Domestic refrigeration equipment	0%	37%	63%
Commercial refrigeration equipment with cooling capacity up to 3000 watt	12%	83%	5%
Industrial refrigeration equipment, with cooling capacity above 3000 watt	12%	88%	0%
Stationary and mobile air conditioners	10%	90%	0%
Refrigerators on trucks	10%	90%	0%
Assembly of equipment	0%	95%	5%

In general, the market penetration of low GWP natural refrigerants is low with the only application sector where this is now occurring in a significant way is domestic refrigeration where R-600 based units now predominate, along with some limited use of R-600 in commercial refrigeration including in local assembly of such equipment. In section II.3, indicative data is provided in Tables II-5 and II-6 covering the indicative market costs of refrigerants and equipment utilizing HFCs and natural refrigerants. The general conclusion remains significant barriers to introduction of low GWP refrigerants in other application sectors associated with cost, end user absence of experience with them, and specific to the refrigeration servicing sector the need for additional technician training, specialized equipment and establishment of safety related measures and standards.

Sources of RACHP refrigerant, equipment and systems:

Survey information from importers and distributors as well as refrigeration service providers indicates that the supply of HFCs to the country has historically originated primarily from China, although lesser amounts are received from the UAE (originating in India) and from Russia although the latter has become a secondary source of supply in recent years. The current distribution of imports is China - 80%, UAE - 5%, and Russian Federation – 15%. Import of fully formulated polyol based on HFC-245fa and HFC-365mfc has been mainly from EU but has also been supplied by a system house in Russia. Import of HFCs from China in particular occurs in relatively small containers, often purchased through distributors filling these containers and who provide limited traceability to original source of production. The importers and distributors in the country are typically relatively small and serve local or regional markets. Additionally, service companies, larger end-users and individual service technicians may import themselves, directly periodically purchasing the material in China and bringing it into the country. There are also problems with defining HFC because of the labeling. There are cases of the delivery of other unregulated substances besides HFC, for example: HCFC-22 and others, but in containers labeled as HFC-134a.

HFC based RACHP equipment and systems imported into the country originate in a range of countries though may be sold from intermediary countries. The primary source of most equipment is China given market dominance and direct border access, but also includes other countries in southeast Asia, India and Europe. The same pattern is followed for materials and components used in local assembly of equipment and spare parts. Table II-11 provides a profile for sourcing of equipment and systems by RACHP category.

Table II-11: Sourcing Profile for Imported HFC RACHP Equipment and Systems

RACHP Application Category	Countries of Origin
Domestic refrigeration	China, Turkey, Russia, Kazakhstan, Korea, Belarus, Uzbekistan, Germany, Italy
Commercial Refrigeration < 3000 Watt	China, Turkey, Russia, Kazakhstan, Korea, Germany, Italy, France
Industrial Refrigeration >3000 Watt	China, Turkey, Russia, Kazakhstan, Germany, Italy, France
Domestic A/C	China, Turkey, Russia, Korea (South), Uzbekistan, Kazakhstan, Thailand.
Commercial A/C	China, Turkey, Russia, Korea (South), Uzbekistan, Kazakhstan, Thailand.
Industrial A/C	China, Turkey, Russia, Italy
Chillers	China, Turkey, Russia, Italy
Heat Pumps	China, Turkey, Russia, Italy
Transport	China, Korea (South), USA, EU, Japan, Turkey, Russia, Kazakhstan, Georgia
Mobile A/C	China, Korea (South), USA, EU, Japan, Turkey, Russia, Kazakhstan, Georgia

Servicing companies and technicians: The business and operational structure of the servicing sector in the country involves a number of organized private registered service companies operating nationally and regionally as well as a more informal group of individual technicians operating as contractors or freelance service providers. A well-established industry sector association known as the Public Association of the Refrigeration Technicians PA "Ecoholod" represents the sector. It has a membership of 30 service companies and 150 individuals and serves as a key stakeholder partner with the NOC and government agencies. In particular, it undertakes administration of the technician certification program implemented during the HPMP and supports training and awareness initiatives in partnership with the NOC and educational institutes.

The current estimated number of active technicians is 250 working directly for end users and organized service enterprises with 600 being individual operators, many with limited training. The annual replacement requirement is estimated to be approximately 150 technicians per year. The current roster of certified technicians is 259. While the country has developed capacity to continuously train both existing and new technicians, the anticipated growth in RACHP capacity and transition to low GWP technologies as HFCs are phased down dictates that this capacity must be maintained and enhanced in terms of ensuring sufficient numbers of appropriately trained technicians are available.

Table II-12 provides a summary of organized service organizations and as applicable individuals based on membership in "Ecoholod" are the national industry association for the servicing sectors representing the refrigeration servicing organizations in Table II-2 providing training and certification of refrigeration technicians, refrigerant collection and recovery, awareness raising for the sector. They also operate a centralized recovery, recycling and reclaim base facility.

Table II-12: Summary of Refrigeration Servicing Organizations

Servicing Enterprise	Services Provided	Geographical Coverage	Employed Technicians
ROO Ecoholod	Training and certification of refrigeration technicians, refrigerant collection and recovery,	Chui, Osh, Issyk-Kul, Jalal-Abad, Batken oblasts and Bishkek	12

	awareness raising of refrigeration technicians.	city.	
OOO Kholod KG	Supply, assembly, installation, repair and maintenance of RACHP	Chui oblast, Bishkek	8
Karibe South Ltd.	Supply, assembly, installation, repair and maintenance of RACHP	Kyrgyzstan, Kazakhstan	25
Promkholod LLC	Supply, assembly, installation, repair and maintenance of RACHP	Kyrgyzstan	10
IE Storozhenko Evgeny Vasilyevich Storozhenko	Supply, assembly, installation, repair and maintenance of RACHP	Chui, Talas oblasts and Bishkek city	3
Rempromkholod LLC	Supply, assembly, installation, repair and maintenance of RACHP	Chui, Issyk-Kul, Talas oblasts and Bishkek city	30
Dix Group LLC	Supply of RACHP	Kyrgyzstan	2
Union Cage Group LLC	Supply of RACHP	Kyrgyzstan	2
Smart Logistics Group LLC	Supply of RACHP	Kyrgyzstan	2
Well Group LLC	Supply of RACHP	Kyrgyzstan	2
Trans Service KG LLC	Supply of RACHP	Kyrgyzstan	2
Kudaiberdiev LLC	Supply of RACHP	Kyrgyzstan	2
IMPULS INVEST LLC	Supply of RACHP	Kyrgyzstan	2
IP Podkopaeva E.A.	Supply, assembly, installation of RACHP	Kyrgyzstan	2
Kholod Service LLC	Supply, assembly, installation, repair and maintenance of RACHP	Kyrgyzstan	12
Buudan LLC	Supply, assembly, installation, repair and maintenance of RACHP	Kyrgyzstan	50
Cholpon-Ata Technical Center LLC	Assembly, repair and maintenance of RACHP	Issyk-Kul region	12
Lothar LLC	Supply of RACHP	Kyrgyzstan	3
Climate312 LLC	Repair and maintenance of RACHP	Chui region, Bishkek	3
VentService Ltd.	Repair and maintenance of ACHP	Kyrgyzstan	30
Rembyttekhnika Osh Ltd.	Repair and maintenance of RACHP	Osh and Batken oblasts	20
Oshtorgmontazh OOO Osh city	Repair and maintenance of RACHP	Osh oblast	25
Arto LLC	Supply, assembly, installation, repair and maintenance of RACHP	Kyrgyzstan	30
Samsung Service Osh Ltd.	Repair and maintenance of RAC	Osh and Jalal-Abad oblasts	25
Planet Electronics Ltd.	Supply of RACHP	Chui oblast, Bishkek city	15
IceLand" LLC	Assembly, repair and	Chui oblast,	10

	maintenance of RACHP	Bishkek city	
IP Abdybek u. M.	Assembly, repair and maintenance of RACHP	Chui oblast, Bishkek city	2
IP Ismanov D. R.	Assembly, repair and maintenance of RACHP	Chui oblast, Bishkek city	2
IP Begimkulov K. E.	Assembly, repair and maintenance of RACHP	Jalal-Abad oblast	5
IP Baimatov A. T.	Assembly, repair and maintenance of RACHP	Batken oblast, Kyzyl-Kiya city	5

Refrigeration technical and vocational training institutions:

RPA "Ecoholod" has been training refrigeration technicians. Also, other universities and vocational schools (VS) train specialists for the country's refrigeration industry. In particular, the Department Machines and Devices for Food Production at Kyrgyz State Technological University trains mechanical engineers in the field of refrigeration and air conditioning, VS No. 3, VS No. 93, VS No. 94 and VS No. 97 in Bishkek, VS at Kyrgyz Uzbek University in Osh, Education Center Tehno-training center LLC and Education Center of RPA "Ecoholod" train electrical mechanics in the repair of refrigerators. Activities in this direction are carried out with the direct participation of members of the RPA Ecoholod. The technicians trained are mainly men, but 60% of teachers are women.

Number of refrigeration technicians trained by the vocational schools and certified by "RPA Ecohold" or "TehnoTraining Center LLC" in 2022 for the refrigeration sector of the Kyrgyz Republic from various training institutions is as follows:

	Educational organization	**Number of refrigeration technicians**
1	RPA Ecoholod	8 refrigeration technicians certified
2	KSTU n.a. I.Razzakov	no graduates
3	VS №3 Bishkek	40 electrical mechanics trained
4	VS №93 Bishkek	44 electrical mechanics trained
5	VS №94 Bishkek	27 electrical mechanics trained
6	VS №97 Bishkek	15 electrical mechanics trained
7	Tehno Training Center LLC	25 refrigeration technicians certified
8	VS at Kyrgyz-Uzbek University, Osh	72 electrical mechanics trained
	Total	**168 refrigeration technicians**

Refrigeration servicing sector profile: Table II-13 below provides a summary profile of how servicing activities are undertaken by RACHP application category including relevant points respecting: i) main problems identified during servicing; ii) main reasons for leakages during operation or losses during servicing, and iii) possible ways of reducing the identified emissions.

Table II-13: RACHP Servicing Delivery Profile

RACHP Application Category	**How Servicing Delivered**	**Reasons for Leakage**	**Possible Reduction Action**
Domestic refrigeration	Supply, repair and warranty services	Mechanical damage of the cooling unit circuit	i) Mandatory training and certification of refrigeration technicians, ii) elimination of the use of disposable refrigerant cylinders, iii) mandatory
Commercial Refrigeration < 3000 Watt	Delivery, assembly, installation, repair and warranty service	Mechanical damage of the cooling unit circuit	
Industrial Refrigeration >3000 Watt	Delivery, assembly, installation, repair and warranty service	Mechanical damage of the cooling unit circuit	
Domestic A/C	Delivery, assembly, repair and warranty service	Mechanical damage of the cooling unit circuit	

Commercial A/C	Delivery, assembly, installation, repair and warranty service	Mechanical damage of the cooling unit circuit	refrigerant leakage inspections of RACHPs, iv) mandatory refrigerant labeling and logbooks for RACHP, v) increased monitoring and inspection by authorized agencies for compliance with standards in the operation of RACHPs.
Industrial A/C	Delivery, assembly, installation, repair and warranty service	Mechanical damage of the cooling unit circuit	
Chillers	Delivery, assembly, installation, repair and warranty service	Mechanical damage of the cooling unit circuit	
Heat Pumps	Delivery, assembly, installation, repair and warranty service	Mechanical damage of the cooling unit circuit	
Transport	Delivery, repair and warranty service	Mechanical damage of the cooling unit circuit	
Mobile A/C	Delivery, repair and warranty service	Mechanical damage of the cooling unit circuit	

Refrigeration Certification Programmes: The mandatory certification of RAC specialists has been introduced in the Government Resolution "On approval of the Program on the terminal phase-out of Ozone Depleting Substances for the Period 2016-2020 (Phase 3)' Government Resolution № 419 29.07. 2016. Certification process is based on the Regulations on training and certification of RAC specialists on the basis of the training center of Gosgortechnadzor of the Ministry of Emergencies and Training programs for different levels of RAC specialists (engineers, technicians) approved by the Ministry of Education and Science in 2016. Certification of refrigeration servicing technicians and technical professionals has been in operation at two training centers, ROO "Ecohold in (Bishkek, Osh) and LLC "Techno-Training Center" in (Bishkek). Additionally, a number of individuals have been funded to attend specialty certification training at Moscow state University. Table II-14 summarizes the number of certified specialists graduated from these institutions.

Table II-14: Number of certified specialists from 2018 to 2022

Educational institution	**2018**	**2019**	**2020**	**2021**	**2022**
ROO "Ecoholod"	67	83	27	21	8
MSU PBT Moscow	6	6	5	4	0
LLC "Techno Training Center"	25	0	0	3	25
Total:	**98**	**91**	**32**	**28**	**33**

Local installation and assembly: There are 8 companies listed in Table II-12 above that provide installation and assembly of RAC equipment including first charge along with general servicing capacity. These companies import equipment components, assembly them, either in a workshop or on-site, then commission them for customers. This is provided primarily in the commercial sector and buildings.

II. STRATEGY

III. HFC PHASE-DOWN STRATEGY

III.1 Overarching strategy

The basis for Kyrgyzstan's overarching HFC phase down strategy is its policy commitment to comply with and, if possible, accelerate the phase down schedule set for Article 5 Group I countries in the Kigali Amendment ratified in 2018. More specifically, this means freezing the HFC baseline consumption defined in Section II.2 above in 2024 and then meeting reductions of 10% by 2029, 30% by 2035, 50% by 2040 and 80% by 2045.

KIP stages and reduction targets: To meet that commitment, Kyrgyzstan proposes a KIP program undertaken in four stages. Stage 1, covered by this project encompasses the period 2024-2029, Stage II would cover the period 2030-2035, Stage III would cover the period 2036 -2040. Stage IV would cover the period 2041-2045. Relative to the 2024 baseline of 450,257 CO_2 Eq. tonnes, the targeted amounts of HFC consumption in the completion year of each stage would be: i) Stage I – 405,231 CO_2 Eq. tonnes; ii) Stage II – 315,180 CO_2 Eq. tonnes; iii) Stage III – 225,126 CO_2 Eq. tonnes and iv) Stage IV – 90,051CO_2 Eq tonnes.

Priority sectors and substances: Reduction strategies and activities will be focused on sectors and substances having the highest servicing consumption based on CO_2 Eq. as well as the developing availability of affordable low GWP technology and refrigerants in the local market for accelerated conversion. For the Stage I period priority servicing sub-sectors currently identified are commercial and industrial refrigeration, and mobile air conditioning based on their accounting for 75% of current consumption. Priority substances identified are HFC-134a, HFC-404A, HFC-410A and HFC-507A which account for 99% of consumption. It is also recognized that flexibility in applying these priorities needs to be exercised by recognizing changes in consumption patterns and market conditions. Additionally, elimination of imported pre-blended polyol using HFCs for construction insulation, not included in baseline consumption, will be addressed subject to future ExCom decisions and guidance on addressing it.

Estimated Stage I reductions and cost effectiveness: The total cumulative HFC consumption reduction from the 2024 freeze consumption of 450,257 CO_2 eq, tonnes through to the 2029 10% of baseline compliance consumption level is 45,026 CO_2 Eq. tonnes. Based on the requested KIP funding for this period (Section III.3), the cost effectiveness is estimated to be USD 4.2/CO_2 Eq. tonnes.

Strategic directions and actions: The overall strategy to achieve these compliance objectives over the 2024-2045 period will be based on the following principal directions and actions tailored to the country's status as a servicing only country:

a) *Introduction of restrictions on HFC consumption:* Utilizing successful experience with HCFCs, the existing system of establishing volumes in licenses for the import, purchase and sale of ODS/HFCs as already updated and expanded to address HFC consumption will be utilized for HFC phase down. Such restrictions provide the primary regulatory and information tools to continuously manage incremental consumption reductions in accordance with compliance targets. This will involve expanding the existing licensing system to include a gradual or periodic quantitative limitation of HFCs allowed in licenses issued as applied to business entities who: i) own/operate equipment containing HFCs; and ii) are engaged in maintenance and repair of HFC-containing equipment. More specifically, this includes the progressive implementation of special requirements and conditions aimed at reducing HFC consumption over the phase down period as follows:

- Prohibition of trade in used HFC containing equipment in the wholesale and retail markets in the country as well developing instructions on the management of used HFCs and HFC-containing equipment;
- Establishing reasonable restrictions on the size of containers (cylinders) containing HFCs imported into Kyrgyzstan, and establishing a ban on the use of disposable (single use cylinders) in the country, including at the retail and end-use levels;
- Revising and updating the standards governing refrigerants including the rules for maintaining large refrigeration plants, particularly the rules on keeping records of refrigeration units, detailed registration of the history of maintenance of units and technological processes, requirements for qualification/verification of knowledge of technical personnel operating the equipment;

- Conducting and maintaining an inventory of technological processes and equipment operating with controlled substances and (or) their alternatives including determination of age and estimated remaining useful life of equipment.

b) *Strengthening import controls:* Kyrgyzstan's ability to manage HFC phase down by the primary regulatory measures identified in the strategic direction and specific measures above is linked to the ability to control imports which is identified as a priority strategic direction. This has two aspects:

- The first involves the importance of the continued development of the practical capacity of national custom's authorities to identify and monitor imports of controlled substances and equipment/products containing them at border entry points and clearance sites. The nature of the country's borders, the large number of both official and unofficial crossing points, and limitations on customs staffing create a risk of illegal trade that would undermine ability to meet HFC phase down requirement. The application regulatory measures such as quotas and import licenses could increase this risk in the absence of appropriately trained staff coverage and availability of equipment to enable the identification of HFCs, including those contained in imported products. The practical aspects of addressing these issues domestically are addressed in strategic directions and activities addressing the need for expanded sustained training, expansion of coverage and supply of screening and analytical capacity in strategic directions described below.
- The second aspect of import controls relates to the need for international harmonization of transborder trade created by the establishment of the EEU Customs Union that the country is part of. As a consequence, Kyrgyzstan currently has reduced ability to control HFC imports at a national level which is something that would be addressed through adoption of a trilateral agreement (Kyrgyz Republic, Russian Federation, Kazakhstan) on the movement and accounting of HFCs and products containing them. This involves development of an electronic system of control of HFC imports from third countries and member states of the Customs Union, control of the movement and use of HFCs within the Customs Union. Additionally, work needs to be done bilaterally with the principal third party countries exporting controlled substances to Kyrgyzstan directly in terms of export notifications.

c) *Strengthening of technical, educational and institutional capacity:* The county's progress to date has been underpinned by the efforts to build and maintain technical, educational and institutional capacity related to the Montreal Protocol. Continuing this remains a key strategic priority through the phase down of HFCs, particularly in the early KIP stages is a key strategic priority particularly in the areas identified in the following:

- *HFC phase down regulatory training:* Undertaking seminars, training events for customs and environmental protection officials, and specialists in repair and maintenance of refrigeration units supports and sustains familiarization of operational personnel people with the requirements of normative legal acts, including those on import control, regulation of HFC end use consumption, customs control, and prevention of illegal trade.
- *Long term customs training programs*: Sustained training and retraining of customs officials directly involved in cargo clearance at border crossing points and customs checkpoints on a permanent basis will be required throughout of the HFC phase down process. This will encompass customs inspectors and persons engaged in related environmental protection activities.
- *Refrigeration industry technical capacity:* Building on what has been achieved to date, enhancing technical capacity of the refrigeration industry generally and particularly the servicing sector remains a high strategic priority recognizing the need for increased efficiency in HFC management in terms of limiting emission and introduction of low GWP alternatives. This will require integration of measures aimed at improving energy efficiency and reducing greenhouse gas emissions, development of information materials, training modules, training of national instructors (teachers), refrigeration technicians, working with HFCs and their low GWP alternatives.
- *Support for institutions of higher and vocational education:* Linked to the points above, a long-term strategic activity will be to permanently establish entry and continuing education programs for customs and environmental personal in specialized institutions of higher and vocational education (Kyrgyz National Technical University, technical lyceums). This would be linked to technical training and certification programs related to the RACHP sector. These programs should ultimately be self-sustaining but initially be supported at

least under the Stage I KIP including the supply of modern training equipment and standard tools and instruments for practicing the practical skills of repair and maintenance of equipment.

- *Support for Customs Authority Equipment:* It is also identified that additional development of capability for detection and analysis of the full range of HFCs is required to identify HFC chemicals and equipment/products containing HFCs both by customs authorities in the field using portable devices and in environmental protection laboratories to enhance enforcement of import control.
- *Labelling and Information Exchange:* Preparation of practical instructions on labeling and marking of regulated HFCs, and information exchange procedures are required for effective customs control.
- *Harmonization with international standards:* Adaptation of European standards and regulations on current practice for management of the existing banks and servicing equipment of HFCs and low GWP alternatives as they are introduced. This will serve to reduce leakage, increase recovery and reuse of refrigerants and facilitate recycling or recovered HFCs and alternatives as well as contribute to reduced energy consumption.

d) *Retrofit/replacement of refrigeration equipment:* A principle long term strategic direction will be the retrofit or replacement of the existing stock of HFC based RACHP equipment with low GWP technologies. The strategy will be based on a progressive introduction of such technologies as existing equipment is retired both at end of life or accelerated by incentives and selective regulatory and/or financial disincentives on HFC based imported equipment introduced over time as appliable.

Recognizing that the current penetration of low GWP technology is relatively low, particularly in priority high consumption RACHP subsectors noted above, demonstrations using low GWP technologies (i.e. ammonia, CO2, propane, isobutene) are considered necessary to reduce barriers to national adoption of such technologies. This will be a priority in early KIP stages to the degree funding is available. In that regard the integration of this type of activity with parallel promotion of higher energy efficiencies pursued in coordination with other MLF funding windows.

With respect to the development and implementation of an incentive concept for industrial and commercial refrigeration equipment owners and national enterprises assembling and installing such equipment. This will have main target area:

- *Promoting the use of low-global warming potential technologies in the country that provide high energy efficiency in new facilities or in existing HFC facilities*. The main priority will be given to the use of natural refrigerants with high efficiency, low global warming potential, including CO_2, hydrocarbons, ammonia or cyclopentane.

e) *Development of a comprehensive refrigerant management system:* A long term strategic direction to be pursued within the overall framework of HFC phase down is to develop a sustainable, market based, fully integrated commercial refrigeration management system built around the refrigeration servicing sector. This will involve the implementation of modern technical requirements and capabilities providing for a high standard of refrigeration servicing, maximizing emission reduction and energy efficiency, optimizing recovery/recycling/reclaim, and ensuring the capture, secure storage and environmentally sound elimination of EOL controlled substances. This will be based on the three interrelated activities described below:

- *Improving refrigerant recovery and recycling practices*: This activity involves equipping qualified technicians with modern equipment for recovery and recycling of HFCs and low GWP alternatives along with the necessary leak detection tools and equipment, application of best HFC and low GWP alternative management practices and putting in place necessary incentives to collect and reuse refrigerants. It also involves strengthening existing recycling service centers in terms of both equipment, infrastructure and technical capacity, including potential for reprocessing and reclaim of contaminated refrigerant as sufficient volumes of refrigerants are captured to justify this kind of investment. Together this will effectively reduce the need to purchase new refrigerants and reduce their emissions.
- *Modernization of the infrastructure of refrigerants distribution*: Experience in the EU shows that compliance with control requirements on the import of refrigerants in recyclable or multi-use containers with their subsequent sale for maintenance and repair of equipment is of great benefit. It facilitates import controls and

reduces emissions by avoiding the loss of residual refrigerant in disposable containers, reduces costs by increasing the local value-added contribution, and facilitates the capture of refrigerant for reprocessing and re-use as well as capture of EOL unwanted refrigerant that otherwise be released.

- *Establishment of EOL management capacity for unusable refrigerants*: The capacity to capture and safely store refrigerants that are no longer usable as they are removed from dismantled equipment, or for which there is no use underpins preventing its emission. This requires the introduction and implementation of an EOL management system that ultimately involves environmentally sound destruction of this material. This requires economic mechanism to ensure collection, secure storage to achieve economies of scale for destruction and transfer for such environmentally sound destruction of EOL controlled substances. It is understood that environmentally sound destruction of unusable controlled substances in the country or through export arrangements will be costly. Therefore, viable market-based financial mechanisms will be required. The initial step in the process involves the establishment of inventories of unwanted controlled substances, the rate these are generated from the bank of controlled substances over time and development of a plan to implement an EOL management system. This first step as provided for by a funding window created under ExCom Decision 91/66 will be pursued in parallel with the Stage I KIP with the expectation that further support may follow for the plan's implementation with a focus on developing EOL management capability within the developing refrigeration management system and exploring linkages to the refrigerant distribution supply chain to accommodate disposal of EOL controlled substances using developing application of carbon finance and extended producer responsibility mechanisms.

f) *Stakeholder Awareness and Consultation***:** An important strategic direction in the overall HFC phase down strategy is to maintain continuous communication and consultation with stakeholders impacted by HFC phase down. These include local and national institutional stakeholders, the affected commercial parties, consumers of refrigeration products and associated services, and the general public. This would involve activities as regular consultations with all stakeholders using a wide range of communication tools on HFC phase down actions. This would include legislative/regulatory, capacity building initiatives, the links to climate change, programs involving equipment modification/replacement associated with introduction of low GWP and energy efficient alternatives. Particular emphasis would be placed on advance warning of the reduction and eventual ban on the import of HFC-containing equipment, and the introduction advanced refrigerant management system that provides for integration of the recycling, recovery, reuse and EOL management of HFCs activities.

g) *Coordination and synergies with other multilateral environmental agreements*: The overall strategy applied for HFC phase down recognizes that this cannot be done in isolation and has several specific linkages to other multilateral agreements. The most important of these is the UN Framework Convention on Climate Change (UNFCCC) to which the country is a party. The Climate Change Office (CCO) within MNRETS is designated as Lead National Authority with respect to the UNFCCC and is responsible for compiling the National Greenhouse Gas Inventories, including HFCs. Recognizing the primary global objective of HFC phase down reduction in its impact on climate change, the NOC facilitates the direct involvement of end-users, service companies and importers dealing with refrigeration and air-conditioning in providing the data related the HFC consumption in the various sectors and subsectors to the CCO for preparing the above inventory and other information. The other principal multilateral agreement where coordination could be required is the Basel Convention on Transboundary Movement of Hazardous Waste which could apply where the import or export of contaminated or unwanted refrigerant or used equipment containing controlled substances was involved.

III.2 Projections of HFC consumption, prioritization, and proposed reductions

Business as Usual HFC Consumption Projections: As a basis for prioritization and estimated reductions in HFC consumption required for Kigali Amendment compliance, a business as usual (BAU) scenario for projected growth was developed by NOC experts for the period 2023 through 2030 based on a year over year growth profile using current trends and understanding of the dynamics of the national service sector and markets it serves. The assumptions applied in this were:

- HFC consumption attributable to new additions to the inventory of HFC based equipment will stabilize back to pre-2022 levels in 2023 reflecting an adjustment expected following the one-time post COVID increase in 2022.

- After that it then gradually increase to a level of 3.7% per year in 2030 based on the NOC experts year by year estimated profile that considers a balance between overall economic growth and continued availability of low cost HFC based equipment and global trends toward increased availability and affordability additional and replacement using GWP equipment with lower GWP refrigerants.
- Allowance of the estimated rate HFC consumption associated HFC equipment replacement of residual HCFC equipment is 10% over the 8-year period or 1.25% per year of 2022 HFC consumption, based the current data derived during the bottom-up survey work of the portion of each sector that retains HCFC equipment as presented in Section II.1 above[4].

The resulting tabular projection by year along with compliance levels and the reductions that would be required for compliance in Table III-1.

Table III-1 Unconstrained (BAU) scenario of HFC consumption forecast based on NOU expert assessment of growth rate and required reductions (CO_2-eq tonnes)

	2022*	2023	2024	2025	2026	2027	2028	2029	2030
HFC consumption per NOC Assessment	486,855	406,572	404,469	409,773	419,16,	431,258	445,289	460,608	477,532
HFC phased in from HCFC phase-out	n/a	6,086	6,086	6,086	6,086	6,086	6,086	6,086	6,086
Total HFC estimated consumption	n/a	412,658	410,555	415,859	425,250	437,344	451,375	466,694	483,618
Montreal Protocol limit based on the estimated baseline	n/a	n/a	450,257	450,257	450,257	450,257	450,257	408,424	408,424
Required HFC reductions	n/a	n/a	**-39,702**	**-34,398**	**-25,007**	**-12,913**	**1,118**	**61,462**	**78,386**

**Based on 2022 Article 7 and Country Program reporting*

While the BAU projection indicates that Kyrgyzstan is anticipated to be able to meet the freeze obligation for several years after 2024 it will reach that level before the 2029 10% reduction takes effect after which it would be in non-compliance. The justification for the need for the KIP is based on there being a need to start laying ground work for reductions as early as possible in Stage I and potentially accelerate it. This approach was demonstrated in the implementation of the HPMP where this proactive approach served to accelerate phase out early. On this basis, the country needs to start implementing phase down measures starting with imposition of quotas governed by compliance consumption level through its licensing system effective in 2024, build full coverage and physical capacity in relation to import control, and strengthen the capacity of its servicing sector by progressively modernizing practices and infrastructure both for HFCs and increasingly introduced low GWP alternatives.

Strategic considerations for Stage I HFC phase-down: The strategic approach taken for Stage I phase down will aim to use the initial period of Stage I where anticipated HFC consumption remains below the freeze level to put in place the regulatory tools and strengthen the required human resource and servicing sector operating capacity to meet potential compliance challenges later in Stage I as the 2029 reduction phase down step is approached and reached, as well as mitigate risks and uncertainties that apply.

The strategic considerations involved in this approach will entail an emphasis on specific aspects of the overall strategy elaborated in Section III.1 namely: i) regulatory actions to control and reduce HFC consumption; ii) strengthening import controls; iii) expanding technical, educational and institutional capacity; and iv) further developing the refrigeration management system to enhance recovery/ recycling/reuse and emission reduction both for the existing bank of HFC equipment and to accommodate progressive introduction of low GWP refrigeration technology. This can be enhanced by demonstration projects depending on funding availability.

This Stage I strategic approach will be supported by a robust stakeholder awareness and consultation program. The approach will integrate energy efficiency and end of life refrigerant management initiatives applicable to the servicing

[4] The useful life of HCFC based RAC equipment while theoretically 8-10 years but in practice in Kyrgyzstan experience indicates that RAC equipment is typically maintained in service for 15-20 years, hence it is estimated that it will continue to be replaced through 2030.

sector for which funded outside the KIP. In the case of energy efficiency, this Stage I KIP proposal contains a program implementation component funded under Decision 91/65 as directed by the MLFS for activities in the servicing sector. Additionally, an EOL management initiative related to inventory and developing management plans will be covered by a standalone proposal implemented early in Stage I under Decision 91/66.

Planned reductions in the prioritized sectors and substances: For the Stage I period priority servicing sub-sectors currently identified are commercial and industrial refrigeration, and mobile air conditioning based on their accounting for 75% of current consumption. Priority substances identified are HFC-134a, HFC-404A, HFC- 410A and HFC-507A which account for 99% of consumption. The opportunities for sector and substance-specific reductions during Stage I, will be pursued based on the observed evolution of the market as reflected in import and market availability trends recognizing that some increased availability of low-cost, new and used, HFC based equipment in conveniently located smaller A5 countries. Larger A5 countries with HFC-based manufacturers may redirect capacity to smaller A5 country markets as phase down occurs in existing A2 countries and accelerated replacement of HFC based equipment may increase availability of used HFC based equipment. This will be addressed by introducing selective restrictions on such imports in the form of quotas and outright bans starting with used equipment. The energy efficiency (EE) non-investment pilot project will be focused on EE considerations for small commercial and domestic equipment.

III. RESULTS AND PARTNERSHIPS

Expected Results

III.3 Stage I implementation programme

The following presents the proposed Stage I KIP implementation programme. This is limited to the RACHP servicing sector and does not propose investment projects in the manufacturing sector. However, if future ExCom decisions open funding window opportunities related to pre-blended polyol, and refrigeration equipment assembly and installation, it would potentially seek support in these sub-sectors to eliminate HFC consumption associated with them and in the case of assembly and installation would integrate this with enhancing energy efficiency initiatives.

The following section details the proposed KIP action plan and its Stage I activities as subdivided into four components with the first three considered as non-investment components implemented through UNEP and the fourth as investment components implemented by UNDP. It is consistent with the overall strategy and designed to meet the phase down targets under the Kigali Amendment. The action plan contains three components funded in accordance with Decision 92/37, namely: i) Component 1 - Legal and regulatory action; ii) Component 2 - Technical capacity strengthening through training of Customs and refrigeration technicians; and iii) Component 4 - Investment activities supporting Components 1 and 2. Component 3 on an energy-efficiency pilot project, while an integral part of the Stage I KIP action plan, is proposed for funding under Decision 91/65. It is recognized that there is a high level of interdependence between them and the individual activities that they encompass.

During the future KIP stages (2030-2045), the country anticipates that more substantive funding would be required and available for more direct investment in equipment replacement as HFC reduction obligations increase. However, it would also plan additional activities to continue strengthening the enforcement and refrigerant management capability as well as supporting technical capacity to handle new low GWP technologies and increasing energy efficiency. This would include further work on regulatory measures to support KIP implementation.

Depending on the impact of the currently proposed KIP stage I activities, including the investment component, the following additional regulatory measures might be considered: i) Controlling the import of used HFC equipment; ii) Controlling the import of HFC based domestic A/C equipment; iii) Controlling import and installation of new large commercial HFC A/C equipment; and iv) Banning the use of non-refillable containers. Capacity strengthening activities included in the Stage I KIP might be continued as part of future KIP stages after 2029 including: i) Additional trainings of technicians on best practices; ii) Additional trainings of customs officers and improvement of customs administrative procedures; and iii) Promotion of technology awareness.

Component 4: Technical Capacity Building (UNDP)[5]

This component is complementary to the activities supported under the *Sub-Component 2.2 Strengthening capacity in the RAC sector*, through provision of equipment of training facilities and technician tools for servicing workshops. This component will also aim to support provision of technical consultancy support for the procurement activities, expansion of trainings, technical studies on alternative solutions to be considered for future pilot and demonstration projects as well as on overall monitoring and reporting of project activities. Proposed activities are described as follows:

Sub-Component 4.1. Equipment support for RAC training centers

Two training centers (one for each tranche) will be equipped for HFC and low GWP alternative refrigerant (particularly hydrocarbons) training with the following main groups of items (T1: 17,000 USD; T2: 17,000 USD):

- Refrigerant handling tools, including recovery and recycling equipment and related accessories such as refrigerant cylinders, manifolds, vacuum pumps and charging tools.
- Tools for general refrigeration service, tube work and brazing equipment.
- Tools to be able to service according to best practices of leak detection and tests of the refrigeration circuit.
- Specific tools for safe service on refrigeration systems containing flammable HC refrigerants, hereunder blow off, venting equipment and flushing equipment.
- Training tools to teach differences between different compressor types.
- Safety protection and first aid kits.

In Tranche 2, one of the training centres supported by the Stage I KIP will be additionally provided a CO2 training set-up, including a CO_2 condensing unit, CO_2 charging equipment, and piping tools for safe handling of high-pressure refrigerant (T2: 20,000 USD).

This sub-component will be supported by a national consultant to help for expansion of trainings with increased emphasis on emission reduction, integration with EE gains through better maintenance, and expansion of training scope in diverse range of refrigerants dealt with (T1: 10,000 USD; T2: 10,000 USD).

Sub-Component 4.2. Equipment support for RAC servicing workshops

In total 8 RAC servicing workshops will be supported (4 workshops in each tranche) with one set of technician tools. These sets of equipment and tools will have sufficient utility to be able to perform field, and/or workshop service, recycling for HFC refrigerants, and are similar to ones provided to the training centre but will be limited to the needs in a specific service situation. They will cover servicing requirements on HFC and low GWP alternative refrigerant based refrigeration systems (particularly hydrocarbons) (T1: 18,000 USD; T2: 18,000 USD).

These 8 toolkits will be distributed to the RAC servicing workshops in 8 different administrative regions of Kyrgyzstan, through guidance and support by the regional branches of RAC associations.

Sub-Component 4.3: Monitoring, reporting and technical support

This sub-component includes consultancy support for following activities:

- Monitoring and reporting of activities, including consultancy support on safeguards, gender equality and overall risk management for the KIP Stage I (T1: 4,000 USD; T2; 4,000 USD)
- Technical support for the procurement activities under sub-component 4.1 and 4.2, including development of technical specifications and Bill of Quantities, support on the technical evaluation, quality control on the equipment deliveries, and other relevant procurement related support as needed (T1: 2,000 USD, T2: 2,000 USD).
- Conduct consultations and technical studies to help NOC to identify and develop possible demonstration project concepts with conversions/replacements into energy efficient and low-GWP alternative systems that would be included in future KIP stages. Specific targets for these technical studies would be based on the NOC's priorities as experience develops, but initial ideas include development of demonstration project concepts for commercial

[5] In the Stage I Kigali HFC Implementation Plan, UNDP's deliverable is referred to as Component 3, whereas in the Project Document it is labeled as Component 4, since "Component 3" is retained as a placeholder for the separate EE pilot

refrigeration and/or heat pump installations, with possible conversions or replacements involving R290 or CO2 based systems (T2: 8,000 USD).

Consideration of the Multilateral Fund gender mainstreaming policy

In line with ExCom decision 92/40 and ExCom document 92/51, the MLF's operational gender mainstreaming policy through adoption of mandatory requirements and performance indicators described in Annex XXII of ExCom 92 report will be incorporated into Stage I KIP implementation.

NOC has undertaken an initial gender assessment related to women's participation in the RACHP sector addressed by the project as part of its preparation activities. The results of this research and a survey of stakeholders in the refrigeration servicing sector (service providers, importers, end users) as well as supporting educational institutions is are summarized in Table III-5 below.

Table III-5: Representation of Women in the RACHP Sector in Kyrgyzstan

RACHP Sub-Sector/Stakeholder Group	% Women
Members of national RACHP industry group (ROO Ecoholod)	8%
RACHP engineers and technicians	5%
Design institutes and stakeholder technical organizations	50%
Refrigerant importers	20%
RACHP equipment vendors (retailers)	70%
Education/training institution teaching staff	60%
State enforcement bodies (customs, border guards, environmental inspection)	30%
Ownership of end users of RACHP equipment	40%

In general, Kyrgyzstan is considered relatively advanced with respect to women's level of participation in the country's economic activity and in terms of national policies in comparison to other countries in the region and with similar levels of development[6]. Specific to the RACHP sector, the initial gender assessment data indicates that there is significant participation within supporting technical services and educational institutions and in principle affected stakeholder businesses supplying RACHP equipment and end users of such equipment, noting that the latter group's importance in terms of potential impacts associated with phase down of HFC based equipment. However, there is potential for improvement in women's participation in direct employment participation at the RACHP sectors engineering and technician levels. This is where the majority of MLF support will be directed starting over the period of the current project and increasingly in future stages of HFC phase down through to 2045.

On that basis, the NOC intends to adopt practices and measures based on the direction provided by ExCom, the MFS and guidance provided by UNDP and UNEP. This will include proactive adoption of mandatory requirements and performance indicators consistent with ExCom decision 92/40 and ExCom document 92/51 applicable to projects submitted at ExCom 94 and thereafter. To this end and based on the guidance issued by the MLFS for preparation of the Stage I KIP[7], the submission contained the completed Gender Mainstreaming Checklist (Annex #3).

In addition, under the assumption that the MLF will make separate incremental funding available in the next replenishment period (see below), specific optional requirements and indicators listed Appendix D of the MLFS guide will be included and applied to all MLF funded projects including the Stage I KIP, namely:

- Employment of a dedicated gender expert in the NOC to develop and implement gender mainstreaming outreach activities related to gender mainstreaming promotion/awareness, training, data collection and monitoring.
- Undertake comprehensive gender assessments applicable to MFS funded projects including this project.

The above proactive commitment to mandatory gender mainstreaming requirements and performance indicators associated with this multi-year Stage I KIP is based on the assumption that incremental financial resources will be made available to support this activity. The limited funding over the period available to the country for undertake the primary objective of initiating phasing down HFCs over a 6- year period provides minimal capacity to incorporate the proactive gender mainstreaming measures required beyond best efforts within existing program elements. The country is aware

[6] https://eca.unwomen.org/en/digital-library/publications/2020/04/gender-in-society-perception-study-kyrgyz-republic

[7] Interim Guide for The Presentation of Stage I Of Kigali HFC Implementation Plans, Appendix D - Indicative Requirements For Gender Mainstreaming, MLFS, July 2023

that this issue has been generally recognized by the Parties and has provided direction in Paragraph 2(f) of Decision XXXIV/2 provided to the TEAP Replenishment Task Force for consideration of "the need to allocate resources for supporting activities related to gender mainstreaming as part of the gender policy of the Multilateral Fund, taking into account the implementing agencies' existing policies to promote gender mainstreaming and the mandate set out in ExCom decision 84/92". The TEAP May 2023 Report Volume 3[8] covering replenishment in the 2024-26 triennium recommends such enabling activity funding for A5 countries based on the funding brackets utilized for the funding window created under Decision 91/66 for EOL inventories and plans. This would provide Kyrgyzstan with estimated USD 80,000 to pursue gender mainstreaming during the above period and potentially with additional sustaining funding in future replenishment periods. This general level of incremental funding applied to the Stage I KIP, as the country's principal activity for the foreseeable future, as well as other MLF projects with common requirements would allow the country and NOC to aggressively implement gender mainstreaming.

UNDP will pay a special attention to gender mainstreaming and given the technical nature of the project, the following elements will be considered during the project implementation:

- UNDP CO will place particular emphasis on gender and Leave No One Behind (LNOB) and will apply the principles and the guidelines of the UNDP Gender Equality Strategy[9] and UNDP Kyrgyzstan Gender Equality Strategy 2023-2027. In October 2019 UNDP Kyrgyzstan became one of the eight Country Offices worldwide which became a Gold Member of Gender Equality Seal Program, which is a testimony to gender being an integral part of its programming.
- UNDP will support the mainstreaming of gender equality and women's empowerment in disaster and climate risk reduction policies and plans, as well as in the budgetary frameworks of key sectors (e.g. water, agriculture, health and education). This includes supporting national capacities to collect and analyze sex- and age-disaggregated data and analyze climate and disaster risk assessments from a gender perspective.
- In addition, data from various gender analysis will be taken into consideration and integrated into decision-making processes and for the implementation of activities. Additional data will be sourced from the gender assessments in energy, environment and biodiversity from other development projects.
- Project will promote gender equality by balancing the participation in meetings, trainings, decision-making committees, to ensure that decisions and planning integrate gender perceptions and have a neutral, if not positive, impact.
- Data will be disaggregated by sex, age where possible. As the updated NDC of the Kyrgyz Republic contains gender considerations and the tracking system for progress made in NDC implementation and achievement will be designed and established and will consider gender issues.
- The Kyrgyz Government, civil society and international institutions have undertaken the implementation of a whole range of tasks - from reducing extreme poverty to environmental sustainability and universal education, reducing child mortality and promoting gender equality. The Third National Communication that was submitted in 2016 well integrates gender considerations in the relevant chapters as well as has a dedicated chapter[10].

Partnerships

Relation between the Kigali HFC implementation plan and the HCFC phase-out management plan

Kyrgyzstan completed HFC phase down in 2019 when the last reported consumption under a two stage HPMP and now is at the level of the minimal allowed consumption. The Stage II Project Completion Report (PCR) was submitted in April 2022. The main linkages between the HPMP and KIP is the experience gained in implementing the HPMP that provides the basis for undertaking the more substantive challenges now associated with HFC phase down. This experience includes i) implementing regulatory import and consumption control mechanisms using import quotas and licenses as well as selective bans on equipment, and ii) the development of the quality and reach of modern refrigeration servicing capability to a level that can will now be built on to achieve levels required for the kind of refrigerant management system required for sustained HFC phase down and introduction of low GWP alternatives.

It should be pointed out in the context of the relationship between the Kigali HFC implementation plan and the HCFC phase-out that a negative consequence of the accelerated phase out of HCFCs promoted by ExCom and achieved by

[8] https://ozone.unep.org/system/files/documents/TEAP-DecisionXXXIV2-replenishment-TF-report-May2023-RTF-report.pdf

[9] https://www.undp.org/publications/gender-equality-strategy-2022-2025

[10] https://unfccc.int/sites/default/files/resource/NC3_Kyrgyzstan_English_24Jan2017_0.pdf

Kyrgyzstan is the rapid growth of HFC consumption such that the challenges of now meeting and sustaining compliance with the Kigali Amendment are increased.

The only current MLF funded work related to HPMPs being undertaken is a small project approved at ExCom 92[11] being undertaken with UNEP under the funding window provided under ExCom Decision 89/6(b) and decision 91/37(a) making it available to countries having completed HPMPs. This project builds upon the success of the HPMP and activities to raise awareness and promote energy efficient equipment with low-GWP refrigerants implemented as part of the enabling activities for HFC phase down and will provide a basis the energy efficiency pilot project component included in this Stage I KIP proposal.

III.5 Other impacts on the environment including on the climate

As noted above section related to the KIP strategy framework, integration of consideration of broader global environmental issues, including climate change, is a part of this framework, consistent with the direction provided in Decision MOP Decision 28/2 (Kigali amendment) and subsequent ExCom guidance. The following notes a number of specific aspects that are incorporated into the Stage I KIP and related parallel projects that contribute to climate change mitigation:

- Involvement of national authorities responsible for climate change policy as key institutional stakeholders.
- Introduction of refrigerant management regulations limiting consumption and emission of HFCs.
- Inclusion of energy efficiency pilot projects in the servicing sector under Decision 91/65.

Parallel development of EOL management plans applicable EOL ODS/HFC under Decision 91/66 (Preparatory funding for the preparation of a national inventory of banks of used or unwanted controlled substances will be requested at ExCom 94).

Risks and Assumptions

A number of risks can be identified in relation to the objective of achieving and sustaining phase down of HFC consumption below the compliance levels set by the Kigali Amendment during the Stage I KIP implementation period from 2024-2029. As is the case for most relatively small servicing only countries, these risks are associated with both with external market factors largely beyond the countries control, and internal ones where direct action by the country is possible within the resources available to it. More specific to Kyrgyzstan is the impact that its successful accelerated phase out of HCFCs has resulted in a rapid increase in HFC consumption to levels above the initial Kigali freeze requirement making phase down more challenging from the outset. Additionally, the country's position geographically exposes it to trade access in the near term to affordable HFCs, and new and used HFC based RACHP equipment at a time when low GWP alternatives are as yet generally unavailable, there acceptance is limited, and they remain unaffordable on the local market.

Table III-4 summarizes the principle specific risks identified along with an assessment of risk level and the mitigation approach proposed.

Table III-4: Risk Assessment Table

Risk	Level of Risk		Mitigation
	Likelihood	Impact	
Negative change in national policy and commitment to HFC phase down	Low	High	The country has a long and positive history of commitment to the Montreal Protocol which remains strong and would not be expected to change. This would be sustained with sufficient long-term financial support sufficient to ensure unacceptable negative economic and social impacts are not created for the country and its population.
Insufficient national legislative and regulatory capacity is available to	Low	High	The country has a proven track record in establishing and applying the use of import

[11] UNEP/OzL.Pro/ExCom/92/30

respond to the expanded challenges associated with HFC phase down			quotas and licensing as the primary tools to create the necessary market adjustments to meet its MP obligations. These tools represent the basis of what is being implemented at the outset of the Stage I KIP starting in 2024 and will be the primary mechanism used to sustain compliance.
Inadequate national project management and IA capacity to support HFC phase down programs	Low	High	Operating in an integrated way across major institutional stakeholders, the NOC has successfully coordinated and managed the implementation of the countries MP obligations and international support for over two decades. It has a stable experience staff that will continue for HFC phase down, restricted only by sustained financial and administrative support from the MLFS and its IAs.
Higher than expected HFC consumption growth than predicted occurs leading to earlier and larger HFC consumption reductions being required than can be achieved during Stage 1 and potentially beyond.	Medium	Medium	Prediction of BAU HFC growth and associated estimates of compliance reductions requirements are based on best judgement from NOC experts on the ground. This suggests a consumption reduction profile that is achievable on a progressive basis through enforced import quotas and licenses as has been the case for ODS phase out. This can be augmented with targeted control and fiscal additional measures as required.
Import and export control enforcement capacity is unable to respond to avoidance of legal restrictions (quotas and licensing) associated with unanticipated demand growth in the HFC market and the geographical constraints the country has.	Medium	High	The project provides for continued upgrading and expansion of training and technical capacity of existing customs and environmental control authorities to respond to additional challenges associated with HFC phase down as resources are available. Additionally, the country is initiating the establishment iPIC notification and transit licensing procedures with neighboring countries.
Increased availability of lower priced HFC based equipment from A5 manufacturers using capacity vacated by non-A5 markets rapidly transitioning to low GWP alternative technology during the Stage I period.	Medium	Medium	The project provides for potential to implement import limits/bans on targeted high-volume sectors and including bans on used HFC based equipment.
Lack of modern servicing capacity for both HFC and low GWP based equipment	Medium	High	The current RRR system remains under development with only 50% of technicians fully equipped and fewer certified or trained for alternative refrigerants. This will be addressed in the Stage I KIP by expanding distribution of tools, strengthening recycling performance and initiating training and demonstrations of low GWP/high EE technology in target sectors as resources permit.
Continued limitations on availability, acceptance and affordability of low GWP alternatives	Medium	High	Large-scale market-driven replacement of the large stock of HFC based equipment with low GWP alternatives will be required beyond Stage I. Subject to resource availability, preparatory support for this will be undertaken in Stage I through a combination of awareness, training and pilot/ demonstration initiatives, including EE pilots as resources are available.
Climate change risks	Medium	Medium	The main climate change risk is temperature rise and associated ambient temperature

			extremes will increase demand for cold chain and A/C equipment hence refrigerant demand that could substantially increase the use of HFCs if the transition to low GWP refrigerants is not accelerated in response. The result will be increased GHG emissions and lower prospects for Kigali compliance. Mitigation in the case of A5 countries like Kyrgyzstan would require more robust international support.

Stakeholder Engagement

Overall supervision of Kyrgyzstan's commitment and actions related to the Montreal Protocol is provided by the Interdepartmental Commission on Ozone Issues established in 2002 with specific responsibility for coordination of Country Program implementation under Government Resolution No. 263. Formal designations of membership on the Commission were most recently approved by Government Resolution № 419 from July 29, 2016 as follows:

- Chairman of the commission – Head of the State Agency on Environment Protection and Forestry under the Government of Kyrgyz Republic (Ministry of Natural Resources, Ecology and Technical Supervision (MNRETS).
- Deputy Chairman of the Commission – Deputy Minister of the Ministry of Emergency Situations of Kyrgyz Republic.
- Deputy Minister of the Ministry of Economic Development and Trade of Kyrgyz Republic.
- Deputy Minister of the Ministry of Health of Kyrgyz Republic.
- Deputy Minister of the Ministry of Agriculture, Water and Processing Industry of Kyrgyz Republic.
- Deputy Minister of the Ministry of Education and Science of Kyrgyz Republic.
- Head of the State agency on Vocational Technical Training under the Ministry of Education and Science of Kyrgyz Republic.
- Head of the Customs Supervision Administration of the State Customs Committee.
- Expert of the Department of Agricultural Sector and Nature Management of the Kyrgyz Republic.

In addition, a range of external members participate in the activities of this Interdepartmental Commission based on assigned responsibilities within the overall Country Program or relevant supporting interests as follows:

- National Ozone Center (NOC) is responsible for coordination and administration of matters related to the Montreal Protocol and national programs on its implementation, under the supervision of the Interdepartmental Commission. This includes responsibility for communication with stakeholders (institutional, private sector service providers, end users, NGOs and the general public) associated awareness activities, and media communication. In this capacity it is responsible for reporting to the Ozone Secretariat, acting as the national focal point for Montreal Protocol matters and associated international assistance programs.
- Ministry of Natural Resources, Ecology and Technical Supervision (MNRETS) has responsibility within the government structure for overall legislative and regulatory authority related to the Montreal Protocol. Within MNRETS, the State Service of Ecological and Technical Supervision, with NOC support, have responsibility for; i) certification of refrigeration technicians and related requirements applied to end users of refrigeration equipment; and ii) monitoring the implementation of environmental legislation related to ODS/HFCs substances, and iii) informing all interested legal entities and natural persons about schedules for HFCs phase down (a function fulfilled through the NOC.
- Ministry of Economic and Commerce (MEC) has authority for licensing and import/export matters with related controls and enforcement and reporting as assigned as a responsibility of the State Customs Committee under this Ministry.
- Ministry of Agriculture is responsible on behalf of the Government for developing and promoting of state policy for sustainable development of the country's agribusiness sector by increasing competitiveness and productivity of the sector and ensuring the safety and food sufficiency in the country.
- Climate Change Office (CCO) within MNRETS is designated as Lead National Authority responsible for compiling the National Greenhouse Gas Inventories, including the F-gases. The NOC collaborates with the CCO and facilitates the direct involvement of end-users, service companies and importers dealing with refrigeration and air-conditioning in providing the data on ODS/HFC consumption in the various sectors and subsectors to the CCO for preparing the above inventory and other information.

- Ministry of Energy is responsible on behalf of the Government for developing and promoting of state energy efficiency policy and standards for sustainable development of the country's industry and building sector.
- Center for Standardization and Metrology under the Ministry of Economy and Commerce acts as the main technical counterpart related to MEPS and labeling.
- Public Association of the Refrigeration Technicians PA "Ecoholod" directly and through individual members has been responsible for development of the certification system for technicians under the HPMP and will play a key role under the KIP through its collaborative responsibility with the State Ecological Inspectorate and Training Centre for implementation of new Certification System including HFCs and natural refrigerants.

Digital Solutions[12]

The second aspect of strengthening import controls relates to the need for international harmonization of transborder trade created by the establishment of the EEU Customs Union that the country is part of. Therefore, Kyrgyzstan currently has reduced ability to control HFC imports at a national level which is something that would be addressed through adoption of a trilateral agreement (Kyrgyz Republic, Russian Federation, Kazakhstan) on the movement and accounting of HFCs and products containing them. This involves development of an electronic system of control of HFC imports from third countries and member states of the Customs Union, control of the movement and use of HFCs within the Customs Union. Additionally, work needs to be done bilaterally with the principal third party countries exporting controlled substances to Kyrgyzstan directly in terms of export notifications.

Given the relatively small size of the country as well as the general concentration of refrigeration and air conditioning equipment in several regions and urban centers, the number of survey targets while significant was of a size that surveys could be conducted by direct contact from experts, either using telephone, electronic communication and/or visits.

Knowledge

Revising and updating the standards governing refrigerants including the rules for maintaining large refrigeration plants, particularly the rules on keeping records of refrigeration units, detailed registration of the history of maintenance of units and technological processes, requirements for qualification/verification of knowledge of technical personnel operating the equipment.

Training of existing front-line customs, environmental enforcement officers / inspectors, possibly other enforcement bodies, to upgrade both their knowledge level and effectiveness.

The awareness, knowledge and support by customs, importers, and wholesalers is crucial for the implementation and enforcement of MEPS and energy-efficiency labelling, as they control the imports and placing on the market of equipment.

The awareness, skills and knowledge of RAC service technicians is crucial to ensure energy-efficient operation of existing RAC equipment and thus a significantly reduced energy consumption through good servicing practices (cleaning, correct operating parameters, correct refrigerant charge, correct installation, preventive maintenance etc.). In addition, it also improves cooling capacity, reliability, equipment lifetime etc.

Sustainability and Scaling Up

A number of risks can be identified in relation to the objective of achieving and sustaining phase down of HFC consumption below the compliance levels set by the Kigali Amendment during the Stage I KIP implementation period from 2024-2029. As is the case for most relatively small servicing only countries, these risks are associated with both with external market factors largely beyond the countries control, and internal ones where direct action by the country is possible within the resources available to it. More specific to Kyrgyzstan is the impact that its successful accelerated phase out of HCFCs has resulted in a rapid increase in HFC consumption to levels above the initial Kigali freeze requirement making phase down more challenging from the outset. Additionally, the country's position geographically exposes it to trade access in the near term to affordable HFCs, and new and used HFC based RACHP equipment at a time when low GWP alternatives are as yet generally unavailable, there acceptance is limited, and they remain unaffordable on the local market.

[12] *Please see the Guideline "Embedding Digital in Project Design".*

IV. PROJECT MANAGEMENT

The Kyrgyz Republic has experience of successful implementation of Country Programs on ODS phase-out. KIP projects will continue to be coordinated by the government's established capacity, specifically the National Ozone Center under the Interagency Commission on Ozone Issues. The relevant activities will be directly implemented by experienced project experts acting under the leadership of the head of the NOC, who also acts as the national coordinator for the Montreal Protocol and the various international bodies involved in its implementation at the global level. The work will be carried out with a high level of consultation both with various governmental bodies and with external stakeholders and the public.

UNDP will act as the lead implementing agency and will procure equipment and oversee the investment component of the project, as well as the management and coordination of the project.

V. RESULTS FRAMEWORK[13]

UNSDCF for Kyrgyzstan 2023-2027 Outcome 3: By 2027, the Kyrgyz Republic has started the transition to low-carbon development and risk-informed climate resilience, contributing to people's fair and equitable access to ecosystem benefits and to the empowerment of vulnerable communities in the governance of natural resources and disaster prevention.
Outcome Indicator 1. Kyrgyz Republic communicated the establishment or operationalization of an integrated policy/strategy/plan that increases their ability to adapt to the adverse impacts of climate change and foster climate resilience and low greenhouse gas emissions development in a manner that does not threaten food production (including a national adaptation plan, nationally determined contribution, national communication, biennial update report or other SDG). Baseline (2023): 1 Target (2027): 4
Applicable Output(s) from the UNDP Strategic Plan: **Output 3.1:** National and subnational governments improved capacities to implement low carbon, people-centered climate change mitigation and adaptation actions, utilizing efficiency-enhancing measures in access to clean sustainable energy and water. **Output Indicator 3.1.1:** Low-carbon and adaptation objectives incorporated in national, sub-national, and sectoral development plans and policies to promote green growth. Baseline, 2020: 0, Target 2027: 4 **Output Indicator 3.1.2:** Low-carbon development and adaptation solutions and mechanisms introduced. Baseline, 2020: 0 Target 2027: 7
Project title and Atlas Project Number: Implementation of the Hydrofluorocarbons phase-down strategy of Kyrgyzstan under the Kigali Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer

EXPECTED OUTPUTS	OUTPUT INDICATORS[14]	DATA SOURCE	BASELINE		TARGETS (by frequency of data collection)						DATA COLLECTION METHODS & RISKS
			Value	Year	Year 1	Year 2	Year 3	Year 4	Year 5	FINAL	
Output 4 *Technical Capacity Building*	*4.1 # training centers equipped with new tools*	*Government reports*	*0*	*2023*	*1*	*0*	*1*	*0*	*0*	*2*	*Delivery records, installation reports, UNDP monitoring visits*

[13] UNDP publishes its project information (indicators, baselines, targets and results) to meet the International Aid Transparency Initiative (IATI) standards. Make sure that indicators are S.M.A.R.T. (Specific, Measurable, Attainable, Relevant and Time-bound), provide accurate baselines and targets underpinned by reliable evidence and data, and avoid acronyms so that external audience clearly understand the results of the project.

[14] It is recommended that projects use output indicators from the Strategic Plan IRRF, as relevant, in addition to project-specific results indicators. Indicators should be disaggregated by sex or for other targeted groups where relevant.

EXPECTED OUTPUTS	OUTPUT INDICATORS[14]	DATA SOURCE	BASELINE		TARGETS (by frequency of data collection)						DATA COLLECTION METHODS & RISKS
			Value	Year	Year 1	Year 2	Year 3	Year 4	Year 5	FINAL	
	4.2. # workshops equipped with equipment and toolkits	*Government reports*	0	2023	*4*	0	4	0	*0*	*8*	*Delivery records, installation reports, workshop inventories, user feedback*
	4.3 # monitoring visits conducted	*Government reports*	0	2023	*1*	1	1	1	*1*	*5*	*Monitoring forms and annual and progress reports*

VI. MONITORING AND EVALUATION

In accordance with UNDP's programming policies and procedures, the project will be monitored through the following monitoring and evaluation plans:

Monitoring Activity	Purpose	Frequency	Expected Action	Partners (if joint)	Cost (if any)
Track results progress	Progress data against the results indicators in the RRF will be collected and analysed to assess the progress of the project in achieving the agreed outputs.	Quarterly, or in the frequency required for each indicator.	Slower than expected progress will be addressed by project management.		
Monitor and Manage Risk	Identify specific risks that may threaten achievement of intended results. Identify and monitor risk management actions using a risk log. This includes monitoring measures and plans that may have been required as per UNDP's Social and Environmental Standards. Audits will be conducted in accordance with UNDP's audit policy to manage financial risk.	Quarterly	Risks are identified by project management and actions are taken to manage risk. The risk log is actively maintained to keep track of identified risks and actions taken.		
Learn	Knowledge, good practices and lessons will be captured regularly, as well as actively sourced from other projects and partners and integrated back into the project.	At least annually	Relevant lessons are captured by the project team and used to inform management decisions.		
Annual Project Quality Assurance	The quality of the project will be assessed against UNDP's quality standards to identify project strengths and weaknesses and to inform management decision making to improve the project.	Annually	Areas of strength and weakness will be reviewed by project management and used to inform decisions to improve project performance.		
Review and Make Course Corrections	Internal review of data and evidence from all monitoring actions to inform decision making.	At least annually	Performance data, risks, lessons and quality will be discussed by the project board and used to make course corrections.		
Project Report	A progress report will be developed consisting of progress data showing the results achieved against pre-defined annual targets at the output level, the annual project quality rating summary, an updated risk long with mitigation measures, and any evaluation	Annually, and at the end of the project (final report)			

Monitoring Activity	Purpose	Frequency	Expected Action	Partners (if joint)	Cost (if any)
	or review reports prepared over the period.				
Verification	Verification of the Plan's results and of the consumption of Annex F substances mentioned in Appendix 1-A, as per subparagraph 5(b) of the Agreement and subparagraph 1(b) of Appendix 4-A.	TBD	In accordance with paragraph 11 of the Agreement, the amount of funding provided may be reduced by US $ [TBD] per CO2 eq tonne of consumption beyond the level defined in row 1.2 of Appendix 2 A for each year in which the target specified in row 1.2 of Appendix 2-A has not been met, on the understanding that the maximum funding reduction would not exceed the funding level of the tranche being requested. Additional measures might be considered in cases where non-compliance extends for two consecutive years.		

VII. MULTI-YEAR WORK PLAN [15][16]

V.2 Plan of Action for Tranche 1 and 2 (UNDP)

Overall, this UNDP component is complementary to the activities supported under the Sub-Component 2.2 Strengthening capacity in the RAC sector, through provision of equipment of training facilities and technician tools for servicing workshops which will be initiated in Tranche 1. Proposed activities are described as follows by sub-component.

Under Sub-Component 4.1 (Equipment support for RAC training centers) one training center will be equipped for HFC and low GWP alternative refrigerant (particularly hydrocarbons) training (see Section III for list). Additionally, national consultant will be supported to help for expansion of trainings with increased emphasis on emission reduction, integration with EE gains through better maintenance, and expansion of training scope in diverse range of refrigerants dealt. and with the following main groups of items.

Under Sub-Component 4.2 (Equipment support for RAC servicing workshops), four RAC servicing workshops in 4 different administrative regions of the country will be supported in Tranche 1 with one set of technician tools. These sets of equipment and tools will have sufficient utility to be able to perform field, and/or workshop service, recycling for HFC refrigerants, and are similar to ones provided to the training centre but will be limited to the needs in a specific service situation. They will

[15] Cost definitions and classifications for programme and development effectiveness costs to be charged to the project are defined in the Executive Board decision DP/2010/32

[16] Changes to a project budget affecting the scope (outputs), completion date, or total estimated project costs require a formal budget revision that must be signed by the project board. In other cases, the UNDP programme manager alone may sign the revision provided the other signatories have no objection. This procedure may be applied for example when the purpose of the revision is only to re-phase activities among years.

cover servicing requirements on HFC and low GWP alternative refrigerant based refrigeration systems (particularly hydrocarbons).

Under Sub-Component 4.3 (Monitoring, reporting and technical support) consultancy support for following Tranche 1 activities will be provided: i) monitoring and reporting of activities, including safeguards, gender equality and overall risk management; and ii) technical support for the procurement activities under Sub-components 4.1 and 4.2, including development of technical specifications and Bill of Quantities, support on the technical evaluation, quality control on the equipment deliveries, and other relevant procurement related support as needed.

Component/Subcomponents	Tranche 1	Tranche 2
4. Technical Capacity Building (UNDP)	**51,000**	**79,000**
4.1. Equipment for RAC Training Centers (incl. logistic costs)	**27,000**	**47,000**
4.1.1. Equipping two RAC training centers	17,000	17,000
4.1.2. CO2 training set-up for one training center	-	20,000
4.1.3. National consultant to support training activities	10.000	10,000
4.2. Equipment for RAC Servicing Workshops (incl. logistic costs)	**18,000**	**18,000**
4.2.1. Equipping eight RAC servicing workshops	18,000	18,000
4.3. Monitoring, reporting and technical support	**6,000**	**14,000**
4.3.1. Monitoring and reporting of activities, including safeguards, gender equality and overall risk management	4,000	4,000
4.3.2. Technical consultancy support for procurement process	2,000	2,000
4.3.3. Technical studies to identify and develop demonstration project concepts.	-	8,000
Total UNDP	**51,000**	**79,000**

Table V-2: Stage I KIP Tranche 1 and Tranche 2 Implementation Activity Timeline Summary

Sub-component	Detailed description of KIP Tranche 1 activities	Tranche 1			Tranche 2		
		2025	2026		2027	2028	2029
4.1 Equipment support for RAC training centers	4.1.1 Equipping two RAC training centers	X			X		
	4.1.2 CO2 training set-up for one training center				X		
	4.1.3 National consultant to support training activities	X	X		X	X	X
4.2 Equipment support for RAC servicing workshops	4.2.1 Equipping eight RAC servicing workshops	X			X		
4.3 Monitoring, reporting and technical support	4.3.1 Monitoring, reporting, safeguards, gender mainstreaming and overall risk management	X	X		X	X	X
	4.3.2 Technical consultancy support for procurement process	X			X		
	4.3.3 Technical studies to identify and develop demonstration project concepts.				X	X	

VIII. GOVERNANCE AND MANAGEMENT ARRANGEMENTS

Roles and responsibilities of the project's governance mechanism

Implementing Partner

1. The National Ozone Center of Kyrgyzstan (NOC) will act as an Implementing Partner for the project. The IP has full legal/regulatory mandate and experience in the same capacity for UNDP projects since 2000

2. The Implementing Partner is the entity to which the UNDP Administrator has entrusted the implementation of UNDP assistance specified in this signed project document along with the assumption of full responsibility and accountability for the effective use of UNDP resources and the delivery of outputs, as set forth in this document.

3. The Implementing Partner is responsible for executing the following aspects of the project:

   a. Project planning, coordination, monitoring, evaluation and reporting. This includes providing all required information and data necessary for timely, comprehensive and evidence-based project reporting, including results and financial data, as necessary. The Implementing Partner will strive to ensure project-level M&E is undertaken by national institutes and is aligned with national systems so that the data used and generated by the project supports national systems.
   b. Risk management as outlined in this Project Document;
   c. Conduct training activities and manage enterprise participation;
   d. Develop refrigerant handling and training tools, including recovery and recycling equipment and related accessories such as refrigerant cylinders, manifolds, vacuum pumps and charging tools;
   e. Assist in identifying and developing possible demonstration project concepts with conversions/replacements into energy efficient and low-GWP alternative systems;
   f. Financial controls, including overseeing financial expenditures against project budgets;
   g. Approving and signing the combined delivery report at the end of the year; and,
   h. Signing the financial report or the funding authorization and certificate of expenditures.

4. The Partner Capacity Assessment Tool (PCAT) confirmed that the NOC has the executive power mandate in the field of full relevance for the project and responds to the key programmatic criteria and has capacities to ensure quality programme management, provide synergies, replicate and upscape project results, mobilise development partners and ensure national-level co-financing for the project. IP has experience and technical capacity to supervise, monitor, and ensure adaptive management and risk response towards delivery of project outcomes and outputs.

5. The previous independent HACT assessments of the NOC confirms their suitability and capacities. HACT assessments have been conducted by independent auditors, confirming low overall risks associated with their capacity to support project execution.

Project stakeholders and target groups

6. The participation and contribution of stakeholders and key target groups are critical for the success of the project, for stakeholders at both the national and local levels. The project applies multiple strategies and mechanisms to ensure stakeholder engagement. UNDP and the NOC have a long history of collaboration and successful project completion in Kyrgyzstan, including multiple previous MLF-funded ODS projects. The project will ensure gender balance and gender sensitivity by mainstreaming throughout all aspects of the project's stakeholder engagement approach.

7. The Kyrgyz Republic has demonstrated experience in the successful implementation of its Country Programme to date. The capacity that has undertaken this within the Government, specifically the National Ozone Center (NOC), operating under the direction of the Interdepartmental Commission on Ozone Issues will continue to act as the focal point for KIP project coordination and management. This activity will be directly undertaken by experienced project managers acting under the direction of the Head of the NOC who also acts as the national focal point on the Montreal Protocol and various international bodies involved with its implementation globally. The work will be undertaken

with a high level of stakeholder consultation both with various government agencies and with external stakeholders and the general public.

8. Implementation will be undertaken under the continued supervision of the Interdepartmental Commission on Ozone Issues. It will involve UNDP acting as the lead implementing agency throughout the KIP and supervising the project's investment component. UNEP will act as a supporting implementing agency for non-investment activities associated with legislation and technical capacity strengthening. These agencies will utilize the established procedures governing procurement, financial management, reporting and monitoring of the relevant implementing agency and international funding facilities, specifically the MLF. Implementation will be further supported by various administrative and service bodies within the government, international and national consultants, suppliers of equipment and services, and beneficiary enterprises.

9. The project will highlight at various points the mechanisms and channels of communication that stakeholders may employ if they have any grievances related to the social and environmental impacts of the project. For example, this point will be indicated during the project inception workshop, and through the project education and awareness activities.

10. UNDP will act as a lead implementing agency being accountable to the donor for the implementation of this project and its investment component. This includes oversight of project execution to ensure that the project is being carried out in accordance with the agreed standards and provisions. UNDP is responsible for delivering project cycle management services comprising project approval and start-up, project supervision and oversight, and project completion.

IX. LEGAL CONTEXT

This project document shall be the instrument referred to as such in Article 1 of the Standard Basic Assistance Agreement between the Government of Kyrgyzstan and UNDP, signed on September 14, 1992. All references in the SBAA to "Executing Agency" shall be deemed to refer to "Implementing Partner."

This project will be partially implemented by the National Ozone Center of Kyrgyzstan ("Implementing Partner") in accordance with its financial regulations, rules, practices and procedures only to the extent that they do not contravene the principles of the Financial Regulations and Rules of UNDP. Where the financial governance of an Implementing Partner does not provide the required guidance to ensure best value for money, fairness, integrity, transparency, and effective international competition, the financial governance of UNDP shall apply.

The designations employed and the presentation of material on maps do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations or UNDP concerning the legal status of any country, territory, city or area or its authorities, or concerning the delimitation of its frontiers or boundaries.

X. RISK MANAGEMENT

Consistent with the Article III of the SBAA, the responsibility for the safety and security of the Implementing Partner and its personnel and property, and of UNDP's property in the Implementing Partner's custody, rests with the Implementing Partner. To this end, the Implementing Partner shall:

a) put in place an appropriate security plan and maintain the security plan, taking into account the security situation in the country where the project is being carried;

b) assume all risks and liabilities related to the Implementing Partner's security, and the full implementation of the security plan.

UNDP reserves the right to verify whether such a plan is in place, and to suggest modifications to the plan when necessary. Failure to maintain and implement an appropriate security plan as required hereunder shall be deemed a breach of the Implementing Partner's obligations under this Project Document.

The Implementing Partner agrees to undertake all reasonable efforts to ensure that no UNDP funds received pursuant to the Project Document are used to provide support to individuals or entities associated with terrorism and that the recipients of any amounts provided by UNDP hereunder do not appear on the list maintained by the Security Council Committee established pursuant to resolution 1267 (1999). The list can be accessed via http://www.un.org/sc/committees/1267/aq_sanctions_list.shtml.

The Implementing Partner acknowledges and agrees that UNDP will not tolerate sexual harassment and sexual exploitation and abuse of anyone by the Implementing Partner, and each of its responsible parties, their respective sub-recipients and other entities involved in Project implementation, either as contractors or subcontractors and their personnel, and any individuals performing services for them under the Project Document.

(a) In the implementation of the activities under this Project Document, the Implementing Partner, and each of its sub-parties referred to above, shall comply with the standards of conduct set forth in the Secretary General's Bulletin ST/SGB/2003/13 of 9 October 2003, concerning "Special measures for protection from sexual exploitation and sexual abuse" ("SEA").

(b) Moreover, and without limitation to the application of other regulations, rules, policies and procedures bearing upon the performance of the activities under this Project Document, in the implementation of activities, the Implementing Partner, and each of its sub-parties referred to above, shall not engage in any form of sexual harassment ("SH"). SH is defined as any unwelcome conduct of a sexual nature that might reasonably be expected or be perceived to cause offense or humiliation, when such conduct interferes with work, is made a condition of employment, or creates an intimidating, hostile or offensive work environment. SH may occur in the workplace or in connection with work. While typically involving a pattern of conduct, SH may take the form of a single incident. In assessing the reasonableness of expectations or perceptions, the perspective of the person who is the target of the conduct shall be considered.

a) In the performance of the activities under this Project Document, the Implementing Partner shall (with respect to its own activities), and shall require from its sub-parties referred to in paragraph 4 (with respect to their activities) that they, have minimum standards and procedures in place, or a plan to develop and/or improve such standards and procedures in order to be able to take effective preventive and investigative action. These should include: policies on sexual harassment and sexual exploitation and abuse; policies on whistleblowing/protection against retaliation; and complaints, disciplinary and investigative mechanisms. In line with this, the Implementing Partner will and will require that such sub-parties will take all appropriate measures to:

i. Prevent its employees, agents or any other persons engaged to perform any services under this Project Document, from engaging in SH or SEA;

ii. Offer employees and associated personnel training on prevention and response to SH and SEA, where the Implementing Partner and its sub-parties referred to in paragraph 4 have not put in place its own training regarding the prevention of SH and SEA, the Implementing Partner and its sub-parties may use the training material available at UNDP;

iii. Report and monitor allegations of SH and SEA of which the Implementing Partner and its sub-parties referred to in paragraph 4 have been informed or have otherwise become aware, and status thereof;

iv. Refer victims/survivors of SH and SEA to safe and confidential victim assistance; and

v. Promptly and confidentially record and investigate any allegations credible enough to warrant an investigation of SH or SEA. The Implementing Partner shall advise UNDP of any such allegations received and investigations being conducted by itself or any of its sub-parties referred to in paragraph 4 with respect to their activities under the Project Document, and shall keep UNDP informed during the investigation by it or any of such sub-parties, to the extent that such notification (i) does not jeopardize the conduct of the investigation, including but not limited to the safety or security of persons, and/or (ii) is not in contravention of any laws applicable to it. Following the investigation, the Implementing Partner shall advise UNDP of any actions taken by it or any of the other entities further to the investigation.

b) The Implementing Partner shall establish that it has complied with the foregoing, to the satisfaction of UNDP, when requested by UNDP or any party acting on its behalf to provide such confirmation. Failure of the Implementing Partner, and each of its sub-parties referred to in paragraph 4, to comply of the foregoing, as determined by UNDP, shall be considered grounds for suspension or termination of the Project.

Social and environmental sustainability will be enhanced through application of the UNDP Social and Environmental Standards (http://www.undp.org/ses) and related Accountability Mechanism (http://www.undp.org/secu-srm).

The Implementing Partner shall: (a) conduct project and programme-related activities in a manner consistent with the UNDP Social and Environmental Standards, (b) implement any management or mitigation plan prepared for the project or programme to comply with such standards, and (c) engage in a constructive and timely manner to address any concerns and complaints raised through the Accountability Mechanism. UNDP will seek to ensure that communities and other project stakeholders are informed of and have access to the Accountability Mechanism.

All signatories to the Project Document shall cooperate in good faith with any exercise to evaluate any programme or project-related commitments or compliance with the UNDP Social and Environmental Standards. This includes providing access to project sites, relevant personnel, information, and documentation.

The Implementing Partner will take appropriate steps to prevent misuse of funds, fraud or corruption, by its officials, consultants, responsible parties, subcontractors and sub-recipients in implementing the project or using UNDP funds.

In the implementation of the activities under this Project Document, UNDP places reasonable reliance upon the Implementing Partner for it to apply its laws, regulations and processes, and applicable international laws regarding anti money laundering and countering the financing of terrorism, to ensure consistency with the principles of then in force the UNDP Anti-Money Laundering and Countering the Financing of Terrorism Policy.

The Implementing Partner will ensure that its financial management, anti-corruption and anti-fraud policies are in place and enforced for all funding received from or through UNDP.

The requirements of the following documents, then in force at the time of signature of the Project Document, apply to the Implementing Partner: (a) UNDP Policy on Fraud and other Corrupt Practices and (b) UNDP Office of Audit and Investigations Investigation Guidelines. The Implementing Partner agrees to the requirements of the above documents, which are an integral part of this Project Document and are available online at www.undp.org.

In the event that an investigation is required, UNDP has the obligation to conduct investigations relating to any aspect of UNDP projects and programmes in accordance with UNDP's regulations, rules, policies and procedures. The Implementing Partner shall provide its full cooperation, including making available personnel, relevant documentation, and granting access to the Implementing Partner's (and its consultants', responsible parties', subcontractors' and sub-recipients') premises, for such purposes at reasonable times and on reasonable conditions as may be required for the purpose of an investigation. Should there be a limitation in meeting this obligation, UNDP shall consult with the Implementing Partner to find a solution.

The signatories to this Project Document will promptly inform one another in case of any incidence of inappropriate use of funds, or credible allegation of fraud or corruption with due confidentiality.

Where the Implementing Partner becomes aware that a UNDP project or activity, in whole or in part, is the focus of investigation for alleged fraud/corruption, the Implementing Partner will inform the UNDP Resident Representative/Head of Office, who will promptly inform UNDP's Office of Audit and Investigations (OAI). The Implementing Partner shall provide regular updates to the head of UNDP in the country and OAI of the status of, and actions relating to, such investigation.

UNDP shall be entitled to a refund from the Implementing Partner of any funds provided that have been used inappropriately, including through fraud or corruption, or otherwise paid other than in accordance with the terms and conditions of the Project Document. Such amount may be deducted by UNDP from any payment due to the Implementing Partner under this or any other agreement. Recovery of such amount by UNDP shall not diminish or curtail the Implementing Partner's obligations under this Project Document.

Where such funds have not been refunded to UNDP, the Implementing Partner agrees that donors to UNDP (including the Government) whose funding is the source, in whole or in part, of the funds for the activities under this Project Document, may seek recourse to the Implementing Partner for the recovery of any funds determined by UNDP to have been used inappropriately, including through fraud or corruption, or otherwise paid other than in accordance with the terms and conditions of the Project Document.

Note: The term "Project Document" as used in this clause shall be deemed to include any relevant subsidiary agreement further to the Project Document, including those with responsible parties, subcontractors and sub-recipients.

Each contract issued by the Implementing Partner in connection with this Project Document shall include a provision representing that no fees, gratuities, rebates, gifts, commissions or other payments, other than those shown in the proposal, have been given, received, or promised in connection with the selection process or in contract execution, and that the recipient of funds from the Implementing Partner shall cooperate with any and all investigations and post-payment audits.

Should UNDP refer to the relevant national authorities for appropriate legal action any alleged wrongdoing relating to the project, the Government will ensure that the relevant national authorities shall actively investigate the same and take appropriate legal action against all individuals found to have participated in the wrongdoing, recover and return any recovered funds to UNDP.

The Implementing Partner shall ensure that all of its obligations set forth under this section entitled "Risk Management" are passed on to each responsible party, subcontractor and sub-recipient and that all the clauses under this section entitled "Risk Management Standard Clauses" are included, *mutatis mutandis*, in all sub-contracts or sub-agreements entered into further to this Project Document.

XII. ANNEXES

1. Social and Environmental Screening Template [English] [French] [Spanish], including additional Social and Environmental Assessments or Management Plans as relevant. *(NOTE: The SES Screening is not required for projects in which UNDP is Administrative Agent only and/or projects comprised solely of reports, coordination of events, trainings, workshops, meetings, conferences, preparation of communication materials, strengthening capacities of partners to participate in international negotiations and conferences, partnership coordination and management of networks, or global/regional projects with no country level activities).*

2. Risk Analysis. Use the standard Risk Register template. Please refer to the Deliverable Description of the Risk Register for instructions

#	Description	Timeline	Risks type	Impact(I) and probability (P)	Countermeasures / response	Ownership	Submitted and updated by	Last update	Status
1	Delay in procurement or delivery of equipment for training centers and workshops	2025–2026	Organizational	I: Medium, P: Medium	Conduct early procurement planning, engage reliable vendors, prequalification of vendors, active tracking of procurement process.	UNDP CO, NOC	UNDP		
2	Low participation of technicians in training and certification programs	2025–2029	Operational	I: Medium, P: Medium	Engage RAC Association, ensure training access in regions, explore online options.	UNDP, NOC	UNDP, NOC Team		
3	Ineffective use or underutilization of distributed tools/equipment	2025–2029	Operational	I: High, P: Low	Provide orientation sessions and follow-up visits; link with technician certification	UNDP, NOC, Training Centres	UNDP, NOC		
4	Changes of personnel and mandates in relevant government bodies can negatively impact the commitment from key stakeholders.	2025–2029	Strategic	I: Medium, P: Medium	UNDP and NOC will communicate regularly with the respective government offices to provide updates on the progress, challenges or issues towards delivery of activities based on the agreed workplan.	UNDP	UNDP		

3. Gender Check List

GENDER MAINSTREAMING CHECKLIST - STAGE I KIP PROJECT

Project component	Question	Answer		
		Yes	No	Partially
Project preparation	Does the project concept include consideration of the different situations of women and men and of the impact the project will have on these different societal groups?	X		
	Does the project explicitly address one or more of the identified gender issues / gender-differentiated project impacts? Please describe how, and if not provide an explanation. *Potential to expand women's employment opportunities in engineering and technician positions in the RACHP sector*	X		
Data and statistics	Where applicable, does the project require the collection of sex-disaggregated data and qualitative information to analyze and track gender issues? Planned as part of project monitoring subject to resource availability	X		
Results framework	Are outcomes, output and activities designed to meet the different needs and priorities of women and men?		X	
	Does the results framework include gender-responsive indicators, targets and baseline data to monitor gender equality results?	X		
Budget	Has the budget taken into account allocations for the proposed gender activities (e.g., capacity-building activities for female technicians)?			X
Stakeholders and participation	Are women/gender-focused Ministries, groups, associations or gender units in partner organizations consulted/included in the project?			X
	Does the project ensure that both women and men can provide input, access, and participate in project activities (e.g., through outreach/inviting female technicians to participate in capacity-building activities)?	X		
Gender capacities	Has a gender expert been recruited or does project staff have gender knowledge and	X		

Project component	Question	Answer		
		Yes	No	Partially
	gender-related tasks incorporated into their job descriptions? *Planned subject to incremental gender mainstreaming funding*.			
	Will project staff and stakeholders be sensitized to gender (e.g., through completion of UN Women online training courses)?	X		
Implementation arrangement	Is there gender-balanced recruitment of project personnel and gender-balanced representation in project boards and steering committees?	X		
Monitoring and evaluation	Does the monitoring and evaluation component of the project require specific reporting on gender issues and on progress made to address them, both quantitatively and qualitatively?	X		

REQUIREMENTS ADOPTED FOR GENDER MAINSTREAMING- STAGE I KIP PROJECT

Project cycle phase	Project requirements	Qutcomes/outputs	Indicators
MANDATORY PROJECT REQUIREMENTS AND INDICATORS			
Project preparation	Narrative or form includes a specific paragraph on gender	Project preparation request is gender-responsive (gender is adequately mainstreamed into the project formulation form)	▪ A specific paragraph on gender is added to the project preparation request
Planning / formulation	Conducting initial gender assessment and preparation of a report	Project proposal is gender-responsive (gender is adequately mainstreamed into the project proposal)	▪ Initial gender assessment undertaken in during preparation and formal gender assessment study included in the final project proposal
Implementation	Efforts undertaken to achieve gender parity among project staff in the project monitoring and implementation unit	Gender equality among project staff is achieved	▪ Number / percentage of women and men employed through project will be monitored and reported periodically.
	Implement gender assessment recommendations and adjust activities based on need as the project evolves	Gender is considered throughout project implementation	▪ Implementation of gender assessment recommendation performance included in project monitoring reporting
Monitoring and reporting	Prepare gender-responsive project implementation reports	Project monitoring and reporting (i.e., tranche implementation reports and annual progress reports) are gender-responsive	▪ Quantitative data collected for reporting is disaggregated by sex where applicable ▪ Reporting (e.g., annual progress and tranche reports) undertaken to include gender-responsive activities, knowledge products on gender produced, good practices and lessons learned, and allocation of financial resources for gender activities where applicable