TERMINAL EVALUATION OF THE UNDP-GEF FULL SIZED PROJECT

Initial Implementation of Accelerated HCFC Phase Out in the CEIT Region
(Belarus, Tajikistan, Ukraine, Uzbekistan)

Evaluation Report

Prepared by

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Abbreviations and Acronyms

A/C	Air-Conditioning
AWP	Annual Work Plan
BRC	Bratislava Regional Centre
CEIT	Countries with Economies in Transition
CEO	Chief Executive Officer (of the GEF Secretariat)
CEP	Committee for Environmental Protection
CFC	Chlorofluorocarbon
CIS	Commonwealth of Independent States
CO	Country Office (UNDP)
DIM	Direct Implementation Modality
ECA	Europe Central Asia
EEU	Environment and Energy Unit (UNDP)
EOL	End of Life
FSP	Full Size Project
GEF	Global Environment Facility
GHG	Green House Gases
GWP	Global Warming Potential
HCFC	Hydrochlorofluorocarbon
HFC	Hydrofluorocarbon
IRH	Istanbul Regional Hub (IRH)
LPAC	Local Project Appraisal Committee (UNDP)
M&E	Monitoring and Evaluation
MLF	Multilateral Fund (of the Montreal Protocol)
MENR	Ministry of Ecology and Natural Resources (Ukraine)
MNREP	Ministries of Natural Resources and Environment (Belarus)
MP	Montreal Protocol
MPU	Montreal Protocol Unit (UNDP)
MT	Metric Tonne
MTR	Mid Term Review
MOP	Meeting of the Parties
MOU	Memorandum of Understanding
NIM	National Implementation Modality
NOC	National Ozone Committee
PIC	Prior Informed Consent
PIMS	Project Implementation Management System
PIR	Project Implementation Review
PM	Project Manager
PU	Poly Urethane (foam)
ODP	Ozone Depleting Potential
ODS	Ozone Depleting Substance
RAC	Refrigeration and Air-Conditioning
SCEEP	State Committee of the Republic of Uzbekistan for Ecology and Environmental Protection
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
XPS	Extruded Polystyrene (foam)

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1. EXECUTIVE SUMMARY

Project Information Table

Project Title	Initial Implementation of Accelerated HCFC Phase Out in the CEIT Region"		
UNDP Project ID (PIMS #):	4309	**PIF Approval Date:**	7 May 2010
GEF Project ID (PMIS #):	4102	**CEO Endorsement Date:**	30 August 2012
ATLAS Business Unit, Award # Proj. ID:	SVK10, 00066255, 00082456; BLR10, 00070086, 00084272; TJK10, 00066625, 00082745; UKR10, 00066300,00082497; UZB10, 00063869, 00080735	**Project Document (ProDoc) Signature Date (date project began):**	30 July 2013
Country(ies):	Belarus, Tajikistan, Uzbekistan, Ukraine	**Date project manager hired:**	12 October 2015
Region:	Europe and Central Asia	**Inception Workshop date:**	4-5 November 2013
Focal Area:	Ozone Depleting Substances	**Midterm Review completion date:**	June 2016
GEF Focal Area Strategic Objective:	ODS-SP1	**Planned planed closing date:**	30 July 2016
Trust Fund [indicate GEF TF, LDCF, SCCF, NPIF]:	GEF TF	**If revised, proposed op. closing date:**	31 July 2018
Executing Agency/Implementing Partner:	National Ozone Units (NOUs) in partner countries (Belarus and Uzbekistan), UNDP (Tajikistan, Ukraine and Istanbul Regional Hub (formerly Bratislava Regional Centre)		
Other execution partners:	-		
Project Financing	***at CEO endorsement (US$)***	***At Terminal Evaluation (US$)***	
GEF financing:	9,000,000	7,920,000	
Total co-financing[1]	15,595,000	15,462,430	
PROJECT TOTAL COSTS	24,595,000	23,312,430	

[1] Co-financing information from Belarus, Tajikistan and Uzbekistan

Project Description

The project is a follow up to the medium-sized GEF-4 regional HCFC project "*Preparing for HCFC Phase-out in CEITs"* that was implemented by UNDP in 2008-2009 and helped to develop detailed survey data on HCFCs in CEITs and assisted with elaboration of outlines of HCFC phase-out strategies to meet the Montreal Protocol compliance targets. The current project served to sustain the initial GEF-4 work in four CEITs committed to move forward with accelerated phase out and prepare for more targeted investment action, all in coordination with parallel work financed in Article 5 countries in the region undertaken under funding from the Multilateral Fund for Implementation of the Montreal Protocol (MLF).

The immediate objective of the project is to achieve compliance of the participating countries with the accelerated Montreal Protocol HCFC phase-out requirements through stabilization and progressive reduction of HCFC consumption. In this connection, this project sought to give input to the preparation and implementation of formal national HCFC phase-out strategies and action plans consistent with the Decision XIX/6 of the Parties to the Montreal Protocol.

The long-range development objective of the project is protecting human health and the environment by assisting the participating countries to phase out consumption and production, as well as to prevent releases of ozone-depleting substances.

In order to achieve the objectives, the project was designed as a combination of regional and national assistance approaches and includes:

(a) enabling-type of activities complemented with experience exchange and networking, contained in the regional Component 1; and

(b) specific technical assistance and capacity building activities contained in the country-oriented Component 2.

The project Component 1 addressed barriers associated with incomplete knowledge and awareness about HCFC phase-out. Specifically, the regional component aimed to provide common Russian language regulatory guidance, "train the trainers" opportunities related to enforcement of HCFC legislation, customs control, integration of HCFC phase-out with energy efficiency and GHG reduction, training materials for transfer to national level programs, and expanded country exposure within the existing ECA network. It has been developed to build on the tools and networks currently in place for some CEITs and the Article 5 countries in the Commonwealth of Independent States (CIS) and is to be accessible to all non-Article 5 CIS countries in the region, although direct participatory funding support will be confined to the four countries participating in this project (Belarus, Tajikistan, Ukraine and Uzbekistan).

The project Component 2 on national capacity building and technical assistance targets support to the adoption of the fully completed HCFC phase-out strategy (with selected legislative options to control HCFC import/use), capacity building and supply of analytical and servicing equipment/tools for environmental inspectorate and Customs Department and refrigeration technicians, modernization of HCFC re-use scheme in the country and demonstration of alternative technologies in refrigeration equipment and A/C sectors, ODS destruction, the current absence of effective regulatory instruments and need to support ongoing institutional development and is aligned with Outcome 2.

At the regulatory level, the country specific components were expected to ensure the implementation of enhanced HCFC regulation/import control, enhanced licensing systems, and introduction of HFC monitoring inclusive of working enforcement level training. These components were complemented by training to strengthen enforcement (environmental and Customs officers to control HCFC end-use and imports) and operational refrigeration-servicing sectors (training, certification, RAC Association), including promotion of energy efficiency and GHG reductions during servicing.

In addition, investment programs were proposed to cover technological conversions in solvent and rigid foam sectors as well as pilot retrofit/replacement incentive programs targeting priority high service demand sectors. The investment programmes aimed at strengthening of refrigeration service capacity and optimizing chemicals distribution to allow control of container size, as well as preparing

collection/storage modalities for destruction facilitated by a pilot destruction project. Where cost effective/economically sustainable opportunities were identified, pilot investments in direct consumption phase-out were undertaken specifically in the foam, refrigeration and solvent sectors.

The GEF financial support for the phase-out of HCFCs in the four countries proved to be critical in enabling the countries to comply with their obligations as for the accelerated phase-out schedule of the Montreal Protocol valid for Article 2 countries of MP.

In particular, the regional component of the GEF project was important for the review and update of national policies and legislation for control of ODS import and consumption. The regional approach on the legislative sub-component through engagement of an international legal consultant with all four countries ensured provision of a uniform and consistent advice to the project countries to make revisions and update of their national ODS-related legislation based on experience from the member countries of the EU that had experienced similar situation (used to be economies in transition before accession to the EU in 2004). Because of the transboundary movement of ODS linking the CEIT countries, the regional approach was far more effective and efficient than would have been separate and therefore fragmented national approaches.

Three project countries fully followed the international consultant's recommendations for update of their national legislative frameworks. Two countries (Belarus and Tajikistan) adopted a national strategy and action plan for HCFC phase out until 2020 as envisaged in the project. The other two countries have chosen a more comprehensive approach to incorporate HCFC-related legal provisions into broader pieces of legislation such as the Law on Atmosphere Air Protection in Uzbekistan or the Law on ODS and F-Gases in Ukraine. However, the latter approach proved to be notably slower and more complicated due to the complexities of the more comprehensive legislation.

The government commitment to the HCFC phase-out has been in general better in the two countries that adopted the separate HCFC phase-out strategies. This can be proved by the fact that by the end of the project, Belarus and Tajikistan have adopted and implemented a comprehensive HCFC-related legislative framework including a number of concrete legislative measures to reduce HCFC consumption in line with the accelerated MP schedule. Both countries have effective and transparent licensing and quota system for HCFC import and effective customs controls of ODS transboundary movement. Furthermore, the two countries have banned imports of non-refillable refrigerant containers as well as import of refrigeration and air-conditioning equipment containing or relying upon HCFCs and have introduced annual reporting requirements for enterprises on the type and quantity of ODS imported, used and stored. Overall, the adopted legislative and policy improvements provided important signals to the private as well as public sectors that the time has come to reduce the consumption of HCFCs and/or adopt more ozone-friendly alternative refrigerants and technologies.

The capacity building sub-component was implemented as a combination of the initial regional approach for training of trainers and provision of resource and training materials followed by the cascaded down trainings of customs and enforcement officers as well as RAC service technicians through the national project components. In the RAC service sector, additional *ad-hoc* support was provided from the regional component in the form of funding for national trainings on natural refrigerants in the four project countries.

The project supported upgrades in the training centres affiliated with national institutes for education of customs officers and environmental inspectors. In Belarus, Tajikistan and Uzbekistan, training programmes for customs and environmental inspectors were incorporated into the national programmes for training and re-training of the enforcement officers thus ensuring that the training on ODS will be sustained beyond the project time boundaries. The enforcement agencies in Tajikistan were provided with two mobile mini-laboratories were equipped for control between the official border-crossings along the entire border. For Belarus and Ukraine, the project provided advanced GC-MS analysers for exact identification of imported ODS refrigerants.

The capacity building sub-component for the customs and enforcement officers have notably improved the national capacities for monitoring of HCFC transboundary movement and interception of illegal ODS shipments through provision of portable refrigerant identifiers for deployment at the

main border points. Several cases of seizure of illegally imported ODS by the customs in all four countries reported during the project implementation period prove the effectiveness of this project sub-component.

In the four countries, the capacity building sub-component of the project has compelled and improved reporting on several aspects of ODS and alerted the countries for more vigilance on transboundary movement of and illegal trade in ODS. The latter is a continuous threat that could undermine the otherwise good achievements of the HCFC phase-out. The HCFC-based equipment constitutes an on-going demand for HCFC refrigerant.

Training programmes for RAC service technicians were developed in cooperation with prime national educational institutions in Belarus, Tajikistan and Ukraine. Master trainers educated in the train-the trainers events organized by the regional component facilitated 3-5 days training programmes for a sizeable number of RAC service technicians on good practices in installation, maintenance and servicing of RAC equipment. In addition to the trainings, RAC servicing equipment and tools were distributed to the service workshops that were represented in the trainings.

Through implementation of this sub-component, the project helped to reduce amount of HCFC vented to the atmosphere as a result of unsuitable practices in RAC servicing. It has also produced economic benefits as the trainings enabled several RAC service workshops to accept more requests for servicing advanced more sophisticated RAC equipment and create new jobs for service technicians.

In Belarus and Tajikistan, the trainings were organized under cooperation with the national Refrigeration Associations. Such cooperation notably increases sustainability of the training efforts as the RAC Associations were helpful in introduction of voluntary certification for RAC service technicians. Although mandatory certification of RAC technicians was considered by the participating countries, the relevant legislative measures were not introduced by the end of the project. In the continued absence of the national RAC Association in Uzbekistan, the UNDP project team substituted its function, but this is obviously not sustainable beyond the project time boundaries.

The project has also contributed to establishment of centralized or semi-centralized national schemes for ODS recollection, recycling and reclamation in Belarus, Tajikistan and Uzbekistan. Thirteen ODS recollection & recycling centres were provided with refrigerant recovery units and tools and four ODS reclamation centres received advanced refrigerant reclaim units. This sub-component also triggered collection of data on amounts of ODS recycled and reclaimed for reuse in Belarus and Tajikistan and similar work is in progress in Uzbekistan. Although the essential hardware for establishment of the national R&R schemes was provided, there is still amount work to be done in order to achieve full operation of the schemes as the evaluation found some reclaim centres not been fully linked for provision of refrigerant purification services to all workshops with ODS recovery units.

There are no incentives for ODS end-users (in particular from the residential sector) to call for services of trained and certified refrigeration service technicians. This is in particular problem in Tajikistan and Uzbekistan where the so called “suitcase technicians” constitute by estimation about 20-25 % of RAC service operations. This situation will persist in the continued absence of certification for RAC service technicians and licensing of RAC service workshops.

As a direct effect of the establishment of the ODS recycling and reclaim schemes, sizeable number of containers with used ODS of unknown composition have been accumulated in some of the R&R centres. In this regard, the evaluation found that the persisting lack of HCFC standards for advanced methods of chemical analysis (other than portable refrigerant identifiers) not only impedes full use of the upgraded laboratory capacities (gas chromatography) for control of ODS import but also prevents identification and determination of the used ODS when composition is not known. Consequently, unidentifiable ODS block a sizeable portion of refillable refrigerant containers at some R&R centres.

The targeted HCFC investment and demonstration sub-components have provided direct support for conversion of selected eligible enterprises in the manufacturing sector in Belarus, Ukraine and Uzbekistan to ozone friendly technologies. In all four countries, this sub-component facilitated introduction of energy efficient technologies based on low GWP refrigerants such as ammonia for

chillers or propane for AC systems. The sub-component in Tajikistan tested an innovative method of natural cooling for relay stations of mobile telephone operators. This demonstration project has proven that such interventions have a catalytic effect and further replication by the private sector beneficiaries will be driven by the sizeable economic rather than environmental benefits.

Procurement was found cost-effective when a regional approach was taken, such as translation of information materials and training manuals into Russian using the existing LTA for translation of one of the participation UNDP CO. However, procurement of equipment and tools was conducted under a national approach. In total, more than 80 portable refrigerant identifiers and several hundreds of sets with refrigerant service tools were procured under the project but the procurement was conducted separately in the four countries. Moreover, procurement of major equipment for conversion of the manufacturing enterprises in Belarus and Ukraine did not take into full account the necessity to ensure availability of warranty and after sale services in the recipient or at least neighbouring countries. Consequently, the procurement of major equipment was unnecessarily protracted.

The project has demonstrated innovative approaches for public outreach in the form of an international photo contest that received a world-wide attention.

It can be concluded that the regional project with its national components made a substantive contribution to removal of a majority of barriers that had prevented three of the participating countries from effective implementation of the Montreal Protocol obligations. Remaining barriers in Ukraine that could not been addressed due to the delays in implementation of the Ukraine national component are subject of the revised national project and will be addressed during the 2-year extension of this component.

Evaluation Rating Table

The main dimensions of the project are rated as follows:

	Rating				
Evaluation Criteria	**Regional**	**Belarus**	**Tajikistan**	**Ukraine**	**Uzbekistan**
Overall Attainment of Objectives	HS	HS	HS	U	HS
Relevance	N.A.	R	R	R	R
Effectiveness	HS	HS	HS	U	HS
Efficiency	S	S	HS	S	S
Monitoring & Evaluation	HS	HS	HS	HS	HS
Implementation & Execution	HS	HS	HS	MS	HS
Sustainability	N.A.	L	ML	ML	ML

The scales for the ratings are given in the box below.

Ratings for Overall Attainment of Objectives, Outcomes, M&E, I&E	
Highly Satisfactory (HS)	No shortcomings, exceeds expectations
Satisfactory (S)	As expected, no or minor shortcomings
Moderately Satisfactory (MS)	More or less satisfactory, some shortcomings
Moderately Unsatisfactory (MU)	Lover than expected, significant shortcomings
Unsatisfactory (U)	Substantially lower than expected, major shortcomings
Highly Unsatisfactory (HU)	Severe shortcomings
Unable to Assess (UA)	Level of information does not allow assessment
Ratings for Relevance	
Relevant (R)	
Not relevant (NR)	
Sustainability Ratings	
Likely (L)	Little or no risks to sustainability
Moderately Likely (ML)	Moderate risks to sustainability
Moderately Unlikely (MU)	Significant risks to sustainability
Unlikely (U)	Severe risks to sustainability
Unable to Assess (UA)	Level of information does not allow assessment

Summary of conclusions and recommendations

This evaluation makes two types of recommendations. Three of the four beneficiary countries of this project (Tajikistan, Uzbekistan and Belarus) are at advanced stage for respective submissions of follow-up projects on completion of HCFC phase-out. The first type recommendations (Nos. 1-8) refer to the focus and implementation strategy of the future projects and therefore should be considered in the first instance for the development, inception and implementation of the new projects on HCFC-phase out in the three CEIT countries (Belarus, Tajikistan and Uzbekistan). However, the recommendations are also applicable for the second phase HCFC phase-out projects in other CEIT countries.

The second type of recommendations (Nos. 9-12), although based on the findings from this ODS phase-out project, are pertinent to GEF-financed projects on a wider range of topics as they refer to operational issues such as procurement and project monitoring. Therefore, these recommendations are applicable for all project countries and the regional component.

Conclusion	Recommendation
1. Lack of certified ODS standards for identification and determination of used ODS and mixtures of used ODS that can't be analysed by the portable refrigerant identifiers prevents effective recycling of sizeable volumes of used ODS currently accumulated at the R&R centres	*1. UNDP should ensure that standards of frequently used ODS are provided to the countries implementing ODS reduction projects to enable both qualitative and quantitative analysis of refrigerants and refrigerant mixtures. In case internationally certified standards can't be imported to the project countries, support should be provided for development and local certification of ODS proxy standards using imported virgin refrigerants of declared purity*
2. Prolonged inability to get the growing stock of ODS and ODS mixtures of unknown composition growing problem with lack of refillable refrigerant containers	*2. UNDP should consider provision of sufficient number of refillable refrigerant containers to the already established as well as new refrigerant reclaiming centres.*
3. The established national refrigerant reclamation systems experience similar deficiencies as the systems that had been developed in Article 2 countries of the EU and beyond. Access to international advice and experience on the practices in the refrigerant reclamation industry in developed countries would enable the countries to accelerate development of their R/R/R systems and improve the circular economy of refrigerants.	*3. UNDP should ensure that international advice on good practices in refrigerant reclamation industry, including advice on elaboration of technical and business plans, is provided to the countries implementing ODS reduction projects in order to improve operations of their national reclamation schemes*
4. Until the RAC service sector becomes fully regulated by mandatory certification and licensing, bad practices common in the informal sub-sector such as accidents or deliberate venting of refrigerants will continue and reduce HCFC recycling and reuse and could thus undermine national efforts for HCFC phase-out	*4. UNDP in cooperation with countries implementing ODS reduction projects should develop outreach activities aiming at the end-users of RAC equipment to explain risks and disadvantages of engagements with the informal servicing sub-sector. The end-user outreach programmes should in particular advocate that cheaper immediate options tend to lead to greater costs in the long term and as well as a worse environmental impact*
5. Lack of capability to address the growing amounts of unwanted ODS remains the only major barrier that was not addressed by the current project due to cancellation of the pilot ODS waste destruction projects in Belarus and Uzbekistan. Similar situation is in other countries in the ECA region. There is already an on-going Regional Demonstration Project for Coordinated Management of ODS and POPs Disposal implemented by UNIDO and supported by the Multilateral Fund for the Montreal Protocol that aims	*5. UNDP together with the countries implementing ODS reduction projects should monitor developments under the UNIDO regional demonstration project on ODS disposal and ensure that national reporting systems are developed and functional for inventories of unwanted ODS and that information on the stock of ODS waste is readily available once a viable solution is proposed by the UNIDO project*

Conclusion	Recommendation
at establishing local capacities for destruction of ODS substances	
6. Emphasising global environmental benefits of HCFC phase-out is not sufficient to achieve behavioural changes in HCFC end-users. The public outreach efforts should be complemented by demonstration of economic benefits from following the good practices in RAC servicing on the end-users of HCFC-based equipment	*6. UNDP should consider conducting an analysis of economic benefits of good practices in refrigeration servicing and retirement of ODS-based equipment for inclusion in public outreach programmes directed on SMEs and residential segment of the end users*
7. Enlargement of the current master trainers base will increase sustainability of national training programmes on refrigerants	*7. UNDP should ensure enlarged participation of qualified national trainers in future ODS-related train-the-trainers programmes and to the extent possible organize T-o-T events with the established refrigerant training centres in the ECA region in order to improve cost-effectiveness and overcome the language barrier*
8. Learning from the acquired practical experience with use of CO2 as refrigerant in the region is needed in order to pave way for wider utilization of CO2-based refrigeration systems in the ECA region	*8. UNDP should ensure that national counterparts from the countries implementing ODS reduction projects learn from the experience with the use of CO2 as refrigerant in the region. E-courses, study tours and train-the trainers programmes could be organized with the Training Centre on use of CO2 as refrigerant that was established at the NORD O.O.O. company in Moscow*
9. The countries that advanced implementation of their national components could not benefit from the regional component support in terms of provision of Russian language training materials for RAC service technicians and had to develop training materials on their own	*9. UNDP should ensure that indicators in the results framework are attached to a time frame and state when they will be measured. The timely dimension of the indicators will allow for prioritization of actions in the project implementation plans*
10. Sub-components of MP-related projects on capacity building of the ODS control enforcement agencies and the RAC service sector envisage procurement of portable refrigerant identifiers and service tool kits for which there is significant and recurrent demand over a relatively long period of time. For such procurement events, Long Term Agreements (LTAs) are preferable as they provide volume leverage, allow to obtain large volume discounts and reduce administrative costs as well as the time needed for acquisition of procured items	*10. For procurement of portable refrigerant identifiers and RAC service tool kits, UNDP should consider either to conclude own LTAs or use LTAs already in place at sister organizations of the UN system that have acquired experience with procurement of equipment items for MP projects (e.g. UNIDO)*
11. Assistance to conversion of the foam and RAC equipment manufacturing as well as conversion of HCFC use in solvent and refrigerant blending envisage procurement of major equipment items that are usually produced on demand according to the Terms of Reference for the procurement. ToRs normally stipulate requirements related to technical specification of the procured equipment items as well as clearly specify demand for related services such as after-sale service to be provided by the equipment suppliers or their authorized agents	*11. UNDP should ensure that Terms of Reference for procurement of major equipment items contain clear definition of related services to be guaranteed by the equipment suppliers, in particular that the supplier's after sale service agents are operational in the recipient country or at least in the neighbouring country. Provision of the after-sale services should be one of the criteria for commercial evaluation of bids submitted under the procurement event*
12. Insufficiency of operational monitoring of actual co-financing levels for the project could pose a challenge for terminal evaluation at the project completion	*12. UNDP should ensure that national project implementation teams establish on-going operational monitoring on actually provided co-financing for the projects*

2. INTRODUCTION

This report presents the findings of the Terminal Evaluation (TE) of the UNDP-supported GEF-financed Project "Initial Implementation of Accelerated HCFC Phase-out in the CEIT Region". The evaluation was conducted by Dalibor Kysela, independent international consultant, on request of the Istanbul Regional Hub (IRH) of the United Nations Development Programme (UNDP).

Purpose of the evaluation

As outlined in the GEF Monitoring and Evaluation Policy and related documents, each GEF full-sized project will be subject to a Terminal Evaluation. Evaluations that are conducted at the end of project implementation, are expected to provide a comprehensive and systematic account of the performance of a completed project by assessing its design, implementation, and achievement of objectives. They are also expected to promote accountability and transparency, facilitate synthesis of lessons learned, and provide feedback to allow the GEF to identify issues that are recurrent across the GEF portfolio.

The Terminal Evaluation was conducted according to the guidance, rules and procedures established by UNDP and GEF as reflected in the UNDP Evaluation Guidance for GEF Financed Projects.

The purpose of TE is to provide the project partners i.e. GEF, UNDP and the Governments of the participating countries with an independent assessment of the key achievements of the project as compared to the original Project Document for the implementation period of the project. It will assess the expected outcomes and their sustainability and identify and discuss the lessons learned, through measurements of the changes in the set indicators, summarize the experiences gained and recommend for future policy dialogues and changes to the implementation structure.

The Terms of Reference for the Terminal Evaluation is provided as Annex 1 to this report.

Scope & Methodology

The evaluation covers all activities undertaken in the framework of the project. The time scope of the evaluation is the implementation period of the project from July 2013 – to June 2018. The geographic scope of the evaluation are the four participating countries, i.e. Belarus, Tajikistan, Ukraine and Uzbekistan.

The Evaluation used a combination of approaches to assess the achievements of the project from several perspectives and a mix of quantitative and qualitative methods of data collection and analysis. Desk reviews, face-to-face meetings, and follow up with key stakeholders were applied as necessary. The evaluation was conducted in three phases as follows:

Preparatory phase: The first step was a desk review of a variety of documents covering project design, implementation progress, monitoring and review, policies/ legislation/ regulations – among others. The review was followed by preparation of evaluation questionnaires with a set of discussion points aiming at gathering information from chosen respondents about attitudes, preferences and factual information linked to the performance indicators in the evaluation matrix.

The questionnaires were tailor made to key project stakeholders and beneficiaries that were selected for visits and face-to-face interviews during the evaluation field mission (next phase). In case some important stakeholders and/or beneficiaries could not be visited during the evaluation mission, their responses were solicited via follow-up e-mail and/or skype communications.

Evaluation Matrix: An evaluation matrix was constructed based on the evaluation scope presented in the TOR. The matrix is structured along the five GEF evaluation criteria for TEs and included principal evaluation questions. The matrix provided overall direction for the evaluation and was used as a basis for interviewing stakeholders and reviewing the project implementation reports.

Evaluation Field Missions: The evaluation field missions to the four participating countries were conducted in order to perform face-to-face consultations with the stakeholders, using semi-structured interviews based on the discussion points in a conversational form. The preparation of the evaluation field mission was done in close coordination with the IRH Project Manager and the UNDP Country Offices (Cos) in the four participating countries. From the COs, advice was sought to agree the timing

of the mission and schedule of visits of the key informants. To the extent possible, visits of relevant project sites to make directs observations of selected project outputs were also conducted during the evaluation missions. The interviews were planned in advance of the mission with the objective to obtain a critical sample of stakeholders' views during the time allocated to the evaluation missions.

The interviews aimed at soliciting responses to predetermined questions designed to obtain in-depth information about the key informants' impressions and experiences. Triangulation of results, i.e. comparing information from different sources, such as documentation and interviews, or interviews on the same subject with different stakeholders, were used to corroborate or check the reliability of evidence.

The itinerary of the evaluation missions and list of people interviewed during and after the evaluation missions are provided as respective Annexes 2 and 3 to this report.

Assessment of Evidence: After the data collection phase, data analysis was conducted as the third and final phase of the evaluation. Data analysis was conducted through review of documents that were made available to the team by the IRH and the four UNDP COs as well as of other documents that the evaluator obtained through web searches and contacts with relevant projects stakeholders and beneficiaries. This process involved organizing and classifying the information collected, tabulation, summarization and comparison of the results with other appropriate information to extract useful information that responds to the evaluation questions and fulfils the purposes of the evaluation.

The list of documents reviewed is provided as Annex 4 to this report.

Evaluation Report: After the data collection phase with conducting interviews, observing selected outputs and reviewing data from existing data sources, data analysis followed as the final phase of the evaluation. Data analysis involved organizing and classifying the information collected, tabulating it, summarizing it, and comparing the results with other appropriate information to extract useful information that responds to the evaluation questions and fulfils the purposes of the evaluation. In this process the evaluators took care of deciphering facts from a body of evidence by systematically coding and collating the data collected, ensuring its accuracy, and translating the data into usable formats or units of analysis related to the evaluation questions.

Structure of the Evaluation Report

The structure of the evaluation report follows the "Evaluation Report Outline" presented in Annex F of the ToR of the assignment (contained in Annex 1 to this report).

3. PROJECT DESCRIPTION AND DEVELOPMENT CONTEXT

Hydrochlorofluorocarbons (HCFCs), a group of ozone-depleting chemicals, are used in a variety of applications such as refrigerants, foam-blowing agents, solvents, fire extinguishers and aerosols. The use of HCFCs is controlled by the Montreal Protocol on Substances that Deplete the Ozone Layer (Montreal Protocol or MP).

The Montreal Protocol was designed to reduce the production and consumption of ozone depleting substances in order to reduce their abundance in the atmosphere, and thereby protect the earth's fragile Ozone Layer. The original Montreal Protocol was agreed on 16 September 1987 and entered into force on 1 January 1989. The Montreal Protocol includes a unique adjustment provision that enables the Parties to the Protocol to respond quickly to new scientific information and agree to accelerate the reductions required on chemicals already covered by the Protocol. The Parties to the Montreal Protocol have amended the Protocol to enable, among other things, the control of new chemicals and the creation of a financial mechanism to enable developing countries to comply. Specifically, four Amendments – the London Amendment (1990), the Copenhagen Amendment (1992), the Montreal Amendment (1997) and the Beijing Amendment (1999) have been made to the Protocol. Amendments must be ratified by countries before their requirements are applicable to those countries2.

The Copenhagen Amendment of the Montreal Protocol of 1992 stipulated that Article 2 countries need to reduce their HCFC consumption to 65% of their baseline in 2004, to 35% of that level in 2010, to 10% by 2015, to 0.5% in 2020 and finally achieve full phase out in 2030. The Beijing Amendment of 1999 extended control measures for HCFCs to production with a freeze in production by 2004 at the baseline. In September 2007, MOP 19 adopted the Montreal Adjustment on Production and Consumption of HCFCs, which entered into force on 14 May 2008. This requires that Article 2 countries accelerate both HCFC consumption and production to 25% of the baseline in 2010.

A number of GEF Countries with Economies in Transition (CEIT) fall under Article 2 of the Montreal Protocol, and are generally eligible for GEF funding in support of HCFC phase out, subject to having ratified the Copenhagen amendment, which is the case for the four (4) participating countries: Belarus, Tajikistan, Uzbekistan and Ukraine.

Project start and duration

The GEF CEO approved the project for implementation on 30 August 2012. The regional and national components were signed/approved as follows:

Regional Project: 22 February 2013
Belarus: 15 May 2013
Tajikistan: 8 May 2013
Ukraine: 29 May 2013
Uzbekistan: 30 July 2013

The regional project including all four national components was considered to be under implementation from the signature date of the last component, i.e. 30 July 2013.

The originally planned project closing date was 22 February 2016. Based on the progress reports and specific delays in Ukraine and Uzbekistan and uneven progress with the national components, a request for 2-year project extension was discussed and approved at the regional Project Board meeting in June 2015. This request was submitted to and formally approved by UNDP and GEF to with the plan that all components will complete the vast majority of planned activities by 31 July 2018.

The national components for Belarus, Tajikistan were operationally closed in early 2017 and the component for Uzbekistan reached completion of its activities as of 31 July 2018. The national component for Ukraine has been subject to a two-stage major revision that was still in progress at the time of TE. Consequently, the decision to extend the Ukraine component until 31 July 2020 has been approved by UNDP-GEF Executive Coordinator. The extension will be subject to additional Terminal Evaluation that will be scheduled near the above completion date.

Problems that the project sought to address

The project is a follow up to the medium-sized GEF-4 regional HCFC project "*Preparing for HCFC Phase-out in CEITs"* that was implemented by UNDP in 2008-2009 and helped to develop detailed survey data on HCFCs in CEITs and assisted with elaboration of outlines of HCFC phase-out strategies to meet the Montreal Protocol compliance targets. The current project serves to sustain the initial GEF-4 work in four CEITs committed to move forward with accelerated phase out and prepare for more targeted investment action, all in coordination with parallel work financed in Article 5 countries in the region undertaken under funding from the Multilateral Fund for Implementation of the Montreal Protocol (MLF).

The HCFC surveys in the participating countries that had been completed under the predecessor project identified the important trends across the region that had to be considered in guiding country phase out strategies:

- Overall HCFC consumption was on an increasing trend with the majority (>80%) of it attributable to XPS production in Ukraine since 2008 and rapid growth in refrigeration servicing demand in all countries, principally for HCFC-22 and somewhat for mixtures, created by a relatively new and expanding inventory of HCFC based (and primarily imported) equipment over the last several years;
- A number of countries had been challenged in meeting their 2013 phase-out obligations and some of them, in the absence of rapid introduction of HCFCs control measures and continued proliferation of new installations of mainly imported HCFC-containing equipment, were expected to have difficulty in meeting the 2015 phase out obligations;
- HCFC consumption previously reported to the Ozone Secretariat had certain inaccuracies in some cases for a variety of country specific reasons, such as underreporting by Belarus due to inability to capture imports (under the Customs Union with Russia) and by Ukraine due to lost institutional capacity and dysfunctional HCFC licensing system, which created problems for compliance assessment;
- Participating countries urgently needed support for implementation of regulatory action on control measures, improved customs control capacity, expanded coverage in licensing systems, technological conversions to non-ODS/low GWP technologies, enhanced awareness of 'natural' and low GHG alternatives, and strengthening of their refrigeration servicing sectors, all targeting control and management of HCFCs/HCFC containing equipment, to meet these challenges;
- Other than XPS, additional HCFC use in manufacturing, where it existed, accounted for a smaller portion of HCFC consumption if calculated in metric tons (MT); however, as it was all based on HCFC-141b - a high potent ODS - that tend to balance the impact in ODP units. This consumption was found in rigid foam, polyol blending and solvent sectors with associated challenges related technology substitution in the latter two categories due to (1) wide range of polyol application by a relatively large number of small users and (2) solvent efficiency not matched by other technologies available on the local markets.

The above trends indicated that the type of response required for HCFC phase out in CEITs had to be somewhat different from the one applied previously for Annex A and B substances phase-out where the GEF's support made a major contribution. Previously, the bulk of targeted ODS consumption could be directly addressed with large scale investment for technology conversion in the manufacturing sector, primarily in large enterprises, and the result was achieved without a strong linkage to technical and regulatory capacity building. With exception for Ukraine, in the other three countries there were fewer opportunities to achieve large reductions in HCFC consumption only with direct manufacturing investment (only a few enterprises). Therefore, a targeted support to capacity building in refrigeration servicing sector combined with regulatory and market tools was necessary to address the substantial accumulated service demand.

During the preparatory activities for the regional project, several barriers were identified in the participating countries that prevented effective implementation of Montreal Protocol obligations. The following table summarizes the main barriers identified for each country.

Table 1: Key barriers at the regional project inception

Belarus	Tajikistan	Uzbekistan	Ukraine
Sustainability of institutional capacity			
Refrigerant management capacity and wide fragmentation of the servicing sectors			
HCFC consumption in the manufacturing sector that requires technical assistance		Continued illegal trade in ODS and mislabeling of containers	Partial eligibility of the manufacturing sector as the principal HCFC consumer
Absence of ability to effectively limit import of HCFC containing equipment that creates a long-term HCFC "consumption bubble"			
Ineffective Import Licensing System unsuitable for Consumption Reporting			Weak interdepartmental coordination and enforcement capacity lacking import controls
Lack of ability to monitor the incoming ODS materials in gas containers			
Limited introduction of low GWP and energy efficient technologies			
Lack of capability to address the growing amounts of unwanted ODSs	Continued illegal trade in ODS and mislabeling of containers	Lack of capability to address the growing amounts of unwanted ODSs	
			Historical credibility issues in demonstration of compliance with MP obligations
			Weak interest from HCFC end-users to cooperate with the Government

Immediate and development objectives of the project

The immediate objective of the project was to achieve compliance of the participating countries with the accelerated Montreal Protocol HCFC phase-out requirements through stabilization and progressive reduction of HCFC consumption. In this connection, this project sought to give input to the preparation and implementation of formal national HCFC phase-out strategies and action plans consistent with Decision XIX/6 and which served as direct input to the updating of existing Country Programs in each individual country.

The long-range development objective of the project was protecting human health and the environment by assisting the participating countries to phase out consumption and production, as well as to prevent releases of ozone-depleting substances.

In order to achieve the objectives, the project was designed as a combination of regional and national assistance approaches and includes:

(a) enabling-type of activities complemented with experience exchange and networking, contained in the regional Component 1; and

(b) specific technical assistance and capacity building activities contained in the country-oriented Component 2.

All participating countries are signatories and/or parties to a wide range of international agreements and conventions related to the environment. Status of the project countries in relation to international conventions related to ozone layer protection is summarized in Table 2 below.

Table 2: Vienna Convention and Montreal Protocol ratification status of the project countries[2]

Country	Vienna Convention	Montreal Protocol	London Amendment	Copenhagen Amendment	Montreal Amendment	Beijing Amendment
Belarus	20/06/1986 (at)	31/10/1998	07/01/1998(ac)	18/12/2006	18/12/2006	18/12/2006
Tajikistan	06/05/1996(a)	07/01/1998(a)	07/01/1998(a)	07/05/2009(a)	07/05/2009(a)	07/05/2009(a)
Uzbekistan	18/05/1993(a)	18/05/1993(a)	10/06/1998(a)	10/06/1998(a)	31/10/2006	31/10/2006
Ukraine	18/06/1986 (at)	20/09/1988	06/02/1997	04/04/2002	04/05/2007	04/05/2007

At the 28th Meeting of the Parties to the Montreal Protocol held in Kigali from 10 to 15 October 2016, the Parties to MP adopted a further amendment to the Montreal Protocol (Decision XXVIII/1). At the time of the terminal evaluation, none of the four participating countries have ratified the Kigali Amendment.

Baseline indicators established

In the absence of international assistance and specifically the GEF funding, it was reasonable to assume that progress on the implementation of the HCFC phase-out strategy in the participating countries would expectedly slow down with limited and fragmented activities initiated to modernize HCFC import/use legislation and management capacity. Without backing HCFC phase-out with financial assistance, the eventual, delayed replacement of HCFCs largely with HFCs and their blends, comparably to prevailing trends in developed countries, would be the most probable medium to long term scenario. Furthermore, several participating countries, namely Tajikistan, Uzbekistan and Ukraine, would enter and/or remain in non-compliance regime with the Montreal Protocol provisions.

The main indicators of the baseline situation in the participating countries are as follows:

- Lack of approved HCFC phase-out strategy;
- Insufficient institutional capacity for enforcement of HCFC control measures by national customs and environmental inspection authorities;
- Weak HCFC re-use capacity and low-level of technical knowledge and instrumentation to address HCFC consumption in the servicing sector;
- Limited technical knowledge of good refrigeration practices with regard to alternative refrigerants (non-ODS/low GWP such as ammonia, carbon dioxide, etc.);
- Lack of information on non-HCFC products and programs;
- Insufficient availability of equipment and tools for testing of gas composition and quality as well as for reducing emissions of HCFCs during maintenance of equipment containing HCFCs;
- Shortage of exposure to alternative technologies and inadequate understanding of energy-saving aspects of modern equipment operational on new technologies;

Main stakeholders

The Project Documents for the national components provide analysis of the main project stakeholders, such as relevant government institutions designated in each participating country, and further with regional authorities, industries, public and local authorities and NGOs. The stakeholder analysis was built on established consultative networks involved in the successful CFC phase-out programs completed in the participating CEITs. In each country, the National Ozone Units (NOU) or equivalents provide a robust interface for interaction with and outreach to institutional, industrial as well as public stakeholders.

Expected Results

The project Component 1 on regional information exchange and networking addressed barriers associated with incomplete knowledge and awareness of HCFC phase-out. The regional component aimed to provide common Russian language regulatory guidance, “train the trainers” opportunities

[2] Ratification/ Acceptance (at) / Accession (ac)

related to regulatory enforcement, customs control, integration of HCFC phase-out with energy efficiency and GHG reduction, training materials for transfer to national level programs, and expanded country exposure within the existing ECA network. It was developed to build on the tools and networks currently in place for some CEITs and the Article 5 countries in the Commonwealth of Independent States (CIS) and is to be accessible to all non-Article 5 CIS countries in the region, although direct participatory funding support will be confined to the four countries participating in this project (Belarus, Tajikistan, Ukraine and Uzbekistan).

The national capacity building part of Component 2 focusses on support to the adoption of the fully completed HCFC phase-out strategy (with selected legislative options to control HCFC import/use), capacity building and supply of monitoring and analytical equipment to environmental inspectorates and customs departments, as well. As capacity building and supply of servicing equipment/tools for refrigeration servicing technicians. The technical assistance part of Component 2 targets modernization of HCFC re-use scheme in the beneficiary countries and target investment projects and demonstration of alternative ODS-free technologies.

At the regulatory level, the country specific components were expected to ensure the implementation of enhanced HCFC regulation/import control, enhanced licensing systems, and introduction of HFC monitoring inclusive of working enforcement level training. These components were complemented by training to strengthen enforcement (environmental and Customs officers to control HCFC end-use and imports) and operational refrigeration-servicing sectors (training, certification, RAC Association), including promotion of energy efficiency and GHG reductions during servicing.

In addition, investment programs were proposed to cover technological conversions in solvent and rigid foam sectors as well as pilot retrofit/replacement incentive programs targeting priority high service demand sectors. The investment programmes aimed at strengthening of refrigeration service capacity and optimizing chemicals distribution to allow control of container size, as well as preparing collection/storage modalities for destruction facilitated by a pilot destruction project.

4. FINDINGS

This section provides a summary and descriptive assessment of the achieved results. In addition, several evaluation criteria are marked in line with the requirements for GEF Terminal Evaluations

Project Design / Formulation

The project has been designed to specifically address the principal barriers identified above based on the overall project framework structure set out in the original GEF Project Identification Form (PIF). The project structure consists of three interlinked components as follows:

Component 1 is the regional component designed to assist on the following key aspects of HCFC phase-out that are common to the four participating countries:

- Development of legislative and policy options for HCFC control and phase-out;
- Capacity building for enforcement of HCFC control measures by customs and environmental/technical inspection authorities;
- Capacity building for introduction into the refrigeration sector of good practices that incorporate energy efficiency and GHG reduction; and
- Support for development of regional institutions and regional information exchange and networking.

Component 2 is composed of national sub-components for the individual participating countries. Each of the four sub-components aims at:

- Development and endorsement of formal national HCFC phase-out strategies and action plans;
- National level capacity strengthening of customs, enforcement officials and refrigeration service technicians; and
- Targeted HCFC Phase-out investment programme and demonstration projects.

Component 3 covers monitoring and evaluation of the project.

At the regulatory level, the country specific sub-components were designed for implementation of enhanced HCFC regulation/import control, strengthening of licensing systems, and introduction of HCFC monitoring. These policy and regulatory interventions are complemented by training to strengthen enforcement (environmental and customs officers to control HCFC end-use and imports) and operational refrigeration-servicing sectors (training, certification, RAC Association), including promotion of energy efficiency and GHG reductions during servicing.

In addition, targeted investment programs were designed under the national sub-components on pilot investment for technological conversions in the foam, refrigeration and solvent sectors, pilot retrofit/replacement incentive programs targeting high service demand sectors and strengthening of refrigeration service capacity as well as preparing collection/storage modalities for destruction facilitated by a pilot destruction projects in two countries. Where cost effective/economically sustainable opportunities were identified, pilot investments in direct consumption phase-out were undertaken specifically in the foam, refrigeration and solvent sectors.

While the regulatory and capacity building elements of the national sub-components follow quite uniform structure, the targeted investment elements were designed to address specific priorities of the four beneficiary countries.

The four beneficiary countries (Belarus, Tajikistan, Ukraine and Uzbekistan) were selected for two reasons. Firstly, all four countries are classified as Parties to MP obliged for full compliance with HCFC phase-out schedules and thus not eligible for phase-out delays that are reserved only for developing countries under Article 5 of MP. Another consequence of this classification is that the participating countries are not eligible to receive financial assistance from MLF. This is of course surprising for a country such as Tajikistan, but it is explained more by the historical reasons than average economic indicators. The second reason for the selection was the history of cooperation of the countries with UNDP as the Implementing Agency of MP.

The original project concept was developed upon consent of the four participating Governments and a designated National Focal Point from each country participated at the project conception.

Analysis of LFA/Results Framework

The regional Project Document in its part 3.4 presents a comprehensive logframe matrix that includes outcomes, description of baseline, objectively verifiable indicators and targets. The results framework contains total nine outcomes. The regional component is composed of four outcomes: one (Outcome 1a) on legislation and policy, two (Outcomes 1b and 1c) on capacity building for enforcement of HCFC control and for introduction of good practices in the principal HCFC consuming sectors, respectively, and the fourth outcome (Outcome 1d) on regional networking and cooperation. Each of the four national projects for the participating countries has a separate outcome (2a to 2d) and the last outcome is related to monitoring, adaptive feedback and evaluation.

The four outcomes under the regional component are homogenous in structure as each of them contains specific and distinctive interventions in relatively narrow technical areas. However, the regional Project Document does not break down the outcomes into outputs and the outputs of the regional component are in fact listed as objectively verifiable indicators.

By contrast, the national outcomes cover comparatively wide areas as each of the four national outcomes contains national interventions similar to those under the outcomes 1a) through 1c) and in addition also a mix of interventions for targeted HCFC phase-out investment and demonstration projects as well as upgrade of HCFC recovery and reuse. Furthermore, the respective national components of Belarus and Uzbekistan contain pilot projects on destruction of unwanted ODS. By this token, the national outcomes are heterogeneous in structure as they encompass interventions in a relatively wide range of areas. Similar to the regional logframe, the four logical frameworks of the national projects do not show the outcome/output breakdown structure. However, the national components' outputs are listed and defined in the body of each national component. This constitutes a bit of inconsistency between the structure of the regional and the national components.

The eight substantive outcomes of the project are coherent with the objective of the project that is to achieve compliance with the accelerated Montreal Protocol HCFC phase-out requirements through stabilization and progressive reduction of HCFC consumption. The outputs and activities are cascaded down from the outcomes in a logical way and the regional and national projects' activities represent a balanced package of interventions on strengthening of human and institutional capacities for enforcement of legislation, handling and management of refrigerant as well as for technology conversion and demonstration of new technologies.

It should be noted that while the national projects in Belarus, Tajikistan and Ukraine had similar focus of the third substantive output on the refrigeration servicing sector, the national project in Ukraine was different as it focused on assistance to the manufacturing sector while leaving the servicing sector for later stage interventions. As the regional component was designed for assistance to the RAC service sector (outcome 1c), in this area the national component of Ukraine appears to be detached from the regional component.

The targets defined in the regional and national project logical frameworks are for the most part specific, measurable, achievable, and relevant, hence complying with four out of the five features of the so-called SMART indicators, i.e. they are specific, measurable, achievable and relevant, but the targets do not specify the time line i.e. when the results target values should be achieved.

There is an implicit timeliness incorporated into the national projects' targets as it can be anticipated that all results would be time-bound to the national projects' completion. However, it implies from the project design that some results of the regional component would be available early on in the project implementation for use by the national components (such as Russian language resource documentation, training and information materials, training-of-trainers for the national components) therefore the time-bound dimension of the regional component targets is missing.

Assumptions and Risks

At the project submission, the risks associated with this project were rated low since the four participating countries had already been engaged in elaborating their respective HCFC phase-out strategy outlines, and already had acquired substantial experience in the previous project on CFC phase-out. However, the risk rating apparently did not take into full account results of the predecessor project under which only Belarus, Tajikistan and Uzbekistan showed sufficient progress towards drafting outlines of their HCFC phase-out strategies while Ukraine failed to complete the outline strategy preparation by the end of the predecessor project. Considering the fact that in this project inception the phase-out strategy was considered a primary and necessary requirement for the participating country to ensure effective, timely and consistent HCFC phase-out, the low risk rating for Ukraine was over optimistic. Experience from this project confirmed that the initial assumption that Ukraine would take full ownership of this project did not materialize.

Lessons from other relevant projects

Lessons learned from projects in the same focal area appear to have been accounted in the design of this project. It should be noted that due to the status of the four participating countries as economies in transition they were not eligible for funding in the focal area of ozone protection hence the number of lessons learned from relevant similar projects was limited. Again, as inefficiencies in the project delivery and relatively weak and inconsistent institutional support were recorded under the predecessor project, it appears that lessons from the latter were not fully taken into account for this project formulation.

Planned stakeholder participation

Key stakeholders identified at the inception of the regional and national project components were involved in the project implementation to the extent possible according to their expected roles. These included the National Ozone Unit established at the main line ministry responsible for environmental protection, the national customs authority, the RAC Association (if established and operational) as well as relevant private sector companies from the RAC manufacturing and servicing sectors. It should be noted that the level of stakeholder analysis at the inception of the national components varied, in particular in relation to stakeholders from the private sector. For the Belarus national component, the stakeholder analysis identified more than twenty national stakeholders while for Ukraine the national stakeholder analysis was less detailed.

Replication approach and UNDP comparative advantage

Following the closure of the national project components in in Belarus, Tajikistan and Uzbekistan, the three countries have requested GEF PPG for stand-alone follow-up national projects. The experience gained under implementation of the national components of this project will be important not only for the follow-up projects but also for addressing HCFC consumption in the RAC service sector under Stage II HPMP projects financed by MLF that UNDP implements in Article 5 countries. In this sense, the potential for replication of the results from this project is high.

Technology transfer is only successful when complemented by targeted strengthening of relevant human and institutional capacities. This project proved that UNDP's long-standing experience in capacity development was an important driver in developing and implementing the coherent package of both "hard" and "soft" interventions and will further stand for benefit under the follow-up projects.

Linkages between project and other interventions within the sector

Due to the ineligibility of the participating countries for funding from other sources, this GEF project constituted the principal and only piece of international development assistance for the area of ozone layer protection. Nevertheless, during the implementation the project was linked with few interventions on the boundary of the project focus area.

Management arrangements

The project was prepared and submitted by the UNDP Bratislava Regional Centre (BRC) and the Local Project Appraisal Committee was held in BRC in January 2013. However, shortly after the

submission of the project to GEF, UNDP agreed to relocate BRC to Istanbul and later created the Istanbul Regional Hub (IRH), that took over responsibility for implementation of the regional component, and, in line with its delegation of authority, granted support to UNDP Country Offices (COs) for implementation of the respective national components.

The national components of Belarus and Uzbekistan were implemented under the National Implementation Modality (NIM) where selected organizations of the respective Governments served as implementing partners and UNDP as a development partner and a funding agency. For the Ukraine and Tajikistan components, as well as the for the regional project component, UNDP assumed the dual role of implementing partner and execution agency under the Direct Implementation Modality (DIM)[3].

The role of IRH was to facilitate additional regional coordination, oversight and reporting to GEF on all aspects of the project, guidance on GEF and UNDP rules and regulations and financial management of GEF project resources. Last but not least, IRH in coordination with relevant stakeholders executed the Monitoring and Evaluation Plan under Outcome 3.

Project Implementation

This section provides an assessment of quality in the project implementation and financial management as well as rating of the applied monitoring and evaluation systems.

Adaptive management

There have been delays in recruiting Project Managers both at regional and national levels and this has impacted the implementation of the projects. Once the Project Managers were on board and fully involved, the project implementation noticeably improved.

The adopted management structures both at the regional and the national levels were as per the arrangements laid out in the respective Project Documents together with description of responsibilities and reporting lines. The decision-making process was conducted according to the outlined arrangements and once the respective Project Managers were on board the decision-making was transparent and timely.

When necessary, guidance on issues was provided by the regional team to their national counterparts. The status of the projects at regional and national levels were adequately reported with issues requiring action were discussed and resolved at the annual project board meetings. With the delays in appointing project managers in some of the countries, the overall project start-up was delayed and the delays in Ukraine (beyond UNDP control) and Uzbekistan (expedited implementation plan), resulted in uneven progress in all countries which also had an effect on the regional component. Consequently, request for a standard 2-year project extension was submitted to and approved by GEF for the period from March 2016 to July 2018.

There were no major issues of adaptive management with the exception of the national project in Ukraine where due to the deteriorating political situation and partial lack of the Government ownership of the project the project implementation was delayed. Two-stage revision of the project was performed in a transparent manner through decision of the established Project Board and additional efforts of the implementing agency (UNDP) reconfirmed the government commitment to the project and brought the project back on track.

Partnership arrangements

A remarkable partnership was established with the UNEP ECA Ozone Network. Apart from exchange of information, this partnership was extended to ensure regular communications and interactions between the counterparts from the four Article 2 countries from this project with representatives of the ECA region Article 5 countries during regular annual ECA Ozone Network meetings. It also allowed to provide support for the project countries to participate in MP meetings in case their

[3] The Ukraine component was developed for implementation under NIM. In 2013, following previous downsizing of state institutions, the Ministry of Ecology and Natural Resources of Ukraine confirmed DIM as the most appropriate modality to ensure smooth implementation of the project.

participation was not sponsored by the Ozone Secretariat. In this way the four project countries and their experts could exchange information about success stories and discuss challenges

Feedback from M&E activities used for adaptive management

Adjustments and corrective actions during the project implementation were in all cases based on feedback that was provided by the regular monitoring activities conducted by the regional and national project teams and recorded in the respective Annual Project Reviews. The corrective actions mostly consisted of modifications of annual work plans for subsequent periods and for the regional component as well as for the four national components were approved by the respective Project Boards/Steering Committees. Similarly, no significant changes to the project and its national components were required by the Mid-Term Review and the MTR recommendations resulted in minor implementation adjustments. Major variances between planned and actual activities occurred only due to cancellation of the pilot ODS destruction sub-components in Belarus and Uzbekistan and the two-stage substantive revision of the national component for Ukraine. None of the changes in the activities had impact on the outputs and outcomes in the results framework.

Project finance and co-finance

The funds committed for the project (as of the project inception) and actual implementation of the GEF grant are summarized in Tables 3 and 4 below:

Table 3: Summary of Financial Resources Mobilized in the CEITs for Phasing Out HCFCs through the GEF/UNDP Project

Country	GEF Trust Funds (Million US$)	Co-Financing Funds (Million US$)	Total (Million US$)
Regional Component	1.080	0.000	0.900
Belarus	2.200	6.895	9.095
Tajikistan	1.100	3.600	4.700
Ukraine	3.190	9.900	13.090
Uzbekistan	1.430	4.900	6.330
Total	**9.000**	**25.295**	**34.295**

Table 4: Implementation of the funds from the GEF Trust Fund (as of 30 June 2018).

	Regional	Belarus	Tajikistan	Ukraine	Uzbekistan
Total Budget	**1,080,000**	**2,200,000**	**1,100,000**	**3,190,000**	**1,430,000**
2013 Expense	61,319	38,383	78,738	58,072	4,664
2014 Expense	66,223	315,263	504,966	73,682	48,841
2015 Expense	135,495	809,866	270,777	281,348	454,548
2016 Expense	266,884	1,022,623	103,665	818,415	287,126
2017 Expense	433,238	13,865	141,854	186,091	459,600
2018 Expense	91,216	0	0	111,502	119,186
Total Expense	**1,054,374**	**2,200,000**	**1,100,000**	**1,529,110**	**1,373,965**
Total Expense/Budget	**97.60%**	**100.00%**	**100.00%**	**47.93%**	**96.08%**
Remaining Budget	**25,676**	**0**	**0**	**1,660,890**	**56,035**

Table 5 below summarizes information about support that was provided from the regional to the four national components.

Table 5: Support from the regional component to the national projects (in US$)

Country	Support (US$)			% of the regional budget
	Travel	Activities	Total	
Belarus	72,628	59,000	131,628	**12.19**
Tajikistan	88,924	89,000	177,924	**16.47**
Ukraine	45,011	0	45,011	**4.17**
Uzbekistan	72,915	142,000	214,915	**19.90**
Total	**279,478**	**290,000**	**569,478**	**52.73**
% of regional budget	**25.88%**	**26.85%**	**52.73%**	

It follows from the table that a sizeable portion of the funds allocated to the regional component was used for additional assistance to the national projects in terms of support for travel of national participants as well as for financial assistance to substantive activities, such as additional contribution to the demonstration projects, national trainings on natural refrigerants and funding of national consultants. About half of the original regional component allocation was re-directed to the national components in the course of the project implementation.

The finances for the projects at the regional and national levels were managed by UNDP on their ATLAS Management and Financial system. Each project office had access to ATLAS and MPU/Chemicals Unit at IRH has an Administrative and Operations Consultant who maintained an overview of the overall project finances.

Table 6 below summarizes information on the co-financing materialized until the terminal evaluation of the project.

Table 6: Allocation of resources for the project by funding source

Country	GEF Trust Fund		National Co-financing	
	Amount (US$)		Amount (US$)	
	At Inception	At TE	At Inception	At TE
Belarus	2,200,000	2,200,000	6,895,000	5,714,400
Tajikistan	1,100,000	1,100,000	3,600,000	3,846,840
Ukraine	3,190,000	1,529,110	N.A.	N.A.[4]
Uzbekistan	1,430,000	1,373,965	5,100,000	5,901,190
Total	**7,920,000**	**6,203,075**	**15,595,000**	**15,462,430**

It follows from Table 6 that the total co-financing originally pledged by the project beneficiaries in Belarus, Tajikistan and Uzbekistan were achieved at the end of the project. For Ukraine, the co-financing data is not shown since the co-financing information at the project inception is no longer relevant after the cancellation of the investment projects in the PU foam and XPS sectors and the substantive revision of the Ukraine national component.

It should be noted that the evaluator did not find any evidence of systematic collection and monitoring of the co-finance data by neither of the project teams or any other entity within the project. At the time of the evaluation missions, a report on actual materialized levels of co-financing from the project beneficiaries was available in Tajikistan. The co-financing information from Belarus and Uzbekistan was collected upon request of the evaluator and provided after the evaluation mission. However, the information obtained from Belarus covers mostly co-financing contributions by the private sector as it was more difficult to collect actual co-financing information from the governmental entities.

The evaluator found the current financial controls for the project sufficient but recommends that the absence of co-financing data collection require immediate attention and effective remedial actions by the implementing partners. Co-financing is generally considered to be important for mobilizing

[4] The co-financing data for Ukraine is not provided due to cancellation of several components of the original national component and pending approval of the revised Project Document.

resources for achievement of GEF objectives and the GEF Council has articulated its importance on several occasions and the GEF Secretariat has often portrayed it as an indicator of the additional resources that GEF has been able to attract towards achievement of global environmental benefits. Although the absence of concurrent co-financing data collection did not have a direct negative impact on project implementation efficiency and effectiveness, insufficient information on co-financing poses a challenge for the terminal evaluation. Given its importance for the GEF projects, establishment of a system for concurrent co-financing data collection is desirable for every GEF project.

Monitoring and evaluation

Indicative monitoring and evaluation (M&E) plans with corresponding budgets were developed during the design phase of the project for the regional as well as for the four national components. The plans listed M&E activities along with the designated parties regarding their responsibility and corresponding timeframes. All M&E plans had the standard components usual for projects of this size and complexity.

Budgets were provided in the regional as well as in the national Project Documents only for the Mid-Term Review and Terminal Evaluation as the M&E activities to be conducted by external consultants. The cost of regular monitoring i.e. the project teams' staff time and UNDP staff and travel expenses were not included as per the GEF rules for project implementation. The budget for MTR and TE in Ukraine was higher due to the geographic distance between some project beneficiaries and location of the project implementing team. However, the budget allocation did not take into consideration the geographical distances in Uzbekistan that are similar to the distances in Ukraine hence the M&E budget for the Uzbekistan was underestimated.

The Monitoring and Evaluation Plan at the project entry is rated **Satisfactory (S).**

All M&E activities were performed according to the respective Project Documents as follows:

In order to provide overall direction for the project and to make key decisions including commitment of resources, the Regional Project Board (RPB) was established composed of an executive (UNDP IRH Manager), representatives of UNDP MPU/Chemicals Unit and UNDP COs from the 4 participating countries, and representatives of respective Ministries of project countries. Due to the relocation of RBC and establishment of IRH, there was no RPB in 2014 but it was substituted by e-mail exchanges by members of RPB.

Similarly, National Project Boards were established in the 4 participating countries and each was chaired by an executive from the respective UNDP CO and consisted of representatives of UNDP IRH and CO as well as representatives of the respective national line ministries.

The regional and national project teams ensured close coordination between RPB and the national boards; this coordination was facilitated by the participation of respective lead ministries on the RPB. The RPB meetings (of about 2-hour long with high-level management represented) were complemented by 2-day long annual Project Meetings prior to the RPB meeting. The Project Meetings reviewed and discussed progress from all project countries and from the regional component. For each PM, a specific policy and/or technical theme was selected. In 2013, HCFC-related policy analysis was selected as the priority theme; in 2015, refrigeration training; and in 2016 ODS waste management as well as gender.

The principal M&E events were organized as follows from Table 7 below:

Table 7: Main M&E events in the regional and national project components

M&E Activity	Regional	Belarus	Tajikistan	Ukraine	Uzbekistan
Inception Workshop	November 2013	October 2013	September 2013	None	November 2014
Annual Project Review Meetings	3 meetings June 2015-November 2017	8 meetings* December 2013-December 2016	3 meetings March 2014 – February 2016	4 meetings October 2015 – April 2018	5 meetings December 2014 – December 2017

*included 3 virtual meetings through e-mail conference

Project execution occurred at the multi-country level. The activities were described in the respective results frameworks and related workplans and budgets. These were confirmed through an annual planning process. Annual Work Plans were prepared for every year of the project implementation and approved by the respective Project Boards. Periodic monitoring was also achieved through missions of the members of the regional project team to the countries and site visits of the national project teams that provided first-hand and on-the-spot information on project progress.

The evaluator reviewed the available APRs and PIRs from the regional as well as national project components and found their value for identification of implementation challenges and as a source of evidence of addressing the implementation challenges by follow-up actions undertaken by the project implementing teams. The APR/PIR self-evaluation ratings by the project implementing teams were consistent with the findings of MTR and TE.

The Mid-Term Review according to the standard GEF procedures took place in the 2nd quarter of 2016 and the Terminal Evaluation in the 2nd quarter of 2018. The time allocation for implementation of the evaluation missions for TE was in-line with the M&E design at entry.

The implementation of the Monitoring and Evaluation Plan is rated **Highly Satisfactory (HS).**

The design at entry as well as performance of the Monitoring & Evaluation system for the entire project is rated "**Highly Satisfactory" (HS).**

UNDP and Implementing Partner implementation/execution

The project implementation/execution was very smooth in Belarus where the national project was implemented under NIM and in Tajikistan where UNDP assumed the dual implementation and execution role under DIM. In Uzbekistan, UNDP could have taken a more proactive approach at the time when challenges in recruitment of the national Project Manager were identified. After solving the initial challenges, UNDP provided adequate and stable support to the national implementing partner.

Execution of the Ukrainian national component was less satisfactory due to a number of challenges resulting from weak and inconsistent institutional support by the Government. Insufficient country ownership of the project resulted in failure to complete registration of the project at the Ministry of Economic Development and Trade. Consequently, the equipment procured under the project, namely two units of GC-MS analysers and 35 units of portable refrigerant identifiers, although received in good order by the national counterparts, were not used by the designated end-users (the State Customs Committee).

In the situation of the continued lack of support by the State Committee for Ecology and Environmental Protection as the senior national implementing partner, UNDP CO decided to conclude a Memorandum of Understanding with several end-user beneficiaries of the national component in order to advance the project implementation.

The problem with the missing registration of the Ukraine national project was reported at the time of the mid-term review (i.e. the 2nd quarter of 2016) but was still persisting at the time of the terminal evaluation, although at TE the reason for the incomplete registration appears to be the on-going substantive revision of the national component. The continued missing registration of the project is a demonstration of weak government ownership of the project and insufficient political support to implementation of the HCFC phase-out.

The implementation and execution rating for the project is "**Satisfactory" (S).**

Project Results

The information presented in this section has been sourced from numerous project implementation reports supplemented with information collected during the evaluation field missions to the four project countries and to the UNDP IRH.

Relevance

The project is aligned with the obligations of the participating countries as Parties to the Montreal Protocol and assists the countries to meet their commitments of phasing out HCFCs within the accelerated schedule of the Montreal Protocol. Since Belarus, Tajikistan, Ukraine and Uzbekistan are the so-called Article 2 countries of MP, the following part of the Decision XIX/6 of the Meeting of the Parties, applies:

For Parties operating under Article 2 of the Protocol (Article 2 Parties) to have completed the accelerated phase-out of production and consumption in 2020, on the basis of the following reduction steps:

(a) by 2010 of 75 per cent;
(b) by 2015 of 90 per cent;
(c) while allowing 0.5 per cent for servicing the period 2020–2030;

Since the implementation period of the project was 2013-2018, the project is relevant for achievement of the second HCFC phase-out milestone in 2015 as well as for setting the participating countries on track towards meeting the third milestone on 1 January 2020.

Since the participating countries as Article 2 Parties to MP are not eligible to receive funding from the Multilateral Fund for the Implementation of Montreal Protocol (MLF), this project is considered as the only systematic development assistance from the international community to the participating countries for fulfilment of their international obligations. From this point of view, the project had critical importance for all four participating countries.

The project has strong linkages to all seven outcomes of the UNDP Strategic Plan 2014-2017, with a special focus on Outcome 1 on inclusive and sustainable growth and development (Outputs 1.1 and 1.3) under the Area of Work 1 "Sustainable Development Pathways". UNDP strives to achieve this outcome by assisting recipient countries establish regulatory schemes and enforceable national systems to manage imports and exports of ODS and providing countries with technical and financial assistance to transform the productive base in key sectors to alternative sustainable technologies and assist industries – and especially SMEs - to remain competitive while complying with the Montreal Protocol provisions, thus saving jobs and sustaining livelihoods.

Although the GEF as donor to this project is not linked formally to the Montreal Protocol, it still actively supports its implementation as under the terms of the Protocol, countries with economies in transition are not eligible for the multilateral funding. The GEF-5 strategy for chemicals consolidated the formerly separated persistent organic pollutants and ozone layer depletion focal areas (under GEF-4), where the latter was an operational response to the Montreal Protocol and its Adjustment and Amendments with the strategic objective to protect human health and the environment by assisting countries to phase out their consumption and production of ozone-depleting substances, including phasing out HCFCs.

By the same token, the 2010 impact study of the GEF Evaluation Office on the GEF's Ozone Programme stated that *…….there remains "unfinished" business in the countries with economies in transition to achieve the full positive impact of ODS phase out*."

Based on the above, the relevance of the project is rated **"Relevant" (R)** both for the recipient countries as well as for the implementation and donor agencies.

Effectiveness and Efficiency

The effectiveness and efficiency of the regional component is evaluated individually for each of its four outcomes.

Outcome 1a - Legislative and policy options for HCFC phase-out and control

The aim of this outcome was to provide the participating countries with information resources and the necessary level of decision maker awareness to undertake national level updating of ODS legislation, regulations, licensing and reporting systems, economic instruments and qualification requirements

necessary to ensure control of HCFC import and use consistent with phase-out obligations (inclusive of quota systems).

The key activity under this outcome was a review of the existing HCFC legislation to help countries to meet the project target on (1) the formulation/adoption of HCFC phase out strategies; and (2) the introduction/implementation of effective regulatory instruments to control HCFC use, and thus, import of HCFCs and HCFC containing equipment. The existing HCFC regulatory instruments in the 4 countries were assessed by an international consultant between November 2013 and October 2015 to make sure international expertise is provided to each of the participating countries in their HCFC legislation review. Following the review, the international consultant prepared national road maps for implementation of inevitable elements of HCFC legislation based on examples and solutions that had been devised in other Article 2 countries, particularly the EU.

Following the international consultant's recommendations, two publications developed by UNEP as reference materials on legislation and policy options for HCFC phase-out were reviewed and adapted to the needs of the participating countries:

- HCFC Policy & Legislative Options;
- Establishing an HCFC Import Quota System;

During the regional meeting in April 2017, representatives of the participating countries together with the international consultant reviewed progress with implementation of the country road maps. In addition, the meeting also provided the first opportunity for the project countries to discuss and receive advice on measures that may be required before or after the ratification of the Kigali Amendment of MP in order to meet its requirements. Although the project focussed exclusively on HCFC refrigerants, the early discussion of the Kigali Amendment (only 6 months after the Amendment was adopted by the MOP) was critically important in order to advocate for promotion of zero ozone and low GWP alternatives in the HCFC phase-out in the four project countries.

Outcome 1b - Capacity building for enforcement of HCFC control measures by customs and environmental/technical inspection authorities

This outcome aimed at preparation of Russian language resource documentation and preparation of national master trainers will be prepared for delivery of national working level training programmes designed to equip customs and environmental/technical inspection authorities in the enforcement of HCFC control measures related to import and application of HCFCs and HCFC containing equipment.

Under this outcome, the following documents developed by UNEP were reviewed (R) and eventually adapted to the needs of the participating countries (A):

- Customs and Enforcement Officers Information Note: Monitoring trade in HCFCs; (R) (A)
- The ODS Smuggling and Concealment Case Study Handbook; (R) (A)
- HCFC Risk Assessment; (R)
- Harmonized System Codes for Commodity Classification; (R)
- Informal Prior-Informed Consent (iPIC); (R)
- Enforcement Strategies of Illegal Trade in ODS; (R)
- Customs Training Manual; (R)

In cooperation with the National Ozone Unit of Armenia and UNDP Tajikistan, UN Environment's Training Manual for Customs Officers: *Saving the Ozone Layer - Phasing out Ozone Depleting Substances in Developing Countries (Third Edition)* was translated into Russian.

Furthermore, total 25 customs officers from all 4 project countries were trained in two regional train-the-trainers as follows:

- Regional customs training on the margins of the annual ECA Ozone network meeting in Bosnia and Herzegovina, March 2014 (4 participants, 1-day training);

- Regional customs workshop on monitoring and control of ozone depleting substances in Uzbekistan, September 2015 (21 participants, 3-day training);

In addition to the regional trainings, the regional component supported also the 3-day national ToT workshop for customs on monitoring and control of ODS in Uzbekistan in September 2015 for 21 participants.

The system of Informed Prior Informed Consent (iPIC) for information exchange on intended trade between the responsible authorities in ODS importing and exporting countries was successfully introduced to all participating countries. The project continued to promote active use of the iPIC system of notifications in the region and all project countries participation to iPIC network was sustained in coordination with UNEP. An example of effective use of the iPIC system can be shown for Uzbekistan. In 2014-2016, the country through the iPIC mechanism reported 15 seizures of 8,589 refrigerant cylinders / cans containing 10,852 metric kg of refrigerants R12, R22 as well as alternatives R134a and R600a without shipment documents.

It should be noted that during UNEP Customs Cooperation Meeting in Turkmenistan (2016), customs and enforcement officers from Ukraine and Uzbekistan have been awarded with the ozone protection medals and certificates in recognition of their strong commitment to address illegal or unwanted trade in ODS, ODS-based equipment and products.

Outcome 1c: Capacity building for the refrigeration sector, incorporation of energy-efficiency and GHG reduction elements

The target under this outcome were user awareness tools, training modules and a pool of national master trainers for delivery of national working level training programmes for refrigeration and air-conditioning (RAC) technicians related to HCFCs and alternatives, taking energy efficiency and GHG reductions into consideration, and enhancing the sustainability of the training programmes by embedding them in the respective national institutions.

Numerous train-the-trainers (ToT) activities at regional as well as national level that were supported by the regional components are listed in Tables 8a and 8b.

Table 8a: Regional train-the-trainers events for RAC service technicians

Title	Provider	Date	No. of part.
5-day regional ToT on F-Gas regulation and EU certification on refrigeration systems	Centro Galileo, Italy	September 2015	14
5-day regional ToT on hydrocarbons	HEAT, Germany	December 2016	13
5-day regional ToT on CO_2 and ammonia	HEAT, Germany	March 2017	13

Table 8b: National training events for RAC service technicians

Title	Provider	Date	No. of part.
4-day national ToT on natural refrigerants	HEAT Tajikistan	April 2017	25
4-day national ToT on natural refrigerants	HEAT Ukraine	April 2017	27
4-day national ToT on natural refrigerants	HEAT Uzbekistan	May 2017	18
4-day national ToT on natural refrigerants	HEAT Belarus	May 2017	14

Outcome 1d: Support for the development of regional institutions, capacity, and cooperation

Under this outcome, the project aimed to enable regional cooperation and information exchange, as well as to support joint initiatives in areas of collective interest and concern, namely:

- Development of a regional network of RAC associations;
- Data collection and regional planning for ODS destruction;
- Development of iPIC mechanisms across the region;
- Participation of the beneficiary countries in the ECA regional network meetings;

The project facilitated networking with Article 2 and other Article 5 countries in the CEIT region initiated the exchange of essential experiences on important HCFC phase-out related topics which were lacking in the baseline situation. The regional component supported country participation in regular meetings organized by the UN Environment Ozone Regional Network for Europe and Central Asia (ECA), both for the annual network meetings and the Russian-speaking thematic meetings of relevance to the countries. In this way the project enabled regular contacts with the Article 5 countries from the region. The supported events are summarized in Table 4.

Table 9: Support for participation in meetings of the ECA ozone network

Title	Date	No. of deleg.
10th Anniversary of the CIS/Europe Ozone Officer Network on HCFC phase-out programme implementation in FYR Macedonia	May 2013	4
Sub-regional UNEP CAP meeting on HCFC Phase-out Projects and legislation for Russian-speaking countries in Kyrgyzstan	Sept 2013	4
Sub-regional UNEP/UNDP/UNIDO meeting on Customs Union implications in Belarus	March 2014	4
Annual Ozone Network meeting for English and Russian speaking countries in Bosnia-Herzegovina	May 2014	4
Thematic meeting on HCFC Phase out in Tajikistan	Oct 2014	4
Annual ECA Network Meeting in Armenia	May 2015	4
Thematic meeting on HCFC Phase out in Romania	Oct 2015	4
Annual ECA Network Meeting and Regional Customs Cooperation Meeting in Turkmenistan	May 2016	8
Thematic meeting on HCFC Phase out in Moldova	Oct 2016	8
Annual ECA Network Meeting in FYR Macedonia	May 2017	8
Thematic meeting on HCFC Phase out in Georgia	Oct 2017	7
Annual ECA Network Meeting in Spain	June 2018	2

Through the regional component, assistance was also provided to participation of the project's countries in the annual Montreal Protocol meetings organized by the Ozone Secretariat through provision of travel funding in cases when full support for participation of the project countries was not provided by the Ozone Secretariat. Summary of the support for participation from the project countries in MP meetings is in Table 10 below.

Table 10: Support for participation in the MP meetings

Title	Date	No. of deleg./countries
37th OEWG in Geneva-Switzerland	April 2016	1 / Uzbekistan
28th MOP in Kigali-Rwanda	October 2016	2 / Belarus, Tajikistan
39th OEWG in Bangkok-Thailand	July 2017	2 / Tajikistan, Uzbekistan
29th MOP in Montreal-Canada	November 2017	1 / Tajikistan
40th OEWG in Vienna-Austria	July 2018	2 / Tajikistan, Uzbekistan

The regional component of the project has also supported the following bilateral exchanges among project countries to share best practices on HCFC phasing out activities. Two delegates from Tajikistan delegates visited Ukraine in September 2015 and 2 delegates from Belarus visited Uzbekistan in August 2017. The above exchanges enabled transfer of experience from the countries with advanced national component implementation and between the two sub-regions of the project.

The regional component supported participation of technical experts at international conferences and exhibitions as follows:

- 2 times 3 delegates to the Chillventa Exhibition on energy efficiency, heat pumps and refrigeration, Nurnberg, Germany in October 2016 and 2017;
- 2 delegates to the ATMOsphere Europe Conference on natural refrigerants, Berlin-Germany, September 2017;

In order to ensure exchange of experience between the national project teams, the regional component organized five annual regional meetings with participations from all four project countries from the inception meeting in November 2013 until the project closure meeting in July 2018. In total, 60 delegates from the four project countries participated in the 5 regional meetings.

Summary of the achievements of the regional component *vis-à-vis* the indicators in the Project Document is in Table 11 below.

Table 11: Summary of the achievements under the four substantive outputs of the regional component

Outcome	Indicators	Achievements
1(a): Legislative and Policy Options for HCFC phase-out and control	Russian language resource materials on HCFC control options Awareness training for decision-makers on legislative and regulatory actions Facilitation of regional dialogue	National Certification Schemes for Refrigeration and Air-Conditioning Service Technicians ODS Data Management ODS Waste Management Strategy Fact Sheets on HFCs and Low GWP Alternatives Fact Sheet, The Kigali Amendment to MP : HFC Phase-down Briefing Note on Ratification of the Kigali Amendment FAQ relating to the Kigali Amendment to the MP
1(b): Capacity Building for Enforcement of HCFC control measures by customs and environmental/technical inspection authorities	Russian language resource documentation Awareness raising activities Training of Trainers PIC Network Regional networking	Training Manual for Customs and Enforcement Officers Information notes on monitoring trade in HCFCs and on enforcement strategies to combat illegal trade in ODS Information materials on Harmonized System Codes for Commodity Classification Information materials and support for registration and participation in iPIC Two regional ToT workshops for customs officers
1(c): Capacity Building for the Refrigeration Sector, Incorporation of Energy-Efficiency and GHG reduction elements	Preparation of Russian language training manuals and information materials ToT on Best Refrigeration Practices	RAC technician video series-translation to create sub-titles Safe Use of HCFC Alternatives in Refrigeration and Air-conditioning Three regional ToT workshops for RAC service technicians Four national ToT workshops on natural refrigerants Translation of Real Alternatives training e-modules
1 (d): Support for the development of regional institutions, capacity, and cooperation	Preparation of Russian language information materials Promotion of Information exchange mechanisms Regional networking on the country with Art 5 and other non-Art 5 countries in the region is supported	Support for participation in the regional ECA ozone network Support for participation in MP meetings (complementary to the support from the Ozone Secretariat)

One of the principal activities for support from the regional to the national components was provision of Russian language resource, training and information materials. The complete list of materials translated in to Russian is provided in Table 12 below.

Table 12: List of resource, training and information materials translated into Russian

Title of the Material Translated	Year
UNEP Training Manual for Customs and Enforcement Officers	2013
UNEnv RAC technician video series-translation to create sub-titles	2015
UNEnv Safe Use of HCFC Alternatives in Refrigeration and Air-Conditioning	2015
National Certification Schemes for Refrigeration and Air-Conditioning Service Technicians	2015
ODS Data Management	2017
ODS Waste Management Strategy	2017
UNEP Ozone Secretariat, Fact Sheets on HFCs and Low GWP Alternatives	2017
UNEnv OzonAction Factsheet, The Kigali Amendment to the Montreal Protocol: HFC Phase-down	2017
Ozone Secretariat, Briefing Note on Ratification of the Kigali Amendment	2017
Ozone Secretariat,	2017
Real Alternatives, training e-modules	2018

Based on the information in the table, the evaluator made two observations as follows:

The comprehensive Russian language training materials were provided early on in the project implementation for the capacity building of customs and environmental enforcement officers (outcome 1b). Translated materials for the legislative and policy options (outcome 1a) and capacity building for the RAC sector (outcome 1c) were provided in 2015 when implementation of the RAC sector trainings in national components (particularly in Belarus and Tajikistan) was already on-going and therefore the national counterparts could not benefit from the translated training materials from the very outset. This was perceived as a deficiency by some of the educational and training institutions involved in the RAC sector-related trainings that were visited during the evaluation mission as they were forced to start the trainings without the support envisaged by the project and eventually develop Russian language training materials by their own resources.

Four informational materials related to the Kigali Amendment were translated in 2017. Although the translated documents are related to HFCs that were not addressed by this project, strong linkages and implications of the Kigali Amendment to the phase-out of HCFCs justify the provision of the HFC-related information to the national counterparts in the four countries.

Further text of this section summarizes achievements of the substantive outcomes in the four participating countries.

Outcome 2a – Belarus: HPMP, National Level Capacity Strengthening and HCFC Phase Out Investment

The national project component for Belarus was officially signed and approved by the Government on 15 May 2013. For the national project component in Belarus, GEF provided financial resources of 2,200,000 US$ and the same amount was disbursed by the operational closure of the national project in early 2017.

The national component of the project for Belarus was designed to assist the country to maintain compliance with its MP obligations through achieving the following goals:

- A finalized and adopted HCFC accelerated phase-out strategy;
- Implementation of national level training for environmental and customs enforcement authorities; and
- Targeted HCFC phase-out investment projects in eligible enterprises in the manufacturing sector.

Summary of actual achievements by sub-components of the national project component is presented in Table 13 below with important details in the text after the table.

Table 13: Summary of the achievements of the project national component in Belarus

Outcome 2a: HPMP, National Level Capacity Strengthening and HCFC Phase Out Investment	
Indicator	**Achievements Summary**
2a.1: Formal HCFC Phase-out strategy and action plan developed and endorsed	National HCFC Phase-out Strategy until 2020 was approved in March 2013 (before the project inception) Two administrative guidances, namely the" Instruction on the procedure for recording ozone-depleting substances" and " Instruction on the inventory of equipment and technical devices containing ozone-depleting substances" were adopted in August 2014. Law "On ratification of the Agreement on the movement and registration of ODS and ODS-containing products in mutual trade of states - members of the Eurasian Economic Union" was adopted in December 2015 The Government has introduced a ban on import of ODS in non-reusable cylinders effective as of January 2016 The Ministry of Natural Resources and Environmental Protection joined the initiative of informal preliminary informed consent (IPIC) in 2017.
2.a2: Trained working level customs and enforcement officials, and refrigeration technicians using resources	Established Training Centre at the State Customs Committee 870 specialists of the customs service were trained and re-trained in 2014- 2015. Further 200 of newcomer customs officers were trained in 2016-2017 A group of 22 custom officers was trained in 2018 and further 37 customs officers scheduled for re-training in August 2018 GC-MS analyser and 33 portable refrigerant analysers provided Established Republican Centre for Advanced Training of Managers and Staff under MNREP Limited training of environmental inspectors Established 2 training centres for RAC service technicians and students 3 national master trainers trained on good practices in RAC servicing About 315 refrigeration service technicians trained in 2014-2016 Sets of small equipment and instruments for refrigeration technicians were purchased and handed over to the APIMH for further distribution among the RAC service centres 3 national master trainers trained on use of natural refrigerants An educational class created at the Belarus National Technical University for training on AC equipment using R-290 (propane) as refrigerant 4 national workshops on use of natural refrigerants in four regions of Belarus
2a.3 - Targeted HCFC Phase-out Investment Program and Demonstration projects: A foam conversion project at MAZ Kupava A solvent conversion project at Atlant Electromechanical Plant Demonstration of benefits of natural cooling in one or two sectors such as agricultural milk coolers Upgrades of HCFC re-use system Unwanted ODS Pilot Destruction Project	56.1 MT of the baseline consumption of HCFC-141b (2.92 ODPt) HCFC-141b as foaming agent at MAZ Kupava phased-out by technology conversion of the PU foam production line to c-pentane 7.3 MT of the baseline consumption of HCFC-141b (0.38 ODPt) as solvent at Atlant Electromechanical Plant phased-out by technology conversion to a non-HCFC solvent AC system at two work units of JV Santa Bremor LLC converted through replacement of two compressors operating on R-22 with an absorption chiller using water as the cooling agent New AC system for comfort cooling installed at Myasomolmontazh in Minsk based on low charge ammonia chiller 4 ODS recollection/recycling and 2 ODS reclamation centres established 44 technicians of the centres trained in adequate use of equipment and best refrigeration practices in equipment maintenance and retrofitting Sub-component cancelled by decision of the Project Steering Council

Output 2a.1: Formal HCFC phase-out strategy and action plan developed and endorsed

The "Belarus National HCFC Phase-out Strategy until 2020" was developed during the preparatory phase of the predecessor regional HCFC phase-out project and was approved by the Government in March 2013. Since then, two revisions of the Strategy have been carried out.

With the support of the project, Belarus adopted a comprehensive legislative framework as well as a number of concrete legislative measures to reduce HCFC consumption in line with the accelerated MP schedule. The country has an effective licensing and quota system for HCFC import; a ban on imports of refrigeration and air-conditioning equipment containing HCFCs; obligatory certification of goods such as refrigerators, air conditioners and heat pumps; requirements for qualifications; and requirements for enterprises to report annually on the type and quantity of ODS imported, used and stored.

Output 2a.2: Trained working level Customs and enforcement officials, and refrigeration technicians

The main customs checkpoints used for transboundary movement of ODS and equipment containing ODS were equipped with 33 portable refrigerant identifiers. Furthermore, the central laboratories of the State Customs Committee (SCC) of Belarus were equipped by gas chromatograph with mass spectrometric detector (GC-MS) for accurate identification of ODS chemicals.

The training programme for customs officers was designed by the State Institute for Advanced Training and Retraining of Personnel of Customs Bodies. A training module on preventing of illegal ODS cross-border movement was established for training of new and retraining of established customs officers and the module was also used for remote training via a new on-line Prometheus system. The trainings since 2016 have been conducted by own resources of the SCC. Three information leaflets "ODS Smuggling Methods", "Inspection of Goods Potentially Containing ODS", and "Document Inspection for Prevention of ODS Trafficking" were developed and used in the orientation programmes for customs officers in the country.

The strengthened capacities of the Belorussian Customs can be documented by the seizure of 20 MT of ozone-depleting substances in June 2016. The shipment documents falsely indicated the contents of the shipment but analysis showed the shipment contained CFC-113 and HCFC-141b that are banned for import (CFC-113) and restricted subject to licensing.

The Republican Centre for Advanced Training of Managers and Staff affiliated under MNREP delivers training programmes for ecological inspectors. The project supported development of a kit for training of ecological inspectors and provision of portable refrigerant identifier for practical training on ODS recognition and control. The same identifiers were to all oblast-level MNREP committees. Representatives of the Centre estimated that about 1/3 of all ecological inspectors received training on ODS with the assistance of the project. The training programme continues after the closure of the national component.

Three master trainers participated in the certified training at the Research Centre Galileo in Italy (funded by the regional project component). Moreover, three master trainers participated in training courses on natural refrigerants in Germany. The master trainers used the acquired experience to update and further develop educational programmes and vocational courses for training of RAC service technicians that were organized under cooperation with the Association of Industries in Air-conditioning and Refrigeration (APIMH) and the Minsk State Mechanic-Technological Vocational and Technical College.

In 2014-2016, a series of training workshops were conducted in 2014 – 2016 for improvement of skills and introduction of good practices into RAC equipment maintenance and repair. The training workshops were conducted at the Resource Centre for Training and Retraining of Workers and Specialists for the Refrigeration Industry affiliated with the Minsk College. The workshops were designed in a holistic manner to address mechanical as well as physics/chemical aspects of RAC equipment servicing. The Centre continues to organize training workshops after the national project closure and is planning and preparing for rebuilding and expansion of the premises in order to cope with the increasing number of trainees and accommodate newly acquired and/or self-constructed training equipment.

Additionally, a national train-the-trainers workshop (4-day training) on natural refrigerants for 14 master trainers was organized in May 2017. Four 1-day follow-up training workshops in four regions of Belarus were organized for about 120 participants between November 2017 and June 2018. This part was funded by the regional project component.

The project also supported national educational institutions to establish educational programmes related to ODS. Sets of state-of-the-art technical training aids including multimedia projectors and screens were provided to two institutions of higher education, namely the Belorussian National Technical University (BNTU) in Minsk and the Mahiliou State University of Food as well as to two

institutions of special secondary education, namely Polack Belkoopsoyuz College of Trade and Technology and Minsk State Vocational/Technical College of Mechanics and Technology.

BNTU established a teaching classroom in order to incorporate practical demonstration sessions in the courses of higher education related to refrigeration and air conditioning. Three demonstration air-conditioning stands on R-290 (propane) were provided by the project and additional teaching equipment was tailor made as a prototype by the BNTU lecturer who was one of the master trainers educated in the Galileo Center in Italy. The AC stands are mobile hence practical teaching could also be conducted at major companies located outside of the capital. In this way, the University has put education on RAC and ODS close to the practice.

The Belorussian Polytechnic University received one piece of analytical GC equipment with flame ionization detector. The analyser has been put to use in research work of the Centre for Analytical Control of Refrigerants established at the University but currently can't be used for determination of ODS because of missing ODS standards. Nevertheless, the University confirmed it will be ready to analyse samples of ODS once the problem with the standards is solved.

Overall, it can be concluded that the sub-components 2a.2 and 2a.3 have built capacities for effective enforcement of the existing ODS legislation as well as enabled introduction of good practices in servicing and installations of RAC equipment.

Output 2a.3: Targeted Phase-Out Investment and Demonstration Projects

Phase-out the HCFC-141b use at MAZ Kupava, Minsk

Use of HCFC-141b as foaming agent at MAZ Kupava has been phased-out by technology conversion of the PU foam production line to cyclo-pentane.

This investment sub-project started in 2014 but was protracted for about two years due to delays in procurement of the new production line. MAZ discontinued the old production line using HCFC-141b for PU foam panels in 2016 and the new high-pressure line operating on c-pentane supplies from barrels was commenced in the 1st quarter of 2017. A comprehensive safety audit of the new production line was conducted in 2017 by the UNDP International Foam Expert. The beneficiary signed a commitment letter to stop use of HCFC-141b and the old line was dismantled to prevent use elsewhere as a second-hand equipment.

As a result of this investment sub-project, 56.1 MT of the baseline consumption of HCFC-141b (2.92 ODPt) was phased-out at MAZ Kupava.

Elimination of the HCFC-141b use of at Atlant Electromechanical Plant, David-Gorodok

Use of HCFC-141b as solvent for metal degreasing at Atlant Electromechanical Plant at has been phased-out by technology conversion to a non-HCFC solvent.

The procurement of a new ultrasound vapor degreasing machine was delayed as no offers were received after an international tender was announced in 2015. Following the second announcement, six offers were submitted but only one of them within the budget allocation for this investment sub-project. Further delays occurred in the procurement process as the machine offered by the supplier had to be adjusted to better fit the requirements of the beneficiary company.

The new machine commissioned in early 2016 but the equipment reportedly reached only about 20% of the planned capacity due to poor performance of the drying phase. Representatives of the UNDP made several requests for the supplier assistance with solving of the problem, but the supplier did not send a specialist to fix the problem on the spot and provided instructions by e-mails only.

After continued effort, the problem was finally fixed by the beneficiary company. They have been able to use the machine at the expected performance level, however, with 1-2 manual interventions per day. The company also informed about the plans to upgrade the machine to fully automatized process by their own funds after the initial warranty period expires. In addition, a distiller for solvent

recycling was procured as well as exhaust ventilation system for the industrial room with the degreasing machine.

As a result of this investment sub-project, 7.3 MT of the baseline consumption of HCFC-141b (0.38 ODPt) was phased-out at Atlant Electromechanical Plant, David-Gorodok.

Demonstration of natural cooling technologies for milk coolers and refrigerated equipment sectors

Under this component, three pilot sub-projects were implemented for demonstration of the benefits in the replacement of refrigeration equipment with alternative technologies with low global warming potential (GWP).

Under the first demonstration sub-project, an educational class was created at the premises of the Belarus National Technical University to train students and refrigeration technicians on installation, maintenance, repair and retrofitting of air-conditioning equipment using R-290 (propane) as refrigerant. The sub-project created a strong base for the introduction of propane as a natural refrigerant for general use in systems of domestic air-conditioning and commercial sector as an alternative to HCFCs.

The second demonstration sub-project focused on conversion of the AC system at two work units of JV Santa Bremor LLC through replacement of two compressors operating on R-22 with an absorption chiller using water as the cooling agent.

The new equipment was put into operation in March 2016. Operation of the new chiller also provides remarkable economic benefits for the enterprise. Application of the absorption cooling technology provides for energy savings of up to 1,148,000 kWh per year compared with the old compressor units. It also reduces CO2 releases linked with the use of HCFC refrigerants.

The launching of this sub-project created a demonstration platform to promote advanced energy savings and ozone-friendly technologies in Belarus. Santa Bremor is one of the biggest producers of chilled and frozen products in Belarus and this subproject is an example of a catalytic effect of demonstration of ozone-friendly technologies. Based on the initial period of operation of the absorption chiller, the beneficiary company is preparing for introduction of the second chiller by its own funds.

The third pilot sub-project was designed for installation of a cooling system with low use of ammonia in central air-conditioning system in the company MyasoMolMontazh in Minsk that produces ammonia-based industrial refrigeration systems for meat and milk processing industries. One ammonia-based chiller procured from the project was commissioned in the 2nd half of 2016 and has been running full capacity since April 2017 when all necessary approvals and permits were received.

It should be emphasised that the new ammonia-based refrigeration machine for the MyasoMolMontazh administrative building was assembled by a local company Holodon CJSC that will also provide servicing and maintenance of the new chiller.

Implementation of this demonstration sub-project provided background for production of new ammonia low-capacity refrigeration systems for wide use in Belarus and their use for replacement of outdated ODS-containing refrigeration equipment. The sub-project also resulted in an additional benefit in building capacities of the local company Holodon.

Upgrade of HCFC re-use system through strengthening R/R/R centres and improving local distribution of bulk HCFC/HFCs in support of container import regulations

As the first activity under this component, an ODS recollection and reuse scheme was developed and agreed upon by all stakeholders including list of equipment to be provided to the selected ODS recollection and reuse (R&R) centres.

Sets of equipment for R&R and tools and accessories for RAC equipment repair and maintenance were provided to four centres (Holodon», «Torgtekhnika», «Laminar», Centre for Ozone-Safe Technologies -formerly «Hladagentservis). In addition, two of the centres received more advanced

equipment for refrigerant reclamation. Forty-four technicians of the centres were trained on adequate use of equipment and best refrigeration practices in equipment maintenance and retrofitting as part of the advanced trainings for RAC service technicians organized by APIMH.

The provision of equipment and training to the four centres, Belarus has started a RR&R system for the recovery, recycling and reclamation of ODS. In 2017, the four R&R centres completed 826 orders, 8.2 tons of refrigerant were recovered from RAC equipment, out of which 4.2 tons of refrigerant were recycled and refilled and about 4 tons of refrigerant was reclaimed for further use in other systems. In the same year, the Centre for Analytical Quality Control of Refrigerants at BSTU has performed about 220 analyses of qualitative determination of the composition of refrigerants.

The RR&R system in Belarus has been initiated but it is still fragmented so individual centres perform recovery and eventually also reclamation of used ODS but there is no systematic collection of information on the amounts of used ODS that were recycled and reclaimed.

ODS Destruction Pilot Project

The original project document contained the sub-component on establishment of a pilot ODS destruction facility based on a mobile ODS destruction equipment that would be deployed to the different storage facilities throughout the country *in-situ* destruction of contaminated/unusable ODS.

An international tender for the purchase of device for the destruction of HCFCs was completed in 2015. However, MNREP decided that it considered unreasonable to procure the equipment under this project and consequently the tender had been cancelled. According to the decision of the project Steering Council[5], the funds from the sub-component were re-allocated for implementation of the pilot demonstration projects (see above).

Conclusion:

The national project component in Belarus helped to address seven out of the nine barriers to effective implementation of the MP obligations in Belarus that were identified in the original Project Document. At the project completion, MNREP has sufficient human resource capacities for enforcement of the existing national legislation and policies on ODS. The Ministry and the State Customs Committee interact for control over the import/ export of ODS on a regular base and SCC provide periodical reports on imports and exports of ODS. The fact that this good communication continues for about two years after the operational and financial completion of Belarus national component is a proof of a strong government ownership of the project results.

Ownership of the results by the private enterprises is also very high. MAZ Kupava has fully embarked on the new production process based on the c-pentane and for more than one year of operation of the new line they were able to satisfy all orders received from the clients. JV Santa Bremor LLC is planning to expand the areas air-conditioned with the use of natural refrigerants through self-financed installation of a second absorption chiller.

Remaining challenges for the HCFC phase-out:

Recollection of HCFCs. There are no incentives for ODS users to bring the equipment with ODS to the established recollection centres. Consequently, informal handling of ODS constitutes a sizeable portion of ODS circulation since it is cheaper than ODS recollection at the authorized centres. This will be possible in the continued absence of licensing for dealing with used ODS.

Identification and determination of used ODS. Even though two laboratories in the country were equipped with equipment for ODS GC and GC-MS equipment can't identify the contents of the containers with unknown used ODS since there are no standards of ODS available in the country. Since ODS even in small quantities are banned from import to the country, attempts to bring ODS

[5] Minutes of the meeting of the Project Steering Council dated 25 May 2015

standards from abroad failed. An alternative option to use already imported pure ODS of declared purity as standards is currently under discussion in the Government.

Growing stock of ODS waste. R&R centres reported growing stocks of containers with used ODS that can't be treated with the equipment currently available at the R&R centres, either because the contents of the containers is unknown or because there are ODS mixtures in the containers that can't be separated.

The lack of capability to address the growing amounts of unwanted ODS is the only remaining barrier after implementation of the project. Removal of this barrier will require improved capacities for identification and determination of unwanted ODS as well harmonized actions in the region for their destruction.

Outcome 2b – Tajikistan: HPMP, National Level Capacity Strengthening and HCFC Phase Out Investment

The national project component for Tajikistan was officially signed and approved by the Government on 8 May 2013. For the national project component in Tajikistan, GEF provided financial resources of 1,100,000 US$ and the same amount was disbursed by the operational closure of the national project in early 2017.

The national component of the project for Tajikistan was designed to assist the country to maintain compliance with its MP obligations through achieving the following goals:

- A finalized and adopted HCFC accelerated phase-out strategy;
- Implementation of national level training for environmental and customs enforcement authorities; and
- Targeted HCFC phase-out investment projects in eligible enterprises in the manufacturing sector.

Summary of actual achievements by sub-components of the national project component is presented Table 14 below.

Table 14: Summary of the achievements of the project national component in Tajikistan

Outcome 2b: HPMP, National Level Capacity Strengthening and HCFC Phase Out Investment	
Indicator	**Achievements Summary**
2b.1: Formal HCFC Phase-out strategy and action plan developed and endorsed	The National Strategy for HCFC Phase-out until 2020 was adopted in November 2015) The Interdepartmental Coordination Council (ICC) on reduction of HCFC consumption was established Decree of the Government of Tajikistan Republic No. 643 "Acts for implementation of the Vienna Convention on Protection of the Ozone Layer and of the Montreal Protocol on Substances Depleting the Ozone Layer (dated 2 November 2015); Normative act/instruction on distribution of quota for import of HCFC for the years 2016, 2017 and 2018; As of 2017, ban on import of HCFC-based equipment into the country according to the new legislation adopted in 2015.
2.b2: Trained working level customs and enforcement officials, and refrigeration technicians using resources	A 3-day training programme for customs, environmental and other law enforcement officers on reducing the use of ODS, as well as the ODS reporting and licensing systems established with the Training Institute of the Customs Service 168 customs officers trained in the project implementation period 20 sets of portable refrigerant identifiers provided and deployed at the main border points 2 mobile mini-laboratories equipped with portable identifiers and other A facility for temporary storage of refrigerants confiscated by the customs service was established and equipped at the Dushanbe terminal of the Customs Committee 12 environmental inspectors of the Committee for Environmental Protection trained in the programme on legislation in the field of ODS, the system of ODS licensing and quotas as well as prevention of illegal trade with ODS 11 master trainers trained on good practices in RAC servicing and 5 master trainers trained on use of natural refrigerants 5-day training course developed in cooperation with the Engineering-Pedagogical College of Dushanbe and registered in the national educational programme 560 refrigeration technicians have passed the five-day refresher courses on the service delivery best practices of refrigeration equipment and air-conditioning systems, recycling, recovery and re-use of ODS (HCFCs) 2014-2016 including 44 technicians trained in 2017 A new 6-month training curriculum was approved and implemented in the national programme "Practical guidance for training refrigeration and air conditioning specialists" 43 engineering technical workers participated in the 6-month progamme and received national certificates 20 engineers and technicians trained and certified in the 4-day training programme on safe use of natural refrigerants (hydrocarbons, ammonia and carbon dioxide, Germany. Further 51 technicians were trained in the same programme with national trainers. The project provided 120 sets of specialized equipment and tools (including 60 units of portable recovery and recycling machines) that were distributed among registered RAC service workshops throughout the country.
2.b3: Targeted HCFC Phase-out Investment Program and Demonstration projects Upgrades of HCFC re-use system through strengthening R/R/R centres and improving storage of unwanted ODS capacity Pilot retrofit/replacement incentive programme Demonstration of benefits of natural cooling technologies in A/C Sector	4 technical centres equipped with specialized equipment for ODS recycling and reuse– 2 in Dushanbe and 2 in the regions Refrigeration Association provided with special equipment for ODS reclamation ODS recovery, recycling and reclamation scheme created and operational under the auspices by the Refrigeration Association HCFC-based cooling aggregates at four dairy processing private sector enterprises, converted to middle temperature cooling aggregate assembly based on HFCs Heat pumps provided to the Refrigeration Association for assembly of demonstration stands for AC operating on propane (R-290) 5 cold rooms and 2 cooling aggregate (only installation and commissioning of aggregates have been undertaken), all based on HFC provided to public sector organizations (care/rehabilitation centres for disabled patients) for storage of food and medicaments and bloods infusion; Introduction and testing of 33 demonstrations of the natural cooling systems in base/relay stations of 3 mobile operators (15 demonstrations initiated in 2015 and additional 18 demonstrations commenced in 2016-2017)

Output 2b.1: Formal HCFC Phase-out strategy and action plan endorsed

The National Strategy for HCFC Phase-out until 2020 was adopted in November 2015. With the assistance of the project, the country has developed a comprehensive package of legislative measures that include systems for HCFC licensing and quota and for issuing import and export permits, clear distinction between virgin HCFCs that need both quota and permit (license) and recycled/reclaimed HCFC that need only permit (license). Furthermore, the HCFC legislation forbids import of non-refillable HCFC containers and partially also import of product containing or relying upon HCFCs.

The legislation also contains provision for annual reporting by importers and exporters of HCFCs and HCFC-containing equipment, although the current reporting system requires improvements, in particular regarding inventory of unwanted ODS waste.

The above achievements under the legislative component indicate strong ownership of the national project component by the Government of Tajikistan.

The project also helped to re-establish the National Ozone Unit as a separate entity within the Committee for Environmental Protection (CEP). However, the NOU is institutionally weak and suffering experiencing funding shortages that could threaten the sustainability of the separate NOU. CEP is currently considering transition of the NOU into a kind of a project office that would be funded from external donor project contracts rather than the central government budget.

Output 2b.2: Trained working level customs and enforcement officials, and refrigeration technicians

Training of the customs officers was conducted according to the approved 3-day training programme developed with the support from the project that was included in the National State System of Advanced Training of Customs Officers.

The main customs border points were equipped with 22 portable refrigerant identifiers to enable effective control of imported refrigerants and to prevent unlicensed and illegal import. Two units of portable refrigerant identifiers were also given to CEP. Furthermore, the Customs Service and CEP were equipped with two mobile mini-laboratories in order to enable effective control of ODS shipment not only at the border crossing points but along the entire border.

A facility for temporary storage of refrigerants confiscated by the customs service was established and equipped at the Dushanbe terminal of the Customs Committee.

In order to further strengthen the capacities and cooperation of the two enforcement agencies, six roundtables with environmental inspectors in the regions and four roundtables with customs officials in the regions were held as well as six master classes for staff of the two agencies employed at the check-points of the customs service and ecological inspection for the detection, identification and identification of ODS.

The project provided significant support in the development and endorsement of curricula for service technicians of RAC equipment as well as long-term state educational programme for students of the Engineering – Pedagogical College of Dushanbe.

A Guide for the training of trainers in the field of the best experience in servicing refrigeration and air-conditioning systems" was approved and implemented. In cooperation with the Engineering – Pedagogical College of Dushanbe, 5-day training course titled “Electromechanics of refrigeration equipment and air-conditioning systems”. As of 2015, the training courses were approved and implemented under the state program "Guidelines for Refresher Training of Refrigeration and Air Conditioning Specialists".

In order to enhance sustainability of the technicians’ training, a new 6-month training curriculum was approved and implemented under the state programme "Practical guidance for training refrigeration and air conditioning specialists" in 2017.

Overall it can be concluded that the national project has successfully supported establishment of two dedicated training centres that have delivered effective training programmes on ODS refrigerants for enforcement officers (customs and environmental inspectors) and RAC service technicians.

Output 2b.3 - Targeted HCFC Phase-out Investment Programme and Demonstration Projects

Under this output, the national project supported three discrete areas.

Updated and expanded HCFC Recycling and Reclaim (HCFC re-use scheme) capacity at the level of larger equipment service centers and the Refrigeration Association;

In order to improve the HCFC recycling in the country, two centres in Dushanbe and another two in the regions were established as R&R centres and received equipment and tools in order to upgrade their capacity for ODS recollection and reuse.

Moreover, the NGO Centre of Artificial Cold that operates as the national Refrigeration Association received more advanced equipment for ODS reclamation.

The R&R centres have been co-located with major suppliers and service companies for RAC equipment. This appears to be a good strategy since it ensures sustainability of the refrigerant recycling activities. Because the expected final reduction of HCFC consumption limits as of 2020, the existence of such functional R&R system is vital for the country to remain in compliance with the accelerated Montreal Protocol HCFC reduction schedule after the last consumption reduction milestone in 2020.

Under the leadership of the Refrigeration Association, the recollection and reuse of refrigerants in Tajikistan has increased with the support of the project as it is shown in Table 15 below.

Table 15: ODS recycling and reuse in 2014-2017 (metric tonnes)

Year	CFC	HCFC	Total Recycled	Total Consumption	% of total
2014	0.444	1.395	1.839	36.6	3.8
2015	0.371	2.117	2.488	30.3	7.4
2016	0.307	6.010	6.317	27.1	23.3
2017	0.223	6.880	7.103	20.0	35.5

The equipment to the four R&R centres was provided in October 2015 and it follows from the data in Table 15 that a sharp increase of reused ODS amounts was recorded in the period 2015 - 2016. The amount of recycled ODS available for reuse in 2017 was almost three times higher in comparison with the recycled amount of ODS in 2015 and constituted almost 36% of the overall need for the country.

The organization of the scheme for used refrigerants recollection has been led by the Refrigeration Association that regularly (every 6 months) assembles information on recollected amounts of ODS from the four R&R centres. However, the format of the records on the recollected ODS needs improvement as currently the information is kept in handwritten format.

The membership of the Refrigeration Association is composed of about 7-8 big companies and similar number of SMEs. According to the Association, the trainings supported by the project reached to about 75-80% of the total population of refrigeration technicians, mainly those working in officially registered service workshops. The remaining 20-25 % are seasonal and informal service technicians that could not been included in the trainings.

The Refrigeration Association provides support to the NOU through making available its data on actual consumption of refrigerants by the Association members and thus assists in compilation of annual reports according to the Article 7 of the MP.

Pilot HCFC equipment retrofit/replacement incentive program

Under the pilot HCFC equipment retrofit/replacement incentive program the project envisaged provision of cash incentives for end users of HCFC-based equipment for retrofit or replacement. The range of alternatives proposed for demonstration were HFC-134a, 404a and 507c for medium to low-temperature solutions, as well as any other low ODP, low GWP, technologically acceptable alternative available or likely to become available in the near future.

The project document proposed targeting for conversion facilities of private sector enterprises involved in the dairy and vegetable product storage (cold rooms for meat, fruit and vegetables, as well

as ice-cream processing factories). However, at a later stage in the project implementation, UNDP CO office suggested to include amongst the recipients also organizations from the social and NGO sectors.

HCFC-based cooling aggregates at two dairy processing private sector enterprises, one ice-cream and one confectionery producing private sector enterprises were converted to middle temperature cooling aggregate assembly based on HFC (R-404a; R-407C; R-410a).

Heat pumps were provided to the Refrigeration Association in order to enable them to assemble (using their own equipment) demonstration stands for air conditioners operating on natural refrigerants (R-290, propane).

Four cold rooms and one cooling aggregate, all based on HFC (R-404a; R-407C; R-410a) were provided to government organizations from the social sector (care and rehabilitation centres for disabled patients) for storage of food and vaccines.

Demonstration of Benefits of Natural Cooling Technologies in A/C Sector

This demonstration sub-project supported introduction and testing of natural cooling systems and for maintaining range of required indoor temperatures by the local cellular companies in their switchboards and base/relay stations in several locations (town setting, village in the mountains, semi-desert and conditions at different altitudes).

This component facilitated introduction and testing of 33 demonstrations of the natural cooling systems in base/relay stations of 3 mobile operators including 15 original demonstrations initiated in 2015 and additional 18 demonstrations that commenced in 2016-2017.

The testing proved high energy efficiency of the tested systems that reached 60-75% in Dushanbe and 75-90% in eastern and northern regions. The natural cooling systems allowed to reduce the use of normal split AC equipment in the base/relay stations by 60-70% and therefore to prolong the operational lifetime of the AC equipment and reduce frequency of servicing and repair. Since the servicing includes topping up of the AC equipment with refrigerants, the reduced frequency of servicing in fact means reductions in consumption and therefore reduced need for HCFC in the coming years.

This demonstration project has proved to be a big success and after the initial period the 3 national mobile operators have started more than 400 additional units of natural cooling using their own resources. It has an enormous replication potential as there are more than 5,000 base/relay stations of mobile operators in Tajikistan that use more than 10,000 air-conditioners based on HCFC-22 representing about 3% of all split-system types of air-conditioners in the country. The cost of one unit for natural cooling is about 1,700 US$ including assembly and montage with investment return period (depending on location) ranging from 2 to 3 years. For the future, the national project team considers demonstration of natural cooling units of greater power input that would be suitable for reduction of AC demand in computer server rooms.

Conclusion:

The national project component in Tajikistan helped to address five out of the six barriers to effective implementation of the MP obligations in Tajikistan that had been identified in the original Project Document.

With the assistance from the project, there have been notable improvements in the management of refrigerants and coordination of the RAC servicing sector as well as in the ability to monitor incoming ODS. The country has also built capacity to limit import of HCFC containing equipment and combat

illegal trade with ODS. The project has also assisted in introduction of alternative technologies to HCFC with low GWP and high energy efficiency. On the other hand, sustainability of the institutional capacity at the NOU is still very fragile.

Remaining challenges for the HCFC phase-out:

Recollection of HCFCs. There are no incentives for ODS users to bring the equipment with ODS to the established recollection centres. Consequently, informal handling of ODS constitutes a sizeable portion of ODS circulation since it is cheaper than ODS recollection at the authorized centres. This will be possible in the continued absence of licensing for dealing with used ODS.

Identification and determination of used ODS. The country currently has limited capacity for qualitative identification and quantitative determination of used ODS. There is no facility capable of identification of individual ODS in mixtures and this could negatively affect further implementation of the HCFC R&R scheme as well as decision-making on unwanted ODS stockpiles.

ODS waste management. ODS waste data management is currently not functioning as part of the overall licensing, registration and reporting system handled by the RAC Association. There is no central storage of ODS waste in the country and no disposal options for ODS waste. ODS that can't be reused are stored at various sites and eventually released to the atmosphere as operational and accidental losses.

Structure of ODS users. Large ODS users are serviced predominantly by the members of the RAC Association. Small ODS consumers and home users are not yet fully included in the scope of work.

Outcome 2c – Ukraine: HPMP, National Level Capacity Strengthening and HCFC Phase Out Investment

The national project component for Ukraine was officially signed and approved by the Government on 29 May 2013. For the national project component in Ukraine, GEF provided financial resources of 3,190,000 US$. The total expenditure as of 15 June 2018 was 1,529,110 US$ and the available unspent balance was 1,660,890 US$.

The national project has been implemented under the UNDP Country Programme Action Plan 2012-2016 in a Direct Execution Modality in close partnership with the major project counterparts, particularly the Ministry of Ecology and Natural Resources of Ukraine.

The for Ukraine was designed to assist the country to return into compliance through achieving the following goals:

- A finalized and adopted HCFC accelerated phase-out strategy;
- Implementation of national level training for Environmental and Customs enforcement authorities; and
- Targeted HCFC phase out investment projects in eligible enterprises in the manufacturing sector and information exchange on emerging HCFC substitute technologies for ineligible companies

Following detailed discussions with national level project partners at the PPG stage, the national project component excludes assistance for the RAC servicing sector due to the limited budget allocation, therefore the RAC servicing sector was proposed to receive assistance in the follow-up Stage II of international assistance to Ukraine for meeting the country' obligations under the Montreal Protocol.

As the political situation since early 2014 had negative implications on some of the original project beneficiaries, the project in Ukraine went through a two-step revision process. In October 2015, the Project Board approved two-stage revision of the project. An initial revision was conducted in late 2015 to re-focus on implementable activities with the remaining originally accepted project beneficiaries. A substantive revision was conducted in 2016-2017 to re-programme the unobligated budget for new project beneficiaries in the manufacturing sector and initial activities in the servicing sector.

The achievements by sub-components of the national project component in Ukraine are presented in Table 16 below.

Table 16: Summary of the achievements of the project national component in Ukraine

Outcome 2c: HPMP, National Level Capacity Strengthening and HCFC Phase Out Investment	
Indicator	**Achievements Summary**
2c.1: Formal HCFC Phase-out strategy and action plan developed and endorsed	Draft Law on Ozone Depleting Substances and F-Gases (apart from HCFC-related strategy to outline a strategy for phase-down of the HFCs under the Kigali Amendment of MP) A licencing and quota system for import of ODS, however, not fully functional in 2015 and 2016 A revised system for the distribution of annual ODS import quota based on electronic auctions introduced in late 2017
2.c2: Trained working level environmental and customs enforcement officials with respect to legislation, regulations, and customs controls	Support for the Training Center of the State Fiscal Services (SFS) 105 custom specialists trained in 2015 and further 30 specialists received trained in 2016 35 portable refrigerant identifiers were procured for SFS as well as 2 GC-MS analysers, however, the equipment not used because of the missing registration of the project Limited number of training workshops for environmental officers (only theoretical without practical training with ODS detection equipment
2c.3 - Targeted HCFC Phase-out Investment Program and Demonstration projects Conversion of blending operation at Polyfoam System House (revised to include also Polyfoam's downstream clients) Conversion PU foam operations at PSC "Intertekhnika" Conversion of XPS foam at LTD "Sobranie); HCFC Solvent phase-out at Nord Group Holding	Phase-out of 63 metric tons (6.93 ODPt) of HCFC-141b at Polyfoam systems house and its downstream end-user clients The other three conversion projects cancelled as a result of the political crisis in Ukraine

Output 2c.1: Formal HCFC phase-out strategy and action plan fully developed and endorsed by the Government

By the proceedings of the 49th Implementation Committee in November 2012, Ukraine was declared to be in potential non-compliance with the consumption control measures under the Montreal Protocol for hydrochlorofluorocarbons in 2010 and 2011. Since the inception of the project, Ukraine committed itself to the development of a law with provisions for the operation of a national quota system for ozone- depleting substances, the monitoring of ozone-depleting substances and products containing them, and the gradual imposition of a ban on imports of equipment containing or depending on ozone-depleting substances.

The original Project Document for the national component in Ukraine envisaged that assistance will be provide to complete formulation of HCFC phase-out strategy, support continued awareness raising of Government stakeholders, HCFC importers, distributors and end-users on the Government plans to restrict the use of HCFCs in order to return to and sustain compliance regime with the Montreal Protocol, collect missing HCFC consumption data from the servicing sector, and adopt the HCFC action plan as a priority action of the Government in the current situation.

Since the beginning of the national project implementation in 2014, the Ministry of Ecology and Natural Resources (MENR) as the main country focal point for MP was reportedly preparing a comprehensive HCFC phase-out strategy. However, at the regional meeting in April 2017, Ukraine did not submit the country roadmap for implementation of HCFC-related legislation for review.

During the meeting with the international evaluator in May 2018, MENR confirmed that due to Ukraine's obligations emanating from the Association Agreement with the EU, the Government no longer pursues the HCFC phase-out strategy. has drafted a new Law on Ozone Depleting Substances and F-Gases that apart from HCFC-related provisions will also outline a strategy for phase-down of the refrigerants controlled under the Kigali Amendment of MP.

In 2015, the country introduced a licencing and quota system for import of ODS, however, MENR faced problems how to determine the level of quota and reportedly there were delays in issuing

licenses for import of HCFC-22 in 2015 and 2016. After internal as well as external consultation (special Intersectoral Commission of the Government, Ozone Secretariat, experience of US and Australian Governments), a revised system based on electronic auctions was introduced for the distribution of annual ODS import quota. The new system was applied for the first time in late 2017 and the next auction was scheduled for July 2018.

The legislation on HCFCs in Ukraine appears to be still missing important elements, such as a ban on import of HCFC in non-refillable containers and legislative control on products and equipment containing and relying on HCFCs. Also, the legislation does not contain provisions on permits (licenses) for handling recycled and reclaimed ODS.

During the meeting with the evaluator, MENR hinted at problems in the management of the UNDP project that were finally resolved in 2017 and common understanding was reached about continuation of the project. The Ministry also commended revision of the Project Document as a step to get the project back on track. On the other hand, the Ministry also pointed at the fact that some procurement activities in the project were not in line with the established procedures and therefore prevented use of the equipment.

Output 2c.2: Trained working level environmental and customs enforcement officials

The project provided multi-media equipment for two established training institutions in Ukraine, namely the State Ecological Academy for Post-Graduate Education and Management as well as for the Training Center of the State Fiscal Services (SFS).

The training component for the customs officers was implemented in 2015-2016. Three groups of 35 custom specialists per group received training in 2015 and one group of 30 specialists received training in 2016. Although 35 portable refrigerant identifiers were procured for SFS, and 30 officers were trained to operate the equipment, the identifiers were not distributed to border crossings and at the time of the terminal evaluation were locked at the SFS headquarters in Kiev. The reason appears to be that the UNDP project was not properly registered with the Government and national legislation does not allow use of the equipment procured from a non-registered project.

Under the initial revision of the project, two gas chromatographs with mass spectrometric detectors (GC-MS) were procured for SFS to enable quantitative analysis of refrigerants. One GC-MS analyser was allocated to the SFS central laboratories in Kiev, the second one was transferred to the SFS branch in Odessa that frequently deals with bulk ODS shipments.

Both GC-MS instruments are currently not in use for the same reason as above, i.e. that the project was not properly registered with the Government. The SFS reported that even if the analysers were released for use, the SFS laboratory department does not have approved analytical procedures for detection of ODS that are required for analysis of suspicious shipments. Moreover, the SFS also does not have a special adaptor that is required for preparation of gaseous ODS samples for analysis.

The State Ecological Academy representatives estimated that there are more than 1,000 environmental inspectors out of which about 600 are out-posted at border crossings to the country. The Academy has been planning training programmes for employees of MENR together with the National Agency for Civil Service. The plans included training of MENR inspectors the headquarters as well as in all oblast/districts. The training for the all categories of civil servants would be provided by state budget funds. The Academy also concluded an agreement with the Refrigeration Association to provide training sessions for members of the Association that would be paid by the Association members. The Academy also has e-learning courses that enable distant learning from the place of work in the provinces and physical presence of e-trainees is required only for the closing examination.

Apart from the multi-media equipment, the State Ecological Academy did not receive any equipment for practical training on ODS detection and handling such as a portable refrigerant identifier and for refrigerant recovery and reclamation. In 2015-2016, the Academy conducted limited number of training workshops that contained only theoretical lessons without a practical part that would give the trainees a required hands-on experience for proper ODS detection and handling.

According to the Academy senior representatives, one of the reasons for the lack of progress in the training of environmental inspectors is the reorganization of MENR that appears to be permanently on-going. With parliamentary elections scheduled in early 2019, there is a possibility that the reorganization could be prolonged and/or restarted with the newly elected government.

Although the project strategy in Ukraine was to postpone the capacity building in the RAC servicing sector in Ukraine until a follow up Stage II national project, limited support for initial capacity building in the servicing sector was provided from the regional component of this project through support for participation of three experts, one each from the Refrigeration Association, the Kiev State University of Food Technologies and the Odessa Academy of Food Technologies at the regional ToTs on natural refrigerants in Germany. A seminar on natural refrigerants was organized for 35 specialists, representatives of academia, engineering and servicing sector in April 2017.

Furthermore, three technicians from the private company Optim participated in the Regional Training-of-Trainers on F-Gas regulation and EU certification on refrigeration systems, provided by Centro Galileo, Italy, in September 2015. Two of the master trainers deliver regular one-day training programmes at the Optim' s Academy of Cooling in Kiev and the third master trainer is located in Kharkiv region on the east and conducts trainings in the largest servicing centre of RAC equipment in the eastern part of Ukraine. Since Optim is one of the largest wholesale distributor of RAC equipment in Ukraine, the training of the three master trainers has already had a substantive impact on the capacity building of the RAC servicing technicians in Ukraine. About 1,500 Optim's dealers and service technicians participated in one-day refreshment trainings since 2015. The trainings were conducted by own resources of Optim company and the Academy of Cooling.

It can be concluded that the trainings of environmental and customs enforcement officers, planned in the original project document, were conducted on a very limited scale and did not have major impact on the capacities of the relevant institutions for control of HCFC. On the contrary, the project laid foundations for future capacity building in the RAC servicing sector that was not in the plan for this project.

Output 2c.3 – Targeted Phase-Out Investment and Demonstration Projects

The original Project Document envisaged the following activities under the investment sub-component of the national project:

- Implementation of blending operation conversion to methyl formate technology at Polyfoam System House (Polyfoam, Ltd.);
- Implementation of a PU foam conversion to c-pentane technology at Intertehnika (PSC "Intertekhnika");
- Implementation of an XPS foam conversion to CO2 technology at Sobraniye ("Sobranie-PRO-UG");
- Implementation of solvent phase-out to trans-blends at Nord (Nord Group Holding);
- Information exchange platform on HCFC substitute technologies for ineligible foam manufacturers (PU and XPS);

The investment sub-component was severely affected by the political unrest and armed conflict in the eastern regions of the country since early 2014. The ODS-using production facilities of Intertehnika and Nord were located on the territory not controlled by the Government and the XPS production at Sobranyje was discontinued since the company was declared bankrupt.

As a reaction to the above changes, the three beneficiary companies were removed from the project. In October 2015, the Project Board decided to conduct a two-step revision of the project, namely to re-focus the initial project revision on implementable activities in 2015-2017, and re-programme the unused budget for activities in the servicing sector.

Under the initial project revision, the budget for the Polyfoam investment sub-project was increased (within MLF approved rules) to include support to all 54 industrial enterprises (Polyfoam's end users).

In December 2015, UNDP signed a service provision contract with the remaining client from the manufacturing sector – the Polyfoam systems house, in order to start the technology conversion with company's support on the ground. The contract envisaged conversion to water/methylformate systems for production of rigid foams and water/methylal for integral skin and microcellular foams. While the original budget allocation for the Polyfoam sub-component was only for the development of the technological conversion plan, development of new systems formulations, procurement installation and commissioning of equipment for systems production and laboratory quality control at the Polyfoam, the new service contract included additional funds for validation of new systems at 54 Polyfoam's downstream clients and verification of the technology conversion at the end users.

The new equipment for the production process as well as for the laboratory was commissioned in early 2018 and the company now produces systems for PU foam production based on water/methylal. The conversion of the end users was on-going and consisted of information workshops and systems validation trials for the downstream clients. The result of full implementation of the contract is phase-out of 63 metric tons (6.93 ODPt) of HCFC-141b at the company and the end-users.

Conclusion:

Implementation of the national project component in Ukraine was severely impacted by the political instability in the country. Due to the slow progress, UNDP requested a two-year extension of the national component for Ukraine after the closure of the regional project. At the time of the terminal evaluation, the project has successfully addressed one of the seven barriers to effective implementation of the MP obligations in Ukraine that had been identified in the original Project Document, namely in phasing-out eligible consumption at one enterprise in the manufacturing sector. The continuous capacity building and institutional support provided by UNDP to Ukraine to change the Government's position towards the project, has recently shown signs of success compared to the starting point back in 2010.

The other barriers, in particular limited enforcement capacity to control imports at the points of entry, inaccurate data collection on HCFC use, weak institutional capacity of the key national stakeholders as well as lack of interest from the HCFC end-users to cooperate with the Government still persist and will be addressed in the extended implementation period.

The substantive revision of the project includes:

- Support for adoption of comprehensive strategy for the Montreal Protocol implementation (including awareness building program for key stakeholders such as the government authorities, public, and civil society on issues related to the Montreal Protocol implementation and HCFC reduction obligations; ODS and ODS alternative survey to determine their consumption in Ukraine);
- Additional activities to ensure use of Analytical Tools for HCFC control enforcement agencies under sub-component Implementation of national level training for Environmental and Customs enforcement authorities.
- Replacing beneficiary companies for targeted HCFC phase out investment projects by including eligible enterprises in the manufacturing sector. This is expected to reduce demand of HCFCs in manufacturing sector; and
- Demonstration of zero-ODS and low-GWP technology options in the servicing sector (new sub-component)

The substantive revision envisages extending the project duration until July 2020. At the time of the terminal evaluation, the revised Project Document was under consideration of the Government.

Remaining challenges for the HCFC phase-out:

Institutional capacity at the Government. Ministry of Ecology and Natural Resources continues to struggle with aggregation of HCFC consumption data and related reporting due to ongoing reforms in the Government of Ukraine. This has serious impact on overall performance on reporting in the MP.

Government commitment. The country was reportedly preparing a comprehensive HCFC phase-out strategy since the inception of the project. Lately the Government intends to incorporate HCFC phase-out into a more comprehensive Law on Ozone Depleting Substances and F-Gases that apart from HCFC phase-out will also outline a strategy for phase-down of the refrigerants controlled under the Kigali Amendment of MP. Given the length of the legislative process and frequent reorganizations in the Government this constitutes a risk that the country will not have a clear road map and action plan for achievement of the 2020 HCFC reduction milestone.

Refrigerant management capacity. The current ODS management in Ukraine is inefficient as private RAC industry is handling only part of the ODS service market, namely large ODS consumers, while management of small customers (residential and mobile AC equipment) is non-existent.

Illegal trade with ODS. The risk of illegal trade with ODS appears to remain high as SFS officers are not able to use the ODS detection equipment (potable identifiers and GC-MS analysers) procured from the project and the extent of training of customs officers was much lower than expected.

HCFC recollection and reuse. The current system of HCFC recollection, recycling and reclamation is reportedly fragmented and not linked to RAC servicing workshops. Also,

Refrigerant Association. The existing RAC Association has been established by members from the academia and does not represent private enterprises in the RAC manufacturing and servicing sectors. Developing a leading role for the Association through the bottom-up process is a necessary condition for establishment of cooperation of the private sector with the Government and introduction of refrigerant management system in the country.

New beneficiaries in the manufacturing sector. The revised Project Document identified two new beneficiaries that will receive financial assistance for conversion from use of HCFC-141b to a non-ODS foaming agent. One of the new beneficiaries, namely Advance – producer of preblended polyols for spray foaming applications, was identified in the original project Document but not selected for assistance. At that time the company's operation fully depended on its partnership with BASF (Germany) and the company had not been able to decide whether it would participate in the project independently of its partner. The evaluation mission found that the position of the company remains unchanged. Moreover, the company with its partner could opt for technological conversion to HFC-based polyols for spray foam applications and such conversion would not be a long-term solution for reduction of ODS controlled by the MP. Last but not least, the experience from the conversion project with Polyfoam shows that such conversion could last more than two years and therefore could not be completed within the 2-year extension of the project.

Outcome 2d – Uzbekistan: HPMP, National Level Capacity Strengthening and HCFC Phase Out Investment

The national project component for Uzbekistan was officially signed and approved by the Government on 30 July 2013. For the national project component in Uzbekistan, GEF provided financial resources of 1,430,000 US$. The total expenditure as of 15 June 2018 was 1,373,965 US$ leaving the unspent amount of 56,035 US$.

The national component of the project for Uzbekistan was designed to assist the country to maintain compliance with its MP obligations through achieving the following goals:

- An adopted HPMP based on an accelerated phase-out strategy;
- Implementation of national level training for the servicing sector and customs/enforcement authorities; and
- Targeted HCFC phase out investment demonstrations projects/pilots undertaken in priority areas

The achievements by sub-components of the national project component in Uzbekistan are presented in Table 17 below.

Table 17: Summary of achievements of the national component in Uzbekistan

Outcome 2a: HPMP, National Level Capacity Strengthening and HCFC Phase Out Investment	
Indicator	**Achievements Summary**
2a.1: Formal HCFC Phase-out strategy and action plan developed and endorsed	The framework National ODS Phase-out Strategy and Action Plan effective since 2002 amended for specific HCFC-related areas through resolutions and/or decrees of the Cabinet of Ministers. Resolution No. 17 (dated 9 January 2018): "Measures for further enhancement of regulation of import to the Republic of Uzbekistan and export from the Republic of Uzbekistan of ozone-depleting substances and products containing them". New law "About amendments and addenda to the law on atmosphere air protection" – first reading of the law conducted in early 2018
2.a2: Trained working level customs and enforcement officials, and refrigeration technicians using resources	A handbook on regulations for customs on import/export of trafficking ozone-depleting substances developed and published in Russian and Uzbek languages 21 officers from the State Customs Committee trained as master trainers in a 3-day workshop for the training programme on national legislation on import/export control of ODS
Customs training and equipment support to enhance customs control capability	300 customs officers and 32 environmental enforcement officers trained on ODS legislation and control 21 portable refrigerant identifiers (9 basic and 12 advanced multi-gas identifiers) and safety tools distributed to the main border points Adaptor for gaseous samples provided for the GC-MS analyser at the Central Laboratories of the State Customs Committee ODS included in the national Harmonized System Codes for Commodity Classification Office IT equipment provided for connection of State Committee on Ecology and Environmental Protection to the One Stop Shop - electronic document management system of the State Customs Committee
Refrigeration technicians' training and equipment support to enhance refrigeration servicing practices	ODS Training Centre established at the Tashkent State Technical University 5 master trainers trained and certified by the international Training Centre Galileo A training manual for refrigeration sector technicians on fundamentals of refrigeration technology and maintenance of refrigeration systems developed in Uzbek and Russian languages More than 800 refrigeration technicians trained in the field of servicing (installation, repairing and maintenance) A handbook on use of propane in RAC Equipment as an alternative to the HCFC-22 as well as 4 infographics on application of natural refrigerants in RAC sector were printed in Uzbek and Russian languages 25 refrigeration technicians trained in a 4-day national training on safe use of natural refrigerants for from servicing and RAC equipment production companies
2a.3 - Targeted HCFC Phase-out Investment Program and Demonstration projects	Before the project inception AZN finalized technological conversion to water-based foaming for refrigerators insulation and phased out 4.1 tons of HCFC-141 b (0.451 ODP tonnes). On-the-job training of 4 foaming machine operators and 10 refrigeration technicians Two portable electronic charging stations and one thermal imager provided as equipment support
Technical Assistance to AZN Techno	Centralized AC system at the Republican Research Centre for Emergency Medicine upgraded through replacement of old R-22 chillers with two units of energy efficient low charge ammonia (R-717) chillers
Demonstration and replacement programme for the refrigeration sector	A heat pump operating on CO_2 and a split AC system running on propane provided for educational/training stands for demonstration of zero ODP low GWP technologies at the Tashkent State Technical University (TSTU)
	3 propane-based air-conditioners were provided for construction of 15 m3 cold rooms running on propane at Xolod Sistem Servis in Tashkent
	5 medical institutions in Nukus city and Myunak district (Republic of Karalpakstan), Bukhara and Navoi cities as well as Khanka district provided with air-conditioners operated on propane, including contracts for four local servicing companies for installation and 1-year free maintenance
Railway Freezer Retrofit project for refrigerated transport sector – Yo'lreftrans	An industrial type flushing unit and consumables (flushing agent, synthetic oil and refrigerant R-134a) provided for the retrofit of refrigerated sections/wagons of JSC Yo'lreftrans railway transport
	Support for establishing a tracking system for the retrofitting of refrigerated sections of JSC Yo'lreftrans railway transportation
Upgrades of HCFC re-use system	5 ODS recovery and recycling (R/R) centres established and equipped in 5 regions of Uzbekistan and one ODS reclaim centre in Tashkent. R/R centres established at existing refrigeration service companies Shomur (Fergana region), Hladmontaj (Andijan region), Yo'lreftrans (Syrdarya region), Holod System Service (Tashkent city) and Panchenko (Navoi region). An ODS reclamation centre established under LLC ""O'ZPROMHOLODMONTAJ"" in Tashkent city and equipped with ODS reclamation equipment and tools
Unwanted ODS Pilot Destruction Project	A special tracking and data collection system developed and implemented including a database for HCFC re-use in the RAC servicing sector
	Sub-component cancelled by the decision of Project Board in September 2017

Output 2.1d: Formal HCFC Phase-out strategy and action plan endorsed

Assistance from the project for the national legislative outputs was provided mainly through the regional project component. An international legal consultant was deployed to review the existing national legislation and prepare a road map for implementation of inevitable elements of the HCFC legislation based on examples from other Article 2 countries, particularly within the EU, in order to comply with the requirements of the HCFC phase-out schedule.

Although the Project Document envisaged development and endorsement of a new formal strategy and action plan specifically for HCFC phase-out, the Government decided to keep the original National ODS Phase-out Strategy and Action Plan that has been effective since 2002 as a framework document and make amendment for specific HCFC-related areas through resolutions and/or decrees of the Cabinet of Ministers.

With the assistance of the project, the country has amended its legislation on HCFC by adoption of the Resolution No. 17 of the Cabinet of Ministers (dated 9 January 2018): "Measures for further enhancement of regulation of import to the Republic of Uzbekistan and export from the Republic of Uzbekistan of ozone-depleting substances and products containing them". The resolution stipulates types of ozone-depleting substances that can be imported on permission, introduces ban on import of certain ODS and equipment containing/depending on ODS and specifies regulations on procedure for distribution of import quotas of ozone-depleting substances.

Furthermore, new regulatory measures for ODS have been proposed through reinforcement of the existing legislation "On introduction of amendments to the Law "Amendments and Addenda to the Law on Atmosphere Air Protection" that includes provision for certification of RAC technicians. The daft Law has already been submitted for the 1st reading in the Parliament.

Inter-agency coordination of joint control of import of ODS and products containing ODS by the State Customs Committee and State Committee on Ecology and Environmental Protection (SCEEP) has improved through regular information exchange through joint meetings and discussions. Through provision of material support (office equipment), the project facilitated connection of SCEEP to the One Stop Shop - electronic document management system that was established with financial support of KOICA (Korean International Cooperation Agency). Through this connection, the inter-agency cooperation and exchange of HCFC import data with the State Customs Committee noticeably improved.

An updated package of legislative measures developed that include systems for HCFC licensing and quota and for issuing import and export permits, distinction between virgin HCFCs that need both quota and permit (license) and recycled/reclaimed HCFC that need only permit (license). Furthermore, the HCFC legislation imposes controls of import of product containing or relying upon HCFCs. The legislation also contains provision for annual reporting by importers and exporters of HCFCs and HCFC-containing equipment, although the current reporting system requires improvements.

Output 2d.2: Trained and equipped working level customs and enforcement officials, and refrigeration technicians respect to legislation, regulations, customs controls, refrigeration servicing techniques, and general best practices

This component of the national project aimed at strengthening the National Customs Service's ODS import control procedures and harmonize them with the functions of the State Committee for Ecology and Environmental Protection and other key Government stakeholders in order to perform effective control of the import of HCFCs and HCFC-based equipment according to the maximum allowable quantities promulgated in the country-specific provisions of the Montreal Protocol and prevent illegal trade in HCFCs chemicals.

The capacity of the National Customs Service to control HCFC import was further strengthened by provision of 21 portable refrigerant identifiers (9 basic and 12 advanced multi-gas identifiers) and safety tools. The procurement was delayed as the originally contracted supplier failed to meet the

contractual obligations to supply the equipment in 2015. The contract was therefore terminated and a new tender was announced.

Deployment of the portable identifiers to the border checkpoints enabled routine control of ODS shipments at the border checkpoints. Given the distance of some checkpoints from the capital (in some cases up to 1,000km), it has increased cost- effectiveness of the control procedures. Before the project, samples from HCFC shipments had to be sent to the Central Laboratories of the State Customs Committee in Tashkent.

The project provided an adaptor for gaseous samples for one of the four existing gas chromatography spectrometers "Shimadzu QP 2010" at the Central Laboratories. This enabled full qualitative analysis of gaseous refrigerants. Before the project, the Central Laboratories were able to analyse only liquid samples and. One of the GC-MS analysers equipped with the adaptor has now been set up exclusively for analysis of refrigerants.

The State Customs Service has also developed national Harmonized System Codes for Commodity Classification that are fully compatible with the WCO and EU and joined IPIC.

The effect of the project support for the State Customs Service can be documented by the fact that during the project period, the customs officers spotted 10 cases of illegal ODS import in 2015-2016 and seized total almost 1.4 MT ODS (R-12 and R-22) As a recognition of their efforts, 15 customs officers from the State Customs Committee of the Republic of Uzbekistan received the 2016 Ozone Protection Award 2016 of UNEPs Regional Ozone ECA network for successful seizure of illegal ODS shipments to Uzbekistan.

For the HCFC consumption sector, the project aimed at training of refrigeration technicians working in the HCFC-containing equipment service workshops in order to improve their practices in handling of HCFC refrigerant gases.

In order to strengthen the material base of the refrigeration service sector, the Project team invited service workshops throughout the country to submit applications for service equipment and tools. Applications were collected from 150 enterprises and a selection panel for public and private refrigeration service enterprises was set up with representatives from UNDP and national partners for distribution of the equipment. Through this transparent process, the project team handed over RAC service equipment (portable recovery unit, leak detector, portable recycling kit, reusable recovery cylinder, etc.) and basic tools (manifold and hoses, piercing pliers, tube benders, leak detector, thermometer, voltmeter, etc.) to total 100 RAC service workshops.

The owners of the service workshops visited during the evaluation mission in Namangan, Andijan and Fergana cities considered the training programme and RAC service equipment distribution very useful since it enabled them to learn about new technologies and provide service for new equipment coming to the market. The visited service workshops also reported that due to their improved capacities they were able to increase number of clients and due to the increased number of orders to create new employment opportunities. Therefore, the project has produced economic benefits in the SME sector.

It can be concluded that the project has been successful in increasing capacities both for control of HCFC import as well as for servicing of RAC equipment and for recycling of the used refrigerants. Through introduction of good practices for ODS recollection and reuse, the project has helped to cut HCFC emissions to the atmosphere, and thus, reduce the HCFC consumption and need for import.

Moreover, the project team has developed and introduced an innovative tracking system for ODS use and re-use and phase out in the RAC service sector. The system started with manual data collection but since the 3rd Quarter of 2017 the participating service workshops submit quarterly reports on ODS use on-line. Introduction of the tracking system also improved internal recording of ODS use and reuse in the participating service workshops.

Output 2d.3 - Targeted HCFC Phase-out Investment Program & Demonstration Projects

Under this output, the project aimed at supporting activities in the following five areas:

. • Technical Assistance to convert from HCFC-22 in refrigeration manufacturing for AZN Techno enterprise;

- Demonstration and Replacement Programme for the Refrigeration Sector (public and private enterprises);
- Railway Freezer Retrofit project for refrigerated transport sector – Yo'lreftrans;
- Upgrades of HCFC re-use system through strengthening R/R/R centers;
- Pilot Destruction Project for Obsolete ODS

The national Project Document earmarked 1,265,000 US$ and the project's regional component allocated additional 100,000 US$ for implementation of the demonstration projects in Uzbekistan.

Technical Assistance to convert from HCFC-22 in refrigeration manufacturing for AZN Techno enterprise

The goal of this component aimed to support conversion of the company's foam production line from R-141b to water-based foaming technology and with replacement of R-22 with R-134a/404a for the refrigeration part of the manufacturing process.

AZN Techno has planned its self-conversion from the current use of HCFC-141b to water blown foams and receive GEF assistance only for HCFC-22 substitution with HFCs-134a/404a refrigerants.

Before the start of this sub-component, AZN finalized technological conversion to ozone-friendly water-based foaming used for refrigerators insulation phased out 4.1 tons of HCFC-141 b (represented 0.451 ODP tonnes). With the new foaming system, the company started manufacturing of nine new types of refrigeration equipment using non-ODS refrigerants, about 90% based on HFC-404a and 10% on HFC-134a. The conversion of the foaming unit was 100% self-financed by the company.

The project supported the company in on-the-job training of four foaming machine operators and ten refrigeration technicians and provided two portable electronic charging stations and one thermal imager (Testo 875i-2).

Demonstration and Replacement Programme for the Refrigeration Sector (public and private enterprises)

In total four demonstration projects were implemented under this sub-component.

Two old R-22 compressor chillers were replaced with two units of energy efficient low charge ammonia (R-717) chillers in the centralized AC system at the Republican Research Centre for Emergency Medicine in Tashkent. The ammonia technology alternative was selected because of previous experience in the country, availability of safety rules and in-country production of the refrigerant. The implementation of this project took about 18 months, from May 2016 to September 2017. In addition, a system for preparation of cooling water was also procured in order to protect the main equipment from corrosion and scale. The chillers were commissioned by an international supplier, but the after-warranty servicing will be provided by a local servicing company.

A heat pump operating on CO_2 (R-744) and a split-system AC running on propane (R-290) were procured for the training centre at the Tashkent State Technical University (TSTU). With the above equipment items, the University lecturers developed educational/training stands using additional equipment parts provided by TSTU and theoretical as well as practical experience gained through participation in the training in Germany (funded by the regional component).

Three propane-based air-conditioners were provided to Xolod Sistem Servis, Tashkent, that used them to construct three 15 m^3 cold rooms using their own construction material and accessories. Since the beneficiary is a supplier of small refrigeration equipment, the purpose of this project is to demonstrate operation of the cold rooms on the ozone-friendly technology to clients and thus create market for the company's own production.

Air-conditioners operated on propane were provided to five medical institutions in Nukus city and Myunak district (Republic of Karalpakstan), Bukhara and Navoi cities as well as Khanka district. The

project team contracted four local servicing companies for cost-free installation and 1-year free maintenance in exchange for provision of R-290 cylinders.

This sub-component proved to be a cost-effective way of demonstration of new ozone-friendly technologies while at the same time building local capacities for assembly, installation and operation of equipment based on zero ODP refrigerants. The provision of ammonia chillers to the country's prime institution of emergency medicine also increases visibility and profile of UNDP both in the country and abroad as it creates a strong social dimension for the project.

Railway Freezer Retrofit project for refrigerated transport sector – Yo'lreftrans

This sub-component of the project was designed to assist the Yo'lreftrans Company to retrofit the dual air-cooling systems based on HCFC-22 in refrigerated wagons used for transport of food products. At the very outset the Project Document found the approach to stimulate the retrofits/replacements in the traditional concept of end-user inceptive as a not cost-effective solution due to equipment age and design and proposed to provide flushing equipment (industrial category) to the company as well as initial supply of solvents and alternative refrigerant.

The project provided one flushing unit as well as 100 kg of a flushing agent 980 liters of synthetic oil and 1,917.6 kg of the refrigerant R-134a for the retrofit of refrigerated sections/wagons of JSC Yo'lreftrans railway transport. Furthermore, a tracking system for the fleet retrofitting process of refrigerated sections of JSC Yo'lreftrans railway transportation was established, which allows provision of information on a regular basis as well as during monitoring visits of project specialists.

Twenty technical staff of the refrigeration unit repair shop (4 senior refrigeration technicians and 16 technicians) of the beneficiary increased their knowledge on the correct use of new fleet retrofit technologies through training. A 3-day training programme for refrigeration technicians servicing refrigerated railway freezers, including both theoretical sessions and practical exercises, was agreed upon with the management of the company. More than two hundred (200) refrigeration technicians of the company went through this training programme conducted by the instructors trained and certified by the Galileo Refrigeration Training Centre (Italy) under the support of the regional component of the project.

With this assistance, the company phased out 659 kg of CFC/HCFC in 68 refrigerated sections/wagons. Through the above training programme and provision of equipment, the project has established a R&R centre at the company and has built the company's capacity for use of the best practices in order to minimize refrigerant loses. Given the size of the company's consumption of ODS, this sub-component has produced a sizeable benefit for the entire country in terms of recycling and reuse of HCFC-22 and reduction of virgin refrigerant import.

Upgrades of HCFC re-use system through strengthening R/R/R centres

Under this sub-component, the project proposed to support to the extent possible strengthening of five previously established recovery and recycling (R&R) centres and provide one reclamation (RR&R) centre with reclamation equipment in order to be capable to restore contaminated gas to high purity levels, identify contaminated blends (GC) and certify quality of reclaimed refrigerants for follow-up re-use.

Sets of equipment for ODS recovery, including twin turbo refrigerant recovery system, basic refrigerant identifier, digital manifold, infrared thermometer with dual Laser, 27.2-liter cylinders, electronic charging scale, vacuum pump, electronic leak detector, thermal Imager and safety tools for technicians (gloves and goggles) were procured and handed over to the five R&R centres located across the country.

One of the centres was also provided with one refrigerant recovery and reclaim machine ECO Cycle Aurora II and thus established as the ODS Reclamation Centre.

The Project Team has developed and introduced a tracking system for ODS use and re-use and phase out in the RAC service sector. The system started with manual data collection but since the 3rd Quarter of 2017 the participating service workshops submit quarterly reports on ODS use on-line.

Pilot Destruction Project for Obsolete ODS

The sub-component had two interrelated activities – (i) demonstration of small scale destruction of obsolete ODS; and (ii) provision of support to the Government in the improvement ODS waste management.

In order to learn from experience in other countries, the project organized a study tour to China for 2 representatives of the SCEEP, along with the Project Manager, to visit the Shenzhen ODS Recovery, Recycling and Disposal Center. The study tour participants became familiarized with the activities and results of a small-scale/mobile ODS destruction project that used ODS destruction unit Plasma X manufactured by ASADA Corp (Japan).

Economic analysis demonstrated that the use of this type of equipment and its maintenance is relatively very expensive as the cost of destruction of 1 kg of ODS is US$20 for CFC and US$10 for HCFC, respectively. Nevertheless, based on the Chinese experience and acknowledging that ASADA had been almost a sole producer of such small-scale equipment, it was decided to procure the Plasma X unit. However, ASADA Corp informed the project that it had discontinued production of the Plasma X unit and prices quoted by other manufacturers of plasma type ODS destruction equipment were 4-5 times higher than the budget allocated for this component in the project.

By the decision of the Project Board dated of 23 September 2017, procurement of small-scale ODS destruction equipment was cancelled and the funds originally allocated to this component were redistributed for implementation of the project's sub-component - Demonstration and replacement programme for the refrigeration sector (No.2 above).

In addition to the activities envisaged in the national project document for Uzbekistan, the national project team has taken a major public outreach event when in 2017 they initiated an international photo contest on Ozone Layer Protection and Climate Change. The contest was organized by the Government of Uzbekistan and UNDP Uzbekistan in partnership with UN Environment Ozone Action and UNDP IRH.

The contest received very good level of international attention with submissions from 56 countries and in fact turned out to be a public outreach event of global proportions. Winners from 6 different countries for received awards in two categories (Ozone Layer Protection & Climate Change) and special nomination on Women & Ozone Layer (awarded by IRH).

Conclusion:

The national project component in Uzbekistan helped to remove six out of the seven barriers to effective implementation of the MP obligations in Uzbekistan that had been identified in the original Project Document.

With the assistance from the project, the country has strengthened capacities for monitoring and control of ODS import in order to combat illegal trade with ODS. The project also assisted in introduction of alternative technologies to HCFC with low GWP and high energy efficiency.

Remaining challenges for the HCFC phase-out:

Uncontrolled small-scale import of ODS. Strict control of ODS import to Uzbekistan is somewhat weakened by the legal provision that allows physical persons to import equipment and accessories of total value under 300 US$ without permission of the State Committee for Environmental Protection and border control of the contents. It is suspected that small quantities of counterfeit refrigerants could have been brought to the internal market in this manner.

Licensing of RAC service workshops. Several service workshops reported complaints about the so called "suitcase technicians" that provide unauthorized servicing of the RAC equipment without

recollection of the refrigerants for reuse. Such unauthorized service appears to be cheaper than the registered service. Licensing of service companies appears to contradict the Government intention to remove barriers to development of SME businesses.

Refrigerant Association. Although support for establishment of the Refrigerant Association started with the inception of the national project, these efforts did not produce the desired effect. In the absence of the Association, the activities in the RAC service sector are coordinated exclusively by the project team. This is not a healthy situation as continued absence of the Association weakens sustainability of the project results in the RAC service sector.

Recollection, reuse and reclamation of ODS. The RR&R system is in its early stages of development. The main obstacle to further development is the fact that there are no incentives for ODS end-users to bring equipment with ODS to the established recollection centres.

ODS waste management. ODS waste data management is currently not functioning as part of the overall licensing, registration and reporting system handled by the RAC Association. There is no central storage of ODS waste in the country and no disposal options for ODS waste. ODS that can't be reused are stored at various sites and eventually released to the atmosphere as operational and accidental losses.

Structure of ODS users. Large ODS users are serviced predominantly by the members of the RAC Association. Small ODS consumers and home users are not yet fully included in the scope of work.

Summary assessment of the results for the entire project

The GEF financial support for the phase-out of HCFCs in the four countries proved to be critical in enabling the countries to comply with their obligations as for the accelerated phase-out schedule of the Montreal Protocol valid for Article 2 countries of MP.

In particular, the regional component of the GEF project was important for the review and update of national policies and legislation for control of ODS import and consumption. The regional approach on the legislative sub-component through engagement of an international legal consultant with all four countries ensured provision of a uniform and consistent advice to the project countries to make revisions and update of their national ODS-related legislation based on experience from the member countries of the EU that had experienced similar situation (used to be economies in transition before accession to the EU in 2004). Because of the transboundary movement of ODS linking the CEIT countries, the regional approach was far more effective and efficient than would have been separate and therefore fragmented national approaches.

Three project countries fully followed the international consultant's recommendations for update of their national legislative frameworks. Two countries (Belarus and Tajikistan) adopted a national strategy and action plan for HCFC phase out until 2020 as envisaged in the project. The other two countries have chosen a more comprehensive approach to incorporate HCFC-related legal provisions into broader pieces of legislation such as the Law on Protection of Air in Uzbekistan or the Law on ODS and F-Gases in Ukraine. However, the latter approach proved to be notably slower and more complicated due to the complexities of the more comprehensive legislation.

The government commitment to the HCFC phase-out has been in general better in the two countries that adopted the separate HCFC phase-out strategies. This can be proved by the fact that by the end of the project, Belarus and Tajikistan have adopted and implemented a comprehensive HCFC-related legislative framework including a number of concrete legislative measures to reduce HCFC consumption in line with the accelerated MP schedule. Both countries have effective and transparent licensing and quota system for HCFC import and effective customs controls of ODS transboundary movement. Furthermore, the two countries have banned imports of non-refillable refrigerant containers as well as import of refrigeration and air-conditioning equipment containing or relying upon HCFCs and have introduced annual reporting requirements for enterprises on the type and quantity of ODS imported, used and stored. Overall, the adopted legislative and policy improvements provided important signals to the private as well as public sectors that the time has come to reduce the consumption of HCFCs and/or adopt more ozone-friendly alternative refrigerants and technologies.

The capacity building sub-component was implemented as a combination of the initial regional approach for training of trainers and provision of resource and training materials followed by the cascaded down trainings of customs and enforcement officers as well as RAC service technicians through the national project components. In the RAC service sector, additional *ad-hoc* support was provided from the regional component in the form of funding for national trainings on natural refrigerants in the four project countries.

The project supported upgrades in the training centres affiliated with national institutes for education of customs officers and environmental inspectors. In Belarus, Tajikistan and Uzbekistan, training programmes for customs and environmental inspectors were incorporated into the national programmes for training and re-training of the enforcement officers thus ensuring that the training on ODS will be sustained beyond the project time boundaries. The enforcement agencies in Tajikistan were provided with two mobile mini-laboratories were equipped for control between the official border-crossings along the entire border. For Belarus and Ukraine, the project provided advanced GC-MS analysers for exact identification of imported ODS refrigerants.

The capacity building sub-component for the customs and enforcement officers have notably improved the national capacities for monitoring of HCFC transboundary movement and interception of illegal ODS shipments through provision of portable refrigerant identifiers for deployment at the main border points. Several cases of seizure of illegally imported ODS by the customs in all four countries reported during the project implementation period prove the effectiveness of this project sub-component.

In the four countries, the capacity building sub-component of the project has compelled and improved reporting on several aspects of ODS and alerted the countries for more vigilance on transboundary movement of and illegal trade in ODS. The latter is a continuous threat that could undermine the otherwise good achievements of the HCFC phase-out. The HCFC-based equipment constitutes an on-going demand for HCFC refrigerant.

Training programmes for RAC service technicians were developed in cooperation with prime national educational institutions in Belarus, Tajikistan and Ukraine. Master trainers educated in the train-the trainers events organized by the regional component facilitated 3-5 days training programmes for a sizeable number of RAC service technicians on good practices in installation, maintenance and servicing of RAC equipment. In addition to the trainings, RAC servicing equipment and tools were distributed to the service workshops that were represented in the trainings.

Through implementation of this sub-component, the project helped to reduce amount of HCFC vented to the atmosphere as a result of unsuitable practices in RAC servicing. It has also produced economic benefits as the trainings enabled several RAC service workshops to accept more requests for servicing advanced more sophisticated RAC equipment and create new jobs for service technicians.

In Belarus and Tajikistan, the trainings were organized under cooperation with the national Refrigeration Associations. Such cooperation notably increases sustainability of the training efforts as the RAC Associations were helpful in introduction of voluntary certification for RAC service technicians. Although mandatory certification of RAC technicians was considered by the participating countries, the relevant legislative measures were not introduced by the end of the project. In the continued absence of the national RAC Association in Uzbekistan, the UNDP project team substituted its function, but this is obviously not sustainable beyond the project time boundaries.

It should be noted that the capacity building sub-component for RAC service technicians was not included in the project in Ukraine as this was supposed to be subject to a follow up separate project. Nevertheless, participants from Ukraine were included in the regional train-the trainers events although there was no plan for a national follow up under the project. The evaluation found that limited trainings were performed for dealers and service technicians in one organization of the private sector. Although the project intended to build a foundation for the future national capacity building efforts in the RAC sector, the cost-effectiveness of this effort is doubtful. Given the expected implementation period of this project (that has been in fact extended by 2+2 years), fragmentation of

the RAC service sector and lack of immediate financial resources for this area in Ukraine, it is uncertain to what extent the foundation would be available in future national capacity building efforts.

The project has also contributed to establishment of centralized or semi-centralized national schemes for ODS recollection, recycling and reclamation in Belarus, Tajikistan and Uzbekistan. Thirteen ODS recollection & recycling centres were provided with refrigerant recovery units and tools and four ODS reclamation centres received advanced refrigerant reclaim units. This sub-component also triggered collection of data on amounts of ODS recycled and reclaimed for reuse in Belarus and Tajikistan and similar work is in progress in Uzbekistan. Although the essential hardware for establishment of the national R&R schemes was provided, there is still amount work to be done in order to achieve full operation of the schemes as the evaluation found some reclaim centres not been fully linked for provision of refrigerant purification services to all workshops with ODS recovery units.

There are no incentives for ODS end-users (in particular from the residential sector) to call for services of trained and certified refrigeration service technicians. This is in particular problem in Tajikistan and Uzbekistan where the so called "suitcase technicians" constitute by estimation about 20-25 % of RAC service operations. This situation will persist in the continued absence of certification for RAC service technicians and licensing of RAC service workshops.

As a direct effect of the establishment of the ODS recycling and reclaim schemes, sizeable number of containers with used ODS of unknown composition have been accumulated in some of the R&R centres. In this regard, the evaluation found that the persisting lack of HCFC standards for advanced methods of chemical analysis (other than portable refrigerant identifiers) not only impedes full use of the upgraded laboratory capacities (gas chromatography) for control of ODS import but also prevents identification and determination of the used ODS when composition is not known. Consequently, unidentifiable ODS block a sizeable portion of refillable refrigerant containers at some R&R centres.

The targeted HCFC investment and demonstration sub-components have provided direct support for conversion of eligible enterprises in the manufacturing sector in Belarus, Ukraine and Uzbekistan to ozone friendly technologies. In all four countries, this sub-component facilitated introduction of energy efficient technologies based on low GWP refrigerants such as ammonia for chillers or propane for AC systems. The sub-component in Tajikistan has tested an innovative method of natural cooling for relay stations of mobile telephone operators. This demonstration project has proven that such interventions have a catalytic effect and further replication by the private sector beneficiaries will be driven by the sizeable economic rather than environmental benefits.

Procurement was found cost-effective when a regional approach was taken, such as translation of information materials and training manuals into Russian using the existing LTA for translation of one of the participation UNDP CO. However, procurement of equipment and tools was conducted under a national approach. In total, more than 80 portable refrigerant identifiers and several hundreds of sets with refrigerant service tools were procured under the project but the procurement was conducted separately in the four countries. Moreover, procurement of major equipment for conversion of the manufacturing enterprises in Belarus and Ukraine did not take into full account the necessity to ensure availability of warranty and after sale services in the recipient or at least neighbouring countries. Consequently, the procurement of major equipment was unnecessarily protracted.

The project has demonstrated innovative approaches for public sector outreach in the form of an international photo contest that received a world-wide attention.

It can be concluded that the regional project with its national components made a substantive contribution to removal of a majority of barriers that had prevented three of the participating countries from effective implementation of the Montreal Protocol obligations. Remaining barriers in Ukraine that could not been addressed due to the delays in implementation of the Ukraine national component are subject of the revised national project and will be addressed during the 2-year extension of this component.

The achievement of project outcomes under the regional and the national components is rated Highly Satisfactory (S) with the exception of the Ukraine component that is rated Unsatisfactory (U). Therefore, the overall attainment of the project objectives is rated **"Satisfactory" (S).**

Regarding efficiency of the project implementation, it should be highlighted that the project was implemented with a 2-year no cost extension. The evidence collected in the evaluation establishes that the project achieved almost all planned outputs with the original GEF resource allocation and managed to leverage considerable co-financing from the Governments and private sector in Belarus, Tajikistan and Uzbekistan.

The implementation followed standard UNDP rules and regulations. Procurement of goods and services in the majority of causes was conducted on a competitive basis as procurement notices were published through standard UNDP announcement channels and evaluation of the bids submitted by qualified suppliers was done in a transparent manner with the aim to select the best technically acceptable offers. The only exception to the competitive procurement was the procurement of equipment for conversion of Polyfoam systems house in Ukraine that was done by Direct Contracting of the beneficiary enterprise.

This procurement modality was selected exceptionally on grounds of a genuine exigency of the requirement as it was deemed in the best interest of UNDP in the situation of political unrest and armed conflict in the eastern regions of the country. Efficiency and transparency of the procurement was ensured by the provisions of the contract that requested the beneficiary to obtain at least three offers from potential suppliers and each subcontract for purchase of equipment and services had to obtain no objection from UNDP international technical consultant and authorization by UNDP CO.

More than 100 units of portable refrigerant identifiers and couple of hundreds of identical sets of refrigerant servicing equipment and tools were procured under the four national components of the project. The procurement was conducted separately in each of the participating country and in one country was delayed because of problems in commercial evaluation of the offers. Centralization of the procurement would have resulted in economies of scale and more expedite delivery of the procured goods.

Minor deficiencies were found in procurement of equipment for conversion of two enterprises in Belarus that took considerably longer than expected and in one case also resulted in purchase of equipment that did not perform according to the specifications and considerable time was lost as the selected supplier did not have after sales service in the recipient or neighbouring countries.

Last but not least, the decision to cancel the pilot ODS destruction components in Belarus and Uzbekistan s also considered as an indicator of efficiency. The funds originally allocated for the ODS destruction unit were more effectively used for other for other activities in both countries. However, analysis of the timelines established that the cancellation decision in Belarus was taken in 2015 while the same in Uzbekistan in late 2017. Since the reason for cancellation was the same in both countries it would have been more efficient for the project in Uzbekistan to take the same decision earlier than

Based the above summary, the overall efficiency of project implementation is rated **Satisfactory (S).**

Country ownership

The respective Governments of Belarus and Tajikistan have demonstrated strong ownership of the project that could be seen from the progress in implementation at the MTR stage when a majority of the national project activities in the two countries were already completed. The strong national ownership is an important precursor for the ability of the two governments to follow through the HCFC phase-out.

Similarly, the Government of Uzbekistan represented by the State Committee for Ecology and Environmental Protection expressed ownership of the project by appointing the National Project Coordinator in July 2013, i.e. immediately after the endorsement of the project by the Government. The progress in the project implementation was delayed by the UNDP initial unsuccessful efforts to

recruit the Project Manager. Due to the full support of the Government, the national project in Uzbekistan was almost nearing its completion at the time of the terminal evaluation.

The national project in Ukraine was affected by the political instability complemented by frequent institutional changes. It was already noticed in the mid-term review that the Ministry of Ecology and Natural Resources (MENR) as the Senior Beneficiary was reluctant to take full ownership of the project. Despite continuous interaction and dialogue initiated by the UNDP Project office the Ministry had reservations about the contents of the national project and selection of beneficiaries as well as they were not clear about their role in the project implementation. Other stakeholders such as the State Fiscal Service and the State Ecological Academy for Post-Graduate Education and Management were prepared to take respective roles in the project implementation hence UNDP had to sign separate MOUs with them to ensure implementation of the project.

Mainstreaming

At the project inception it was rated zero by the UNDP Gender Marker as a project not expected to contribute noticeably to gender equality. During the implementation, efforts were made to increase the gender focus of the project when the regional Project Board made *ad-hoc* budget allocation to initiate gender analysis/baseline study related to ODS.

The evaluation found that gender-related information was not systematically collected throughout the project implementation. In the brief assessment of the information collected in the evaluation mission the evaluator did not find any burning issues related to the equality of opportunities and meaningful participation of women in MP-related decision-making processes including leadership roles. In fact, the operational focal points in the National Ozone Units in three of the four countries were women.

Similar observations were made regarding the opportunities for work of women in public sector organizations such as the customs and environment inspection service. The enforcement agencies in Belarus and Ukraine reported more than equal representation of women, including positions in the field, and similar pattern of participation in the capacity building activities organized under the project for the customs and enforcement officers. The customs service in Belarus started to consider options for attraction of more men to the field positions.

Regarding the access to the capacity building activities and training for RAC service technicians, the situation is totally different, but it has to be assessed against the nature of the RAC servicing profession. For example, there are restrictions in some countries (e.g. Tajikistan) that protect women from carrying heavy items at work and therefore in fact prevent women from taking employment as RAC service technicians.

Nevertheless, the evaluation noted signs of progress on gender mainstreaming. Some of the educational institutions participating in the project have recently appointed gender advisors in order to take fully into account gender-related issues. Also, the project has demonstrated increased gender focus when IRH created a special award window in the photo contest Women & Ozone Layer. Therefore, the gender rating of the project at TE should be slightly increased in comparison with the project inception rating.

Following the transitioning from the Millennium Development Goals to the Sustainable Development Goals, the contribution of the ozone related projects, originally under the MDG 7 (Environmental Sustainability) has now been distributed amongst several SDGs. Since the transition from MDGs to SDGs happened several years after the project formulation, it could not be reflected in the project and neither in the evaluation. For future MP project, it is recommended to conduct SDG mapping in order to determine to which concrete SDGs ozone-related projects contribute.

Since the project was oriented on countries with economies in transition, the project did not mainstream poverty alleviation. Some issues of improved governance were included in the sub-components on strengthening of legal and enforcement capacities in the technical focus area of the project.

Sustainability

Institutional framework and governance: The sustainability of the project activities is judged by the commitment of the participating Governments to sustain and updated the current legislative framework as well as enforcement of the legal provisions. The HCFC policy and legal enforcement frameworks supported by the projects in all participating countries (respective national outputs 1a,1b) are likely to last for a foreseeable future. However, attention has to be brought to the relatively fragile institutional frameworks in the two countries in Central Asia as the respective National Ozone Units were established as separate entities only under this project. In Ukraine, the institutional framework is also relatively weak due to the unstable political situation. In the absence of funds from other sources, the three countries will require support for further strengthening of the existing institutional frameworks particularly related to the Kigali Amendment of MP.

Rating of institutional framework and governance sustainability: **Moderately Likely (ML).**

Financial sustainability: Sustainability of the activities in the RAC servicing sector (national output 1c) is relatively high in countries with established and active Refrigeration Associations (Belarus and Tajikistan). In Uzbekistan, the non-existing Association has been substituted for the project duration by the UNDP project team. In order to boost the sustainability of this sub-component, support for establishment and operations of the Refrigeration Associations in Ukraine and Uzbekistan will be necessary.

There are no concerns whatsoever about sustainability of the application of new zero-ODS low-GWP technologies that have been introduced to the participating countries through the conversion and demonstration sub-projects with private sector enterprises. All recipients of the new technologies continue to use them and since they have started to realize economic benefits from the new technologies, some of them are planning to use their own funding in order to expand the use of the new technologies.

Sustainability of the zero-ODS technology demonstration sub-projects in the institutions of the public sector is also satisfactory, particularly in the health sector (Tajikistan and Uzbekistan).

Rating of financial sustainability: **Likely (L).**

Political and environmental sustainability: There is negligible risk to sustainability from the environmental and political perspectives as all the countries have signed all amendments of the Montreal Protocol and have expressed their strong commitment to the HCFC phase-out schedules. Moreover, all countries have actively participated in negotiations related to the recent Kigali agreement that was developed in order to reduce environmental impacts from substitution of ODS by ODS-free substances with high impact on global warming.

The outlook is somewhat less satisfactory in Ukraine due to the continued politically fragile government and the continued conflict in the eastern part of the country. On the other hand, Ukraine has taken on board the recent

Rating of both political and environmental sustainability is **Likely (L).**

Based on the above facts and assumptions, there is no or very little risk to sustainability, hence the overall rating for sustainability is **Likely (L).**

Progress towards impact

The direct impact of the project is that the participating countries comply with the MP obligations related to HCFC for 2015 and 2020 and eventually accelerate the phase-out earlier than MP requirements.

The impact of the project on phase-out of HCFCs in the four participating countries is demonstrated by displaying the HCFC consumption during 2013-2016 reported to the Ozone Secretariat according to the Article 7 of MP in the Tables 18-21 below. The A-7 reports for 2017 were not yet available at the time of the terminal evaluation.

Table 18: Reported consumption of HCFC in Belarus in 2013-2016

HCFC	Consumption (ODP tonnes)				Baseline
	2013	2014	2015	2016	(ODP tonnes)
Total for group CI (HCFC)	6.95	5.56	4.5	3.45	50

It follows from the Table 18 that with the assistance of the national project component, Belarus managed to phase-out of 3.60 ODP-tonnes of HCFC in 2014-2016 and has achieved the 90% reduction of the baseline in 2015.

Table 19: Reported consumption of HCFC in Tajikistan in 2013-2016

HCFC	Consumption (ODP tonnes)				Baseline
	2013	2014	2015	2016	(ODP tonnes)
Total for group CI (HCFC)	2.28	2.01	1.66	1.50	18.70

It follows from the Table 19, that with the assistance of the national project component, Tajikistan managed to phase-out of 0.78 ODP-tonnes of HCFC in 2014-2016 and has achieved the 90% reduction of the baseline in 2015.

Table 20: Reported consumption of HCFC in Ukraine in 2013-2016

HCFC	Consumption (ODP tonnes)				Baseline
	2013	2014	2015	2016	(ODP tonnes)
Total for group CI (HCFC)	59.4	49.06	5.1	16.11	164.2

It follows from the Table 20, that Ukraine phased-out of 43.29 ODP-tonnes of HCFC in 2014-2016 and has achieved the 90% reduction of the baseline in 2015.

However, the lack of progress in implementation of the national project suggests that the reported reduction in HCFC consumption in 2014-2016 was mainly an effect of the reduced economic activities during the political crisis rather than effect of implementation of the project.

Table 21: Reported consumption of HCFC in Uzbekistan in 2013-2016

HCFC	Consumption (ODP tonnes)				Baseline
	2013	2014	2015	2016	(ODP tonnes)
Total for group CI (HCFC)	4.58	9.86	7.23	4.68	74.7

It follows from the Table 21, that with the assistance of the national project component, Uzbekistan managed to phase-out of 5.18 ODP-tonnes of HCFC in 2014-2016 and has achieved the 90% reduction of the baseline in 2015.

5. CONCLUSIONS, RECOMMENDATIONS, LESSONS LEARNED

Conclusions and recommendations

Based on the facts finding collection in the previous section, this section synthesizes and interprets the empirical findings into conclusions that make judgments supported by the findings. Recommendations are then actions proposed to be taken by various project stakeholders that are based on the findings and conclusions.

This evaluation makes two types of recommendations. Three of the four beneficiary countries of this project (Tajikistan, Uzbekistan and Belarus) are at advanced stage for respective submissions of follow-up projects on completion of HCFC phase-out. The first type recommendations (Nos. 1-8) refer to focus and implementation strategy of the future projects and therefore should be considered in the first instance for the development, inception and implementation of the new projects on HCFC-phase out in the three countries (Belarus, Tajikistan and Uzbekistan). However, the recommendations are also applicable for the second phase HCFC phase-out projects in other CEIT countries.

The second type of recommendations (Nos. 9-12), although based on the findings from this ODS phase-out project, are pertinent to GEF-financed projects on a wider range of topics as they refer to operational issues such as procurement and project monitoring. Therefore, these recommendations are applicable for all project components (Belarus, Tajikistan, Uzbekistan and the regional).

<u>On improvement of national refrigerant reclamation programmes</u>

Gas chromatographic analysers were provided for identification and determination of ODS and ODS mixtures that can't be analysed by the portable refrigerant identifiers. The countries participating in the project reported persisting problems with import of certified standards for the gas analysers.

<u>Conclusion:</u> Lack of certified ODS standards for identification and determination of used ODS and mixtures of used ODS that can't be analysed by the portable refrigerant identifiers prevents effective recycling of sizeable volumes of used ODS currently accumulated at the R&R centres.

Accumulation of recollected ODS and ODS mixtures of unknown composition blocks a sizeable portion of refrigerant refillable containers available at the refrigerant reclamation centres and thus obstructs further development of the circular economy of refrigerants.

1. *Recommendation: UNDP should ensure that standards of frequently used ODS are provided to the countries implementing ODS reduction projects to enable both qualitative and quantitative analysis of refrigerants and refrigerant mixtures. In case internationally certified standards can't be imported to the project countries, support should be provided for development and local certification of ODS proxy standards using imported virgin refrigerants of declared purity.*
2. *Recommendation: UNDP should consider provision of sufficient number of refillable refrigerant containers to the already established as well as new refrigerant reclaiming centres.*

The project provided support for establishment of national systems for refrigerant recycling, reclaim and reuse. The national refrigerant reclaim systems are still in very early stages of development and therefore not functioning effectively.

Conclusion: The established national refrigerant reclamation systems experience similar deficiencies as the systems that had been developed in Article 2 countries of the EU and beyond. Access to international advice and experience on the practices in the refrigerant reclamation industry in developed countries would enable the countries to accelerate development of their R/R/R systems and improve the circular economy of refrigerants.

3. *Recommendation: UNDP should ensure that international advice on good practices in refrigerant reclamation industry, including advice on elaboration of technical and business plans, is provided to the countries implementing ODS reduction projects in order to improve operations of their national reclamation schemes.*

A sizeable amount of refillable refrigerant containers in some the established refrigerant reclaim centres of some countries has been blocked by the recollected ODS and ODS mixtures of unknown composition.

Conclusion: Prolonged inability to get the growing stock of ODS and ODS mixtures of unknown composition growing problem with lack of refillable refrigerant containers.

On the RAC service sector:

The training programmes on good practices in RAC servicing have included the formal RAC servicing sector. However, a sizeable part of the RAC servicing in CEI countries is still provided by an informal RAC servicing sub-sector. Certification of RAC service technicians and licensing of RAC service workshops has been under consideration of the Governments in the CEIT region.

Conclusion: Until the RAC service sector becomes fully regulated by mandatory certification and licensing, bad practices common in the informal sub-sector such as accidents or deliberate venting of refrigerants will continue and reduce HCFC recycling and reuse and could thus undermine national efforts for HCFC phase-out.

4. *Recommendation: UNDP in cooperation with countries implementing ODS reduction projects should develop outreach activities aiming at the end-users of RAC equipment to explain risks and disadvantages of engagements with the informal servicing sub-sector. The end-user outreach programmes should in particular advocate that cheaper immediate options tend to lead to greater costs in the long term and as well as a worse environmental impact.*

On growing stock of ODS waste:

Although the original project proposed two national pilot ODS destruction projects, these were later cancelled as the proposed technology was considered not fully effective. The growing stock of ODS waste is a persistent problem in the region that can't be solved until a proven solution applicable in the region is found and its effectiveness demonstrated.

Conclusion: Lack of capability to address the growing amounts of unwanted ODS remains the only major barrier that was not addressed by the current project due to cancellation of the pilot ODS waste destruction projects in Belarus and Uzbekistan. Similar situation is in other countries in the ECA region. There is already an on-going Regional Demonstration Project for Coordinated Management of ODS and POPs Disposal implemented by UNIDO and supported by the Multilateral Fund for the Montreal Protocol that aims at establishing local capacities for destruction of ODS substances).

5. *Recommendation: UNDP together with the countries implementing ODS reduction projects should monitor developments under the UNIDO regional demonstration project on ODS disposal and ensure that national reporting systems are developed and functional for inventories of unwanted ODS and that information on the stock of ODS waste is readily available once a viable solution is proposed by the UNIDO project.*

On end-user outreach:

The project under its regional as well as national components has conducted a number of public outreach activities that were emphasising the global environmental benefits of the ODS phase-out.

Activities conducted with private sector enterprises have demonstrated importance of positive economic benefits from HCFC phase-out and introduction of more energy efficient equipment based on natural refrigerants.

Conclusion: Emphasising global environmental benefits of HCFC phase-out is not sufficient to achieve behavioural changes in HCFC end-users. The public outreach efforts should be complemented by demonstration of economic benefits from following the good practices in RAC servicing on the end-users of HCFC-based equipment.

6. *Recommendation: UNDP should consider conducting an analysis of economic benefits of good practices in refrigeration servicing and retirement of ODS-based equipment for inclusion in public outreach programmes directed on SMEs and residential segment of the end users.*

On training programmes:

The project has established base of national master trainers for the RAC service sector. However, in some countries the master trainers base is overdependent on a small number of trainers that had already received training in the past ODS-related projects.

Conclusion: Enlargement of the current master trainers base will increase sustainability of national training programmes on refrigerants.

7. Recommendation: *UNDP should ensure enlarged participation of qualified national trainers in future ODS-related train-the-trainers programmes and to the extent possible organize T-o-T events with the established refrigerant training centres in the ECA region in order to improve cost-effectiveness and overcome the language barrier.*

Through the train-the-trainers programme, the project has built foundations for future wider use of natural refrigerants. The project countries have already introduced pilot and demonstration activities on use of hydrocarbons and ammonia as zero ODP and low GWP refrigerants but no follow-up on the use of CO_2 as refrigerant.

Conclusion: Learning from the acquired practical experience with use of CO_2 as refrigerant in the region is needed in order to pave way for wider utilization of CO2-based refrigeration systems in the ECA region.

8. *Recommendation: UNDP should ensure that national counterparts from the countries implementing ODS reduction projects learn from the experience with the use of CO2 as refrigerant in the region. E-courses, study tours and train-the trainers programmes could be organized with the Training Centre on use of CO2 as refrigerant that was established at the NORD O.O.O. company in Moscow.*

On project design:

The regional component was designed to support the national components through provision of Russian language documentation and manuals. With the exception of the translation of the UNEP Manual for Training of Customs Officers, other translated materials were provided relatively late, particularly materials for training of RAC service technicians.

Conclusion: The countries that advanced implementation of their national components could not benefit from the regional component support in terms of provision of Russian language training materials for RAC service technicians and had to develop training materials on their own.

9. *Recommendation: UNDP should ensure that indicators in the results framework are attached to a time frame and state when they will be measured. The timely dimension of*

the indicators will allow for prioritization of actions in the project implementation plans.

On procurement:

More than 100 portable refrigerant identifiers and couple of hundreds of refrigerant servicing equipment and tools were procured under the four national components of the project. The procurement was conducted separately in each of the participating country and in one country was delayed because of problems in commercial evaluation of the offers.

Conclusion: Sub-components of MP-related projects on capacity building of the ODS control enforcement agencies and the RAC service sector envisage procurement of portable refrigerant identifiers and service tool kits for which there is significant and recurrent demand over a relatively long period of time. For such procurement events, Long Term Agreements (LTAs) are preferable as they provide volume leverage, allow to obtain large volume discounts and reduce administrative costs as well as the time needed for acquisition of procured items.

10. Recommendation: For procurement of portable refrigerant identifiers and RAC service tool kits, UNDP should consider either to conclude own LTAs or use LTAs already in place at sister organizations of the UN system that have acquired experience with procurement of equipment items for MP projects (e.g. UNIDO).

Procurement of major equipment for manufacturing sector companies under one of the national components did not take fully into account demand to have after sales services readily available either in the beneficiary country or in the neighbouring country. Evaluation of technical offers and malfunctioning of the equipment after installation took caused delays in procurement and supply that affected the ability of the companies to keep up established level of production.

Conclusion: Assistance to conversion of the foam and RAC equipment manufacturing as well as conversion of FCFC use in solvent and refrigerant blending envisage procurement of major equipment items that are usually produced on demand according to the Terms of Reference for the procurement. ToRs normally stipulate requirements related to technical specification of the procured equipment items as well as clearly specify demand for related services such as after-sale service to be provided by the equipment suppliers or their authorized agents.

11. Recommendation: UNDP should ensure that Terms of Reference for procurement of major equipment items contain clear definition of related services to be guaranteed by the equipment suppliers, in particular that the supplier's after sale service agents are operational in the recipient country or at least in the neighbouring country. Provision of the after-sale services should be one of the criteria for commercial evaluation of bids submitted under the procurement event.

On co-financing:

Although national co-financing is an important condition for approval of GEF project funding, there are no mechanisms for collection of information on co-financing.

Conclusion: Insufficiency of operational monitoring of actual co-financing levels for the project could pose a challenge for terminal evaluation at the project completion.

12. *Recommendation: UNDP should ensure that national project implementation teams establish on-going operational monitoring on actually provided co-financing for the projects*

Lessons learned and good practices

The project design with the regional component to support the national components allowed for a consistent approach for implementation of the sub-component on ODS legislation through engagement of an international consultant. Moreover, it facilitated establishment of an equal basis of master trainers as a foundation for further cascading down of trainings enforcement officers and RAC service technicians in the participating countries. The centralized procurement of services through the regional component proved to be the efficient waxy of spending the limited project resources.

However, design of future similar projects should take into full account the decentralized project implementation at the multi-country level. Mandatory approval of the project by the implementing agency and all participating governments took about 6 months and in one country there was further delay in establishment of the national project implementation unit. All this resulted in uneven progress in implementation in the four countries which inevitably affected implementation of the regional component.

From this experience, the planned three-year duration proved to be too short for such a complex project and a two-year extension had to be requested. Such extension represented obvious challenges as to the allocation of the project management costs for the regional component and therefore it would be prudent to take into full account the predisposition for extension in the budgetary allocations of future similar regional component's.

The original project document envisaged that the Project Implementation Unit (PIU) would consist of a 30% part-time project assistant who would work in coordination with the Regional Technical Advisor. This arrangement proved to be vastly insufficient for a project of this complexity and size (the regional component budget allocation US$ 1,080,000 and envisaged support to four countries in two sub-regions). The corrective measure taken at the 2015 Regional Project Board, namely recruitment of the regional Project Manager, albeit on 50%-time allocation basis, was a step in the right direction and dramatically improved effectiveness of the support provided to the substantive activities of the four national components as well as timeliness of the administrative/financial procedures required for the project extension and closure.

The experience gathered with the establishment of the PIU in Uzbekistan provides further evidence that the PIU composition requires a careful consideration at the project design. Instead of a single national project manager, the national Project Steering Committee decided to recruit several experts with expertise in differentiated areas such as investment/demonstration projects, monitoring & evaluation as well as in public relations & outreach. Such division of responsibilities allowed the national Project Manager to concentrate fully on the project management and coordination function while enabled use of a specific expertise for development and practical implementation of innovative activities and production of cutting-edge results such as the on-line monitoring of ODS consumption, development of interactive games and the photo contest on ozone layer protection.

The example of the photo contest, namely that it had expanded from the national component to reach world-wide proportions is an illustration of importance of assistance by the regional component that allocated additional funds and opened communication channels that were not available at the national level. This case also suggests that additional capacity on public outreach and external communication should be considered for any future regional project, at least on a part time basis. Such capacity will also help with translation of the technical language related to the Montreal Protocol into communications easily understandable by the general public and will thus make a notable contribution to the public awareness facet of the project.

The substantive revision of the national component for Ukraine included revision of the original investment technology conversion sub-project of a systems house Polyfoam. The revision included allocation of additional funds for technology conversion at the downstream clients of the systems house. This is considered as good practice for facilitation of technological conversion at SME companies that are not eligible for direct financial assistance due to their low consumption of HCFC. The experience from the completed Polyfoam investment sub-project will be vital for smooth

implementation of the newly formulated investment sub-projects at two other systems houses that also include conversion of their downstream clients.

The cancellation of the national pilot ODS waste sub-projects and the subsequent commissioning of the ODS Waste Management Concept for the four countries by the regional component demonstrates beyond reasonable doubt that the area of ODS waste management and disposal requires a regional approach, in particular for smaller countries, given the low amounts of ODS in the current ODS banks in the project countries.

The support from the policy component of the project to initial capacity building on HFC phase-down was incorporated into the project as a response to the recent adoption of the Kigali Amendment of the Montreal Protocol. Although such activities were beyond the scope of the original project they represent an example of a prudent reaction to recent development in the area closely related to the theme of the project. The exposure of the project beneficiaries to essential information on phase-down of HFC could be considered as an incentive for early ratification of the Kigali Amendment by the project countries and the first step towards future activities on HFC phase-down. The country specific roadmaps elaborated under the ODS Waste Management Concept cover apart from the existing ODS banks also unwanted HFC therefore the capacity building on HFC contributed to the discussion of potential solutions to the ODS waste disposal challenge through improved economy of the joint ODS/HFC management and disposal.

On the contrary, the aspiration of the project to support development of a regional network of RAC associations proved to be too ambitious for two reasons. Firstly, there is no experience with establishment of a similar regional mechanism for the Article 5 countries in the ECA region and secondly, the RAC associations were functional only in two of the four project beneficiary countries. Therefore, support for establishment of RAC associations should be provided primarily under national projects with additional support through bilateral exchanges with countries with already functional RAC associations.

The project has proven enormous value of the support to pilot demonstration sub-projects and confirmed the conducive and catalytic effect international development assistance can have for adoption of ozone-friendly technologies and non-ODS refrigerants by the private sector. The uptake and replication of the initial project-funded demonstration cases by the private sector beneficiaries attests that such projects can leverage extensive investments into ozone-friendly technologies and refrigerants, in particular as cost performance (including energy efficiency) appears to be dominating factor for private sector investments rather than the environmental performance. Projects that can demonstrate substantive operational cost savings and related profit gains in addition to environmental benefits will have a huge impact on progress in HCFC phase-out and reduction of HCFC and HFC use in refrigeration and AC systems. Last but not least, such projects are a good example of cooperation of UN organization with private sector and in particular show a catalytic role UN can play in demonstration of environmental-friendly technologies and mobilizing of private sector funding.

ANNEX 1: TERMINAL EVALUATION TERMS OF REFERENCE

INTRODUCTION

In accordance with UNDP and GEF M&E policies and procedures, all full and medium-sized UNDP support GEF financed projects are required to undergo a terminal evaluation upon completion of implementation. These terms of reference (TOR) sets out the expectations for a Terminal Evaluation (TE) of the *"Initial Implementation of Accelerated HCFC Phase Out in the CEIT Region (Belarus, Tajikistan, Ukraine and Uzbekistan)"* (PIMS #4309.)

The essentials of the project to be evaluated are as follows:

PROJECT SUMMARY TABLE

Project Title:	Initial Implementation of Accelerated HCFC Phase Out in the CEIT Region			
GEF Project ID:	4309		*at endorsement (Million US$)*	*at completion (Million US$)*
UNDP Project ID:	SVK10, 00066255, 00082456; BLR10, 00070086, 00084272; TJK10, 00066625, 00082745; UKR10, 00066300,00082497; UZB10, 00063869, 00080735	GEF financing:	US$ 9,000,000	TBC at completion
Country:	*Belarus, Tajikistan, Ukraine and Uzbekistan*	IA/EA own:	N/A	TBC at completion
Region:	Europe and Central Asia	Government:	US$ 5,400,000	TBC at completion
Focal Area:	GEF/Ozone	Other:	US$ 23,740,000	TBC at completion
FA Objectives, (OP/SP):	ODS/SP1	Total co-financing:	US $25,445,000	TBC at completion
Executing Agency:	UNDP	Total Project Cost:	US $34,445,000	TBC at completion
Other Partners involved:	Ministry of Environments of respective countries	ProDoc Signature (date project began):		31.07.2013
		(Operational) Closing Date:	Proposed: 31.07.2016	Actual: 31.07.2018

OBJECTIVE AND SCOPE

The project was designed to respond to the obligations incurred by participating countries (Belarus, Tajikistan, Ukraine and Uzbekistan) under their respective phase out schedule for HCFCs of the Montreal Protocol. It is a timely capacity building effort (with investment elements for the manufacturing, where existing, and servicing sectors) designed to improve regulatory measures to help address the accelerated HCFC phase-out in the medium and longer term, and to strengthen the preparedness for the complete phase-out of HCFCs from current use. The project document has been designed to address the following two main components (regional and national):

- Component 1 (Regional information exchange and networking component), addressing barriers associated with incomplete knowledge and awareness and which is aligned with PIF Component 1; Outcomes 1(a-d) - the component to be implemented on UNDP regional level (initially out of UNDP Bratislava Regional Center, and later on from a new UNDP Istanbul Regional Hub);
- Component 2 (National capacity building and technical assistance component), targeting support to the adoption of the fully completed HCFC phase-out strategy (with selected legislative options to control HCFC import/use), capacity building and supply of analytical and servicing equipment/tools for the Environmental Inspectorate and Customs Departments and refrigeration technicians, technological conversions for solvents and rigid foams, modernization of HCFC re-use scheme in the country and demonstration of alternative technologies in refrigeration equipment and A/C sectors, pilot small-scale ODS destruction.

The TE will be conducted according to the guidance, rules and procedures established by UNDP and GEF as reflected in the UNDP Evaluation Guidance for GEF Financed Projects.

The objectives of the evaluation are to assess the achievement of project results, and to draw lessons that can both improve the sustainability of benefits from this project, and aid in the overall enhancement of UNDP programming.

EVALUATION APPROACH AND METHOD

An overall approach and method[6] for conducting project terminal evaluations of UNDP supported GEF financed projects has developed over time. The evaluator is expected to frame the evaluation effort using the criteria of **relevance, effectiveness, efficiency, sustainability, and impact,** as defined and explained in the UNDP Guidance for Conducting Terminal Evaluations of UNDP-supported, GEF-financed Projects . A set of questions covering each of these criteria have been drafted and are included with this TOR (see Annex A). The evaluator is expected to amend, complete and submit this matrix as part of an evaluation inception report, and shall include it as an annex to the final report.

The evaluation must provide evidence-based information that is credible, reliable and useful. The evaluator is expected to follow a participatory and consultative approach ensuring close engagement with government counterparts, in particular the GEF operational focal point, UNDP IRH and Country Offices, project team, UNDP GEF Technical Adviser based in the region and key stakeholders. The evaluator is expected to conduct a field mission to Dushanbe-Tajikistan, Istanbul-Turkey, Kiev-Ukraine, Minsk-Belarus, Tashkent-Uzbekistan as primary locations with additional visits to projects sites as deemed necessary in each country; and to Uzbekistan to present final TE report during the regional project closure meeting in May-June 2018. Interviews will be held with the following organizations and individuals at a minimum: Ministry of Environments, UNDP Country Offices and project teams of respective project countries (Belarus, Tajikistan, Ukraine and Uzbekistan) and other key stakeholders in the project countries as well as regional project team and MPU/Chemicals team based in UNDP Istanbul Regional Hub.

The evaluator will review all relevant sources of information, such as the project document, project reports – including Annual APR/PIR, project budget revisions, midterm review, progress reports, GEF focal area tracking tools, project files, national strategic and legal documents, and any other materials that the evaluator considers useful for this evidence-based assessment. A list of documents that the project team will provide to the evaluator for review is included in Annex B of this Terms of Reference.

[6] For additional information on methods, see the Handbook on Planning, Monitoring and Evaluating for Development Results, Chapter 7, pg. 163

EVALUATION CRITERIA & RATINGS

An assessment of project performance will be carried out, based against expectations set out in the Project Logical Framework/Results Framework (see Annex C), which provides performance and impact indicators for project implementation along with their corresponding means of verification. The evaluation will at a minimum cover the criteria of: **relevance, effectiveness, efficiency, sustainability and impact.** Ratings must be provided on the following performance criteria. The completed table must be included in the evaluation executive summary. The obligatory rating scales are included in Annex D.

Evaluation Ratings:			
1. Monitoring and Evaluation	***Rating***	**2. IA& EA Execution**	***rating***
M&E design at entry		Quality of UNDP Implementation	
M&E Plan Implementation		Quality of Execution - Executing Agency	
Overall quality of M&E		Overall quality of Implementation / Execution	
3. Assessment of Outcomes	**Rating**	**4. Sustainability**	**rating**
Relevance		Financial resources:	
Effectiveness		Socio-political:	
Efficiency		Institutional framework and governance:	
Overall Project Outcome Rating		Environmental :	
		Overall likelihood of sustainability:	

PROJECT FINANCE / COFINANCE

The Evaluation will assess the key financial aspects of the project, including the extent of co-financing planned and realized. Project cost and funding data will be required, including annual expenditures. Variances between planned and actual expenditures will need to be assessed and explained. Results from recent financial audits, as available, should be taken into consideration. The evaluator(s) will receive assistance from the Country Office (CO) and Project Team to obtain financial data in order to complete the co-financing table below, which will be included in the terminal evaluation report.

Co-financing (type/source)	UNDP own financing (mill. US$)		Government (mill. US$)		Partner Agency (mill. US$)		Total (mill. US$)	
	Planned	Actual	Planned	Actual	Planned	Actual	Actual	Actual
Grants								
Loans/Concessions								
• In-kind support								
• Other								
Totals								

MAINSTREAMING

UNDP supported GEF financed projects are key components in UNDP country programming, as well as regional and global programmes. The evaluation will assess the extent to which the project was successfully

mainstreamed with other UNDP priorities, including poverty alleviation, improved governance, the prevention and recovery from natural disasters, and gender.

IMPACT

The evaluators will assess the extent to which the project is achieving impacts or progressing towards the achievement of impacts. Key findings that should be brought out in the evaluations include whether the project has demonstrated: a) verifiable improvements in ecological status, b) verifiable reductions in stress on ecological systems, and/or c) demonstrated progress towards these impact achievements.[7]

CONCLUSIONS, RECOMMENDATIONS & LESSONS

The evaluation report must include a chapter providing a set of **conclusions**, **recommendations** and **lessons**. Conclusions should build on findings and be based in evidence. Recommendations should be prioritized, specific, relevant, and targeted, with suggested implementers of the recommendations. Lessons should have wider applicability to other initiatives across the region, the area of intervention, and for the future.

IMPLEMENTATION ARRANGEMENTS

The principal responsibility for managing this evaluation resides with the UNDP Istanbul Regional (IRH). The UNDP IRH will contract the evaluators and ensure the timely provision of per diems and travel arrangements within countries for the evaluation team. The Project Team will be responsible for liaising with the Evaluators team to set up stakeholder interviews, arrange field visits, coordinate with the Government etc.

EVALUATION TIMEFRAME

The total duration of the evaluation will be 45 days according to the following plan:

Activity	Timing	Completion Date
Preparation	4 days	15 January 2018
Evaluation Missions	20[8] days as follows: 4 days mission to each of Minsk-Belarus and Tashkent-Uzbekistan as primary locations with additional visits to projects sites as deemed necessary in each country; 3 days mission to each of Kiev-Ukraine and Dushanbe-Tajikistan as primary locations with additional visits to projects sites as deemed necessary in each country; 2 days mission to Istanbul-Turkey. 4 days for mission reports.	12 March 2018
Draft Evaluation Report	16 days	16 April 2018
Final Report	3 days	30 April 2018
Presentation Mission	2 days mission to regional project closure meeting in Uzbekistan.	May-June 2018 (exact date to be confirmed but not later than 30 June 2018)

[7] A useful tool for gauging progress to impact is the Review of Outcomes to Impacts (ROtI) method developed by the GEF Evaluation Office: ROTI Handbook 2009

[8] Please note that indicated mission days do not include days spent on travel between the duty station and the project country.

EVALUATION DELIVERABLES

The evaluator is expected to deliver the following:

Deliverable	Content	Timing	Responsibilities
Inception Report	Evaluator provides clarifications on timing and method	No later than 2 weeks before the evaluation missions (due date – 15 January 2018)	Evaluator submits to UNDP IRH
Mission Reports	Short summary of TE findings	Within 1 week after the completion of evaluation missions (due date – 12 March 2018)	Evaluator submits to UNDP IRH
Draft Final Report	Full report, (per annexed template) with annexes	Within 4 weeks after the completion of evaluation missions (due date – 16 April 2018)	Sent to UNDP IRH, reviewed by RTA, PCU
Final Report*	Revised report	Within 1 week of receiving UNDP comments on draft (due date – 30 April 2018)	Sent to UNDP IRH for uploading to UNDP ERC.
Presentation	Presentation of the final TE report during the regional project closure meeting	May-June 2018 (exact date to be confirmed but not later than 30 June 2018)	To regional project meeting participants

*When submitting the final evaluation report, the evaluator is required also to provide an 'audit trail', detailing how all received comments have (and have not) been addressed in the final evaluation report.

QUALIFICATIONS

The evaluation will be conducted by an independent international evaluator. The consultant shall have prior experience in evaluating similar projects. Experience with GEF financed projects is an advantage. The evaluator selected should not have participated in the project preparation and/or implementation and should not have conflict of interest with project related activities.

The evaluator must present the following qualifications:

- A Master's degree in chemistry, physics, engineering, environmental science, or other closely related field (10%);
- Minimum 5 years of relevant professional experience on Montreal Protocol and Ozone Depleting Substances (20%);
- Previous experience with results-based monitoring and evaluation methodologies (20%);
- Experience working with the UN and GEF will be considered an asset (10%);
- Experience in Montreal Protocol implementations in the Europe and CIS region of the project will be considered an asset (5%);
- Understanding and basic knowledge of Russian is an asset (5%);

The price proposal will weigh as 30% of the total scoring.

EVALUATOR ETHICS

Evaluation consultants will be held to the highest ethical standards and are required to sign a Code of Conduct (Annex E) upon acceptance of the assignment. UNDP evaluations are conducted in accordance with the principles outlined in the UNEG 'Ethical Guidelines for Evaluations'

PAYMENT MODALITIES AND SPECIFICATIONS

%	Milestone
20%	Following submission of inception report and mission travel plan
40%	Following submission of evaluation mission reports
40%	Following submission and approval (UNDP-IRH and UNDP RTA) of the final terminal evaluation report and its presentation in the regional project closure meeting

APPLICATION PROCESS

Qualified candidates are requested to apply online via this website. The application should contain:

- **Cover letter** explaining why you are the most suitable candidate for the advertised position. Please paste the letter into the "Resume and Motivation" section of the electronic application.
- **Filled P11** form including past experience in similar projects and contact details of referees (blank form can be downloaded from

  http://www.eurasia.undp.org/content/dam/rbec/docs/P11_modified_for_SCs_and_ICs.doc); please upload the P11 instead of your CV.
- **Financial Proposal*** - Total lump sum amount in USD for tasks specified in this announcement. Mission related costs must NOT be included in the price offer as they will be covered separately as per UNDP rules and regulations.
- **Incomplete applications will not be considered. Please make sure you have provided all requested materials. Please combine all your documents into one (1) single PDF document as the system only allows to upload maximum one document.**

** Please note that the financial proposal is all-inclusive and shall take into account various expenses incurred by the consultant/contractor during the contract period (e.g. fee, health insurance, vaccination, personal security needs and any other relevant expenses related to the performance of services...).*

***Payments** will be made only upon confirmation of UNDP on delivering on the contract obligations in a satisfactory manner.*

*Individual Consultants are responsible for ensuring they have **vaccinations**/inoculations when travelling to certain countries, as designated by the UN Medical Director. Consultants are also required to comply with the UN **security directives** set forth under dss.un.org*

General Terms and conditions as well as other related documents can be found under: http://on.undp.org/t7fJs.

Qualified women and members of minorities are encouraged to apply.

Due to large number of applications we receive, we are able to inform only the successful candidate about the outcome or status of the selection process.

ANNEX F: EVALUATION REPORT OUTLINE[9]

i. **Opening page:**

- Title of UNDP supported GEF financed project
- UNDP and GEF project ID#s.
- Evaluation time frame and date of evaluation report
- Region and countries included in the project
- GEF Operational Program/Strategic Program
- Implementing Partner and other project partners
- Evaluation team member/s
- Acknowledgements

ii. **Executive Summary**

- Project Summary Table
- Project Description (brief)
- Evaluation Rating Table
- Summary of conclusions, recommendations and lessons

iii. **Acronyms and Abbreviations**

1. Introduction

- Purpose of the evaluation
- Scope & Methodology
- Structure of the evaluation report

2. **Project description and development context**

- Project start and duration
- Problems that the project sought to address
- Immediate and development objectives of the project
- Baseline Indicators established
- Main stakeholders
- Expected Results

3. **Findings**

(In addition to a descriptive assessment, all criteria marked with (*) must be rated)

3.1 ***Project Design / Formulation***

- Analysis of LFA/Results Framework (Project logic /strategy; Indicators)
- Assumptions and Risks
- Lessons from other relevant projects (e.g., same focal area) incorporated into project design
- Planned stakeholder participation
- Replication approach
- UNDP comparative advantage
- Linkages between project and other interventions within the sector
- Management arrangements

3.2 ***Project Implementation***

- Adaptive management (changes to the project design and project outputs during implementation)
- Partnership arrangements (with relevant stakeholders involved in the country/region)
- Feedback from M&E activities used for adaptive management
- Project Finance:
- Monitoring and evaluation: design at entry and implementation (*)

[9]The Report length should not exceed *40* pages in total (not including annexes).

- UNDP and Implementing Partner implementation / execution (*) coordination, and operational issues

3.3 ***Project Results***

- Overall results (attainment of objectives) (*)
- Relevance(*)
- Effectiveness & Efficiency (*)
- Country ownership
- Mainstreaming
- Sustainability (*)
- Impact

4. **Conclusions, Recommendations & Lessons**

- Corrective actions for the design, implementation, monitoring and evaluation of the project
- Actions to follow up or reinforce initial benefits from the project
- Proposals for future directions underlining main objectives
- Best and worst practices in addressing issues relating to relevance, performance and success

5. **Annexes**

- ToR
- Itinerary
- List of persons interviewed
- Summary of field visits
- List of documents reviewed
- Evaluation Question Matrix
- Questionnaire used and summary of results
- Evaluation Consultant Agreement Form
- Annexed in a separate file: TE Audit Trail

Annexed in a separate file: Terminal GEF Tracking Tool (if applicable)

ANNEX 2: ITINERARIES OF EVALUATION FIELD MISSIONS

AGENDA OF MISSION

International consultant on terminal Evaluation of the UNDP/GEF project "Initial Implementation of Accelerated HCFC Phase Out in the CEIT Region", to Belarus, Minsk, 21 May – 25 May 2018

Date/time	Institution	Venue
21 May		
15:00 – 15:40	Briefing meeting with UNDP Representative in order to inform about the objectives of the terminal evaluation mission of the project	Office UNDP Kirava str., 17, Minsk
16:00 – 17:00	Meeting with National Project Coordinator and Head of the Department for the Protection of Atmospheric Air Ministry of Natural Resources and Environment	Minsk, Kollectornaya str., 10
17:20 – 18:00	Meeting with the project manager, technical coordinator, presentation of project results	Project Office, Minsk, Red Army str. 22a -15
22 May		
9:00 – 10:30	Visit of Open Company "Factory of automobile trailers and bodies" MAZ-Kupava "	Minsk, Mashinostroiteley str., 18
11:00 – 12:30	Visit to the State Institute for Advanced Training and Retraining of Personnel of the Customs Bodies of the Republic of Belarus, Central Laboratory of the State Customs Committee Educational institution "State Institute for Advanced Training and Retraining of Personnel of Customs Bodies of the Republic of Belarus"	Minsk, Mogilevskaya str., 45/4
14:00 – 15:00	- Visit to the RAC Association "APIMH"	Minsk, Artilleristov str., 8
15:00 – 16:00	- Visit to the resource center (at the college) Educational institutions "Minsk State Mechanic-Technological Vocational and Technical College" Resource Center for Training, Retraining and Advanced Training of Workers and Specialists for the Refrigeration Industry	Minsk, Kazintsa str., 8
23 May		
9:00 – 11:00	Visit to David Gorodok Electromechanical Plant (DGEMP) - solvent conversion project	Brest region, David Gorodok, Kalinina str., 68
17:00	Return to Minsk	
24 May		
9:00 – 10:30	Visit to the class for the training of specialists in air conditioning for work with hydrocarbon refrigerants (propane), Belarusian National Technical University	Minsk, Independence avenue, 65
10 :30 – 12 :00	- Visit to the Center for Analytical Control of Refrigerants at the Belarusian State Technological University	Minsk, Sverdlov Str. 13a
12:30 – 13:30	Visits to "Republican Center of State Ecological Expertise and skills of executives and specialists" of the Ministry of Natural Resources and Environmental Protection of Belarus. Educational institution "Republican Center of State Ecological Expertise and Enhancement of the Ministry of Natural Resources"	Minsk, Mendeleyev St. 36
14:00 – 17:00	Visits to HCFC regeneration and reuse Centers ("Ozone-friendly technologies", "Laminar", "Holodon") LLC "CENTER OF OZONE-PROOF TECHNOLOGIES"	Minsk
25 May		
10:00 – 11:00	Debriefing meeting with UNDP Resident Representative and staff of the Environment and Energy Unit and presentation the results of the evaluation mission	Office UNDP Kirava str., 17, Minsk
12:30 – 13:00	Visiting JSC Myasomolmontazh - demo project on ammonia chiller, presentation of a low-ammonia-chilling system produced by JLLC "Ref-units" Open Joint Stock Company "MYASOMOLMONTAZH"	Minsk, Artilleristov str., 8
13.30	Departure to Vienna from Minsk with the flight OS 688	Minsk International Airport

Agenda of Evaluation Mission

International Consultant

"Initial Implementation of Accelerated HCFC Phase Out in the CEIT Region" project

May 29 – June 1, 2018

May 29, 2018

08:25	- Arrival to Kyiv (Boryspil Intl)	*Accommodation*

May 30, 2018

10:00-11:00	Briefing meeting with UNDP Deputy Country Director	UN House, 1 Klovsky Uzviz
12:00 – 13:00	Skype call, Director of the LLC Khimpostachalnik	UN House, 1 Klovsky Uzviz
14:00-15:30	Meeting Head of Department for Climate Change, Ozone Layer and Director of International Activities of the Ministry of Ecology and Natural Resources of Ukraine, GEF OFP	Mitropolita Lubkivskogo Str.
16:00-17:00	Meeting with the UNDP Project Team	UN House, 1 Klovsky Uzviz

May 31, 2018

9:00-10:00	Meeting with Rector of the State Ecological Academy of Post – Graduate Education and Management of Ukraine	35, Mitropolita Lubkivskogo Str.
11:00-12:00	Skype – call with Director of the LLC Advance service	UN House, 1 Klovsky Uzviz
14:00-15:00	Meeting with Director of the SFS Tax and Customs Audit Department	8, Stepana Bandery Avenue

June 1, 2018

09:00 – 10:00	Skype call with Director of the LLC Polyfoam	UN House, 1 Klovsky Uzviz
10:00 – 11:00	– Meeting with Project Team	UN House, 1 Klovsky Uzviz
12:00 – 13:00	- Meeting with General Director, LLC "Trading company " Optim", Private Academy of Refrigeration	Venue: 9, Pshenichna Str.
15:00 – 16:00	– Debriefing meeting with UNDP Deputy Country Director;	UN House, 1 Klovsky Uzviz
19:55	Departure to Vienna	

Agenda of the Evaluation Mission

International Consultant for the Terminal Evaluation of the HCFC Phase-out Project to the Republic of Tajikistan

04-07 June 2018

Time	Activity	Venue
Monday, 04 June 2018		
14:00 – 16:00	**BRIEFING** Meeting with the UNDP CO and HCFC Project Team:	UNDP CO
Tuesday, 05 June 2018		
9.00 – 10.00	Visit of 3 objects on the demo project "Introduction of the system of natural cooling in Base stations"	CJSC "Babylon", CJSC "TT Mobile"
10.00 – 11.00	Meeting with Director LLC Vostok (Volna) Visit to the established 2nd Technical Center (Dushanbe) for recycling and re-use of ODS	LLC Vostok
11:30 – 12:30	Meeting representatives of the Engineering Pedagogical College of Dushanbe	Engineering Pedagogical College
14.30 – 16.00	✓ Meeting with Chairman of the Association of the NGO "Center of artificial cold" of the Republic of Tajikistan; ✓ Visit to the established 1st Technical Center (Dushanbe) for recycling and re-use of ODS	Association "Center of artificial cold"
Wednesday, 06 June 2018		
8.30 – 9.30	Meeting with Deputy Chairman of the Committee for Environmental Protection under the Government of the Republic of Tajikistan Representative of the National Ozone Center of Tajikistan.	COEP
10.00 – 11.30	De-briefing Meeting with UNDP SM and CO representative:	UNDP CO, Energy and Environment Program Team
14.00 – 14.30	Meeting with representatives of the Customs Service under the Government of the Republic of Tajikistan.	Customs Service under the Government of the Republic of Tajikistan
14.30 – 16.00	Visiting the site of the demo project "Implementing alternative technology to replace HCFCs in the social sector"	State institution "National center for rehabilitation of disabled children" Chorbog "in Varzob district"

07 June 2018 – Departure to Istanbul

AGENDA of the Evaluation Mission

International consultant on Terminal Evaluation of the joint project of UNDP/GEF and the Government of the Republic of "Initial Implementation of Accelerated HCFC Phase-Out in the CEIT Region - Uzbekistan"

11 - 14 June 2018

Date/time	Events / Participants	Venue
09:00 – 10:00	Meeting with the Project Manager	Project office 13a, Shota Rustaveli Str., Tashkent city.
10:00 – 11:00	Meeting with the project team. Summary presentation of the project, its implementation and results	
11:30 – 12:30	Briefing meeting with UNDP DRR and staff of the Sustainable Development Cluster (SDC) in order to inform about the objectives of the Terminal Evaluation (TE) mission	UNDP CO 4, Taras Shevchenko Str. Tashkent
14:00 – 15:00	Meeting with representatives of the State Customs Committee of the Republic of Uzbekistan for evaluation of results within the project activity "Customs training and equipment support to enhance Customs control capability".	Office of the State Customs Committee 3, Uzbekistan Avenue, Tashkent city.
15:30 – 16:30	Visit Training Center for refrigerant technicians established under Tashkent State Technical University name after Islom Karimov	Tashkent State Technical University
17:00 – 18:00	Visit HCFC Recovery and Recycling Center established under the LLC "Xolod Sistem Servis" and demonstration project on designing and construction of cold-rooms running on R290 in Tashkent city	Office of LLC "Xolod Sistem Servis"
08:00 – 12:00	Travel to Pop district of Namangan region (HCFC project vehicle)	Namangan region
12:00 – 12:15	Visit RAC service enterprise IE "Toxtanazarov Baxtiyor Ikramovich"	
12:15 – 13:15	Travel to Namangan city	
14:15 – 15:00	Visit RAC service enterprises LLC "Maishiy Texsoz" and IE "Sharipov Erkin Hudayberdievich"	
15:00-16:30	Travel to Andijan region	Andijan region
16:30 – 17:00	Visit HCFC Recovery and Recycling Center established under the private enterprise "Hladmontaj" in Andijan city	
17:00 – 18:30	Travel to Fergana region, overnight in Fergana city	
09:00 – 09:30	Visit HCFC Recovery and Recycling Center established under the private enterprise "Shomur" in Fergana city.	Fergana city
09:30 – 10:00	Visit RAC service enterprise PE "Fergana Konstantin"	
10:00 – 10:30	Visit RAC service enterprise Family Enterprise "Al'batros Servis" (RAC service company and producer of commercial refrigerators)	
12:00 – 17:00	Travel to Tashkent	
09:00 - 10:00	Visit HCFC Reclaim Center established under the LLC "Ozpromholodmontaj" in Tashkent city.	Office of LLC "Ozpromholodmontaj"
10:15 - 12:00	Visit the demonstration project "Replacement of outdated air-conditioning chillers running on R22 with the one(s) running on ammonia (R717)"	Building of the Republican Research Center for Emergency Medicine
12:00 – 13:00	Visit LLC "AZN" within "Technical assistance programme for LLC AZN	Office of LLC AZN
14:00 – 15:30	Meeting with the representatives of the State Committee for Ecology and Environmental Protection	Facilities of the State Committee for Ecology and Environmental Protection
15:30 - 16:30	Debriefing meeting with UNDP Resident Representative and staff of the Environment and Energy Unit and presentation the results of the evaluation mission	UNDP CO 4, Taras Shevchenko Str. Tashkent
17:00 – 18:00	Working on the results of the TE with HCFC project Team	Project office 13a, Shota Rustaveli Str., Tashkent city.

ANNEX 3: LIST OF PERSONS INTERVIEWED

Name of Person	Organisation	Designation
UN Organizations		
Selimcan Azizoglu	UNDP Istanbul Regional Hub	Project Manager
Maksim Surkov		Programme Specialist, MPU/Chemicals
Etienne Gonin		Programme Analyst, MPU/Chemicals
Halvart Koppen	UNEP Ozone Action Programme	Regional Officer for Europe and Central Asia
International Consultants		
Jan Kozakiewicz		International Legal Consultant
Bert Veenendaal		International Foam Consultant
Belarus		
Igar Tchoulba	UNDP CO Minsk	Programme Analyst
Aleksandr Bambiza		Scientific Coordinator
Iryna Usava		Project Manager
Sergei Zavyalov	Ministry of Natural Resources and Environmental Protection (MNRE)	National Project Coordinator, Head of the Department for Regulation of Impact on Ambient Air and Water Resources
Nataliya Klimenko		Consultant of the Department for Regulation of Impact on Ambient Air and Water Resources
Olga Rovnieko	State Institute for Advanced Training and Retraining of Personnel of the Customs Bodies	Acting Head
Veronika Gluca		Head of the Methodological Department
Olga Kalchitskaya		Head of the Laboratory
Yuri Polyakov		Chief Chemist, Laboratory
Vitaliy Yakubov	Open Company "Factory of automobile trailers and bodies" MAZ-Kupava "	General Director
Pavel Sergeev		Chief Engineer
Ekaterina Chernoshei	Association of Microclimate and Cold (APIMH)	Acting Director
Vasily Volkov		Deputy Chairman
Maria Tsvirko	AkvaTerServis	National Consultant
Svetlana Andreeva	Minsk State Mechanic-Technological Vocational and Technical College	Director
Andrei Nikolaevich Zenovchik		Head, Resource Centre for Training and Retraining of Workers and Specialists for the Refrigeration Industry
Eduard Stepura	David Gorodok Electromechanical Plant	Director
Nikolay Grechko		Head of workshop number 8
Viktor Bashtovoy	Belarusian National Technical University	Head of UNESCO Chair of BNTU
Nikolai - Zhuk		Senior teacher (low-temperature technology)
Vladimir Marcul	Centre for Analytical Control of Refrigerants, Belarusian State Technological University	Head, Department of Industrial Ecology
Kristina Gordeychik		Head, Laboratory for Analysis of refrigerants
Dmitry Melnikhenko	Republican Centre of State Ecological Expertise, Ministry of Natural Resources and Environmental Protection	Deputy Director for Academic and Scientific Work
Tatyana Kovaleva		Head, Department for Academic and Scientific Work
Alesandr Rachevsky		Leading Specialist, Sector of international relations and transfers
Vasily Pipik	LLC "Center of Ozone-Friendly Technologies	Director
Dmitry Akulich		Deputy Director
Nikolay Litvinko	JSC Myasomolmontazh	Director

Name of Person	Organisation	Designation
Tajikistan		
Sanja Bojanic	UNDP CO Dushanbe	Deputy Country Director
Khurshed Kholov		Programme Manager, E&E Programme
Khurshed Khusaynov		Technical Advisor
Nargizakhon Usmanova		Programme Analyst/Team Leader
Aliev Alisher	Engineering Pedagogical College in Dushanbe	Director
Zulfiya Rozikova		Senior Lecturer
N. Kurbanov	LLC Vostok (Volna)	Director
Bakhtiyor Dzhaborov	Association of the NGO "Center of artificial cold"	Chairman
Abdurahmonzoda Saidumron	Committee for Environmental Protection	Deputy Chairman
Saidusmon Sudurov		Representative, National Ozone Center
Sh. Mirzoshoev	Customs Service	
Ukraine		
Blerta Cela	UNDP CO Kiev	Deputy Country Director
Olena Maslyukivska-Samberg		Programme Analyst
Alla Tynkevych		Programme Associate
Nina Pashchenko		Project Assistant
Anatolyi Gamera		National Consultant
Svitlana Grinchuk	Ministry of Ecology and Natural Resources	Head, Department for CC&Ozone Layer
Vladislav Marushevskiy		Director, Dept. International Affairs
Valentyna Vasylenko		Focal Point for the Vienna Convention and Montreal Protocol
Olexandr Bondar	State Ecological Academy of Post – Graduate Education and Management	Rector
Vanda Baranovska		Vice-Rector
Yuliia Shadevska	State Fiscal Service	Director, Tax and Customs Audit Dept.
Tatiana Migas		First Deputy of Acting Director, Specialized Laboratory
Vladymyr Tkachenko		Deputy of Acting Director, Specialized Laboratory
Viktor Chupilko (via Skype)	LLC Polyfoam	Director
Anatoliy Kostoriz (via Skype)	LLC Advance Service	Director
Andriy Astrauhov (via Skype)	LLC Khimpostachalnik	Director
Viktor Bernadskiy	LLC Optim - Private Academy of Refrigeration	General Director
Vasyl Vinnik		Service Manager
Valeriy Vozhnyi	International Refrigeration Academy	Chairman

Name of Person	Organisation	Designation
Uzbekistan		
Farid Garakhanov	UNDP CO Tashkent	Deputy Resident Representative
Hurshid Rustamov		Head, Sustainable Development Cluster
Rano Baykhanova		Specialist for Climate Change
Abror Khodjaev		Project Manager
Isroiljon Khasanov		Specialist on Investment in RAC Sector
Akbar Sultanov		Specialist on Public Outreach
Elmurod Nazarov		Specialist on Monitoring
Jahongir Usmanov		Administrative and Finance Assistant
Uktam Utaev	State Committee for Nature Protection	Deputy Chairman
Noila Rustamova		Deputy Head, Department for Atmosphere Air Protection
Nodir Yunusov		Head, Department of International Cooperation
Kudratulla Kharimov	Teaching Centre at the Tashkent State Technical University	Head, Department of Refrigeration and Cryogenic Technology
Tohkhir Nurmatov		Senior Lecturer
Dilshod Azizov		Lecturer
Dilshod Shakhobiddinov		Leading Specialist of Fergana region
Jaloliddin Ishakov	OOO Xolod Sistem Service	Director
Konstantin Kis		Founder
Bakhtior Tokhtanazarov	IP Tokhtanazarov	Chairman
Kodirkhom Jabbarov	OOO Maishyi Tekzoz	Chairman
Erkin Sharipov	IP Sharipov	Chairman
Anvar Ashurov	CP Hladmonazh	Chairman
Erkin Shomuratov	PE Shomur	Chairman
Konstantin Buguruslantsev	CP Fergana Konstantin	Chairman
Alisher Yadragov	CP Albatros Servis	Chairman
Khabibulla Nazirov	OOO O'zpromholodmontaj	Chairman
Khikmat Anvarov	Republican Centre for External Medicine	Deputy Director for International Cooperation
Mirzokhid Makhmurov		Chief Engineer
Anvar Nazirov	OOO AZN	Director
Marat Nazirov		Deputy Director
Yodgorov Alisher	PE "Albatross"	Chairman
Akmal Ismailov	JSC "Yo'lreftrans"	Chief Engineer
Kamol Khakiev		Chief Technologist
Abduganiev Bakhtiyor	State Customs Committee of the Republic of Uzbekistan	Head, Department of Customs Examination and Maintenance of TNVED
Gulfia Khabieva		Head of International Department

ANNEX 4: LIST OF DOCUMENTS REVIEWED

Regional Component

- OZ 4102 Regional HCFC PIF
- 4102-2010-05-13-085542-STAPReviewAgency
- 4309 Regional Prodoc UNDP for submission - as submitted
- 4309 PD REG revised after LPAC 14Feb2013
- National Implementation by the Government of UNDP Projects
- Financial Management and Implementation Modality: Direct Implementation (DIM) Modality
- UNDP Regional Programme Document for Europe and CIS 2014-2017
- Regional Component Project Implementation Reports 2014 – 2017
- Regional Local Appraisal Committee Minutes January 2013
- Regional Inception Workshop Report 2013
- Regional Project Board Meeting Minutes June 2015
- Regional Project Board minutes March 2016
- Regional Project Board meeting minutes April 2017
- Mission Reports of Jan Kozakiewicz, 2014-2017
- Report on Regional Workshop on Management of End of Life ODS, 2016
- Waste Management Concept for CEIT Countries, 2017

Belarus Component

- 4309 Belarus Project Document - financially cleared
- Belarus Annual Review Reports 2013-2015
- Belarus Inception Workshop Report 2013
- Belarus Project Steering Committee Meeting Minutes 2013 - 2016
- Report on elaboration of HCFC re-use system in Belarus, 2014
- Report on the functioning of the scheme of collection and re-use of HCFCs in Belarus, 2017

Tajikistan Component

- 4309 Tajikistan Project Doc - financially cleared
- Tajikistan Annual Project Reports 2014-2016
- Tajikistan Project Steering Committee Minutes 2014-2017
- Updated GEF Tracking Tool Tajikistan, June 2018

Ukraine Component

- 4309 Ukraine Project Document - financially cleared
- 4309 Ukraine Substantive Revision to the Project Document (for Government approval)
- Ukraine Project Board Meeting Minutes 2015-2018
- 154 Contract Polyfoam, 2015
- Draft Project Document on Khimpostachalnyk, 2018
- Draft Project Document on Advance LLC, 2018
- Report on HCFC consumption in Ukraine and data collection for development of HCFC phase-out strategy, 2017
- Updated GEF Tracking Tool Ukraine, June 2018

Uzbekistan Component

- 4309 Uzbekistan Project Document - financially cleared
- Minutes of HCFC Uzbekistan Project Inception Workshop, 2014
- HCFC Project Uzbekistan - results achieved, lessons learned and best practices, 2018
- Uzbekistan Project Board Meeting Minutes 2014-2017

ANNEX 5: EVALUATION QUESTION MATRIX

Evaluation Questions	Indicators	Data Sources	Data Collection Methods
Relevance			
Is the initiative aligned to the national development strategy? How does the project align with national strategies in the affected sectors and specific development challenges in the country? Where is this project implemented? Who are the main beneficiaries of the project and how does the project address their human development needs? To what extent are the objectives of the project still valid? Are the activities and outputs of the project consistent with attainment of its objectives?	Number of development and sectoral plans/strategies relevant for the project Level of alignment between the project objectives/outcomes and national development and sectoral strategies	UNDP programme/project documents UNDP programme/project Annual Work Plans Programmes/projects/ thematic areas evaluation reports Government's national planning documents Human Development Reports MDG progress reports Government partners progress reports Interviews with beneficiaries	Desk reviews of secondary data Interviews with government partners Interviews with NGOs partners/service providers Interviews with funding agencies and other UNCT Interview with civil soci- eties in the concerned sector Interviews with political parties leader Interviews with related parliamentary committees Related Constitutional bodies such as Human Rights, Women Rights, etc. Field visits to selected projects
Are UNDP approaches, resources, models, conceptual framework relevant to achieve the planned outcome? Are they sufficiently sensitive to the conflict- post-conflict environment in the country? To what extent has UNDP adopted participatory approaches in planning and delivery of the initiative and what has been feasible in the country context? What analysis was done in designing the project? To what extent have indigenous peoples, women, conflict- displaced peoples, and other stakeholders been involved in pro- ject design? Are the resources allocated sufficient to achieve the objectives of the project?	Level of participation of key and tangential stakeholders in the project implementation Level of stakeholder analysis at the project design stage Level of allocation of resources to individual outcomes	UNDP staff Development partners (UN agencies, bilateral development agencies) Government partners involved in specific results/thematic areas Concerned civil society partners Concerned associations and federations	Interviews with UNDP staff, development partners and government partners, civil society partners, associations, and federations

Evaluation Questions	Indicators	Data Sources	Data Collection Methods
Effectiveness			
Did the project or programme implementation contribute towards the stated outcomes? Did it at least set dynamic changes and processes that move towards the long-term outcomes? What outputs has the project achieved and what outcomes does the project intend to achieve? What changes and progress towards the outcomes can be observed as a result of the outputs? To what extent were the project objectives achieved? How does UNDP measure its progress towards expected results/outcomes? In addition to the project, what other factors may have affected the results? What were the unintended results (+ or -) of the project?	Level of coherence between the project design and implementation approaches Level of coherence between activities and outputs/outcomes Level of management of assumptions and risks	Project/programme/thematic areas evaluation reports Progress reports on projects UNDP staff Development partners Government partners Beneficiaries	Desk reviews of secondary data Interviews with government partners, development partners, UNDP staff, civil society partners, associations, and federations Field visits to selected sites
How broad are the outcomes (e.g., local community, district, regional, national)? What has been the results of the capacity building/training components of the project? Were qualified trainers available to conduct trainings? Are the results of the project intended to reach local community, district, regional or national level?	Level of outreach of the project to the ultimate beneficiaries Level of increase in capacity building resulting from the training components	Evaluation reports Progress reports on projects	Desk reviews of secondary data
Who are the direct beneficiaries and how many of them were affected by the project? Who are the ultimate beneficiaries and to what extent have they been reached by the project? To what extent do the poor, indigenous groups, women, and other disadvantaged and marginalized groups benefit? How have the particular needs of disadvantaged groups been taken into account in the design and implementation, benefit sharing, monitoring and evaluation of the project/ programme? How far has the regional context been taken into consideration while selecting the project/ programme? Was there any partnership strategy in place for implementation of the project and if so how effective was it?	Level of outreach of the project to the ultimate beneficiaries Level of inclusion of marginal groups of beneficiaries Cooperation with partners on project implementation	Programme documents Annual Work Plans Annual Progress Reports Evaluation reports MDG progress reports Human Development Reports	Desk reviews of secondary data

Evaluation Questions	Indicators	Data Sources	Data Collection Methods
Efficiency			
Has the project or programme been implemented within the original timeframe and budget? Have UNDP and its partners taken prompt actions to solve implementation issues, if any? Have there been time extensions on the project? What were the circumstances giving rise to the need for time extension? Has there been over-expenditure or under-expenditure on the project? What mechanisms does UNDP have in place to monitor implementation? Are these effective? Have there been any outside factors (e.g. political instability) affecting on implementation effectiveness?	Level of adherence to the original timeframe and budget Quality of annual workplans *vis-à-vis* the project logframe Level of solution of implementation issues solved by PMU/UNDP Quality and level of use of implementation monitoring tools	Programme documents Annual Work Plans Annual Progress Reports Evaluation reports Government partners Development partners UNDP staff (Programme Implementation Support Unit)	Desk reviews of secondary data Interviews with government partners and development partners
Were UNDP resources focused on the set of activities that were expected to produce significant results? Was there any identified synergy between UNDP initiatives that contributed to reducing costs while supporting results? Gas there been a Project Implementation Support Unit and how it assisted the efficiency of implementation? Were the project resources concentrated on the most important initiatives or were they scattered/spread thinly across initiatives?	Synergies with similar activities funded from other sources Level of financial controls established and used to provide feedback on implementation Level of prioritization of activities for achievement of significant results	Programme documents Annual Work Plans Annual Progress Reports Evaluation reports Government partners Development partners UNDP staff (Programme Implementation Support Unit)	Desk reviews of secondary data Interviews with government partners and development partners

Evaluation Questions	Indicators	Data Sources	Data Collection Methods
Sustainability			
Does/did the project have an exit strategy? How does UNDP propose to exit from projects that have run for several years? To what extent does the exit strategy take into account the following: – Political factors (support from national authorities) – Financial factors (available budgets) – Technical factors (skills and expertise needed) – Environmental factors (environmental sustainability) Were initiatives designed to have sustainable results given the identifiable risks?	Quality and level of self-sufficiency of institutional frameworks for continuation of activities after project completion Availability of counterpart/stakeholder funding for the project outcomes	Programme documents Annual Work Plans Annual Progress Reports Evaluation reports	Desk reviews of secondary data
What issues emerged during implementation as a threat to sustainability? What corrective measures were adopted? How has UNDP addressed the challenge of building national capacity in the face of high turnover of government officials? What unanticipated sustainability threats emerged during implementation? What corrective measures did UNDP take?	Level and quality of identification of sustainability issues Nature and quality of management corrective measures to address sustainability issues	Evaluation reports Progress reports UNDP programme staff	Desk reviews of secondary data Interview UNDP programme staff
How has UNDP approached the scaling up of successful pilot initiatives and catalytic projects? Has the government taken on these initiatives? Have donors stepped in to scale up initiatives? What actions have been taken to scale up the project if it is a pilot initiative?	Level of stakeholder awareness and ownership of the project results Level of donor interest for scale-up and/or replication	Evaluation reports Progress reports UNDP programme staff	Desk reviews of secondary data Interview UNDP programme staff

Evaluation Questions	Indicators	Data Sources	Data Collection Methods
Progress towards impacts			
What difference has the project made to the direct and ultimate beneficiaries? Which are the intermediate states that lead to impacts, have they been achieved and how? Which (if any) are still missing gaps between the project outcomes and realization of the expected impacts? Are the necessary conditions in place for enabling scaling up of outcomes into impacts?	Level of coherence between the project outcomes and intended impacts Nature of conditions for conversion of outcomes into impacts	Programme documents Annual Work Plans Annual Progress Reports Evaluation reports Government partners Development partners UNDP staff (Programme Implementation Support Unit)	Desk reviews of secondary data Interviews with government partners and development partners
Have indigenous institutions been established and or strengthened to provide leadership and technical support to the transfer of project outcomes into impacts? Have collaboration mechanisms between government agencies and their boundary partners established to implement the project-initiated measures? Have the relevant government agencies undertaken measures to support the adoption of the project's results and their inclusion as national priorities?	Level of key stakeholder awareness and ownership of the project results Quality and level of collaboration between the stakeholder institutions	Programme documents Annual Work Plans Annual Progress Reports Evaluation reports Government partners Development partners UNDP staff (Programme Implementation Support Unit)	Desk reviews of secondary data Interviews with government partners and development partners
Are there sufficient fundraising, investment and revenue-generating mechanisms and strategies to enable and support the outcome-impact pathways? Are government agencies encouraged/enabled to facilitate wider adoption of the project results? Have senior and influential government officials endorsed the project's innovative approaches and champion the development of a more enabling policies, mechanisms and strategies for wider adoption?	Level of key stakeholders' awareness and ownership of the project results Level of stakeholders' financial commitments	Programme documents Annual Work Plans Annual Progress Reports Evaluation reports Government partners Development partners UNDP staff (Programme Implementation Support Unit)	Desk reviews of secondary data Interviews with government partners and development partners

SAMPLE QUESTIONS RELATING TO THE PROMOTION OF UN VALUES FROM A HUMAN DEVELOPMENT PERSPECTIVE			
Evaluation Questions	**Indicators**	**Data Sources**	**Data Collection Methods**
Supporting policy dialogue on human development issues			
To what extent did the initiative support the government in monitoring achievement of MDGs? What assistance has the initiative provided sup- ported the government in promoting human development approach and monitoring MDGs? Comment on how effective this support has been.	Level of contribution of the project to the achievement of MDGs	Project documents Evaluation reports HDR reports MDG reports National Planning Commission Ministry of Finance	Desk review of secondary data Interviews with government partners
Contribution to gender equality			
To what extent was the UNDP initiative designed to appropriately incorporate in each outcome area contributions to attainment of gender equality? To what extent did UNDP support positive changes in terms of gender equality and were there any unintended effects? Provide example(s) of how the initiative contributes to gender equality. Can results of the programme be disaggregated by sex?	Level and quality of monitoring of gender related issues	Project documents Evaluation reports UNDP staff Government partners Beneficiaries	Desk review of secondary data Interviews with UNDP staff and government partners Observations from field visits
Addressing equity issues (social inclusion)			
How did the UNDP initiative take into account the plight and needs of vulnerable and disadvantaged to promote social equity, for example, women, youth, disabled persons? Provide example(s) of how the initiative takes into account the needs of vulnerable and dis- advantaged groups, for example, women, youth, disabled persons How has UNDP programmed social inclusion into the initiative?	Level and quality of monitoring of social inclusion related issues	Project documents Evaluation reports UNDP staff Government partners Beneficiaries	Desk review of secondary data Interviews with UNDP staff and government partners Observations from field visits

ANNEX 6: QUESTIONS AND ISSUES FOR THE FIELD MISSIONS

Legislative and Policy Options for HCFC control and phase-out

- What Legislative, Regulative and Policy options are in place currently for HCFC control?
- Are there any bans in place or planned on
    - a) import of HCFC based equipment;
    - b) new manufacturing facilities using HCFCs; and c) other?
- What economic/fiscal instruments are in place/under considerations?
- Mechanisms and capacity for prosecution and enforcement?
- Sanctions or penalties to be imposed on violation of legal regulations?
- Has a quota system for HCFCs been established? How is it set for each year?
- Is the quota system legislated/regulated?
- Is there a licensing system for import and use of HCFCs in place? Is it mandated by legislation/regulation?
- Is reporting of consumption and use by importers/users mandated by legislation/regulation? How often?
- Channel of Communication between the Government (the licensing authority) and the Customs
- Does Customs report import and export data to Government entity managing HCFC phase out?
- Procedures to be applied in case of suspicious shipments
- What is the system of monitoring and reporting on exports of ODS

Training of Technicians

- Has training material been made available in Russian/local language?
- Is the training sustainable i.e. has national capacity been established? How?
- How many local trainers have been trained by Master Trainer(s)?
- How many refrigeration and air-conditioning technicians were planned to be trained under the project?
- How many have been trained in and in how many training programs?
- Has the training been as per schedule or have there been any delays? If so, what are the causes of
- the delay?
- How are technicians identified for training?
- Is there a requirement for technicians to be certified? Is it legislated?
- What activities cannot be done by an uncertified technician?
- Have any basic refrigeration tools been distributed to the technicians? How were the
- beneficiaries selected? What equipment was distributed?
- Have any recovery/recycling machines been distributed to technicians? How were the beneficiaries selected?
- Is there a Refrigeration Technicians Association? What support is given to them? How are they contributing to the HCFC phase out?

Investment and Demonstration Projects

- What is the status of investment projects in the country?
- If not completed are they on track or are there delays? If delayed, reasons for delay.
- What is the status of demonstration projects
- If not completed are they on track or are there delays? If delayed, reason for delay.

ODS Recovery/Recycling/Reclamation

- Is there a recovery/recycling project ongoing?
- Is recovery/recycling mandated by legislation?
- Is it centralised or have the larger service companies been given the equipment?
- What equipment has been supplied and how were they distributed?
- Does NOU receive regular reports of quantities recovered and recycled? How often are these reports received? Is reporting mandatory?
- Is the reported data verified?
- How is recycled HCFC put back into the market?

ODS Waste

- Is recovered ODS that cannot be recycled stored for ongoing/future disposal?

- What arrangements are there for storage and how does he NOU keep track of the quantities that are awaiting disposal?
- What is done with suspicious/seized HCFCs held by Customs?
-

Awareness and Outreach

- Has awareness program for decision makers on Legislation/Regulations/Policy been implemented? How was this done
- Are additional awareness programs on this subject planned? If so, when.
- Have any awareness programs been conducted for end users? How, and can the impact be measured?

Regional Cooperation

- Is there active exchange of information with other Article 5 and non Article 5 countries in the region?
- How does this exchange of information happen?
- Investment Projects (conversion of manufacturers using HCFCs to non HCFC and demonstration retrofit projects)

Monitoring and Evaluation

- Is there an ongoing monitoring and evaluation of the implementation of the project?
- Who conducts it and who is the report sent to?
- How often does the project committee meet to take into account the progress of the project and the M&E report?
- Project Management
- A short description of how the project implementation is managed and the reporting structure

ANNEX 7: EVALUATION CONSULTANT AGREEMENT FORM

Evaluators:

1. Must present information that is complete and fair in its assessment of strengths and weaknesses so that decisions or actions taken are well founded.
2. Must disclose the full set of evaluation findings along with information on their limitations and have this accessible to all affected by the evaluation with expressed legal rights to receive results.
3. Should protect the anonymity and confidentiality of individual informants. They should provide maximum notice, minimize demands on time, and respect people's right not to engage. Evaluators must respect people's right to provide information in confidence and must ensure that sensitive information cannot be traced to its source. Evaluators are not expected to evaluate individuals and must balance an evaluation of management functions with this general principle.
4. Sometimes uncover evidence of wrongdoing while conducting evaluations. Such cases must be reported discreetly to the appropriate investigative body. Evaluators should consult with other relevant oversight entities when there is any doubt about if and how issues should be reported.
5. Should be sensitive to beliefs, manners and customs and act with integrity and honesty in their relations with all stakeholders. In line with the UN Universal Declaration of Human Rights, evaluators must be sensitive to and address issues of discrimination and gender equality. They should avoid offending the dignity and self-respect of those persons with whom they come in contact in the course of the evaluation. Knowing that evaluation might negatively affect the interests of some stakeholders, evaluators should conduct the evaluation and communicate its purpose and results in a way that clearly respects the stakeholders' dignity and self-worth.
6. Are responsible for their performance and their product(s). They are responsible for the clear, accurate and fair written and/or oral presentation of study imitations, findings and recommendations.
7. Should reflect sound accounting procedures and be prudent in using the resources of the evaluation.

Agreement to abide by the Code of Conduct for Evaluation in the UN System[10]

Name of Consultant: _ _____DALIBOR KYSELA_____

Name of Consultancy Organization (where relevant)**:** _____N.A._____

I confirm that I have received and understood and will abide by the United Nations Code of Conduct for Evaluation.

Signed at Vienna on 10 April 2018

Signature: ___ _____

[10] www.unevaluation.org/unegcodeofconduct