REQUEST FOR CEO ENDORSEMENT

PROJECT TYPE: Full-sized Project
TYPE OF TRUST FUND:GEF Trust Fund

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PART I: PROJECT INFORMATION

Project Title: Initiation of the HCFC phase out in the Republic of Azerbaijan			
Country(ies):	Republic of Azerbaijan	GEF Project ID:[1]	4602
GEF Agency(ies):	UNIDO (select) (select)	GEF Agency Project ID:	100320
Other Executing Partner(s):	Climate Change and Ozone Centre (CCOC), the Ministry of Ecology and Natural Resources of Republic of Azerbaijan (MENR), the Ministry of Industry and Energy of Republic of Azerbaijan (MIE)	Re-submission Date:	10/24/2014
GEF Focal Area (s):	Ozone Depletion Substances	Project Duration(Months)	48
Name of Parent Program (if applicable): ➢ For SFM/REDD+ ☐ ➢ For SGP ☐ ➢ For PPP ☐	n/a	Project Agency Fee ($):	262,000

A. FOCAL AREA STRATEGY FRAMEWORK[2]

Focal Area Objectives	Expected FA Outcomes	Expected FA Outputs	Trust Fund	Grant Amount ($)	Co-financing ($)
(select) CHEM-2	Outcome 2.1 Country capacity built to meet Montreal protocol obligations and effectively phase out and reduce releases of ODS.	Output 2.1.1 Country annual reports to the Ozone Secretariat.	GEF TF	550,000	2,450,000
(select) CHEM-2	Outcome 2.2 ODS phased out and their releases reduced in a sustainable manner.	Output 2.2.1 HCFCs phase out plans under development and implementation.	GEF TF	2,070,000	4,100,000
(select) (select)			(select)		
(select) (select)			(select)		
(select) (select)			(select)		
(select) (select)			(select)		
(select) (select)			(select)		
(select) (select)			(select)		
		Total project costs		2,620,000	6,550,000

[1] Project ID number will be assigned by GEFSEC.
[2] Refer to the Focal Area Results Framework and LDCF/SCCF Framework when completing Table A.

B. PROJECT FRAMEWORK

Project Objective: The project is designed to phase out all remaining HCFC consumption in the Republic of Azerbaijan.						
Project Component	**Grant Type**	**Expected Outcomes**	**Expected Outputs**	**Trust Fund**	**Grant Amount ($)**	**Confirmed Co-financing ($)**
1a. Legislative and Policy Measures Needed to Strengthen HCFCs Control and Phase out	TA	1.1a. Legislation related to control and phase out of HCFC adopted.	1.1a. (i) Formal HCFC Phase out Strategy and National Action Plan developed. 1.1a. (ii) Quota system, licensing system, certification scheme for technicians, reporting systems, resource materials for use by CCOC, customs authorities and other stakeholders and government agencies covering the legislative and regulatory actions required for HCFC phase out are in place.	GEF TF	200,000	1,000,000
1b. Institutional Capacity building	TA	1.1b. Institutional capacity of Climate Change and Ozone Centre (CCOC) strengthened to support legislation, control and phase out of HCFC. 1.2b. Customs processes and capability upgraded to control import and export of HCFCs.	1.1b.(i) National database and tracking process (updated ODS licensing mechanisms) are in place. 1.1b.(ii) HCFCs consumption patterns and scenario plans developed. Analysis of the level of residual HCFCs demand after 2014 and 2019, including assessment of ODS equipment banks. 1.1b.(iii) Training programme for decision makers, concerned government ministries and CCOC covering legislative and regulatory actions for HCFCs phase out implemented.	GEF TF	300,000	1,350,000

			1.2b.(i) Training programme and necessary equipment for customs officers and environmental officers.			
2. Conversion of manufacturing process involving HCFC-22 and HCFC-141b and Assistance to the RAC service sector	Inv	2.1. Phase out of HCFC-22 and HCFC-141b in the manufacturing sector. 2.2. Reduction of demand of HCFC-22 in servicing sector (reduced GHG emissions).	2.1.(i) Conversion of key HCFC based manufacturing sectors (approximately 10-14 sub-projects); Technology transfer, engineering services, capital equipment and instrumentation required for conversion of manufacturing facilities. 2.2.(ii) Improved RAC service practice (including technician certification). 2.2.(iii) National Recovery, Recycling and Reclamation scheme.	GEF TF	2,000,000	4,000,000
	(select)			(select)		
	(select)			(select)		
	(select)			(select)		
	(select)			(select)		
	(select)			(select)		
			Subtotal		2,500,000	6,350,000
			Project management Cost (PMC)[3]	(select)	120,000	200,000
			Total project costs		2,620,000	6,550,000

C. SOURCES OF CONFIRMED CO-FINANCING FOR THE PROJECT BY SOURCE AND BY NAME ($)

Please include letters confirming co-financing for the project with this form

Sources of Co-financing	Name of Co-financier (source)	Type of Co-financing	Co-financing Amount ($)
National Government	Ministry of Ecology and Natural Resourses of Republic of Azerbaijan	In-kind	200,000
GEF Agency	UNIDO	Cash	50,000
Private Sector	Baku Chinar Refrigerators	Cash	100,000

[3] PMC should be charged proportionately to focal areas based on focal area project grant amount in Table D below.

Private Sector	Fayton MMM	Cash	950,000
Private Sector	Frigo Market Ltd	Cash	600,000
Private Sector	Baku Chinar Refrigerators	In-kind	500,000
Private Sector	Fayton MMM	In-kind	2,400,000
Private Sector	Frigo Market Ltd	In-kind	1,750,000
Total Co-financing			6,550,000

D. TRUST FUND RESOURCES REQUESTED BY AGENCY, FOCAL AREA AND COUNTRY[1]

GEF Agency	Type of Trust Fund	Focal Area	Country Name/ Global	(in $)		
				Grant Amount (a)	Agency Fee (b)[2]	Total c=a+b
(select)	(select)	(select)				0
(select)	(select)	(select)				0
(select)	(select)	(select)				0
(select)	(select)	(select)				0
(select)	(select)	(select)				0
(select)	(select)	(select)				0
(select)	(select)	(select)				0
(select)	(select)	(select)				0
(select)	(select)	(select)				0
(select)	(select)	(select)				0
Total Grant Resources				0	0	0

[1] In case of a single focal area, single country, single GEF Agency project, and single trust fund project, no need to provide information for this table. PMC amount from Table B should be included proportionately to the focal area amount in this table.

[2] Indicate fees related to this project.

F. CONSULTANTS WORKING FOR TECHNICAL ASSISTANCE COMPONENTS:

Component	Grant Amount ($)	Co-financing ($)	Project Total ($)
International Consultants	175,000	100,000	275,000
National/Local Consultants	187,000	110,000	297,000

G. DOES THE PROJECT INCLUDE A "NON-GRANT" INSTRUMENT? No

(If non-grant instruments are used, provide in Annex D an indicative calendar of expected reflows to your Agency and to the GEF/LDCF/SCCF/NPIF Trust Fund).

PART II: PROJECT JUSTIFICATION

A. DESCRIBE ANY CHANGES IN ALIGNMENT WITH THE PROJECT DESIGN OF THE ORIGINAL PIF[4]

A.1 National strategies and plans or reports and assessments under relevant conventions, if applicable, i.e. NAPAS, NBSAPs, national communications, TNAs, NCSA, NIPs, PRSPs, NPFE, Biennial Update Reports, etc.

The project result framework has been reviewed and streamlined, but all activities submitted in the PIF remain the same. No additional changes were made as it is in line with the PIF.

The initial country programme for the phase-out of ODS was compiled in 1997 at the initiative of the UNEP/IE, based on the data survey of ODS consumption in various sectors, conducted by the National Ozone Team. In 1996, Azerbaijan used ODS in the refrigeration (CFCs), fire-fighting (halon), solvent (CFCs,methyl chloroform) and foam blowing (CFCs) sectors. Azerbaijan reported a halon consumption of 501.2 ODP-tonnes, but UNDP later determined that this might be installed in equipment rather than consumed.

Azerbaijan acceded to the Vienna Convention, the Montreal Protocol, the London and Copenhagen Amendments in 1996. As a developed country that was formerly a part of the Soviet Union, Azerbaijan was required to, inter alia, phase out the consumption of halons on 1 January 1994; and to phase out CFCs by 1 January 1996. Azerbaijan approved the Montreal Amendment in 2000. In 1998, the Parties to the Montreal Protocol noted that Azerbaijan was in non-compliance with its control obligations as consumption of 456.5 ODP-tonnes of CFCs and 501.2 ODP tonnes of halon was reported in 1996 . About 93% of CFCs consumption was in the refrigeration sector, 6% in the foam blowing sector with remaining 1% in the solvent sector. Based on its Country Programme, Azerbaijan committed to:

1) Establish a system for licensing operators in the refrigeration servicing sector in 1999;
2) To consider by 1999, a ban on the import of ODS-based equipment.
3) Apply a tax to ODS imports;
4) Phase out CFCs consumption by 1 January 2001; and
5) Ban on all imports of halons by 1 January 2001;

The Parties specifically urged Azerbaijan to work with the relevant Implementing Agencies to implement non-ODS alternatives, and to quickly develop a system for managing banked halon for any continuing critical uses. The Government of Azerbaijan requested GEF assistance to enable it to comply with provisions of the Montreal Protocol.

Decision XIX/6 of the Meeting of the Parties of to the Montreal Protocol requires non-article 5 countries to accelerate phase out of HCFC and reduce consumption to 10% of baseline by 2015 and 0.5% of baseline by 2020 and phase out all consumption by 2030.

However the institutional capacity currently in place is insufficient to meet these requirements and Azerbaijan is at risk of further non-compliance without significant technical and financial assistance.This project is consistent with the country's priorities and plans; it is designed to re-establish effective national monitoring, legislative and control systems, such as those applied for the phase out of CFCs (completed by 1 January 2006) and further strengthen capability to deal with the complex nature of systems and equipment using HCFCs, including pre-blended HCFC-141b and polyol which has to date not been controlled.

A.2. GEF focal area and/or fund(s) strategies, eligibility criteria and priorities:

The proposed project is consistent with GEF FA, Objective CHEM-2: Phase out of Ozone Depleting Substances (ODS) and Reduce ODS Releases.

The outcome 2.1 of the project is designed to meet Montreal Protocol obligations and effectively phase out the consumption

[4] For questions A.1 –A.7 in Part II, if there are no changes since PIF and if not specifically requested in the review sheet at PIF stage, then no need to respond, please enter "NA" after the respective question

and reduce releases of ODS. Outcome 2.2 addresses the phase out of ODS in the service sector by transition to alternative service solutions that are in line with current best practice.

The strategy consist of two major components. The first area of focus will be to provide the institutional capacity and capability required to properly implement current ODS legislation. This will require robust monitoring,reporting and control of HCFC imports, consumption and exports. The second component is to affect the phase out of 18.95 ODP tonnes (minimum) of HCFC-22 and HCFC-141b through the conversion of commercial refrigeration manufacturing and polyurethane insulation panel manufacturing at 10 to 14 companies and through assistance to the refrigeration service sector for 70 to 100 service comapnies.

A.3 The GEF Agency's comparative advantage:

The GEF agency (UNIDO) is within the comparative advantage matrix and the project addresses the areas where UNIDO's valuable experience will contribute to the institutional strengthening and capacity building to meet HCFC phase out obligations.The programme is consistent with the country's priorities and commitments to fullfil its obligations under Montreal Protocol. It is designed to strengthen the national monitoring and legislative system established for CFC phase out, which was completed in January 2006. The project's primary goal is to develop and implement country strategies for HCFC phase out based the most recent surveys of HCFC consumption and to ensure an adequate institutional capacity is put in place, and formalised in a National HCFC Phase out Strategy and Action Plan.

The secondary objective is the direct phase out of HCFCs in the refrigeration and foam manufacturing sectors in the Republic of Azerbaijan and where possible to avoid the adoption of HFCs, accepting that non-HFC solutions are not available in all applications.

A.4. The baseline project and the problem that it seeks to address:

Baseline Scenario: The investigations carried out in the preparation of this PIF have highlighted a number of problems facing Azerbaijan in terms of HCFC phase out:

Institutional capacity

A framework regulation for a licensing system to monitor and control ODS imports was approved in December 2000. The taxation system regulating imports of ODS was introduced in 2001. The licensing system was coupled with the Recovery and Recycling sub-project and with training in good refrigeration practices. Quotas for CFC import were established from 1997 until planned phase out in January 2002. (Azerbaijan reported zero CFC consumption only in 2006.) At the time that the Project was funded there was a strong government commitment to ozone layer protection. However, this commitment was de-prioritized when the project was completed in 2002. Legislation was adopted in 2005 handing responsibility for the control of imports and exports of CFCs and equipment containing CFCs to the Ministry of Ecology and Natural Resources (MENR) .

At this time the government structure was reorganised and the National Ozone Unit (NOU) was effectively disbanded when it was not reassigned to the The National Department of Hydrometeorology (NDH) but was incorporated into the MENR. In 2003, The Centre for Climate Change and Ozone Centre (CCOC) was established within the NDH. The head of the CCOC was assigned as the Montreal Protocol focal point, equivalent to the NOU.

However, high staff turnover in the CCOC has contributed to very poor continuity of process and institutional memory; and previous Ozone Officers have consistently been able only to speak Azeri which limited communication with personnel outside of Azerbaijan.

A similar degradation of capacity has occurred in the State Customs Committee (SCC) which was heavily involved in ozone-related activities at the initial phase of the CFCs phase out Project and participated in the preparation of the legislation. Since the CFC phase out programme was completed, the institutional capacity related to the monitoring and control of all ODS has therefore been significantly depleted and whilst the legislative framework developed to control ODS (CFC and HCFC)s is technically still in place, the implementation of control processes at the working level is practically non-existent. At present the legislation covering the import of HCFCs and HCFCs based equipment is not supported by any robust monitoring or control processes. A quota system, administered through the CCOC does not appear to be effective and anecdotal evidence

gathered during site visits in Azerbaijan for the preparation of this PIF shows very wide discrepancies in HCFCs permits awarded as compared to actual HCFCs imports. Furthermore anecdotal evidence suggests that it is likely that there is significant movement of unauthorized goods and illegal trade, a situation exacerbated by the prevalence of disposable cans for the distribution of refrigerants including HCFC-22.

Furthermore the use of HCFC-141b in preblended polyols has not been recorded, as this was not originally a requirement and no communication has been received advising the Government this was necessary. Consequently, there has been no effective monitoring or control of the import and distribution of pre-blended HCFC-141b-polyol systems.

The project aims to provide assistance to the CCOC and SCC to improve the effectiveness of all monitoring and compliance procedures and to better define operating practice. Companies who are trading illegally will be more easily identified, as more robust monitoring will be in place, and appropriate punitive action will be possible. The project will provide training capacity within SCC through the approved and accepted approach of Training of trainers this will provide a sustainable resource within SCC for monitoring and control.

The role of the CCOC in the HCFC phase out programme is to achieve a smooth HCFC use phase-out in the relevant sectors. The project is designed to put in place the support and processes required to achieve the smooth transition. Once the transition from HCFCs to non-HCFCs has been implemented, the new status will be sustained through the regulatory and policy frameworks that will be enacted as part of the project. This includes the establishment and bringing into force of the quota system controlling import and export of HCFCs.

Based on the current trends in consumption in the foam production, refrigeration and air conditioning servicing sectors, it is vital that both institutional capacity and investment funding are put in place to meet the Montreal Protocol targets. At the same time it is important for the Republic of Azerbaijan to consider the longer term climate impact of HCFCs alternatives, and in particular the instituational and technical capacity that will be required avoid HFC technologies by, for example, adopting unfamilar technology such as hydrocarbon and carbon dioxide refrigerants.

HCFC Consumption Baseline

The official Article 7 baseline for HCFCs consumption is 14.9 ODP tonnes, however the annual consumption reported under Article 7 for the period 2005-2010 was as follows:

Table 1: The annual HCFC consumption Article 7 data

Year:	2005	2006	2007	2008	2009	2010	2011	2012	Baseline
HCFC Consumption ODP T according to Article 7 data:	0.00	0.90	0.80	0.80	3.50	0.30	7.63	3.52	14.9

Surveys and site investigations show that the total use for 2009-10 was at least 19 ODP tonnes or more. There are two main reasons for these discrepancies. Firstly the lack of institutional capacity has made it impossible to accurately track the consumption of HCFCs, secondly it was found that considerable volumes of HCFC-141b have been used in pre-blended polyols, which do not need to be reported under Article 7 of the Montreal Protocol. Due to weaknesses in record keeping and the capacity issues encountered by CCOC as well as local trading of chemicals the exact breakdwon of pre-blended and pure HCFC-141b been used is very difficult to asertain.

Given the weaknesses in the monitoring and reporting system, it is assumed that the baseline has never been correctly established. Prior to the approval of this project the institutional capacity of the Government of Azerbaijan is insufficient to undertake the steps necessary to correct Article 7 data reporting, in particular should it relate to the special requirements for a revision of the baseline; the availability of sufficient data to fulfill the baseline revision requirements is in any case unlikely. Since the support requested under this project is mainly determined by sector and individual enterprise data, established with good accuracy during the survey, a revision of Article 7 data does not appear to be the most pressing subject. Consequently, the Government plans to revisit Article 7 data reporting once the institutional capacity for assessing consumption data has

been (re-) established in the country as part of this project. The data reporting for previous years will be revisited by the focal point with high priority in its work, overtaken only by the even higher priority to undertake the necessary steps to establish enforceable import controls necessary for the country's compliance. Once the project is approved, Azerbaijan will correct Article 7 data retrospectively.

The project will lead to a complete phase out of HCFC-141b use in the foam sector and lead to the ban of the import of HCFC-141b, both pure and in pre-blended polyols. The actual use of HCFC in Azerbaijan has been re-assessed by field visits, which identified 10-12 companies which are manufacturing commercial refrigeration equipment, 3 medium sized insulated panel manufacturers and 8-10 other small companies manufacturing rigid polyurethane insulation foam for domestic and commercial refrigeration equipment. There is also a significant but highly dispersed refrigeration service sector with around 60-70 small companies servicing mainly commercial and residential air-conditioners and around 5-7 larger service centres which is associated with international equipment suppliers.

Table 2: HCFC Use by Sector

HCFC-22	MT	ODP T
Commercial refrigeration manufacturing	**47.24**	**2.60**
Service		
Air-conditioning	76	3.97
Commercial & cold stores	60.00	3.30
Fishing	0.85	0.05
Food processing	0.80	0.04
Railway refrigerated trucks	0.53	0.03
Subtotal	**138.18**	**7.39**
Total HCFC-22	**185.42**	**9.99**
HCFC-141b		
Foam manufacture (Using HCFCs bulk as well as imported preblended polyols)	**81.48**	**8.96**
TOTAL	**266.90**	**18.95**

The rerfigeration service demand shown above is based on minimum estimated service demand and excludes consumption data from the oil and gas sector which was not available at the time of the survey. In particular the service demand for residential and commercial air-conditioning could be considerably higher. The minumum case scenario is based on the following analysis for split air-conditioners which are the most common in the country:

No in Baku	Rest of Azer	Total	% R22	Avge Charge	Rating kW	Hours PA	MWh	Energy Factor	T CO2	MT CO2	% Service	MT R-22	ODPT
200,000	200,000	400,000	80%	0.95	1.50	1,288	772,800	0.72	556,416	0.56	20%	76	4.0

However the 20% service demand must be optimistic given the age and condition of much of the equipment.[5]

A revised market review including a variety of stakeholders in the refrigeration and air-conditioning manufacturing and service sectors and the two largest polyurethane foam manufacturers indicates that the consumption of HCFCs rose slightly during the period 2005 to 2009, but appears to be relative flat in the period 2009-2010.

Stakeholders (importers and servicing companies) interviewed for preparation of the PIF, indicate that there was rise in the consumption of HCFC based equipment (primarily air-conditioners) in the period 2005 to 2009, due mainly to increasing urbanization in the large cities and improving living standards, as well as reduction of HCFC equipment costs. The data was also confirmed by available customs information. The trend for HCFC based equipment is expected to be at the same level from 2009-10 due to the increasing number of other air-conditioner systems slowly entering the market.

Based on a consumption of 18.95 ODP tonnes, including the ODP componenet of HCFC-141b in pre-belded polyols (as determined during the project survey), Azerbaijan must phase out 17.06 ODP tonnes by 2015 to achieve the 90% reduction target and a further 1.80 ODP tonnes by 2020 to achieve the 99.5% reduction target

Currently, there are three main barriers to achieving this HCFCs phase out and developing long term strategies to minimize the climate impact of alternative technologies:

- lack of institutional capacity to monitor and control consumption,
- lack of technical and financial capacity to phase out HCFCs in manufacturing and servicing
- lack of stakeholder engagement and commitment.

At this stage the priority of the Government of Azerbaijan is to achieve compliance through a ban of HCFCs, delaying implementation to improve the accuracy of consumption data would increase the risk of non-compliance.

Baseline Project

After the CFC phase out and the previous project, the Government was re-organised. The SCENM was transformed into the Ministry of Ecology and Natural Resources (MENR). The National Department on Hydrometeorology (NDH) was incorporated into the MENR. In 2003, the Climate Change and Ozone Centre (CCOC) was established within the NDH. The head of the CCOC was assigned as a focal point on issues related to the Montreal Protocol.

However there has been no continuity in transition from the NOU to the CCOC and the equipment and systems in place at the CCOC are outdated or obsolete. Staff turnover in the CCOC has also contributed to very poor continuity of process and lack of institutional memory. Previous Ozone Officers have been able only to speak Azeri which limited communication with personnel outside of Azerbaijan. A similar degradation of capacity has occurred in the State Customs Committee (SCC) which had been heavily involved in ozone-related activities at the initial phase of the CFC phase out project. Institutional ties between CCOC and SCC are also in need of substantial strengthening.
Since the CFC phase out programme was completed, the institutional capacity related to the monitoring and control of ODS has therefore been significantly depleted. Whilst the legislative framework developed to control CFCs is technically still in place, the implementation of control processes at the working level is practically ineffective. At present the legislation covering the import of HCFCs and HCFCs based equipment is not supported by any robust monitoring or control processes. The HCFCs licensing system is theoretically operational, the system is enforceable but at the time of preparing the PIF was was not being enforced due to lack of resources.

[5] While the number of households in AZB is not exactly known, there are approximately 3 million male (and females) above 25 in AZB, suggesting a similar number of households (CIA factb). According to the same source, the highest earning 10 per cent of the households earn 6.75 times the average income, which would lead to a household income of around US $43,000 for approximately 300,000 households, which is a considerable income placing these households clearly into the affluent middle class. In combination with the multiple and commercial use of even small air conditioners, this supports strongly the estimate of 400,000 units of the domestic air conditioner size. Due to price and market availability, an estimate of only 80% of the units being HCFC is rather conservative.

Anecdotal evidence also suggests that it is likely that there is significant movement of unauthorized goods and illegal trade, a situation exacerbated by the prevalence of disposable cans for the distribution of refrigerants including HCFC-22. The use of HCFC-141b in imported pre-blended polyol has not been properly recorded as there has been no effective monitoring or control of the import and distribution of pre-blended HCFC-141b-polyol systems.

The Government of Azerbaijan recognizes the importance of compliance with the Montreal Protocol and is taking action to rectify the diminution of capacity of the CCOC. Since 2010 the Ministry of Ecology and Natural Resources (MENR) has been monitoring the capacity of the CCOC and the institutional requirements for achieving HCFC phase out. In the meantime, the government has decided to guarantee the baseline funding of the CCOC for 5 national staff members. The CCOC is in the process of reconciling all ODS data, records and institutional understanding into a single national database. The CCOC is already actively investigating the alleged illegal imports of HCFCs. The CCOC has established contact with the biggest HCFC users with a view to developing phase out plans. The CCOC staff is now English speaking and has undergone basic induction on the modalities of multilateral agreements. A member of the CCOC has been assigned to liaise with other Government departments, to establish the scope of activity required to bring the regulatory framework in line with what is now required to phase out HCFCs at a practical level.

The existing licensing system will be updated and re-enforced through cooperation between CCOC and Customs. The Government is committed to enforcing controls on movements of HCFCs, but it requires assistance to provide technical capacity and hands on training for customs and compliances oficcers. This is one of the major objectives of this project. The licensing /quota system applies to HCFC blends as well as refrigeration equipment. A taxation policy is not condsidered feasibile in the short time remaining until 90% phase out is required.

To address issues of capacity of the State Customs Committee a working group has been established and the CCOC is actively engaged with the Customs Authorities to establish their requirements to monitor and control HCFC imports leading to the phase out of HCFCs. A joint CCOC / Customs task force is now in place to establish how to effectively implement control regulations, and the CCOC has commissioned an audit of import and export data and processes to establish what is required to control the import and export of HCFCs including HCFC-141b blended in polyol, and HCFC based equipment. Legislation will included a ban on the use of HCFCs after the conversion process and shall included pre-blended polyols containing ODS.

Co-financing

In addition to the baseline project described above the Government of Azerbaijan is willing to provide funded personnel for the coordination, management and control of HCFC phase out activities. Grant funded personnel are required for the provision of know-how transfer, training and project managers experienced in the HCFC phase out and other environmental issues. The Government of Azerbaijan will finance the payment of all taxes and duties on technological equipment supplied in through the project.

Participating enterprises in the foam manufacturing and RAC manufacturing sectors will co-finance investment sub-projects. In addition to co-financing the supply of equipment required for conversion enterprises will be required to pay for all civil works, ancillary equipment and the provision of utilities for any new installations. The enterprises contacted so far have agreed in principle that the level of co-financing provided through GEF support would be sufficient to provide the incentive and support necessary to initiate phase out. In this way the GEF grant is an essential catalyst in achieving HCFC phase out.The project will be executed taking into account the experience gained during the implementation of institutional and investment components of other recently approved UNIDO / GEF Projects. The local market and institutional conditions will be taken into account in the detailed design of the project and work breakdown. A co-financing table is presented below:

Table 3: Co-financing by project components

Type	Non-investment component	Investment component	Total in US $
Amount in US $	624,900	5,925,100	6,550,000

The remaining barriers

a) Technical Capacity

Azerbaijan requires urgent support in the development and implementation of regulatory and technical actions to reduce HCFC consumption. Assessment of current institutional and technical capacity shows that although the baseline level of technology in use in the manufacturing and service sectors is relatively low, external support is required as there is no local technical capacity. This includes technical know-how regarding conversion of manufacturing facilities and implementation of best practice refrigeration servicing required to minimise leakage and reduce service intervals.

b) Stakeholder Engagement

Overall stakeholder engagement is low, partly driven by very competitive economic conditions in which investment in new technology is seen as commercially unviable and partly due to lack of communications from Government and industry stakeholders to users and consumers.It is clear that the national strategy will have to include an element of communication and engagement in order to gain the approval and commitment of stakeholders who are currently unaware of or reluctant to accept the need for HCFC-phase out.

c) Building on Previous and Ongoing Activities and Establishing Collaborative Links

In developing this project UNIDO has reviewed the available documentation relating to previous and ongoing projects in Azerbaijan and the region. The lessons learned from previous activities as detailed in the 2004 Mid-Term Evaluation on the old Institutional Strengthening project and in the 2010 GEF Evaluation office overall ODS Impact study. These documents in particular show the extent of work which was carried out in Azerbaijan and importantly what worked well and what did not.

It is clear that the previous project has achieved good impact but has suffered from poor post-project sustainability; a key objective of this project will therefore be to look at how to prevent that reoccurring. A clear theme from the lessons learned is the need to identify all the relevant stakeholders and find ways to communicate and engage with them. Again the documents referred to above contain very useful references and lists of awareness activities that worked in the past.

Given the clear need to engage and communicate widely the project will develop a formal link with UNEP OzonAction CAP-based Eastern Europe and Central Asian Network (ECA), to which Azerbaijan has been an observer, and through which South-South cooperation, iPic regional cooperation on illegal trade and other experiences can be made.

A.5. Incremental /Additional cost reasoning: describe the incremental (GEF Trust Fund/NPIF) or additional (LDCF/SCCF) activities requested for GEF/LDCF/SCCF/NPIF financing and the associated global environmental benefits (GEF Trust Fund) or associated adaptation benefits (LDCF/SCCF) to be delivered by the project:

The Republic of Azerbaijan requires further incremental technical and financial assistance from the GEF to strengthen its institutional capacity and gain practical experience in sustainable HCFCs phase out. The project also aims to improve the effectiveness of communication, control and registration of users and to define better operating practices in HCFC consuming sectors.

The project is designed to phase out a total of at least 18.95 ODP tonnes, but the objective of the government is total phase out of all HCFCs. Assistance is essential to motivate and ensure the required stable co-financing by different national investors.The standard approach (based on past guidance of the Multilateral Fund) for the conversion of manufacturing has been to select the least costly technically acceptable technology to phase out ODS. However more recently it has been internationally recognized that this can lead to phase out projects that do not necessarily provide the optimum overall climate benefit, when taking into account the energy efficiency of the equipment that replaces HCFC in conjunction with the Global Warming potential of the alternative substance. It has to be recogmized that there is an additional cost in making, e.g., a commercial refrigeration system more energy efficient over and above the cost of replacing HCFC-22. There is widespread agreement that the cost of a second conversion of a facility to improve energy efficiency after a conversion from ODS would

be higher than the incremental cost of making the changes related to energy efficiency at the same time as the HCFCs phase out.

The concept of this project is to phase out HCFC-22 and HCFC-141b and at the same time promote the use of low GWP alternatives and in the refrigeration sector. Wherever possible, accepting that non=HFC solutions are not available for all applications.

Without the GEF's support the demonstration and adoption of these technologies would not be feasible and therefore, the development of this project would not be possible.

Project Component 1: Build Institutional Capacity

Sub-component 1(a) will address development of legislative and policy measures needed to strengthen HCFCs controls and phase out. It will include development of a National HCFCs Phase out Strategy and National Action Plan and substantial support for the creation of the documents necessary for updating of ODS legislation, regulations, licensing and reporting systems, economic instruments, qualification requirements for technicians and training requirements for customs officers.

Sub-component 1(b) will address building institutional capacity through institutional strengthening and capacity building tools. It will address the Government and stakeholder engagement and commitment, without which progress in implementing of Montreal Protocol obligations will be at risk. In particular this component will facilitate:

- Adoption of strengthened legislation providing the authority to MENR to control ODS
- A new monitoring and reporting system
- Provision of HCFCs identifiers to the customs posts (the project proposes to purchase about 20 units to equip all customs points authorized to pass the ODS)
- Accreditation and training scheme for service technicians
- Development and promulgation of refrigeration best practice code/guidelines for leak minimization
- Best Practice training for RAC sector (train the trainers) to minimize leakage and improve service practice
- Development of national database for skilled technicians
- Monitoring and promotion of recovery and recycling activities
- Training to substantially upgrade technician skill level to handle next generation low GWP refrigerant in equipment design, assembly, maintenance and service

It is anticipated that the majority of small companies can easily cease the use of HCFC-141b in pre blended polyol given appropriate guidance and support. Companies who are trading illegally should be more easily identified when much more robust monitoring is in place, and in these situations a strengthened CCOC and State expertise department of the Ministry of Ecology and Natural Resources will be able to take appropriate punitive action".

Project Component 2: Conversion of manufacturing process involving HCFC-22 and HCFC-141b and assistance to the RAC service sector

Rationale

The rationale for the conversion of manufacturing facilities and the support to the service sector is to achieve phase out wherever possible using low GWP alternatives to HCFC-22 and HCFC-141b and to promote enhanced energy efficiency through improved equipment design and better service and maintenance practice.It is not possible to prevent the private sector from adopting HFC solutions through self-funded conversion, however the capacity building, awareness and stakeholder engagement activities in this project will aim to promote non-HFC solutions. The technologies funded by investment could include Cyclopentane, Methyl Formate for foam manufacturing and R-290, Ammonia and Carbon Dioxide for refrigeration and air-conditioning manufacturing. Some training for technicians in good servcie practice will be included, but budgetery constraints preclude the dvelopment of training and qualifications in the use of flammable refrigerant alternatives.

In addition to these technologies technical assistance will be made available to help users evaluate the potential uses of latest generation HFO blowing agents and refrigerants.In the activities within the project which focus on supporting the refrigeration service sector in terms of emissions reductions and recovery and recycling will however be aimed at the sector

as a whole. It is extremely important that good maintenance and leak tightness standards are improved across the sector in the case of existing HCFCs and often independently introduced HCFCs due to high GWPs involved.

Manufacturing sector

The project is designed to phase out all consumption of HCFCs in manufacturing in the Republic of Azerbaijan in 36 months time. This requires immediate actions in the institutional and regulatory fields, and formalization of national commitments in the National Action Plan that will be prepared and approved within an accelerated time period.

Foam manufacturing

Azerbaijan has decided to aim for a total phase-out of HCFC 141b in the foam sector before the end of 2015, the foam sector is currently composed of 12-14 small and medium sized enterprises, including large manufacturies (almost all SMEs at the national level) with the following production.

HCFC-141b is mostly pre-blended in polyols although few large manufacturers operate three component systems in the production of commercial refrigeration equipment and insulations panels.

Baseline Data for Foam Manufacturing Enterprises

Name, location and local ownership %	A&K) Алиев и Компания Ул. M. Gashgaja, 46 Baku, Azerbaijan	Arktika Plus MMC 35, S. Rahman street, Baku, Azerbaijan	Fayton Ltd 1A/2 y. Safarov str., AZ1025, Baku, Azerbaijan	TITAN group H. Əlıyev prosp., Bakı, AZ1000	Emil-Ko Ltd 20, Mugtadir street, Quba, Azerbaijan	Frigo Market Ltd 85A, S. Bahlulzade street, Baku, Azerbaijan
Ownership	100% private	100% private	100% private	100% private	100% private	
Year of establishment	1993	2000	1998	1998	1995	1999
List of main equipment used for manufacturing PU foam Year of installation of the production lines using HCFCs and date of installation of the major pieces of equipment (e.g., foam dispensers)	1995 Насос - Миксер High pressure polyurethane machine	Alkomak High pressure polyurethane machine	CANON Model: a THREE PART ASYS 100 Polyurethane machine Year: 1992 EURO POLIURETAN Model: H300 Polyurethane machine Year: 2004 GAMA Yer:2005	Model: G-140 h Polyurethane sprey Year: 2009 VEB PLASTTECHNIK Model: GH-100 Polyurethane machine Year: 1980 VEB PLASTTECHMIK Model: GN-25-12 Polyurethane machine Year: 1989 BCM Model: 20725887 Polyurethane machine	Ekolmak Model: Qplus2000 High pressure polyurethane machine	Ekolmak Model: Qplus1500 High pressure polyurethane machine
Average consumption of HCFC- 141b: 2007-2009	2007 – 85 tons 2008 – 88 tons 2009 – 90 tons	2007 – 20 tons 2008 – 30 tons 2009 – 38 tons	2007-55 tons 2008-115 tons 2009-118 tons	2007-65 tons 2008-125 tons 2009-102 tons	2007 – 30 tons 2008 – 30 tons 2009 – 40 tons	2007 – 20 tons 2008 – 25 tons 2009 – 30 tons

The project will support the conversion of foam manufacturers through the provision of production equipment necessary to adopt alternative non-HCFC with low GWP blowing agents. The primary activities will be directed initial towards the conversion of the largest foam and refrigeration production facilities in order to maximize the immediate phase out achieved by the project.

Companies with higher use of HCFC-141b will be converted to use pentane for foam blowing. For small and medium sized companies, methyl Formate is being considered either using Ecomate (pure methyl formate, MF) with associated safety equipment or in blended systems using MF to reduce flammability issues.

All companies are currently using HCFC-141b production lines will be converted to low GWP technology solutions as

indicated above. The project includes activities to remove and destroy the existing foaming equipment and install the new equipment after the preparation of a safety study for the use of flammable blowing agents. In addition to equipment, the project will also provide training, trials and testing of the product as well as safety analysis after the finishing of the installation.

The project also allows for support to a medium scale systems house to provide appropriate small-scale systems including methyl formate for users who are unable to implement 3 component conversions due to the high cost of implementing cyclopentane technology. It is envisaged that a number of small and medium scale enterprises will need to adopt methyl formate technology to run in existing low pressure foaming machines.

The strategy for phase out of HCFC-141b in foam manufacturing will include three elements:

a) Conversion of several larger foam manufacturing companies to cyclopentane technology
b) Conversion of 2 eligible systems houses to allow them to supply suitable non-HCFC polyol systems across the range of applications within the customer base.
c) Establishing a conversion support fund through which eligible downstream foam enterprises would access the funds and technical assistance required to modify their manufacturing equipment and processes.

The conversion costs presented in the annexes below are typical costs based on experience with a large number of previous and ongoing projects. In line with GEF modality, enterprises wishing to access project funding will be required to contribute co-financing.

Equipment production description continuous sandwich panel lines:

Companies are equipped with a continuous sandwich panel production line mainly producing metal to metal panels.
The lines are fully equipped from the un-coilers and profiling of the metal or aluminum sheets to foaming, cutting and curing.

The production cycle is as follows:
- Warehouse and storage for metal coils
- Two un-coilers for the top and bottom sheet
- Corona treatment
- Two profiling lines top and bottom, different roof and wall profiles
- Pre-heating oven
- Foam plate and foaming machine
- Double belt conveyor with electrical heating
- Cutter, circular saw
- Conveyor
- Pneumatic crane for stacking of the panels
- Curing area

The raw material are supplied in drums and charged inside tanks placed in a separate room. For the conversion, the first assessment showed that for all the companies, a replacement of the foaming machines is required due to the age of the equipment and electronics.

Continuous sandwich panel project incremental capital costs:

The costs are collected in the table in Annex E and for the continuous production line involve:
- Replacement of the foaming machine metering units Polyol, Isocyanate, two additives and Pentane as the actual ones are not suitable for use with Pentane as blowing agent. They cannot be modified with regard to output (the pumps are also not anymore available on the market for spare parts and assurance that the system will work) for the purpose of pentane as blowing agent.
- A specific temperature control system is required for the polyol and Isocyanate, this includes heat exchangers, piping, a separate circulation pump and temperature control units.
- New Worktanks for the additives as these are also flammable and the existing tanks certification is not according to the standards of today.

- Pentane Polyol and additives dynamic mixer ATEX certified, the actual one is not.
- Replacement electrical cabinet of the foaming machine suitable for the use with flammable blowing agents including zener barriers, software designed for the purpose.
- Modification of the manipulator by replacement of electrical parts and controls
- Replacement of mixing head suitable for pentane
- Nitrogen blanketing
- Tank storage equipment for a pentane aboveground tank which is provided by the beneficiary including electrical control cabinet.
- Pentane drums unloading equipment for charging the storage tank
- Replacement of the electrical heating of the double conveyor
- Replacement of the cutter, at the moment circular saw, with a belt cutter to avoid the formation of sparks.

Safety system with:
- Control board
- Gas sensors HP machine 3x, 2 sensors for foaming area, 2 sensors for the pentane tank storage, 2 sensors for pentane drums unloading, 6 sensors for the double conveyor, 2 sensors for the cutting room and 4 sensors for the curing area of finished panels.
- Ventilation for the foaming equipment, conveyor, drum unloading area and cutting area.
- Fire protection in the foaming machine room, sprinkler system
- Lightning protection of the storage room pentane drums
- Antistatic floor around the conveyor and foaming machine room
- Backup electric generator for power supply to the safety system and ventilators
- The press electrical board as well as the position sensors of the hydraulic pistons need to be replaced with a suitable one for this ex-proof zone.

Equipment production description discontinuous sandwich panel lines / Commercial Refrigeration:

The companies have several foaming machines and mixing heads and use different types of presses. For the calculation of the ICC we consider the replacement of the foaming machines with 2 mixing heads and ancillary equipment.
The costs are collected in the table in Annex H and for the discontinuous production line involve:
- 150 kg/h pentane high pressure foaming machine
- Pentane tank
- Work tanks for polyol and Iso 250 ltr
- Charging pumps for polyol/ pentane mixture and iso
- 2 x mixing head 24 mm
- Nitrogen blanketing
- Pre-mix unit for mixing polyol and pentane (pentane will be provided from the common tank storage for both productions)
- Buffer tank Polyol/Pentane 250 ltr
- Piping from premix unit to high pressure foaming machine
- Chiller

The machine will be placed in the room where the actual machine is located and the pre-mix unit inside the room where the drums are stored. The safety system will be separate from the continuous line production due to the distance between the lines. Safety system with:
- Control board
- Gas sensors HP machine 3x, 2 sensors for the premix unit, 4 sensors for each press (3x4).
- Ventilation for the foaming equipment, each press, premix unit.
- Fire protection in the foaming machine room and premix unit, sprinkler system
- Antistatic floor around the presses, premix unit and foaming machine
- Backup electric generator for power supply to the safety system and ventilators
- Modification of the heating system of the presses by replacement of the electrical cabinet for controlling the heaters with a cabinet certified for the use. As well as interface connection with the foaming machine.

The beneficiary will provide:
- Pentane tank for feeding both production lines

- Pentane piping from the tank storage to the continuous line metering unit and storage room where the premix unit will be placed.
- Room for the pentane metering unit outside the actual metering unit room of the continuous line machine
- Re-use of the actual room for the high pressure foaming machine for the discontinuous line
- Re-use of the Isocyanate piping to the high pressure machine
- space, enclosure in the actual storage room of raw materials for the pre-mix unit (polyol/pentane) for the discontinuous line (piping from the premix unit to the foaming machine will be provided by the equipment supplier)

All these activities will be closely agreed on with the equipment supplier.

Equipment production description rigid block

Description of plant and manufacturing process.

Block Making

Polyol resin blends are prepared according to the issued formulation sheet. After mixing each blend is tested and compared to the standard for rise profile, cure time and sample shape. When the blend is released it is decanted and weighed into clean empty drums and cans. If the blend is for block making it remains in the blending tank and is weighed directly into the resin vessel in preparation for mixing.

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The block mould is opened flat and lined with polyethylene. The mould is then assembled on 3 sides. The required amount of MDI is weighed out into the mixing vessel and placed onto the mixer platform. The required amount of resin blend is weighed out and poured into the mixing vessel. The mixer is lowered into the mixing vessel. The MDI and resin blend are thoroughly mixed together for 45seconds.

The mix is quickly poured into the open end of the mould and the mould lid is lowered and the open end of the mould is closed. The block is removed at full rise.Blocks are allowed to mature for at least 3 days before cutting into sheets and pipe insulation shells.

Several attempts at replacing 141-b with methyl formate have resulted in gross shrinkage.
Many trials using pentane have all resulted in very good results. The trials involved dissolving pentane in the MDI at a level of 5 – 6%. The block making procedure was basically the same as outlined above, the difference being that the blowing agent is in the MDI. Pre dissolving pentane into MDI is the preferred alternative for block making.

Modifications Required For Conversion.
Equipment modifications are essentially those required to safely handle, store and process flammable liquids.

Area /Modifications Required:

Handling and storage; Off-loading and transfer equipment; Secure storage area for either drums storage or tanks, with bund, ventilation, extraction and pentane gas sensors; Nitrogen blanketing; Temperature control.

Transfer and blending: Transfer equipment; Metering/measuring equipment; Mixing equipment; Ventilation, extraction; Pentane gas sensors; Block making area; Block mould; Ventilation, extraction; Pentane gas sensors; Power outage back-up.

Formulation modifications need to be finalised. Small scale sample preparation equipment and foam testing equipment will be required to quickly evaluate formulation changes. This is would include, scales, fume cupboard, bench mixers, physical property testing equipment and insulation value testing equipment.

Technical assistance for SMEs in the foam sector

For the selected companies a technical assistance program will be initiated focusing on the aspects of:

- Available technologies in foams using low GWP solutions
- Sector alternative options
- Group training of sector related companies
- Back to back discussion with traders, foam associations and suppliers
- Understanding of standards and solution finding of barriers
- Discussions with construction sector.

The common understanding must be established that foams are not only determinant for insulation but also other properties. The companies will be trained in new technologies and provided support in the selection of alternative options. These trainings will be supported by suppliers and traders of raw materials as well as their commitment requested for the introduction of low GWP raw materials. One of the barriers are often exsisting standards and these will need modification wherever required. The construction sector is hereby often a barrier when standards in place prevent the use of other blowing agents.

For these activities, UNIDO together with the CCOC will organize workshops in the main cities and establish a dedicated person in the PMU. These workshops to be organized twice yearly will be dedicated to all stakeholders.

Equipment production description System house

The system houses have several blenders in which a variety of systems and batch sizes are produced. Modificattions are needed to allow the safe use and testing of flammable components and also to ensure that an economic batch size can be produced. In the majority of existing installations systems are not suitable for handling flammable liquids and significant modifications will be required. The project incremental capital costs used in this project are based on the MLF guidelines 55/47, and a budget of US$ 370,000 per systems house has been assumed. The main modifications required are :

Flammable agent bulk storage and handling system
Closed-system premixing station (two blenders)
Pumps
Product piping
Nitrogen dispenser
Other safety adaptations
Test equipment Pycnometer, refractometer, k-factor tester and other required equipment.

Minimum safety requirements:
- Safety cabinet
- 6 to 10 sensors (for flammable substance)
- 2 to 4 sensors for HSE (methyl formate TWA threshold is lower than for 141b)
- 2 ventilators explosion proof
- Ducting
- Grounding
- Adaptation of stirrer, pump, motors, sensors.

Tanks for flammable liquids are generally installed underground like pentane tanks. These are rated at less than 0.5 Bar. In this case the price includes the whole pressure rated storage system and therefore is in line with the budget template.

The two blenders need to be specially modified and pressure rated at 10 bar. The price given takes into account that the blenders have to be made explosion proof. There needs to be a system for charging the drums, also with ventilation and explosion proof, this is completely missing from the template.

RAC Manufacturing Sector

Whilst some RAC manufacturers already have the capability of manufacturing non-HCFC equipment, some enterprises have not yet addressed the issue. The volume of HCFC-22 consumed by these enterprises is estimated to be around 60% of the total RAC manufacturing sector. These enterprises will incur conversion costs when the manufacturing ban comes into place. Please see a table in Annex E for an overview on costs.

The project strategy is to convert refrigeration and air-conditioning manufacturing to non-HFC low-GWP alternatives wherever technically and economically feasible. These could include hydrocarbon (R-290), ammonia, CO_2 and new HFO refrigerants. However, where charge volumes preclude the use of hydrocarbons and other non-HFC refrigerants are not technically or economically viable, HFCs will be adopted

The project will specifically aim to convert the production of a number of commercial refrigeration and air-conditioning manufacturers from HCFC-22 to R-290. This will include the provision of new equipment for the production (charging) of equipment as well the necessary hydrocarbon storage, handling and safety equipment.

In case the manufacturing industry converts (part or all of their production) to flammable alternatives such as, inter alia, HC technology for refrigeration, a number of pre-conditions would have to be fulfilled to allow for the sustained introduction of the technology into the market, inter alia:

a) The availability of national regulation of standards covering production, storage, transport and use of refrigeration equipment for commercial refrigeration purposes using flammable alternatives, such as HCs, and enforcement of such regulation
b) Standards for the servicing of flammable alternatives, such as HC-based equipment, in the field
c) Training of refrigeration technicians in flammable alternatives, such as HC technology, to ensure that the equipment in the field is always adequately serviced; (this is outside the scope of the current project, due to budget constraints)
d) A targeted labelling policy to ensure that all flammable alternatives, such as HC-based equipment, is clearly identified by users and technicians

Where HFC conversion as the only suitable solution to HCFC phase out, that is already availible and can be implemented, the emphasis will be on the provision of technology tranfer and technical assistance in the redesign and modification of existing equipment and the associated modifications to manufacturing equipment and processes in line with previous MLF and GEF conversion projects. The urgency of the intervention in Azerbaijan will however require readily available and easy to implement technology in order to meet compliance with the Montreal Protocol schedule.

Refrigeration Service Sector

According to information collected during the survey from importers, wholesalers distributors and service companies the demand for HCFC-22 in the service sector grew from 2005 to 2009 due to the increasing installed capacity of refrigeration and air-conditioners, particularly in the larger cities. The demand will level off as and when newer designs of non-HCFC equipment become more frequently installed. However recent observations do not indicate a large take up as yet. In surveys of several districts of Baku, the principal city of Azerbaijan, 98% of all air-conditioners were charged with HCFC-22.

Significant number of HCFCs consumers in the service and installation sectors operates in the grey economy, without registration of legal entities, and without licenses. Many purchase HCFC-22 in disposable cylinders of unknown origin at rural and urban markets.

Based on the actual HCFCs demand for serving, Azerbaijan faces very significant challenges in fulfilling its phase out obligations in 2015 and 2020. A major reduction in service demand is an essential component of the national phase out strategy.

The training program conducted under the CFC phase out project proved to be successful in terms of the number of trainees, the geographical coverage and the content of the curricula. However training was not continued after the Project finished in 2002. Since then, a great number of new technicians have entered the refrigeration servicing business that need to be trained on good servicing practices and non-ODS alternatives. Some large refrigeration companies organize team training involving suppliers of new equipment. SMEs are in a disadvantage and the Government therfore must address this issue.

However, the CCOC does not have the capacity to organize the training on a continuing basis. This project must therefore address this issue.

Equipment owners must be encouraged to ensure HCFC based equipment is made as "leak free" as possible, converted to an alternative refrigerant or replaced with suitable non-ODS based equipment in an appropriate timescale. Emission reduction is

not limited to improving leak tightness or recovering refrigerant it is discipline that applies to the entire life-cycle of the product and should be included at the design and installation stages of new products and systems. In many of the new commercial air conditioning installations HCFC-22 is specified as the refrigerant by consultants. HCFC-22 is often chosen because of price, convenience and a good availability of equipment. A reduction in the usage of HCFC- 22 in this sector would require:

1. Improved communications with industry role players by a wide distribution of informative literature and guide lines towards HCFC free refrigeration and air conditioning. All such communications should also promote the need for a reduction of carbon emissions as of equal importance.
2. Country wide workshops with specific sectors of the RAC industry to encourage two way communications on issues relating to the phase out of HCFCs and the reduction of carbon emissions. A particular objective of these sessions would be to encourage consultants not to specify HCFC-22 as a refrigerant and support them with information on alternatives and the advantages therein.
3. Government should amend procurement policy to ensure that no new installations charged with HCFC-22 will be installed in any Government owned buildings as well as establishing standards, regulations, codes of good practices and training/certification of technicians to allow for the introduction of HC technology (standard setting and training would have to be completed well in advance of the introduction of HC-based equipment)
4. A service sector thoroughly trained in alternatives; in case of the use of flammable low GWP alternatives, this training would have to be extensive and market entry barriers against untrained technicians would need to be designed and enacted.

Whilst this project aims to put in place the basic institutional capacity and conversion activities required to achieve compliance with the Montreal Protocol targets, the funding available is insufficient to implement a full scale technician training programme to address the medium and longer term issues of technical capacity in the refrigeration service sector. This would require a specific and extensive training programme designed for the service sector to upgrade skills and knowledge and tools/equipment on the uses, servicing and safe handling of hydrocarbon and other flammable refrigerants. Adoption of hydrocarbon technology will therefore be limited to companies with appropriately skilled service technicians and engineers.

Should additional funding become available a suitable national or regional programme could be developed to build sector capacity to address natural and climate friendly alternatives.

Given the known illegal practices relating to refrigerants, the project will also contain activities to develop awareness for technicians of illegal mislabelled refrigerant. It will also develop awareness at the consumer level (private and commercial) of the negative economic and environmental impact of selecting non-sustainable HCFC units with a limited future availability of HCFC for service, compared to the benefits of non-ODS energy efficient equipment.

Recovery, Recycling and Reclamation

Significant volumes of HCFC-22 are commissioned and de-commissioned on a regular basis. Due to lack of technical awareness and/or storage and handling facilities large volumes are vented as they are considered unusable. Similarly small and medium service enterprises and technicians working in the informal centre assume there is no value in recovered refrigerant due to the quantity and/or quality recovered.

As part of the policy measures highlighted above recovery, recycling and reclaim of refrigerants will be made mandatory, it is therefore necessary to provide an adequate recovery, collection and reclaim infrastructure to allow technicians and end users to comply with regulations and codes of practice.

Information from previous UNDP project: The timetable of the R&R project reflected the requirement to contribute to the complete CFC phase out by January 2000. According to the timetable, the recovery and recycling operations should start in six months time from the date of the GEF approval i.e in July-August 1999. The total project duration was determined to be 18 months and planned for closure in June 2000. The project experienced delays and was completed in June 2001 by 12 months later than scheduled.

UNOPS procurement office formulated the required specifications for R&R and servicing equipment, organized the international bidding and delivered the equipment. The list of equipment for refrigerant recovery operations included 300 sets

of portable recovery machines and recovery bags together with refrigerant cylinders and recovery equipment kits, including manifolds, hoses, tools and accessories, electronic leak detectors and weighing scales. The UNOPS procurement office acquired 50 sets of refrigerant recycling and servicing equipment for recycling centres, including automatic single cycle recycling machines together with 10 machines designed for servicing mobile air-conditioners, 50 portable recovery machines and recovery bags, refrigerant cylinders, vacuum pumps for handling storage cylinders, refrigerant identifiers and recovery kits, tools and accessories. Spare parts were included in the delivery package.

The NOU selected potential beneficiaries among registered servicing workshops and refrigerant distributors on the basis of their pattern and quantities of CFC refrigerants used in their servicing operations. There were a number of small unregistered servicing enterprises and individual entrepreneurs with insignificant CFC consumption that had been left out from the NOU consideration. The database of potential beneficiaries was compiled by the NOU. The UNDP consultant arrived to Baku and conducted training workshops in the training centre established in the Baku Technical University. The training curriculum included the following topics: the theory of Ozone Layer and impact of CFC emissions; the production and supply trends of ODS refrigerants (CFC-11, CFC-12, R-502, HCFC-22); proper and safe handling of CFC refrigerant; Recovery, Recycling and Reclamation of ODS; good ODS containment practices in servicing the refrigeration equipment (refrigerant recovery procedures, methods of evacuation of systems before recharging, prevention and early detection of leaks). Hands on training followed demonstrating the work of the supplied recovery and recycling equipment in servicing of different refrigeration systems. Later, the national consultant conducted a series of one day workshops in different geographical locations of the country. All the participants received translated recovery and recycling manual. Upon completion of the training course, the trainees have been tested and provided with certificates. According to the project document, the targeted number of trainees was 200. The UNDP PIR does not provide detailed information on the number of training courses and the number of certified technicians.

The distribution of the recovery and recycling equipment was performed by the NOU. Servicing workshops dealing with commercial and domestic refrigeration equipment were in the focus of NOU attention. The placement of 300 sets of recovery machines and associated servicing kits have been determined by evaluating the most effective locations with regard to their access to the largest and consistent volumes of CFC-12. The ownership of recovery and recycling equipment was maintained with the Government. According to agreements between NOU and servicing enterprises, the recovery and recycling equipment was leased to the owners on a non-commercial basis. The enterprises were responsible for keeping records and reporting data to the NOU on quantities of refrigerants recovered and recycled and the efficiency of the equipment. It was envisaged that with time the locations of R&R equipment might be changed and the machines would then be relocated to facilities with greater needs. There are no records available about the termination of the agreement and/or relocation of the R&R equipment.

Altogether, 32 recycling centres were established. Several recycling centres were situated within the principle refrigerant distributors with refrigerant handling experience. Fifty recovery units have been held in reserve in the recycling centres, to be made available for recovery operations by workshops and firms not included in the primary recovery network and for replacement while the units were sent for repair and maintenance. No information is available about the distribution of these 50 recovery units.

About 10,000 vehicles were identified as equipped with CFC-12 based MAC systems. The network of MAC servicing workshops exists in the country. Most of these workshops are located in the capital Baku. In average, each car MAC system contains about 1 kg of refrigerant. There was a good potential to reduce CFC emissions in this sector by providing recycling equipment to servicing workshops. When distributing 10 recycling machines designed for servicing MAC systems, special attention was given to those workshops that had a record of sufficient number of MAC repair jobs.

Promotion of Low GWP Refrigerants

Large R-22 installations are still being procured and that these add to the service demand for the rest of the life of the equipment. The Government is committed to imposing bans on the import of HCFC-22 based equipment and the installation of new systems containing HCFC-22. It is anticipated that there will be significant resistance to these regulations amongst the refrigeration sector, partially due to the perceived increase in costs of non-HCFC systems and partly due to the lack of awareness of alternatives systems.

R-290, CO2 and ammonia could provide a range of low GWP solutions suitable for a significant number of applications

in Azerbaijan, in addition to this new generation refrigerants (HFO) are currently being commercialised and could be trialed relatively easily as part of the HPMP activities.

The Government believes it is important to engage in the promotion of alternatives at the earliest stage and in tandem with the awareness raising related to the banning of HCFC-22. Without some activity to communicate and demonstrate the availability and suitability of low GWP solutions the ban will necessarily increase the consumption of HFCs. A small budget will be made available to support activities which raise awareness and build engagement in the refrigeration sector. Stakeholders feel the impact of this activity would come from the signal it sent to the market and the commitments that could be gained from private sector users, particularly in the commercial refrigeration sub-sector.

Demonstration projects such as the conversion of supermarket refrigeration systems to natural refrigerant carbon dioxide (CO2) and ammonia (NH3) cascade systems and full CO2 systems could be used to gain commitments from larger users and chains.

Giving manufacturer's access to this technology has the potential to reduce the use and emissions of HCFC in Azerbaijan, through this project and through replication at other manufacturers and dissemination of information to end users. Similarly the use of small scale ammonia systems is now becoming more widespread and given Azerbaijan's relatively advanced capabilities in the engineering and safety management of medium and large scale systems, there is no reason why ammonia could not be use in more applications.

The use of hydrocarbons is limited in Azerbaijan at the present time due to domestic AC, however there is some scope for using more natural refrigerants in this area, subject to the appropriate training and standards being in place. For example AC replacement of only 40.000 units would lead to 76Mt phase-out on a 10 years life cycle. A detailed project specification would be compiled on approval of the project and after an initial survey of suitable demonstration sites. A summary of investment costs are provided in Annex E.

A.6 Risks, including climate change, potential social and environmental risks that might prevent the project objectives from being achieved, and measures that address these risks:

Table 5: List of risks

Risk	Level	Mitigation Measures
The change of the Parliamentary schedule	Low	Goodwill and commitment of the Government to support and prioritize any legislation that has been generated by this project.
Lack of interest/cooperation from companies and difficulties in adoption of new technology at the local market	Medium	Support will be provided by the Government and suppliers through public awareness and communication, to introduce alternative technologies available for HCFCs and raise more interest by the companies. Under the guidance and coordination of PMO the international expert and suppliers will actively participate in awareness and providing additional information on new technologies.
Risk of job losses for conversion projects due to economic changes	Low	Safety net (government subsidy) provided to cover job losses.
Implementation delays cause non-compliance beyond 2010, 2015 (90%) total phase out (99,5%) by 2020	Low	Goodwill and commitment of the Government to support and prioritize any legislation that has been generated by this project.

Customs is not capable to monitor and control	Low	Goodwill and commitment of the targeted sector to respect the legislation.
Non-sustainability of HCFC phase-out after project funds are disbursed	Low	Focus on establishing mechanisms to self-sustain the activities required for the phase-out, such as integrating best practice training for customs officers and technicians into the curriculum of professional training institutes; establishing a self-sustained technicians' certification scheme supported by regulation; introducing commercial mechanisms for refrigerant recovery, recycling and reclamation; adopting regulations and standards to allow the introduction and safe operation of low-GWP (hydrocarbon, HC) technologies; adopting regulations banning import of HCFCs (including HCFC-141b contained in pre-blended polyols and pure, or HCFC-based equipment) and new manufacturing capacity using HCFCs; establishing a monitoring mechanism for converted enterprises; and strengthening the institutions in charge for enforcing these controls.

A.7. Coordination with other relevant GEF financed initiatives:

The coordination with other GEF agencies as well as with the CEIT is foreseen in the frame of the preparation of the GEF/WB/UNDP Regional HCFC Phase out Programme. The active participation in the work of Regional Ozone Network in Europe & Central Asia (ECA) is strongly encouraged by the project.

UNIDO has already implemented over 40 ODS projects and achieved phased-out of over 4800 ODP MT in EUR region and therefore, its presence and valuable experience in this area, should be considered as an advantage (recent example is the ongoing project in the Russian Federation). Moreover, Montreal Protocol Branch is also implementing ODS phase-out project in Turkey, Iran, etc, therefore, a consistent, cost-efficient coordination of phase-out activities can be maintained.

Since the Montreal Protocol Branch has over 20 years experience in phasing out of ozone depleting substances on global level, all lessons learnt and best available technologies were used in designing this project. Some relevant lessons learnt are provided below:

Good communication and engagement of all stakeholders is extremely important and should include manufacturers, suppliers, installers and the service community as well as consumer facing agents and systems designers;

It is important to allow counterpart companies access to information and expertise in all technology options to allow them to make informed decisions about phase out;

In addition, it is also important to have a medium and long term plan for the activities in the service sector where it can take significant time to update long standing practices.

Based on experience and lessons learned, from previous projects, this project includes a standard range of activities in four main areas which are essential to achieve HCFC phase out:

1. Institutional
   - Legislative and Policy Measures Needed to Strengthen HCFCs Control and Phase out
   - Institutional Capacity building
   - Communications, awarness and stakeholder engagement
   - ODS Destruction stratagy
2. Foam Manufacturing
   - Investment

- Technical assistance

3. RAC Manufacturing
    - Investment
    - Technical assistance
4. Refrigeration Service
    - Recovery and Recycling
    - Emissions reduction – good practice training
    - Low GWP demonstrations

This project will also take into account the experience gained during the implementation of institutional and investment components of the UNIDO / GEF Project "Phase out of HCFCs and promotion of HCFCs Free Energy Efficient Refrigeration and Air-conditioning Systems in the Russian Through Technology Transfer. Phase I – 90% HCFCs Reduction" and other GEF projects prepared and / or implemented in the Commonwealth of Independent States by UNIDO, UNEP, UNDP and the World Bank in the sphere of protecting the ozone layer, preventing climate change, introduction of energy-efficient technologies and energy efficiency labelling of the products.

Whilst the PCB on-going project, entitled "Environmentally Sound Management and Disposal of Polychlorinated Biphenyls (PCBS), with total budget of US$ 2,120,000 funded by GEF, is currently being managed by UNIDO is concerned mainly with sound end life management rather than manufacturing conversion as is the case in this project, there are some synergies which will be employed. The PCB project aims to enhance the regulatory infrastructure and strengthen institutions at national and local levels to identify, monitor, manage and treat PCBs in an environmentally sound manner. The institutional capacity building required for this will be similar in nature to the capacity to monitor, manage and control the use of HCFCs and ODS. The options to co-host resources and agencies and share implementation synergies will be explored, since the CCOC is the same counterpart and coordination modalities can be enhanced at the inception phase that should clearly identify scope of cooperation between the two projects. Further, a more detailed scope of cooperation will be prepared as soon as the project is approved. It is planned to adapt according to local conditions the legislative and normative documents on state regulation of the consumption and turnover of HCFCs, for the phased implementation of the European F-gas Regulation as well as to extend the technology of Methyl Formate in the foam sector of Azerbaijan and other.
Reference is also made to the parts on stakeholders engagement and building on previous and on-going activities provided in section A4, page 10.

B. ADDITIONAL INFORMATION NOT ADDRESSED AT PIF STAGE:

B.1 Describe how the stakeholders will be engaged in project implementation.

The project addresses strengthening of institutional capacities for sustainable HCFCs phase out, through development and implementation of training, awareness and capacity-building activities for the key Government ministries (MENR, MIE) and departments, legislators, decision-makers and other institutional stakeholders. Special attention will be given to the up-grading of ODS and HFC import legislation and customs officers training activities. The target beneficiaries:

Manufacturing enterprises that use HCFCs in the manufacturing process or products, mainly refrigeration, air-conditioning and foam producers;

- Refrigeration servicing sub-sector, given is likely importance in managing long term HCFC phase out;
- Large installation owners in cases where industrial and commercial HCFC based installations are involved;
- Vocational schools – refrigeration and air-conditioning technicians.

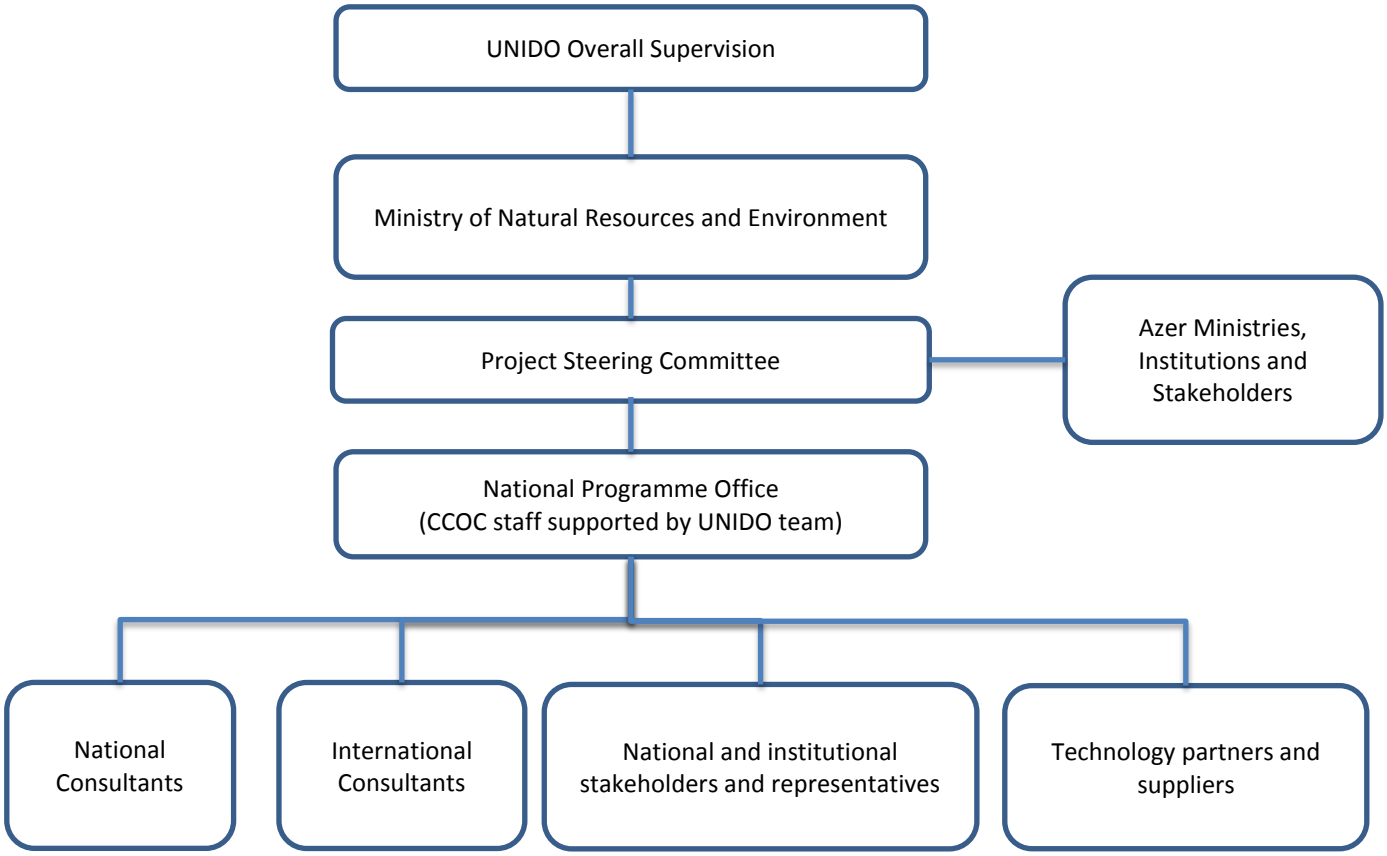
Consumers, in terms of end users, will be addressed through awareness programmes and communication, this will have some indirect impact on consumer demand (enterprises that use HCFCs in the manufacturing process).

Implementation/executing arrangements and implementation modalities

Ministry of Ecology and Natural Resources (Centre for Climate Change and Ozone Centre) is the designated national leading agency and focal point of the implementation of the Montreal Protocol. The actual project components will be directly executed by the Climate Change and Ozone Centre (CCOC), under the direction and support of UNIDO. The CCOC will be supported by UNIDO as the implementing agency through which grant funds will be used to procure goods

and services to be supplied to beneficiaries in the Republic of Azerbaijan. The CCOC will regularly collect data for reporting purposes and support the project implementation. The National programme office will consist of local consultants and support staff to provide smooth implementation of project activities (field visit to the factories, workshops, etc.). These will be supported by the UNIDO project team which will provide implementation and execution support through the procurement and sub-contracting modalities used widely in Montreal Protocol activities.
This approach is required due to the immediacy of action necessary for Azerbaijan to avoid non-compliance and the relative weakness of the existing institutional structure in relation to the types of activity.

The UNIDO rules and procedures for procurement activities will be applied. Though the responsibility for execution lies with the Ministry of Ecology and Natural Resources (MENR) several project activities will be executed in close cooperation with other Ministries, including the Ministry of Industry and Energy (MIE). The management structure aims to support the needs of the Azerbaijan Republic in achieving full phase out of HCFCs, by creating robust institutional capability at the appropriate agencies and departments of the Government of Azerbaijan. Please see a project management structure below.



B.2 Describe the socioeconomic benefits to be delivered by the Project at the national and local levels, including consideration of gender dimensions, and how these will support the achievement of global environment benefits (GEF Trust Fund/NPIF) or adaptation benefits (LDCF/SCCF):

The investment components of the project deal with refrigeration mmanufacturing and servicing sectors and the foam manufacturing sector. The project will provide new equipment which will replace the existing equipment which is generally at least 20 years old. New equipment will be more reliable and capable of producing goods of higher quality that at present. Since the technology to be provided will meet the standards currently adopted by European manufacturers, the conversion process will make it possible for Azer companies to manufacture products to European quality levels, this will give them the opportunity to improve their competitiveness in the local market and make it possible to compete with imported goods.

Although the production capacity of the plants will not be increased, the productivity of manufacturing plants will be enhanced as new equipment is inherently more reliable, this will increase the sustainability of the companies involved. The main social benefit of the project is to provide job security in the sectors involved. If this project is not implemented the manufacturers involved would be forced to either convert production at their own cost or to stop manufacturing products using HCFCs, both of these outcomes would have negative impact of the sustainability of the sectors and would lead to job losses. An additional benefit of the proposed new technology is the reduced operating costs, in over 80% of projects where foam manufacturers have converted to hydrocarbon foam blowing agents, they have a realised a incremental operating cost reduction, thus further enhancing competitiveness.

The project design takes into consideration the GEF's guidance on gender mainstreaming, through the whole project cycle. It reflects the GEF's experience that it is often difficult to empower women's participation in projects that focus on technology, by engaging predominantly male population.

While the degree of relevance of gender dimensions vary depending on the GEF focal area or type of engagement, accounting for gender equity and equality is an important consideration when financing projects that address global environmental issues, because gender relations, roles and responsibilities exercise important influence on women's and men's access to and control over environmental resources and the goods and services they provide.[6]

Within a project context, gender mainstreaming commonly includes identifying gaps in equality through the use of sex-disaggregated data, developing strategies and policies to close those gaps, devoting resources and expertise for implementing such strategies, monitoring the results of implementation, and holding individuals and institutions accountable for outcomes that promote gender equality.[7]

UNIDO also recognizes that "gender equality and the empowerment of women have a significant positive impact on sustained economic growth and sustainable industrial development, which are drivers of poverty reduction and social integration. [8]

With regard to country situation, it is noted that for providing the gender equality, the President issued a decree "On implementation of the state woman policy in Azerbaijan" on March 6, 2000, including the proper representation in state management system. The decree provides the equal representation of women in all state structures with men, as well as importance of passing the present legislation through the gender examination. Later, on the basis of this Decree the Cabinet of the AR came to a decision on the National Activities Plan (NAP) about women problems in Azerbaijan for 2000-2005 years. This plan was based on the Beijing Activities Platform and CEDAW taking into consideration the present situation and country priorities. The NAP is considered the state instrument prepared with the participation of the ministries, committees and NGOs. This document considers the preparation of the state program on women problems, taking the concrete and urgent measures, calling to account on a legal basis of the people accused of violating the women rights, as well as taking the appropriate measures in this connection. In Azerbaijan, women are mostly represented in lower and middle strata of the management, but they are weakly represented in the highest positions of the government. Women make 3, 4% in state, legislation and decision making processes.[9]

There is also the Azerbaijan Gender Information Centre[10] which is actively promoting gender mainstreaming related issues that can be informed and get more details on project activities at the inception stage of project. More concrete, during the collecting of baseline data, gender disaggregated data can be also included as part of this information. Also during the legislation and policy advice, it should be taken into consideration to get involved more women in policy decision making processes and increasing their potentials to get the decision making positions. It is recognized that through awareness programmes and campaigns to be provided to the companies for gender parity in the targeted sector, and provision of support (GEF funded and co-financed) for educational activities on wider scope of technical topics, such as industrial refrigeration

[6] Policy on Gender Mainstreaming, Global Environment Facility, May 2012, p.1.
[7] Mainstreaming Gender at the GEF, Global Environment Facility Introduction, Section 1, 2008, p.8.
[8] Millennium Development Goal 3, "Promote Gender Equality and Empower Women" UNIDO's Contribution to Women Economic Empowerment, UNIDO, 2008, p.2.
[9] National Centre for Productivity and Competitiveness and International Labour Organization, **"**Development of Gender Equality and Women entrepreneurship program, Evaluation of the situation for development of woman entrepreneurship", National Report Baku, 2009, p.7.
[10] www.gender-az.org

and air conditioning, can provide women access to the knowledge and skills and empower them to participate in the sector. Therefore, collecting gender disaggregating data should be given particular attention and the efforts will be made to collect data from companies, trainings that have been conducted, from other relevant stakeholders to be able to emphasize importance of involving more women in all project activities. This impact on gender mainstreaming will be monitored through conduct of a survey with gender analysis, wherever is possible to obtain gender disaggregated data (such as, how many women and men are working in companies, or how many women and men are participating in trainings organized by project, etc). Further, to prioritize women beneficiaries in RAC servicing sector to get the assistance and more access to knowledge and skills, as well as factories owned and/or managed by women, to increase the possibilities of women succeeding managerial positions in the private sector. By organizing training programmes through advertisements, it is important to underline that women are very much encourage to participate. During the development of the National Project management (NPM) team, the gender balance will be taken into consideration and project personnel will encourage women to apply for the advertised positions. If possible of the NPM member can be specifically designated for the all gender related issues, collecting of data, awareness, communication, etc. Possible cooperation with the Azerbaijan Gender Information Centre and existing Gender focal point in the Ministry of Environment, as well as other gender knowledgeable stakeholders, such as NGOs related to women and environment, will be further explored to get them involved as much as possible.

B.3. Explain how cost-effectiveness is reflected in the project design:

The investment costs reflected in the project document are based on precedents from many successfully completed projects implemented by UNIDO. The incremental capital costs are based on reasonable least cost technically acceptable costs in the targeted sectors. The co-financing provided by beneficiaries will also improve the overall cost effectiveness of the programme. The calculation of grant cost effectiveness is shown in table 6 below, this is based on the overall investment costs given in Annex E and the total impact on ODS phase-out.

Table 6: Cost effectiveness

Phase out of HCFC-22	181.62	MT
Phase out of HCFC-141b	81.48	MT
Total Phase out of HCFCs	263.10	MT
Total investment cost foam sector	3,443,800	US$
Total investment cost refrigeration sector	2,555,700	US$
Grant Cost effectiveness	9.50	$/kg

C. DESCRIBE THE BUDGETED M &E PLAN:

Monitoring and Evaluation (M&E) activities are outlilned in table 7 below and will be budgeted from allocation of different components. The Project Steering Committee (PSC) will be formed at the inception stage of the project. This Committee will meet twice a year and be responsible for the overall strategic and policy guidance of the Project. A detailed schedule of project reviews will be developed by the project management team, in consultation with project implementation partners and representatives of the participating communities, during the early stages of project initiation. Such a schedule will include tentative timeframes for PSC meetings, and monitoring and evaluation of the project activities by the PSC, including collecting of data on socio economic and gender dissagregated data to monitor gender related issues.The overall M&E format for the project will follow the instructions and guidelines of the GEF and UNIDO.

Project Inception Report

The inception report prepared by the project team will take place no later than four months after the project approval and commencement. The report will include a baseline report on current situation regarding HCFC consumption, detailed annual work plan with clear indicators and corresponding means of verification for the first year of the project, with the presenting

progress made to date on project establishment and start up activities, amendments to project activities/approaches, if any, and it will be submitted to GEF.

The Annual Project Report /Project Implementation Report

The Annual Project Report /Project Implementation Report in a prescribed format will be prepared and submitted annually by the project management as per guidelines set for the same. The Annual Project Report /Project Implementation Report will inform the annual review meeting (ARM) of the project, which will be held in conjunction with the annual Steering Committee meetings and should therefore be circulated to PSC participants well in advance. The final Annual Project Report /Project Implementation Report will be submitted to UNIDO and then further submitted to GEF as per standard procedures.

The mid-term project evaluation will be prepared at the mid-point of the project to present all milestones achieved so far and introduce the planning activities for the final part of project implementation. The final evaluation will focus on similar issues as the mid-term evaluation will also look at early signs of potential impact and sustainability of results. Related recommendations for follow-up activities would be included in each of these review processes.

According to the Monitoring and Evaluation policy of the GEF and UNIDO, follow-up studies like Country Portfolio Evaluations and Thematic Evaluations can be initiated and conducted. All project partners and contractors are obliged to (i) make available studies, reports and other documentation related to the project and (ii) facilitate interviews with staff involved in the project activities.

Table 7: Monitoring and Evaluation (M&E) activities

M&E Activities		
Type of M&E activity	**Responsible Parties**	**Time frame**
Inception Report	Project Management Team	No later that 4 months after project starts
M & E design and collection of data	Project Management Team (a monitoring expert will be recruited)	Start, mid and end of project
Regular collection of monitoring information to review and assess project progress	NPM/UNIDO Project Steering Committee to review the project performance and make corrective decision	Annually prior to APR/PIR
Steering Committee Meetings	NPM/ UNIDO	Subsequently twice a year
Technical Committee Meeting	NPM/UNIDO	Every six months
APR and PIR	NPM/ UNIDO	Annually
Mid-term Review	NPM/ UNIDO	At the mid-point of project implementation
Terminal Project Evaluation and Report	Project Management Team, UNIDO Evaluation Group	At the end of project implementation
Visits to field sites	UNIDO and Government representatives (UNIDO staff travel costs to be charged to agency fees)	Minimum yearly

NB: Gender Reports and Economics reports will be standing items on the APR and PIR

Table 8: M & E budget table

Activities	**2014**	**2015**	**2016**	**2017**	**2018**
Monitoring (international and national experts) Design and collection of baseline data	7,000	5,000	5,000	5,000	5,000
Mid-term review			5,000		

Terminal project evaluation (international and national experts)					40,000
Project Travel		10,000	10,000	10,000	15,000
Sub-total	**7,000**	**15,000**	**20,000**	**15,000**	**60,000**
Total: US $ 117,000					

LEGAL CONTEXT:

"The Government of the Republic of Azerbaijan agrees to apply to the present project, mutatis mutandis, the provisions of the Standard Basic Assistance Agreement between the United Nations Development Programme and the Government, signed on 6 January 2001."

PART III: APPROVAL/ENDORSEMENT BY GEF OPERATIONAL FOCAL POINT(S) AND GEF AGENCY(IES)

A. RECORD OF ENDORSEMENT OF GEF OPERATIONAL FOCAL POINT(S) ON BEHALF OF THE GOVERNMENT(S):): (Please attach the Operational Focal Point endorsement letter(s) with this form. For SGP, use this OFP endorsement letter).

NAME	POSITION	MINISTRY	DATE *(MM/dd/yyyy)*
H.E Mr. Hussein Baghirov	Minister, GEF Operational Focal Point	MINISTRY OF ECOLOGY AND NATURAL RESOURCES REPUBLIC OF AZERBAIJAN	12/04/2011

B. GEF AGENCY(IES) CERTIFICATION

This request has been prepared in accordance with GEF/LDCF/SCCF/NPIF policies and procedures and meets the GEF/LDCF/SCCF/NPIF criteria for CEO endorsement/approval of project.

Agency Coordinator, Agency Name	Signature	Date *(Month, day, year)*	Project Contact Person	Telephone	Email Address
Philippe R.Scholtès Managing Director Programme Development and Technical Cooperation Division (PTC), UNIDO GEF Focal Point		10/24/2014	Mr. Yury Sorokin, Industrial Development Officer	+43 1 260 26 3624	Y.Sorokin@unido.org

ANNEX A: PROJECT RESULTS FRAMEWORK (either copy and paste here the framework from the Agency document, or provide reference to the page in the project document where the framework could be found).

Expected results	Indicators	Means of Verification	Risks	Assumptions
Objective: The project is designed to phase out all remaining HCFC consumption in the Republic of Azerbaijan	• Phase-out of 18.95 ODP tonnes of HCFC-22 and HCFC-141b by 2015 (90%) and total phase out (99,5%) by 2020 • Volume of sales of non-HCFC goods per enterprise	Ozone Secretariat Report	None	None
COMPONENT 1. Legislation, Policy framework and institutional capacity building				
Outcome 1.1a. Legislation related to control and phase out of HCFC adopted	• Strategy and National Action Plan endorsed by Parliament • Regulatory systems and processes enacted in legislation for: - quota system; - licensing system; - certification scheme;	Government Gazette notices (official records)	The change of the Parliamentary schedule	• Goodwill and commitment of the Government to support and prioritize any legislation that has been generated by this project
Outcome 1.1b. Institutional capacity of Climate Change and Ozone Center (CCOC) strengthened to support legislation, control and phase out of HCFC	• More accurate data and control of import, export, consumption, and authorized movements of HCFCs • Updated ODS licensing mechanisms in place • CCOC staff able to maintain HCFC consumption projection and bank estimate	• CCOC Inspection report • Project Implementation Review (PIR) Report	None	None
Outcome 1.2b. Customs processes and capability upgraded to control import and export of HCFCs	• Customs processes for control of HCFC are adopted and in place • % of trained custom officers report that they have improved capability to control HCFC import/export as a result of the project	• Official Customs data import records, wholesale sales figures, company consumption records	None	None
COMPONENT 2. Conversion of manufacturing process involving HCFC-22 and HCFC-141b and assistance to the RAC service sector				

Expected results	Indicators	Means of Verification	Risks	Assumptions
Outcome 2.1 Phase out of HCFC-22 and HCFC-141b in the manufacturing sector.	• All supported factories converted and use non-ODS technologies • Phase-out of 18.95 ODP tonnes of HCFC-22 and HCFC-141b	• Ozone Secretariat Report • Project site visits • Project Implementation Review (PIR) Report	• Implementation delays cause non-compliance beyond 2010, 2015 (90%) total phase out (99,5%) by 2020	• Goodwill and commitment of the Government to support and prioritize any legislation that has been generated by this project
Outcome 2.2 Reduction of demand of HCFC-22 in servicing sector (reduced GHG emissions)	90 % reduction in demand of HCFC-22 in servicing sector by 2015	• Official Customs data import records, wholesale sales figures, company consumption records • Project site visits • Project Implementation Review (PIR) Report	Customs is not capable to monitor and control	Goodwill and commitment of the targeted sector to respect the legislation
Output 1.1a.(i) Formal HCFC Phase out Strategy and National Action Plan developed	Strategy and National Action Plan formulated and completed, ready for fomal endorsement by the Parliament	• Project Implementation Review (PIR) Report	None	None
Output 1.1a.(ii) Quota system, licensing system, certification scheme for technicians, reporting systems, resource materials for use by CCOC, customs authorities and other stakeholders and government agencies covering the legislative and regulatory actions required for HCFC phase out in place	• Documents necessary for updating regulatory systems and processes are prepared for: - quota system; - licensing system; - certification scheme; - reporting system; - resource materials for use by CCOC	• Project Implementation Review (PIR) Report	None	None
1.1b.(i) National database and tracking process (updated ODS licensing mechanisms) are in place	• Number of CCOC staff trained to provide support to legislation, control and phase out of HCFC	• Project Implementation Review (PIR) Report	None	None

Expected results	Indicators	Means of Verification	Risks	Assumptions
	• Official communications and correspondence between CCOC and stakeholders and consumers • Working relationship between CCOC and customs officials			
1.1b.(ii) HCFCs consumption patterns and scenario plans developed. Analysis of the level of residual HCFCs demand after 2014 and 2019, including assessment of ODS equipment banks	Report on HCFCs consumption patterns and scenario plans	• Project Implementation Review (PIR) Report	None	None
1.1b.(iii) Training programme for decision makers, concerned government ministries and CCOC covering legislative and regulatory actions for HCFCs phase out implemented	• At least 20 representatives from the concerned institutions trained (men and women) • Satisfactory performance of CCOC, government ministries and relevant institutions	• Training evaluation reports and training certificates issued	None	None
1.2b.(i) Training programme and necessary equipment for customs officers and environmental officers	• At least 40 customs officers trained (men and women) • Necessary equipment provided	• Training evaluation reports and training certificates issued • List and specification of equipment provided	None	None
2.1 (i) Conversion of key HCFC based manufacturing sectors (approximately 10-14 sub-projects); Technology transfer, engineering services, capital equipment and instrumentation required for conversion of manufacturing facilities	• 10-14 participating factories • No. of non-ODS technologies are demonstrated to 10-14 participating factories • Engineering services and equipment provided • List of capital items procured	• Verification reports • Satisfactory for operational converted factories	• Lack of interest/cooperation from companies and difficulties in adoption of new technology at the local market • Risk of job losses for conversion projects due to economic	• Support will be provided by the Government and suppliers through public awareness and communication, to introduce alternative technologies available for HCFCs and raise more interest by the companies. • Under the guidance and coordination of PMO the international expert and suppliers will actively participate in awareness and

Expected results	Indicators	Means of Verification	Risks	Assumptions
			changes.	providing additional information on new technologies. • Safety net (government subsidy) provided to cover job losses.
2.2 (ii) Improved RAC service practice (including technician certification)	• At least 200 certified technicians (men and women) • 2-3 of installed demonstration projects and log of visitors	• Register of trained and certified technicians • Verification report by visits to the demonstration sites	None	None
2.2 (iii) National Recovery, Recycling and Reclamation scheme	• Collection and transportation logistics in place	• Establishment of at least 2 R &R facility in Azerbaijan. • Records on recycling and reclamation reported by CCOC. • Verification report by visits to the demonstration sites.	None	None

ANNEX B: RESPONSES TO PROJECT REVIEWS (from GEF Secretariat and GEF Agencies, and Responses to Comments from Council at work program inclusion and the Convention Secretariat and STAP at PIF).

The STAP comments were addressed in writing and discussed with the STAP secretariat. UNIDO felt that the written responses to the STAP comments were quite comprehensive and satisfactory and that there is good awareness of the importance of building on past gains and set-backs in projects. It was mentioned that there could be more attention to look beyond those projects implemented by UNIDO for background, and to collaborate also with UNDP and UNEP, which also have a history of investment and institutional strengthening work in Azerbaijan, and from whom Project Implementation Reports, evaluation reports, etc., might be sourced. This approach was agreed on by UNIDO and is built into the project approach.

Comments	Response
Canada:	
The proposal indicates that the country consumes 18.95 ODP tonnes of HCFCs, with that estimate established through field visits. Please confirm that the project's objective is to phase out the entire amount of HCFCs.	The project is designed to phase out all remaining HCFC consumption in Azerbaijan.
Of note, due to institutional difficulties, only a small portion of HCFCs imported have previously been identified and, therefore, the latest country's reported HCFC consumption under the Montreal Protocol is only 0.3 ODPt. On the basis of its official consumption, the country would only require a much smaller project to comply with the 2020 99.5% reduction because its reported baseline consumption is 14.9 ODPt – so "officially" it has already achieved a 98% reduction. However, accepting that the official consumption is significantly under estimated, the GEF's approval of the phase-out project should be contingent on Azerbaijan reporting its real consumption from now on and, to the extent possible, the country revising the data that was underestimated in previous years.	The institutional support proposed in the project has always had as an explicit objective to improve the capacity of the CCOC to monitor, control and report on HCFC consumption. This was included in component 1(b) of the PIF and remains an objective: *1.1 (b) Policy, legal framework and institutional capacity required to assess and accelerate HCFC phase out.* *1.2 (b) Refinement and correction of HCFC consumption data, including, import, export and usage breakdown for 2007 -2011.* *1.3 (b) Much greater control of authorized HCFC movements and significant reduction in movement of unauthorized ODS.* *1.4 (b) Analysis of the level of residual HCFCs demand after 2014 and 2019, including assessment of ODS equipment banks.* *1.5 (b) Monitoring and assessment of HCFC and HFC imports and usage patterns and trends.*
Of the $2M requested for phase-out projects, there is no breakdown indicating how much would be used for the: (a) phase-out of HCFC-141b in foams; (b) phase-out of HCFC-22 in refrigeration manufacturing; and (c) phase-out of HCFC-22 refrigeration servicing. In fact, no specific projects as such are presented for these sectors. For the manufacturing sector, it is not clear to what technologies the enterprises will be converted to, and consequently what the capital and operating costs are expected to be; rather some potential technologies have been identified. In the servicing sector, we could not find a description of the activities that will be funded. Please clarify how the $2M figure was selected.	A full investment breakdown is given in section B2 and Annex F show the split of investment in foam manufacturing, RAC manufacturing and the refrigeration service sector. Section B2 also details the conversion technologies that will be funded: *The technologies funded by investment will include Cyclopentane, Methyl Formate for foam manufacturing and R-290, Ammonia and Carbon Dioxide for refrigeration and air-conditioning manufacturing.* Section B2 also gives a breakdown of activities in the refrigeration service sector.

Given that the technologies in the manufacturing sector are not determined in the project proposal, it is not possible for the GEF to know whether the desire expressed in the proposal to avoid high-GWP HFC technology will in fact materialize. Please comment.	This has been clarified in the Request for CEO Endorsement in sections B1 and B2: *The standard approach (based on past guidance of the Multilateral Fund) for the conversion of manufacturing is to select the least costly technically acceptable technology to phase out HCFCs. However more recently it has been internationally recognized that this can lead to phase out projects that do not necessarily provide the optimum overall climate benefit. For example a technology solution which is energy efficiency neutral and replaces HCFC-22 with HFC-410A could have a net negative overall climate impact due to the higher GWP of HFC-410A. Similarly there is an additional cost in making a commercial refrigeration system more energy efficient over and above the cost of replacing HCFC-22. The cost of secondary conversion of a facility to improve energy efficiency would be higher than the incremental cost of making the changes at the same time as the HCFCs phase out.* *The incremental cost reasoning adopted by this project is to phase out HCFC-22 and HCFC-141b and at the same time promote the use of low GWP alternatives and in the refrigeration sector to promote improved energy efficiency.* *Without the GEF's support the demonstration and adoption of these technologies would not be feasible and therefore, the development of this project would not be possible.* ***Rationale*** *The rationale for the conversion of manufacturing facilities and the support to the service sector is to achieve phase out wherever possible using low GWP alternatives to HCFC-22 and HCFC-141b and to promote enhanced energy efficiency through improved equipment design and better service and maintenance practice.* *It is not possible to prevent the private sector from adopting HFC solutions through self-funded conversion; however the awareness and stakeholder engagement activities in this project will aim to promote non-HFC solutions. In that respect no funding will be made available for HFC based conversion activities. The technologies funded by investment will include Cyclopentane, Methyl Formate for foam manufacturing and R-290, Ammonia and Carbon Dioxide for refrigeration and air-conditioning manufacturing.* *In addition to these technologies technical assistance will be made available to help users evaluate the potential uses of latest generation HFO blowing agents and refrigerants.* *In the activities within the project which focus on supporting the refrigeration service sector in terms of emissions reductions and recovery and recycling will however be aimed at the sector as a whole. It is extremely important that good maintenance and leak tightness standards are improved across the sector and even more so in the case of HFC based equipment, due to the high GWPs involved.*

USA:	
The United States would like to submit the following comments on the work program, specifically regarding GEF ID 4602 (Azerbaijan) Initiation of the HCFCs Phase out and Promotion of HFCs-Free Energy Efficient Refrigeration and Air-Conditioning Systems. We offer the technical comments below as a complement to the broader comments on this and other projects that we offered during the discussion of the work program at the June 2012 GEF Council meeting. While we support the objectives of the proposed project for Azerbaijan, we have additional questions about the project and feel that there are several ways in which it could be strengthened.	
We appreciated that the project document noted that the intent of this project is to pursue non-HFC options to avoid a future second transition. However, there seemed to be some instances where the project varied from this policy preference. Furthermore, unlike proposals that are brought before the Executive Committee of the Montreal Protocol for approval, the project proposal does not seem to include a commitment to specific reduction commitments nor to a particular technology.	The project will commit Azerbaijan to phase out all remaining HCFC consumption 18.95 ODP tonnes.
We also would note a substantial concern that Azerbaijan's licensing system is not functioning successfully. We appreciate that the project would work to correct this. Similarly, we note with concern the discrepancy between Azerbaijan's reported Article 7 consumption and actual consumption. The project document notes that three main barriers are the lack of institutional capacity to monitor and limit consumption, lack of technical and financial capacity to phase out HCFCs in manufacturing and servicing, and lack of stakeholder engagement and commitment. These seem quite serious given Azerbaijan already now needs to be 75% below its HCFC baseline. Many of the ideas listed in the project document (e.g., technician certification, best practices for leak repair) are important tools to address this. We are not familiar with the blending of methyl formate with HFC-134a. We understand such a blend might improve energy efficiency and decrease flammability. However, it's unclear, without knowing more about the blends, whether there would be significant improvements. For example, will the facility still need static-free conditions? To what extent is the insulating value improved?	We agree with these observations and also agree that the project seeks to address all of these issues through the institutional capacity enhancement that will be delivered. Regarding methyl formate technology; the proposed technology has been used for several years in South Africa where Industrial Urethanes has developed systems using small quantities of HFC-134a of the order of 1-2%. This acts to lower the flash point of the system and essentially reduces the requirement for certain additional safety equipment such as static free moulds. Thermal insulation efficiency is comparable to HCFC-141b systems for the majority of applications according to trial results published by Industrial Urethanes.

We also have a question about the cost effectiveness of the project, which the project document indicates is 6-7 $/kg. We would like to know how this figure is calculated. Our calculations appear to indicate a higher number. Similarly, the document indicates that Azerbaijan must phase out 16.7 ODP tonnes by 2015 and a further 2.2 ODP tonnes by 2020. Would it be possible to clarify how those figures are calculated? (Given Azerbaijan's baseline of 14.9 ODP tons and its current consumption of 18.95 ODP tons (263.1 metric tonnes) of HCFCs, it appears that Azerbaijan would have had to phase out 15.2 ODP tons by 2010, a further 2.2 ODP tones by 2015 (vice 2020), and by 2020 a further 1.48 ODP tons to have a consumption no greater than 0.5% of its baseline. Finally, we would note that Azerbaijan has yet to ratify the Beijing Amendment of the Montreal Protocol. We hope Azerbaijan is able to ratify that amendment as soon as possible.	The project is designed to phase out a total of 18.95 ODP tonnes, and grant cost effectiveness is US$ 9,50; reference is made to table 6 in section B3. The calculations have been reviewed and the text replaces as follows: *Based on a consumption of 18.95 ODP tonnes. Azerbaijan must phase out 17.06 ODP tonnes by 2015 to achieve the 90% reduction target and a further and a further 1.80 ODP tonnes by 2020 to achieve the 99.5% reduction target*. Azerbaijan ratified the Beijing amendment on 31 August 2012.

STAP Comments

Comments	UNIDO Response
The project development team needs to re-examine the project baseline and past lessons learned from previous projects to better utilize outputs generated, to avoid past pitfalls, and to ensure that the GEF intervention results in maximum global environmental benefits, without duplication of effort.	We agree entirely with the sentiments expressed here by STAP. The project concept and detail takes account of the lessons learned not only from previous activities in Azerbaijan but also from a very wide range of ODS phase out and institutional strengthening projects implemented by UNIDO in the regions and globally. The particular lessons learned from analysis of previous activity in Azerbaijan lead us to the conclusions stated in the project that: *Since the CFCs phase out programme was completed, the institutional capacity related to the monitoring and control of ODS has therefore been significantly depleted and whilst the legislative framework developed to control CFCs is technically still in place, the implementation of control processes at the working level is practically ineffective.* *At present the legislation covering the import of HCFCs and HCFCs based equipment is not supported by any robust monitoring or control processes. A quota system, administered through the CCOC does not appear to be effective and anecdotal evidence gathered during sites visits in Azerbaijan for this PIF shows very wide discrepancies in HCFCs permits awarded compared to actual HCFCs imports.* *Furthermore anecdotal evidence suggests that it is likely that there is significant movement of unauthorized goods and illegal trade, a situation exacerbated by the prevalence of disposable cans for the distribution of refrigerants including HCFC-22.*

	Additionally the consumption of HCFC-141b has not been properly recorded as there has been no effective monitoring or control of the import and distribution of pre-blended HCFC-141b-polyol systems. This refers to companies operating within the law but without fully compliant paperwork or registration. *The project aims to improve the effectiveness of registration, communication and control to better define operating practice. It is anticipated that the majority of small companies can easily comply given appropriate guidance and support. However companies who are trading illegally should be more easily identified when much more robust monitoring is in place, and in these situations a strengthened CCOC and State expertise department of the Ministry of Ecology and Natural Resources will be able to take appropriate punitive action.*
The developers should look at the full range of fundamental elements necessary for a successful ODS phase- out project, as has been standard for both the MLF and GEF ODS project.	This is the case. The project includes a range of activities in four main areas: 5. *Institutional* • *Legislative and Policy Measures Needed to Strengthen HCFCs Control and Phase out* • *Institutional Capacity building* • *Communications, awarness and stakeholder engagement* • *ODS Destruction stratagy* 6. *Foam Manufacturing* a. *Investment* b. *Technical assistance* 7. *RAC Manufacturing* a. *Investment* b. *Technical assistance* 8. *Refrigeration Service* • *Recovery and Recycling* • *Emissions reduction – good practice training* • *Low GWP demonstrations*
There needs to be a better analysis of stakeholders in the project, including the consumer and global partners, networks and cooperative processes that assist in illegal trade efforts, and reducing demand for ODS.	The nature of consumers and global partners has been analyzed during the project preparation. We note the STAP reviewer's comments regarding "reducing demand from consumers in the public domain". We would point out that the nature of production covered by the project is almost entirely in the commercial sector, and therefore the impact of broader consumer pressure is limited. That said the project does deal with residential air-conditioning where private consumers are making the purchase decision. These factors have been taken into account. Specific conversion activity technical assistance will be given not only to the phase out of HCFCs but also to the improvement of energy efficiency. In tandem with this the awareness and engagement with public, commercial and institutional stakeholders will aim to increase demand for higher efficiency "greener" products. In essence this is the same as reducing demand for ODS systems. The stakeholder analysis undertaken so far goes as far as can be expected at this stage of the project and far enough to draw the conclusion as stated in the project: *Overall stakeholder engagement is low, partly driven by very competitive economic conditions in which investment in new technology is seen as commercially unviable and partly due to lack*

	of communications from Government and industry stakeholders to users and consumers. *It is clear that the national strategy will have to include an element of communication and engagement in order to gain the approval and commitment of stakeholders who are currently unaware of or reluctant to accept the need for HCFC-phase out.* We would also anticipate significant input and involvement from other institutional stakeholders at the Government level as indicated in the project management structure *"AZER ministries and institutions"* particularly the Ministry of Energy" with the aim of linking in to broader energy efficiency and related activities in the country. It will only be possible to define the exact nature of this involvement once the project is approved.
If the aforementioned is managed appropriately, and duplicative elements removed from the project design, there might be more resources freed up to support destruction of some of the ODS in the country, even if through export to overseas facilities.	We have reviewed the inputs and activities designed into the project and whilst we agree with the sentiment of the reviewer that ODS Destruction implementation is a missing final piece of the of the "end to end" solution, we cannot see how sufficient funds can be released from within the current budget to provide an ODS destruction facility and infrastructure in Azerbaijan.
Response from STAP:	
Summary of STAP Response	The written responses to the STAP comments were quite comprehensive and satisfactory and that there is good awareness of the importance of building on past gains and set backs in projects in the countries. It was mentioned that perhaps there could be more attention to look beyond those projects implemented by UNIDO for background, and to reach out also to UNDP and UNEP, which also have a history of investment and institutional strengthening work with Azerbaijan, and from whom Project Implementation Reports, evaluation reports, etc., might be sourced. As was stated in the original STAP commentary on the PIF, it was re-emphasized that another invaluable link should be made to the UNEP OzonAction CAP-based Eastern Europe and Central Asian Network (ECA), of which Azerbaijan has been a part, and through which South-South cooperation, iPic regional cooperation on illegal trade and other experiences can be gleaned. The network is MLF-funded, but there is potential for GEF countries to participate in the activities. In the past the GEF project may pay for the air fare and DSA of the GEF country participant, while the Network absorbs much of the logistical cost for training, etc. It is also useful in assessing how neighbouring countries with similar historical government structures and economic hardship have overcome obstacles to regulate ODS. It was recommended that the project insert this as a formal cross-agency collaborative link, to enhance the set up and execution of certain aspects of technical work, and enhance the quality of any GEBs generated by the project. Recognizing the intent to work largely with the commercial sector, it was agreed that awareness for technicians across the board on explosive, illegal R40/HCFC mix drop-ins should be given a thought, as well as keeping consumers of air-conditioning units aware of the implications of selecting HCFC units.

ANNEX C: STATUS OF IMPLEMENTATION OF PROJECT PREPARATION ACTIVITIES AND THE USE OF FUNDS[11]

A. PROVIDE DETAILED FUNDING AMOUNT OF THE PPG ACTIVITIES FINANCING STATUS IN THE TABLE BELOW:

PPG Grant Approved at PIF: **YES**			
Project Preparation Activities Implemented	***GEF/LDCF/SCCF/NPIF Amount ($)***		
	Budgeted Amount	***Amount Spent Todate***	***Amount Committed***
Detail work plan of PPG activities developed	5,000	4,947	
Report related to baseline situation (Foam, Ref.and Air Cond. Sector) and barrier analyses for dissemination of results	10,000		9,604
Design of the pilot/demonstration project and draft FSP project document developed	25,000		25,449
Total	40,000	4,947	35,053

[11] If at CEO Endorsement, the PPG activities have not been completed and there is a balance of unspent fund, Agencies can continue undertake the activities up to one year of project start. No later than one year from start of project implementation, Agencies should report this table to the GEF Secretariat on the completion of PPG activities and the amount spent for the activities.

ANNEX D: CALENDAR OF EXPECTED REFLOWS (if non-grant instrument is used**)**

Provide a calendar of expected reflows to the GEF/LDCF/SCCF/NPIF Trust Fund or to your Agency (and/or revolving fund that will be set up)

ANNEX E: ADDITIONAL INFORMATION TO THE SECTION A5 ON INCREMENTAL/ADDITIONIAL COST

REASONING

Table 1: Refrigeration Production

Refrigeration Producers	Comm Ref Units	Charge kg	Total R22 MT	Cold Stores	Charge kg	Total R22 MT	Total MT	ODP T
Titan	3,000	4.20	12.60	65.00	8.00	0.52	13.12	0.72
AIK	4,000	3.50	14.00	98.48	8.00	0.79	14.79	0.81
AZCo	2,500	3.50	8.75	59.09	8.00	0.47	9.22	0.51
Others	3,000	3.20	9.60	64.02	8.00	0.51	10.11	0.56

Table 2: Summary of Investment Costs

Conversion	Unit Cost	No	Total Cost
Continuous sandwich panel	575,000	2	1,150,000
Discontinuous sandwich panel	375,000	1	375,000
Block	280,000	2	560,000
Commercial refrigeration	475,000	2	950,000
System Houses	369,600	1	369,600
Technical assistance SMEs	19,800	6	118,800
Total ICC Foam		**14**	**3,523,400**
RAC Manufacturing Refrigerant Charge Conversion HC	355,905	4	1,423,620
Service Sector			
Recovery and Recycling and Reclaim	392,600	2	785,200
Emissions reductions Programme	525,000	1	525,000
Promotion of Low GWP refrigerants	195,000	1	195,000
Total Service Sector			**2,928,820**
			6,452,220
TOTAL INVESTMENT*			**5,925,100**

*Additional data on breakdown of incremental capital costs is provided in Annex F.*used for project calculations*

ANNEX F: ADDITIONAL DATA

Estimated Breakdown of Incremental Capital Costs
Continuous Sandwich Panels

Production	Unit cost US$	No.	Total
Replacement Polyol and Iso metering units	45,000	2	90,000
Temperature control system with heat exchanger, pump and temperature control unit	10,000	2	20,000
Additive metering units and day tanks	35,000	2	70,000
Pentane metering units	45,000	1	45,000
Electrical control panel	35,000	1	35,000
Nitrogen supply system	10,000	1	10,000
Mixing head suitable for pentane	15,000	1	15,000
Dynamic mixer for components suitable for pentane, 4 components	10,000	1	10,000
Modification of foam manipulator	7,500	1	7,500
Pentane tank ancillary equipment, pumps, level sensor, leakage sensor, flame barriers etc.	35,000	1	35,000
Pentane drum unloading pumps	5,000	1	5,000
Replacement electrical heaters conveyor 3 x 20 KW	5,000	3	15,000
Replacement circulating saw cutter with belt cutter	75,000	1	75,000
Plant safety			
Ventilation and exhaust system (fans, piping, ductworks, grounding, electrical boards/connections) foaming machine	7,500	1	7,500
Ventilation and exhaust system (fans, piping, ductworks, grounding, electrical boards/connections) foaming plate and double conveyor	15,000	1	15,000
Ventilation and exhaust system (fans, piping, ductworks, grounding, electrical boards/connections) cutter saw and drum storage area	7,500	2	15,000
Modification of electrical control board conveyor and substitution of position sensors	10,000	1	10,000
Gas sensors, alarm, monitoring system for entire plant 3 HP, 2 foaming plate, 6 double belt, 2 cutter saw, 2 storage area pentane drums, 2 pentane tank, 4 for storage area	2,500	21	52,500
Safety system electrical control board for control gas sensors and ventilation system	25,000	1	25,000
Fire protection/control system for the plant	5,000	1	5,000
Lightning protection and grounding	5,000	1	5,000
Antistatic floor	2,500	1	2,500
Standby electric generator safety panel and ventilation	5,000	1	5,000
Total US$			**575,000**

Discontinuous sandwich panel lines

Production	Unit cost USD	No.	Total
New HP machine 150 kg/h	100,000	1	100,000
Polyol/ Pentane worktank charging	5,000	1	5,000
Additional mixing head	15,000	1	15,000
Premix pumping unit	40,000	1	40,000
Buffer tank for polyol	15,000	1	15,000
Piping from premix to HP machine abt. 50 m	5,000	1	5,000
Pentane tank ancillary equipment, pumps, level sensor, leakage sensor, flame barriers etc.	35,000	1	35,000
Pentane drum unloading pumps	5,000	1	5,000
Chiller	5,000	1	5,000
Nitrogen gas cylinder supply system	10,000	1	10,000
Plant safety			0
Ventilation and exhaust system (fans, piping, ductworks, grounding, electrical boards/connections) foaming machine	7,500	1	7,500
Ventilation and exhaust system (fans, piping, ductworks, grounding, electrical boards/connections) Press	7,500	3	22,500
Modification of electrical control board press and substitution of position sensors	10,000	3	30,000
Gas sensors, alarm, monitoring system for entire plant 3 HP, 4 each press, 2 premix area	2,500	17	42,500
Safety system electrical control board for control gas sensors and ventilation system	25,000	1	25,000
Fire protection/control system for the plant	5,000	1	5,000
Antistatic floor	2,500	1	2,500
Standby electric generator	5,000	1	5,000
Total US$			**375,000**

Rigid block production

Production	Unit cost USD	No.	Total
Refurbishment equipment and addition of pentane metering unit	85,000	1	85,000
Pentane tank ancillary equipment, pumps, level sensor, leakage sensor, flame barriers etc.	35,000	1	35,000
Pentane drum unloading pumps	5,000	1	5,000
Chiller	5,000	1	5,000
Nitrogen gas cylinder supply system	10,000	1	10,000
Plant safety	7,500		0
Ventilation and exhaust system (fans, piping, ductworks, grounding, electrical boards/connections) foaming machine	7,500	1	7,500
Ventilation and exhaust system (fans, piping, ductworks, grounding, electrical boards/connections) Press	7,500	3	22,500
Modification of electrical control board press and substitution of position sensors	10,000	3	30,000
Gas sensors, alarm, monitoring system for entire plant 3 HP, 4 each press, 2 premix area	2,500	17	42,500
Safety system electrical control board for control gas sensors and ventilation system	25,000	1	25,000
Fire protection/control system for the plant	5,000	1	5,000
Antistatic floor	2,500	1	2,500
Standby electric generator	5,000	1	5,000
Total US$			**280,000**

Commercial Refrigeration

Production	Unit cost USD	No.	Total
New HP machine 150 kg/h x 2	100,000	2	200,000
Polyol/ Pentane worktank charging	5,000	1	5,000
Additional mixing head	15,000	1	15,000
Premix pumping unit	40,000	1	40,000
Buffer tank for polyol	15,000	1	15,000
Piping from premix to HP machine abt. 50 m	5,000	1	5,000
Pentane tank ancillary equipment, pumps, level sensor, leakage sensor, flame barriers etc.	35,000	1	35,000
Pentane drum unloading pumps	5,000	1	5,000
Chiller	5,000	1	5,000
Nitrogen gas cylinder supply system	10,000	1	10,000
Plant safety			0
Ventilation and exhaust system (fans, piping, ductworks, grounding, electrical boards/connections) foaming machine	7,500	1	7,500
Ventilation and exhaust system (fans, piping, ductworks, grounding, electrical boards/connections) Press	7,500	3	22,500
Modification of electrical control board press and substitution of position sensors	10,000	3	30,000
Gas sensors, alarm, monitoring system for entire plant 3 HP, 4 each press, 2 premix area	2,500	17	42,500
Safety system electrical control board for control gas sensors and ventilation system	25,000	1	25,000
Fire protection/control system for the plant	5,000	1	5,000
Antistatic floor	2,500	1	2,500
Standby electric generator	5,000	1	5,000
Total US$			**475,000**

System houses budget template

	Item	Cost US$	Notes
1	Methyl Formate bulk storage and handling system	127,000	18 Bar rated, including nitrogen blanket, piping and instrumentation
2	Closed-system premixing station (two blenders)	130,000	
3	Pumps	5,000	
4	Product piping	39,000	
5	Nitrogen dispenser	0	included in item 1
6	Other safety adaptations	15,000	
7	Pycnometer, refractometer, k-factor tester and other required equipment	20,000	
	Sub total	336,000	
	10 % contingency	33,600	
	TOTAL	369,600	

Emissions reductions Programme

Item	Description	QTY	Unit price	Total price
1	Refrigeration sector working group meetings	4	10,000	40,000
2	National awareness workshops and exhibition	5	15,000	75,000
3	Trainer the trainer sessions good practice (F-gas level) 4 x 10 trainers	4	20,000	80,000
4	National technician training and certification, $300 per person per day (10 -12 technician per session)	1000	300	300,000
5	Certification Scheme development and co-ordination	1	30,000	30,000
	TOTAL			**525,000**

RAC Manufacturing Conversion to HC

Item	Description	Cost US$	No	Total
	R600a/R290 Storage and Feeding			
1	HC-Feeding pump with automatic change over	18,850	2	37,700
2	HC-pipeline	3,500	2	7,000
3	Absorption filter dryer	2,100	2	4,200
4	Storage and feeding room with bottle rack (locally made)	3,800	1	3,800
	subtotal			**52,700**
	HC Charging			
5	Power switch-off safety board, etc.	100,000	1	100,000
	HC-discharge for repair			
6	HC-EX-pumping system	1,500	1	1,500
7	Exhaust pipe	500	1	500
	subtotal			**102,000**
	Safety devices			
8	Gas Alarm system with 4 gas sensors, fire detectors, ventilation control etc.	28,000	1	28,000
9	Gas sensor calibration system	2,000	1	2,000
10	Handheld HC-leak detector for maintenance	550	3	1,650
11	Ventilation system	12,500	1	12,500
12	Enclosure	4,000	2	8,000
13	Sets of safety markings, escape ways and emergency exit lamps	800	1	800
	subtotal			**52,950**
	Leak detection lines			
14	Handheld HC-leak detector for refrigerators	15000	2	30,000
	Evacuation lines			
15	evacuation pumps 18m³/h with condensate separator, oil filter, joints, 2 hoses	3,600	4	14,400
	Electric safety			
16	Electric safety board acc. to IEC 60335-1 and 2-24+2-89 incl. calibration kit	15,000	1	15,000
	Total Equipment			**267,050**
21	**General**			
	Training and International Technical Support	20,000	1	20,000
22	Trials	13,500	1	13,500
23	Testing	9,500	1	9,500
24	Safety Audits	13,500	1	13,500
	subtotal			**56,500**
	TOTAL			**323,550**
	Contingencies 10%			32,355
	TOTAL CAPITAL INVESTMENT COSTS			**355,905**

Promotion of Low GWP Refrigerants

Demonstration Area		Funding US$	Outcomes
1	National awareness campaign on R-22 phase out and associated bans National adverts and available alternatives.	5,000	Increased awareness of HCFC-22 alternatives and further engagement with service sector stakeholders.
2	CO_2 Demonstration Project, such as supermarket cascade system	100,000	• Pre-assessment of existing HCFC-22 systems including lifecycle and EE analysis • Conversion of existing HCFC system to low GWP alternative (including EE enhancements co-funded by 3rd party) • Post conversion system monitoring and analysis including lifecycle climate impact and benefits assessment • Detailed report and case study made available to refrigeration suppliers, end users and consultants • Converted facilities open for visits and study tours for interested parties • Market analysis of replicability of demonstration technology and estimate of climate impact • Increased awareness and uptake of Low GWP refrigerants.
3	Hydrocarbon domestic and small commercial air-conditioning systems	30,000	
4	Small-scale ammonia installations	30,000	
5	Latest generation olefin refrigerant trials	30,000	

Refrigerant Recovery and Recycling

Reclaim Centre Scope and Cost Breakdown (Design Capacity: Approx. 40 MT Annually)

Item	Description	QTY	Unit price	Total price
	Reclaim equipment, cylinders and scale			
1	Reclaim unit	1	15,000	15,000
2	1,000 lbs storage tanks	4	1,500	6,000
3	Transfer pump for recovered/contaminated refrigerant	1	5,000	5,000
4	Scale to check filling level of storage tanks	1	2,500	2,500
5	100 lbs recovery tanks for either recovery or reclaimed refrigerant	25	200	5,000
6	30 lbs recovery tanks for either recovery or reclaimed refrigerant	40	100	4,000
7	Advanced refrigerant identifier to check in-coming refrigerant	1	5,000	5,000
	Subtotal			**42,500**
	Laboratory items - to check quality of reclaimed refrigerant			
8	Gas chromatograph	1	30,000	30,000
9	Non-certified refrigerant standard	0	15,000	0
10	Karl Fischer moisture tester	1	10,000	10,000
11	Misc. lab equipment; e.g. precision thermometer, laboratory scale, gas tight syringes	1	5,000	5,000
	Subtotal			**45,000**
	Cylinder cleaning, inspection and testing equipment			
12	Hot water dispenser	1	4,000	4,000
13	Rack for cylinder washing	1	1,000	1,000
14	Cylinder drying installation	1	2,000	2,000
15	Valve removal tool	1	100	100
16	Inspection camera	1	500	500
17	Air compressor for testing of recovery cylinders	0	10,000	0
18	Industrial vacuum pump for evacuation of cleaned cylinders	1	2,500	2,500
	Subtotal			**10,100**
	Recovery equipment			
19	Recovery unit with filter module for either recovery or on-site recovery/re-use	100	1,000	100,000
20	ID units (customs)	20	5,000	100,000
21	30 lbs recovery cylinders	600	100	60,000
	Subtotal			**260,000**
	Other costs			
22	Spare parts	1	10,000	10,000
23	Training/installation	1	10,000	10,000
24	Freight/transportation/clearance	1	10,000	10,000
25	Misc& contingency	1	5,000	5,000
	Subtotal			**35,000**
	TOTAL			**392,600**