REQUEST FOR CEO ENDORSEMENT

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

For more information about GEF, visit TheGEF.org

PART I: PROJECT INFORMATION

Project Title: **Nationally Appropriate Mitigation Actions (NAMAs) for low-carbon end-use sectors in Azerbaijan**			
Country(ies):	Azerbaijan	GEF Project ID:[1]	5291
GEF Agency(ies):	UNDP	GEF Agency Project ID:	5138
Other Executing Partner(s):	SOCAR, Ministry of Ecology and Natural Resources (MENR) - National Climate Change Center	Submission Date:	August 7, 2014
GEF Focal Area (s):	Climate Change	Project Duration(Months)	60 months
Name of Parent Program (if applicable): ➢ For SFM/REDD+ ☐ ➢ For SGP ☐ ➢ For PPP ☐	NA	Project Agency Fee ($):	339,150

A. FOCAL AREA STRATEGY FRAMEWORK[2]

Focal Area Objectives	Expected FA Outcomes	Expected FA Outputs	Trust Fund	Grant Amount ($)	Cofinancing ($)
CCM-1	Outcome 1.1 Innovative low-carbon technologies successfully demonstrated, deployed, and transferred	Output 1.1: Innovative low-carbon technologies demonstrated and deployed on the ground	GEFTF	775,000	15,000,000
CCM-2	Outcome 2.1 Sustainable financing and delivery mechanisms established and operational	Output 2.2: Investment mobilized Output 2.3: Energy savings achieved	GEFTF	1,030,000	12,000,000
CCM-4	Outcome 4.2: Increased investment in less-GHG intensive transport and urban system	Output 4.2: Investment mobilized Output 4.3: Energy savings achieved	GEFTF	550,000	2,356,000
CCM-6	Outcome 6.2: Human and institutional capacity of recipient countries strengthened	Output 6.1: Countries receiving GEF support for enabling activities	GEFTF	1,045,750	2,200,000
Project Management			GEFTF	169,250	344,000
		Total project costs		3,570,000	31,900,000

[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: To support the government of Azerbaijan in the development and implementation of NAMAs in the low-carbon end-use sectors						
Project Component	**Grant Type**	**Expected Outcomes**	**Expected Outputs**	**Trust Fund**	**Grant Amount ($)**	**Confirmed Cofinancing ($)**
1 Assessment of GHG emission mitigation potentials and target setting	TA	**Outcome 1:** Assessment of GHG emission mitigation potentials and target setting completed	1.1 Relevant barriers that hinder the development and implementation of GHG mitigation measures assessed 1.2 Main oil & gas end-use sectors regarding status of energy performance and potential for decreasing energy intensity are analysed 1.3 Detailed marginal abatement cost curves for the oil & gas end-use sectors developed to demonstrate effective mitigation policies and economic scenarios 1.4 Awareness among governmental institutions increased and the development of a national replication strategy supported 1.5 Emission reduction targets in the oil & gas end-use sectors are established and validated	GEF TF	301,950	495,000
2. Development of NAMAs in oil & gas end-use sectors	TA	**Outcome 2** NAMAs in oil & gas end-use sectors developed	2.1 Three designed programs for the implementation of selected prioritized feasible NAMAs in main oil & gas end-use sub-sectors 2.2 Fully capable and qualified private and public sector entities in the design and implementation of NAMAs 2.3 Defined and established financial instruments mitigation actions in the oil & gas end-use sectors	GEF TF	411,800	345,600

3. Implementation of NAMAs in the oil & gas end-use sector	Inv	**Outcome 3:** NAMAs in the oil & gas end-use sector implemented	Three implemented NAMAs in oil & gas end-use sectors: • 3.1 NAMA 1: SOCAR's Green Building Program implemented • 3.2 NAMA 2: Sustainable Transport at SOCAR implemented • 3.3 NAMA 3: SOCAR's Associated Gas Capturing Program implemented Total lifetime direct emission reductions over approx. 0.56 mln t CO_{2eq} and total indirect emission reductions of 6.24 mln t CO_{2eq}	GEF TF	1,330,000	29,875,400
	TA				957,950	537,500
4. MRV system and national registry for mitigation actions in the energy generation and end-use sectors	TA	**Outcome 4:** MRV system and national registry for mitigation actions in the energy generation and end-use sectors implemented	4.1 Defined and established sectoral and subsectoral reference baselines for oil & gas end-use sector sectors 4.2 Established sub-sectoral GHG inventories for key oil & gas end-use sub-sectors 4.3 Established and operational national registry mechanism for mitigation actions in the oil & gas end-use sectors	GEF TF	399,050	302,500
			Subtotal		3,400,750	31,556,000
			Project management Cost (PMC)[3]	GEF TF	169,250	344,000
			Total project costs		3,570,000	31,900,000

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

C. SOURCES OF CONFIRMED COFINANCING FOR THE PROJECT BY SOURCE AND BY NAME ($)

Please include letters confirming cofinancing for the project with this form

Sources of Co-financing	Name of Co-financier (source)	Type of Cofinancing	Cofinancing Amount ($)
National Government	MENR	In-kind	800,000
Private Sector	SOCAR	In-kind	900,000
Private Sector	SOCAR	Cash	30,000,000
GEF Agency	UNDP	Grant	200,000
Total Co-financing			31,900,000

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
UNDP	GEF TF	Climate Change	Azerbaijan	3,570,000	339,150	3,909,150
Total Grant Resources				3,570,000	339,150	3,909,150

[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 ($)	Cofinancing ($)	Project Total ($)
International Consultants	1,017,000	0	1,017,000
National/Local Consultants	1,009,850	595,000	1,604,850

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, NAPs, NBSAPs, national communications, TNAs, NCSA, NIPs, PRSPs, NPFE, Biennial Update Reports, etc.

- In Azerbaijan, the State pursues a policy aimed at mitigating the causes and consequences of climate change. These efforts include adoption of the State Programme for Usage of Renewable and Alternative Energy Sources in the Azerbaijani Republic as well as the establishment of a Designated National Authorities (DNA) under the Clean Development Mechanism (CDM) within the framework of the Kyoto Protocol to the United Nations Framework Convention on Climate Change ratified in 2000.

  In order to facilitate the implementation of the Convention, a State Commission on Climate Change was established in 1997 by a resolution of the President of the Azerbaijan Republic. The Commission was composed of representatives of all related institutions and ministries. With GEF and UNDP support the *First* (2001) and *Second* (2010) *National Communications of the Republic of Azerbaijan* to the UNFCCC have been developed; the third National Communication is currently under development. The enormous GHG mitigation potential of the oil & gas production and end-use sectors has been highlighted in the FNC and SNC.

- Azerbaijan is not included in the Annex I group under the Convention and has not taken any quantitative obligations in accordance with the Kyoto protocol. Therefore, the country may only participate in the Clean Development Mechanism of the Kyoto protocol. Notwithstanding that Azerbaijan has not taken any quantitative obligations, it has taken initial steps towards mitigation, such as use of renewable energy sources, application of more efficient technologies in the energy sector, increase of forest areas, use of gas instead of black oil at thermal electric stations and others. Based on a proposed methodology (following UNFCCC and GEF guidelines) adjusted to the country-specific circumstances, a *Technology Needs Assessment (TNA)* as well *Technological Action Plans (TAP)* have been developed and presented in 2013. The TNA prioritizes low carbon technologies in the energy production sector as well as addresses the significant potential for GHG mitigation in the residential and commercial building sectors.

- The project is therefore aligned with NC, TNA and TAP as far as prioritization of climate change mitigation actions are concerned.

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

The project is consistent with GEF *Climate Change Mitigation Objective 1 – Implementing innovative low-carbon technologies, Objective 2 - Promoting market transformation for energy efficiency in the building sector*, *Objective 4 – Promoting low-carbon transportation technologies, and Objective 6 – Support Enabling Activities under the Convention*. Proposed changes in project alignment with GEF FA strategic framework reflect the results of NAMA identification and prioritization process conducted at PPG stage.

At COP 17 in Durban, the Parties recognized "the need for support for enabling activities to assist developing country Parties in the identification and preparation of nationally appropriate mitigation actions for submission to the registry, and support for their implementation" (FCCC/AWGLCA/2011/L.4).

In this line the Government of Azerbaijan is requesting support for the definition, design, and implementation of NAMAs (CCM- 6) in key oil & gas end-use sectors, with focus on promotion of innovative low-carbon technologies in the oil & gas production and end-use sectors (CCM-1), energy efficiency in buildings (CCM-2), as well as energy efficient transportation technologies (CCM-4).

The project will contribute to the achievement of GEF's outcome indicators and core objectives as follows:

[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.

- **GEF FA Objective 1**: Innovative low-carbon technologies will be demonstrated and implemented in the oil & gas production and end-use sectors as a result of needs and priorities defined in the country's First and Second National Communication as well as Azerbaijan's State programs on efficient energy use. GEF intervention under this priority objective will enable technology transfer and investment in pilot projects implemented under the NAMA mechanism.
- **GEF FA Objective 2**: Market transformation for energy efficiency in the building sector is one priority defined under the TNA/TAP and will promote new technologies targeting efficient use of energy in existing and new building constructions (residential and service buildings) resulting in NAMA pilot activities that will showcase significant energy saving and renewable energy potentials in SOCAR's building sector.
- **GEF FA Objective 4**: Promoting energy efficiency and low-carbon transport technologies will be demonstrated within another NAMA pilot project to address the significant potential of sustainable transport systems that will utilize state-of-the-art technologies in this sector. In doing so, SOCAR will be provided with technical assistance and technological support in realising GHG mitigation potentials within its own transportation system.
- **GEF FA Objective 6**: Support enabling activities and capacity building under the Convention by enhancing impact through new project approach under which a set of NAMA projects will be developed, implemented, and registered with UNFCCC.
- The **core outputs** will be the design, feasibility assessment and implementation of ideally 3 NAMAs in three energy end-use sectors where SOCAR is an active market player.
- The **result** will be leading to direct GHG emission reductions of 0.56 million tonnes CO2eq/year and indirect emission reductions of 6.24 million tonnes CO2eq/year.

A.3 The GEF Agency's comparative advantage:

UNDP is one of the lead agencies of the GEF to implement enabling activities and capacity development activities related to climate change mitigation. In Azerbaijan, UNDP has supported the country in developing its First and Second National Climate Change Communication to the UNFCCC and is currently supporting the MENR for the preparation of the Third National Climate Change Communication. The proposed UNDP / GEF Project is fully aligned with the Outcome 3 of the Country Program Document (2010-2015) for Azerbaijan related to environmental sustainability and has a target to assist the Government in reducing the carbon intensity of GDP. UNDP Country Office in Azerbaijan has a strong climate change portfolio consisting of the following initiatives: Promoting Development of Sustainable Energy in Azerbaijan, Solid Waste Management Improvement Project and Capacity Building for CDM (both completed); and a dedicated climate change team.

Globally, this project falls under UNDP Signature Program 3 "Access to New Finance Mechanisms" which is aimed at promoting new approaches to leveraging finance for climate mitigation projects and programs, such as sectoral crediting, CDM PoAs and NAMAs. Proposed project is one of a series of similar initiatives UNDP is designing/implementing across the world focused on NAMAs in energy generation/end-use sectors, such as the project "Nationally Appropriate Mitigation Actions in the Energy Generation and End-Use Sectors in Peru", approved by GEF Council in 2012.

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

Azerbaijan's GHG emissions and climate change mitigation targets

Azerbaijan is a fast developing, oil and gas oriented economy. According to 2nd National Communication to UNFCCC, Azerbaijan's annual GHG emissions were 50.6 mln tCO2e/year in 2005 with the energy sector (i.e. combustion of oil & gas) accounting for the largest share of domestic emissions, more than 50% or 31.3 mln tCO2. GHG reduction has to some extent already taken place in the country. Due to the decline in industrial activities since 1990, the level of GHGs released into the atmosphere from stationary and mobile sources has declined. While the level of pollution equated to 55.1 million tons of CO2 in 1990, in 2011 this figure accounted for 26.8 million tons of CO2 *(source: IEA, 2011)*.

The GHG inventory was initially conducted in Azerbaijan in 1998-2000 under financial support of Global Environmental Facility and UNDP as part of a project of the Initial National Communication to the UN Framework

Convention on Climate Change. The GHG inventory covered the period of 1990 to 1994. The Second National Communication was initiated in July 2006 with the support of UNDP and GEF. One of its components was the GHG inventory. The present GHG inventory covers all sectors over the period 1990 to 2005 (see Table 1 below). Emissions, trends and uncertainties were calculated.

TABLE 1: GHG EMISSIONS AND REMOVAL (GT CO2 EQ)

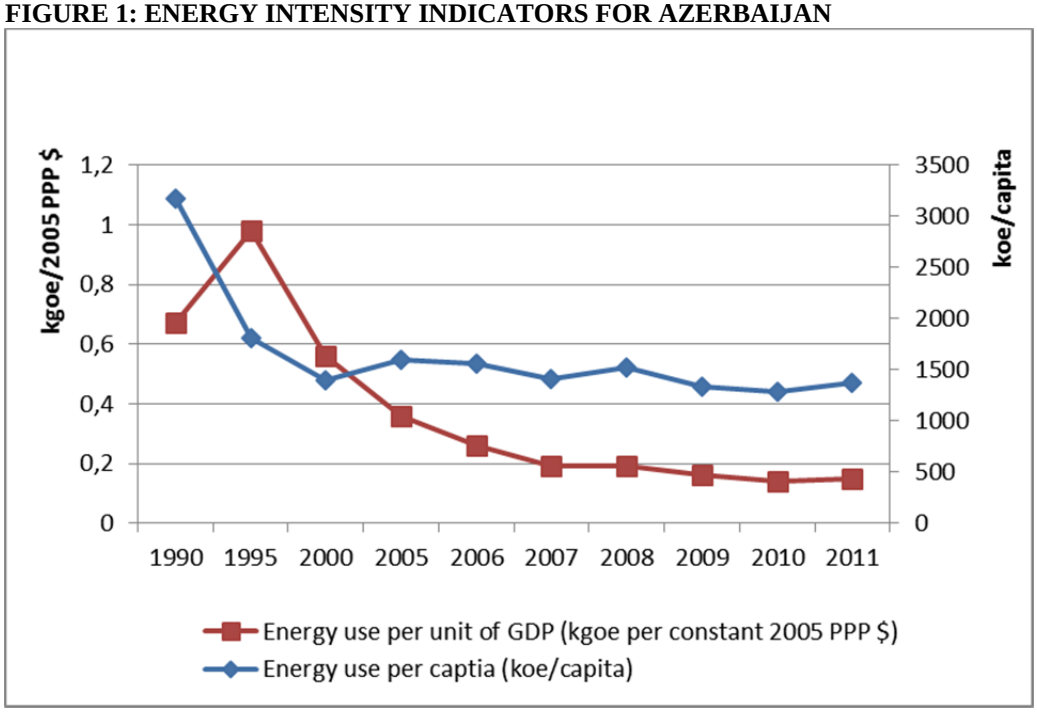
GHG	1990	1994	2000	2001	2002	2003	2004	2005
Emissions								
CO_2	50677	35985	29274	28842	28703	31347	33280	35845
CH_4	20036	9849	11354	12522	12537	12603	12895	14433
N_2O	992	620	360	347	344	347	350	357
Total	**71705**	**46454**	**40988**	**41711**	**41584**	**44297**	**46525**	**50635**

Source: 2nd National Communication (2010)

Energy Intensity and GHG emissions in Azerbaijan

The energy intensity in Azerbaijan decreased rapidly after 1994, through the country's economic transition. Energy use per unit of GDP was 0.98 kgoe per 1,000 US$ (2005 power purchasing parity) in 1995 and it decreased to 0.15 in 2011. This places Azerbaijan close to the OECD's average, which is 0.15. It is the result of the country's impressive GDP growth, which increased the capacity of the economy as a whole. Although energy intensity has decreased significantly, energy use per capita has remained almost the same since 1995.

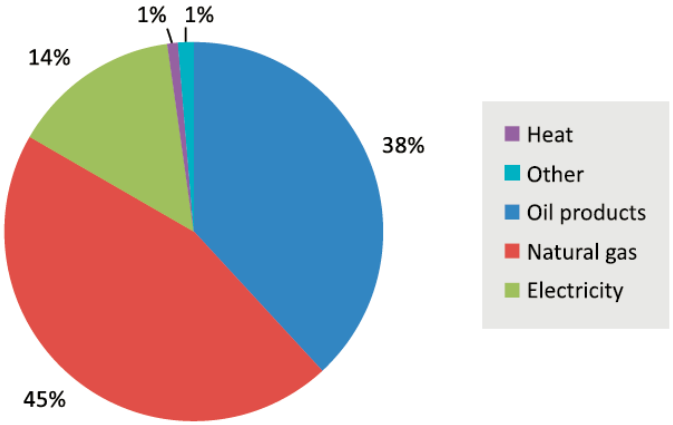
FIGURE 1: ENERGY INTENSITY INDICATORS FOR AZERBAIJAN



Source: IEA (2011)

Currently, the following energy sources contribute to the final energy consumption and greenhouse gas emissions in the country: natural gas (45%), oil products (38%), electricity (15%), heat (1%) and others (1%). Increasing energy efficiency is a key component of a sustainable energy strategy, as it is recognized by experts as being the most cost efficient way to reduce the environmental footprint of energy activities, ahead of the development of renewable sources of energy.

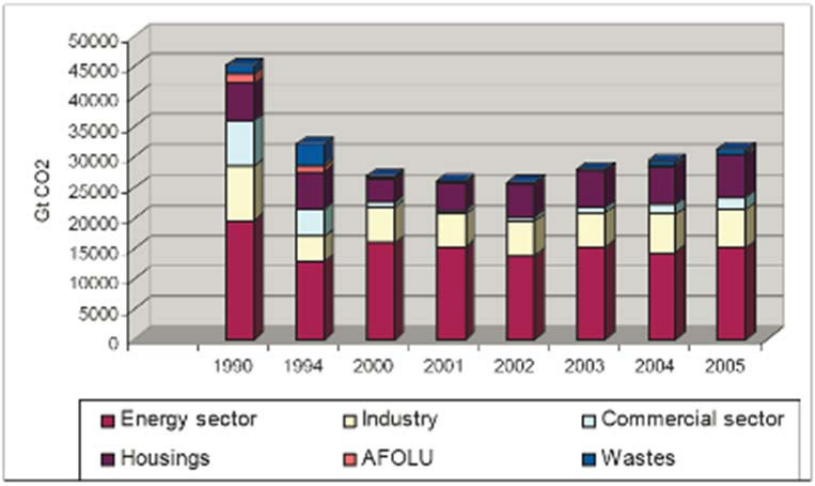
FIGURE 2: SOURCES OF ENERGY CONSUMPTION - 2011



Source: MIE (2012)

The main sources of CO2 emissions in Azerbaijan are related to the energy production and end-use sectors. CO2 emissions in the energy end-use sector come from the burning of fuels, including in the production of energy, oil and gas extraction, transport and the residential sector. In general, there is potential for greater decarbonization in Azerbaijan across all sectors. The replacement of oil & gas as main fuel by other sources, particularly alternative energy sources, is a key to achieve a considerable reduction in GHG emissions.

FIGURE 3: CO2 EMISSIONS IN THE ENERGY PRODUCTION AND END-USE SECTORS (GT CO2 EQ)



Source: 2nd National Communication (2010)

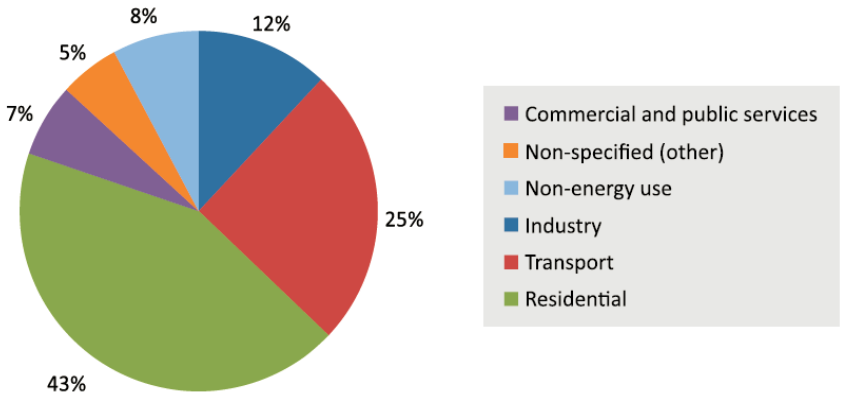
Residential consumption accounted in 2011 for 43% of the total final consumption (3,409 ktoe in 2011) and this was followed by transport (25% or 1,985 ktoe/a) and industry (12%, 949 ktoe/a). The following figure shows the share of each sector over the years.

TABLE 2: FINAL ENERGY CONSUMPTION (PER SECTOR, KTOE PER YEAR)

Sectors	1990	1995	2000	2002	2004	2006	2007	2008	2009	2010	2011
Residential	2,001	2,250	2,379	2,817	3,357	3,618	3,237	3,723	3,272	3,362	3,409
Industry sector	7,018	3,274	1,989	1,845	1,571	1,896	1,274	1,493	953	798	949
Commercial and public services	0	109	459	389	198	159	441	481	436	440	520
Transport sector	1,432	1,116	744	963	1,253	1,586	1,323	1,642	1,472	1,704	1,985
Others	4,747	2,033	1,067	544	402	129	260	313	391	407	428
Non-energy use	809	45	66	74	508	171	457	630	520	537	618
TFC	16,007	8,828	6,704	6,631	7,288	7,559	6,992	8,282	7,044	7,248	7,909

Source: Energy Charter Secretariat - In-Depth Review of the Energy Efficiency Policy of Azerbaijan (2013)

FIGURE 4: FINAL ENERGY CONSUMPTION (PER SECTOR IN %, 2011)



Source: MIE (2012)

The power sector is important to the development of Azerbaijan's economy. Azerbaijan is fully electrified, and electrical power is the third most utilized energy source (first is natural gas and second is oil) for domestic and industrial use. It has an installed generating capacity of about 6,500 MW, of which thermal power stations contribute 5,500 MW and hydropower stations make up most of the balance. Until the recent past a significant portion of the installed capacity was not available; however, since the year 2000, investment efforts in generation and transmission have improved conditions in the electricity power system. Converting power plants to natural gas has also provided an important leap forward in terms of improving power plant efficiencies and their environmental impacts, but since power generation is one of the largest users of oil & gas in the country, it provides great potential for decarbonization, too.

Business-as-Usual Scenario

Background information - Oil & Gas Sector in Azerbaijan

As an oil- and gas-rich country (latest estimations on crude oil reserves are at 7 billion barrels), Azerbaijan has been extracting these resources for industrial purposes for more than 160 years. Following its independence from the Soviet Union in 1991, oil production in Azerbaijan fell sharply between 1992 and 1997 – mainly due to conflict with Armenia over Nagorno-Karabakh, outdated technology, poor planning and lack of investment in new drilling and rehabilitation of existing wells – bottoming out at 9.1 mln tons in 1997. By 2000, production had recovered to 14 mln tons, then to 22.4 mln tons in 2005 and 44.3 mln tons in 2008.[5]

Azerbaijan's proven gas reserves are estimated at about 30 trillion cubic feet (TCF), and the further potential for exploration is expected to be between 100 and 200 TCF[6]. Virtually all natural gas is produced from offshore fields. After independence, production declined steadily to 4.5 billion cubic meters (BCM). In 2009, gas production increased to 23.3 BCM and was expected to reach 28.5 BCM in 2010. About 66 % of total production is used to meet domestic demand and 34 % exported mainly to Russia, Georgia and Turkey.

The extraction of oil has increased for the past 5 years. There is one gas and two oil refinery plants in the country. The capacity of the oil refining plants is about 20 million tons. However, since these plants have become obsolete, the level of oil production has diminished. At present, most crude oil extracted in the country is exported to foreign countries. There are three pipelines intended for oil export: Baku-Novorosiysk, Baku-Supsa, and Baku-Tbilisi-Ceyhan. In 2007, the Baku-Tbilisi-Erzurum pipeline was launched for facilitating gas export.

Presently, there are 57 oil fields in Azerbaijan, of which 18 are located in the Azerbaijani share of the Caspian Sea. The potential sources of GHG in the oil and gas sector are Azneft Production Unity, Heydar Aliyev Oil Refinery, and AzerNeftYag Oil and Gas Refinery.

The State Oil Company of the Azerbaijan Republic (SOCAR) is a state owned oil and gas company and is responsible for all aspects of offshore and onshore exploration of oil and gas fields in the country, the pipeline system, oil and gas imports and exports, processing, refining and sale of oil and gas products. SOCAR was founded on 13th September 1992 following the merger of two state oil companies, Azerneft and Azneftkimiya. Although SOCAR is involved in all segments of the oil sector, it produces only about 20 percent of Azerbaijan's total oil output, with the remainder produced by international oil companies, such as BP.

SOCAR has been taking regular actions to deal with climate change. It has established the Ecological Park in order to meet the demand for trees and shrubs, and to inform the population about environmental issues. In order to meet part of the peak demand for electricity from alternative energy sources and RES, four wind generators with 10 kW each and solar panels with a total capacity of 20 kW have been installed as a pilot project.

Understanding the environmental and economic benefits of mitigating global climate changes impact, SOCAR has joined the initiatives of developed oil companies with its corporate "Climate Change Mitigation Strategy" in 2010. Measures of reducing GHG emissions will lead to the modernization of the company and ultimately is expected to increase its competitiveness in the market.

SOCAR is an important player on the Azerbaijani market and has, due to its outstanding position as a state-owned company, the visibility and potential to become a major stakeholder and implementer of the proposed GEF project.

Apart from SOCAR, a number of operational companies and joint ventures are also large sources of GHG emitters. Due to the lack of relevant technologies, 750-800 million cubic meters of low-pressure associated gas from SOCAR's offshore oilfields were released to air at the end of the 1990s without being burnt. On each of the onshore fields, 2-5 million cubic meters of associated gas are extracted annually. In the meantime, the amount of by-gas aired into atmosphere from on- and off-shore fields of SOCAR has gradually diminished.

TABLE 3: AMOUNTS OF ASSOCIATED GASES EVAPORATING FROM SOCAR'S PRODUCTION WELLS

[5] State Statistics Committee of Azerbaijan, 2009
[6] Oil and Gas Journal, 2009

Years	2006	2007	2008	2009	2010	2011	2012
Thsd. m^3	578,572	494,0180	280,479	407,121	276,426	119,191	109,059

Source: SOCAR

BAU Component 1: GHG/Energy baseline and targets

Azerbaijan joined the United Nations Framework Convention on Climate Change (UNFCCC) in the category of a non-Annex I country in 1995, and is also a signatory to other international agreements on climate change, such as the Kyoto Protocol. National Inventory of greenhouse gas emissions in Azerbaijan has been conducted within its initial communication to UNFCCC for 1990-1994. The year 1990 has been taken as baseline. Greenhouse gas emissions have been assessed using the IPCC Methodology based on the data of the governmental and various ministerial statistics. The second national communication on climate changes was submitted to the UNFCCC in 2010.

Azerbaijan's baseline emissions are projected to grow nearly two-fold and reach 115.6 MtCO2 by 2025, starting from about 60.8 MtCO2 in 1990 (according to Azerbaijan's First National Communication to UNFCCC – 2001) primarily as a result of increased domestic consumption of oil & gas and corresponding increase of energy end-use in the residential, power and transportation sectors.

SOCAR is involved in exploring oil and gas fields, producing, processing, and transporting oil, gas, and gas condensate, marketing petroleum and petrochemical products in domestic and international markets, and supplying natural gas to industry and the public/households in Azerbaijan. SOCAR is also operating large own vehicle fleet (more than 6,000 vehicles), is operating as a developer and constructer of public, commercial and residential buildings and thus contributing to GHG emissions in different energy end-use sectors. Due to its important position within the overall market chain of exploration-production-transport and final end-supply the company's activities have a very significant share in the country's overall GHG emissions regime, in average 10-15% of country's emissions.

Apart from the major share in GHG emissions, and due to the lack of relevant technologies, 750-800 million cubic meters of low-pressure associated gas from SOCAR's on- and offshore oilfields is released to air every year without being burnt, leading to an equivalent of about 1.3 million tons of CO2 being emitted from oil & gas fields annually.

Every year, a total of about 3 million tons of CO2 eq. are emitted by SOCAR and its business operations in Azerbaijan. By taking appropriate actions the GHG emissions the estimated potential for GHG emission reductions is about 1.2 million tons of CO2 eq, or at least 30% (Second National Communication to the UNFCCC, MENR, 2010).

SOCAR has implemented a very ambitious voluntary commitment to reduce its own emissions by 40% or an equivalent of aggregate 20 mln tCO2 by the year 2020. This commitment and the actions to achieve them are spelled out in the *SOCAR's Climate Change Strategy* adopted by the Company's Board in December 2010. During the development of this strategy, joint assessments of several mitigation options within SOCAR's enterprise were researched and summarized:

- Improvement of the GHG inventory and monitoring system
- Perspectives of development of future Eco-Park complex
- Study of use of alternative fuels used within SOCAR's vehicle fleet
- Energy efficiency at own production sites including the option to capture the by-gas of oil wells and making the collected gas available for end users (gas heating in households, alternative fuel options developing).

Furthermore, in connection with the execution of Order No. of SOCAR of 2008, the Environmental Department has carried out an inventory of greenhouse gas emission sources for 2007-2010 at structural divisions of SOCAR, operating companies and joint ventures.

Nevertheless, the biggest challenge remains with the legislative and political framework conditions that will impose stronger targets towards applying GHG mitigation strategies among diverse sectors in the country. Among the existing framework conditions is also to be mentioned the weak statistical data basis on energy end-use sectors and overall weak capacity and means to conduct national and sectoral GHG inventories on a regular basis.

A national inventory system incorporates all of the elements needed to estimate, report and archive GHG emissions and sinks, including the institutional, legal and procedural arrangements. Having a system in place means that a country can

develop a high quality inventory at regular intervals — be that annually or every three to four years — because institutional arrangements within each country are established and broadly known, legal support is in place and all the sources of data (activity data, emission factors, and background information) for compiling the national GHG inventories have been identified, documented, appropriately archived and made accessible.

The GEF project will address the existing gaps by proposing appropriate mechanisms and developing sub-sectoral GHG and energy inventories for key oil & gas end-use sectors and by defining and establishing reference baselines for these sub-sectors on which voluntary emission reduction targets for key end-use sectors can be based in the future.

BAU Component 2: Mitigation programs and policies for oil & gas end-use sectors

The Government of Azerbaijan has initiated several State Programs towards GHG mitigation and addressing energy efficiency and renewable energy production, with specific actions aimed at achieving national targets by 2030 (for further information refer to Annex E). For example, the Action Plan for Energy Efficiency and Reduction of Losses and Technological Consumption of Energy Sector Enterprises has been adopted. The Plan foresees implementation of mandatory metering programs at enterprises and households, measures to reduce technical losses, as well as adoption of normative documents and standards related to utilization, losses and technological consumption of fuel resources by all public entities.

There are a number of donor-funded initiatives providing critical support to the Government for implementation of the State Programs from which most relevant for the project activities are listed below; while a number of BAU projects are focusing on design and implementation of policies, there is a lack of actions and eventual investment in climate change mitigation. So, by focusing on pilot activities in partnership with SOCAR the project will fill in this gap and bridge policies with actions.

The non-exhaustive list of energy policy and support programs is therefore considered to provide relevant inputs to the improvement of end-use sectoral approaches the project will address by developing and implementing National Appropriate Mitigation Actions.

The *Energy Reform Support Program* is funded by the European Union (ESRP, 2nd Phase for 2014-2020 is under development) which will assist Azerbaijan in implementing agreed priorities. Building on the State Program for the Development of the Fuel and Energy Sector in Azerbaijan (2005–2015), the Azerbaijani Government under the ERSP will review the national energy strategy in order to develop an overall, coherent, integrated and transparent energy strategy that covers the supply, transportation, transit and use of all the energy resources and the further reforms to be undertaken; it will identify the infrastructure rehabilitation requirements and the new infrastructure needs, while specifying in more detail the policies and legislative and institutional reforms to promote EE, energy savings and the greater use of RE in all oil & gas end-use sectors.

UNDPs *Promoting Development of Sustainable Energy Project* supports development of conducive policy and regulatory framework for energy efficiency and renewable energy, builds technical and institutional capacities for policy enforcement, and facilitates implementation of demonstration sustainable energy projects (such as small hydro power).

ADB Economics of Climate Change in Central and West Asia: one of the outputs of this on-going regional ADB-supported initiative will be the estimation of the costs of climate change mitigation measures in Azerbaijan's oil & gas end-use sectors, as well as the assessment of the policy and measures needed for low-carbon growth, including market-based mechanisms, energy price setting, carbon taxation, subsidy removal, and urban planning. Its outcomes are considered relevant for this project and shall be integrated into the development of the appropriate mitigation actions under the outcome 2.

Among other activities and projects under completion are the *Energy Saving Initiative in the Building Sector in the Eastern European and Central Asian Countries (ESIB)*, an INOGATE project focusing on: Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Tajikistan, Turkmenistan, Ukraine and Uzbekistan. It's main objectives were:

- to support the development and enforcement of EE-related legislation in the building sector; and

- to support an enabling investment climate for energy conservation projects (including identification and assistance in the preparation of EE investments in the building sector for submission to international financial institutions).

The *Sustainable Buildings in Azerbaijan; Technical Assistance and Capacity Building* project has been implemented in a partnership between the State Agency on Alternative and Renewable Energy Sources of Azerbaijan (SAARES) and Norsk Energi (Norway) for the period 05/2011–04/2014. This is a technical assistance and capacity building programme on the energy auditing, certification and management of buildings, utilisation of RE in buildings and support for the development of new regulations and norms for EE and RES in buildings. The Project is financially and technically supported by GoNorway. Within the project, 25 potential auditors were selected for the initial trainings in energy auditing. The training participants are representatives from SAARES and other relevant ministries, including the Ministry of Emergency Situations.

BAU Component 3: Investment and mitigation actions in the oil & gas end-use sectors

Although the country has made visible progress in developing state programs on energy and renewables within the last years, there is a defined need for developing laws and secondary legislation on energy efficiency and renewable energy. Consequently, the level of involvement from state sector to trigger mitigation activities through appropriate energy efficiency and renewable energy financing and supporting schemes has been quite low. Among one private sector initiative, the European Bank for Reconstruction and Development (EBRD) is scaling up its operations in the Caucasus: Armenia, Azerbaijan and Georgia as part of the ambitious targets set in its *Caucasus Energy Efficiency Programme (CEEP).* In the framework of the recent up-scaling of the Facility, in total USD 100 million will be made available until 2015 for on-lending to eligible industrial and residential energy efficiency as well as small renewable energy projects supported by technical co-operation (TC), including a performance based investment incentive scheme which will be designed to address specific barriers depending on the sector and type of investment. Private-sector engagement is crucial to benefit the country's energy and carbon intensity by taking a greater stake in realizing investments to low energy and low carbon technologies.

SOCAR has been among few other institutions at the forefront of national climate change mitigation actions. Apart from adopting bold targets and implementing GHG emission reduction measures internally, the company is implementing several initiatives to promote more efficient and cleaner oil & gas end-use technologies and practices among its customers and employees.

SOCAR's demand-side management program for natural gas users supports installation of meters and smart-cards for individual and industrial oil & gas end-users. SOCAR also announced the plans to act as a renewable energy project developer based on recent pilot investments in small-scale wind and solar energy conducted. Another focus is to replace outdated equipment and technology on its on- and off-shore oil-gas wells as well as oil & gas production facilities and collecting by-gases being eliminated in very large amounts. SOCAR's vehicle fleet is among the largest owned by a single company in the country, specific measures addressed within their Climate Change Strategy are to examine alternative fuel options including the use of fuels from renewables.

With specific regard to the above mentioned situation analysis including prevailing barriers for promoting increased energy efficiency and renewable energy policies, legislation and mitigation programs, there are sector-specific conditions that characterize the baseline situation in regard to the implementation of mitigation actions in the oil & gas production and end-use sectors that the project will address.

Building Sector

More than 80 per cent of all residential buildings were constructed some 40–50 years ago and about 30 per cent are in urgent need of renovation or even reconstruction. In total, about one-fifth of the housing stock is made up of *khrushchevki*—prefabricated multifamily housing estates constructed in the 1950s and early 1960s throughout the former Soviet Union. These estates had an operational period of 25 years and are now experiencing significant physical and structural damage.

TABLE 4: HOUSING STOCK

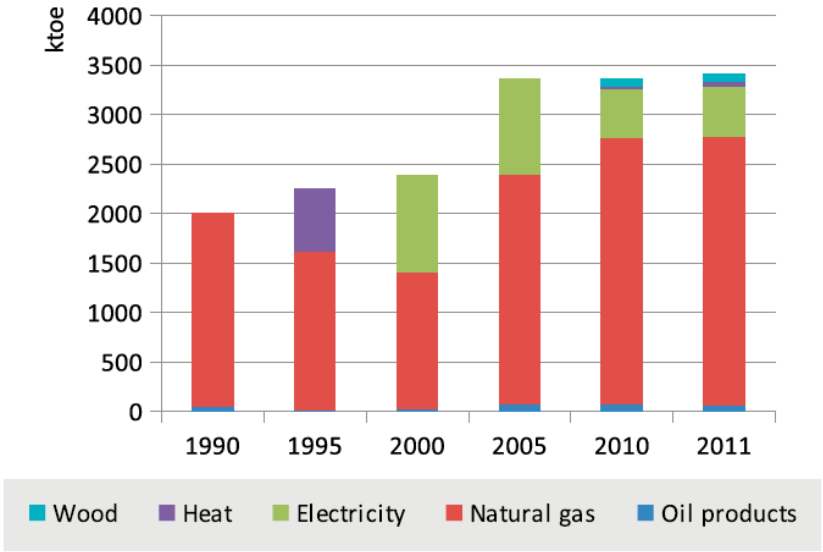
	2005	2007	2008	2009	2010	2011
Total dwelling stocks, mln.m^2 general floor area	104.0	107.9	109.4	112.0	114.5	
Number of residential buildings, thsd. Units	1,031.7	1,069.2	1,081.8	1,109.0	1,123.1	
Number of residential dwellings (including rooms in hostel), thsd. Units	1 585.3	1,614.6	1,630.6	1,656.5	1,673.1	
Number of multi-store residential buildings, units	6,870.0	7,091.0	7,474.0	7,063.0	7,068.0	
Final energy consumption, in ktoe/year	3,357.0	3,237.0	3,723.0	3,272.0	3,362.0	3,409.0
Specific energy demand in kWh/m².a	375.4	348.9	363.9	339.8	341.5	

Source: Statistical Committee of Azerbaijan

Residential energy consumption increased gradually from 2,001 ktoe in 1990 to 3,409 ktoe in 2011 with a yearly average growth of 3.8%. It started to decrease in 2007, mainly due to the fall in electricity consumption resulting from the increase in tariffs. Natural gas is the main fuel used in residential consumption. About 80% of the total residential energy consumption is met by natural gas. There is no diversity in the energy sources used for residential consumption and electricity represents only 15% of the total consumption. The shares of heat, wood and oil products constitute the remaining 5%.

However, considering the large specific energy demand of residential buildings (around 340 kWh/m².a), there is a significant energy saving potential in the building sector to be tackled (40-50% in average, compared to international best practice). Even though EE issues are known by constructors in Azerbaijan, they are generally not applied as they make the projects more expensive. Here a behavioural change is needed and the potential for large-scale residential and other buildings reconstruction (schools, nurseries, health clinics, office buildings) to be tackled

FIGURE 5: RESIDENTIAL ENERGY DEMAND ACCORDING FUEL TYPES



Source: MIE (2012)

As of 2010, Azerbaijan's existing residential building stock comprises approximately 115 million square meters, the large majority of which is aging, inefficient buildings constructed in the Soviet era. On average, buildings in Azerbaijan consume two to three times more energy per unit of floor area than buildings in Western Europe. Most of the existing residential stock consists of multifamily buildings using natural gas for heating. Consequently, almost 80% of GHG

emissions from residential energy use arise from space heating and hot water production. Electricity demand accounts for another 15% of residential-sector emissions, with air-conditioning and ventilation becoming increasingly used, and cooking and other uses making up the remaining share in the residential electricity demand.

Over much of the past decade, a booming economy and aggressive government housing-development policy led to rapid acceleration of new housing construction rates in Azerbaijan. On average, introduction of new housing was increased by five times between 2000 and 2012 (or about 15% of the existing housing stock per annum), with only minor setbacks in construction activity caused by the financial crisis in 2009. Between 2005 and 2012, the number of dwellings increased by an average of 15,000 apartments per year.

TABLE 5: GROWTH RATES OF RESIDENTIAL BUILDINGS STOCK

Year	**2000**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**
Stock growth rate in thsd. m²	486,7	1.592,9	1.583,5	1.616,1	1.844,5	1.501,5	2.048,7	2.032,6	2.146,8
in %	17%	20%	-1%	2%	14%	-19%	36%	-1%	6%

Source: Statistical Committee of Azerbaijan

The following assumptions characterize the business-as-usual scenario in the buildings sector in Azerbaijan:

1. Low speed in the formulation of energy-efficiency improvements in the country's building codes. The Housing Code (HC) of the Republic of Azerbaijan was adopted in 2009, however no major requirements regarding minimum energy efficiency standards have been introduced so far, and it is also not likely that it will happen soon. However, in order to be conservative, it is assumed that energy requirement for heating in new buildings is expected to be improving at the rate of 3% per year starting in 2012 (i.e. going down from the current average of approximately 300 kWh/m².year to 250 kWh/m².year by 2027).

2. The compliance rate for building codes. Relatively low compliance of buildings with building codes is a worldwide problem encountered not only in developing and transition economies but also in developed ones. Furthermore, like other countries in the region Azerbaijan faces problems of illegal settlements and illegal construction. The number of illegal buildings is quite high, which creates serious barriers not only for their registration, but also for the proper functioning of the housing sector and for general urban development. For the purpose of calculations, it is assumed that in BAU scenario the buildings to be built at least comply fully with the minimal sanitary norms on EE (which actually often is not the case).

3. Building construction volumes: As of the beginning of 2009, Azerbaijan had 1,082,100 residential houses, of which 7,500 had more than 5 storeys. Over the last 15 years, the majority of multifamily housing estates never underwent repairs or benefited from renovations. The city of Baku accounts for approximately half of all multi-apartment housing in Azerbaijan by floor space. Annual construction volumes growth average rate was around 15% between 2000 and 2010. In 2009, the growth rate decreased by almost 20% because of the global financial crisis; the 2010-2025 growth trend is assumed to be 5% annually, linked to the anticipated GDP growth rate.

In a *business-as-usual scenario*, state- and commercially-funded construction and renovation in Azerbaijan will be implemented using outdated building norms and practices and with no regard given to energy efficiency, resulting in excessive energy use. GEF assistance is requested to support SOCAR in adopting more energy-efficient construction practices in buildings.

Under the BAU scenario, the annual emissions from the SOCAR's building stock would maintain to grow and energy efficiency potentials and improved building technologies would remain mainly unutilized.

The *alternative scenario – the GEF project scenario* -- relies on a set of actions and expected outputs that will allow on the one hand to improve energy performance in SOCAR's buildings and thus build necessary capacities among designers and construction companies, on the other hand implement relevant demonstrations, which are expected to help revise the existing trends and reduce energy consumption and associated GHG emissions in residential or commercial buildings in the future.

With the GEF support, through implementing a NAMA the focus on energy efficient design and retrofitting measures in the existing housing stock together with the integrated building design approach to be applied to SOCAR's new construction shall be enforced, leading up to at least 40-50% reduction in specific energy consumption for heating in residential sector from the current average of 300 kWh/m² year down to 175 kWh/m² year by 2029 for improved design techniques.

Azerbaijan has a significant historical and cultural heritage, also in its urban areas. To meet modern planning standards, greater attention needs to be given to the renovation of historical areas as well as other buildings. A very important aspect here should be the focus on the energy efficiency when renovating, including the employment of modern concepts and construction materials. Although the country has considerable oil and gas resources, energy efficiency policies would foster further economic growth and would have a positive impact on family budgets.

Transport sector

Apart from the industry and residential sectors, the transport sector is the third largest producer of GHG emissions in the country. Since 1990, the amount of motor vehicles has almost tripled, mainly caused by the massive expansion of passenger cars on Azerbaijani streets, and with the biggest dynamic of numbers increasing between 2000 and 2008.

TABLE 6: STATUS OF MOTORISED VEHICLES IN AZERBAIJAN

	1990	**1995**	**2000**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**
Total	**398.761**	**392.165**	**440.626**	**612.069**	**690.012**	**773.318**	**860.047**	**925.866**	**982.553**	**1.037.626**	**1.135.936**
% increase		**-2%**	**12%**	**39%**	**13%**	**12%**	**11%**	**8%**	**6%**	**6%**	**9%**
From which:											
-Passenger cars	260.210	278.285	332.026	479.447	548.979	616.853	700.080	759.203	815.683	871.449	958.594
-Trucks	99.507	79.673	78.566	90.852	97.395	110.391	113.088	117.378	118.460	122.182	130.019
-Buses	14.044	12.768	16.756	26.735	27.474	28.092	29.340	29.985	29.569	29.189	29.647
-Other vehicles	25.000	21.439	13.278	15.035	16.164	17.982	17.539	19.300	18.841	14.806	17.676

Source: Statistical Committee of Azerbaijan

Energy use in transport decreased during 1990–1999 but then it gained a significant increase and exceeded its value of 1990 after 2004, corresponding to the opening up of the economy to foreign countries and also to the increase in the quality of life.

Almost all of the final energy consumption in the transport sector is met by oil products, and the share of electricity is only 2%. Under the *business-as-usual scenario*, alternative fuel sources and energy efficient transport modes and behavior will not be propagated to be used and it is expected that the transport sector is going to increase, although at lower rates compared to last decade, leading to a further increase in the sectoral share of the country's GHG emissions.

The *GEF project scenario* will consider technological and market opportunities for improving the current fuel mix that is 98% depending on gasoline and diesel engines to (a) identify the production and distribution channels for decarbonized fuel types to be introduced into the transport sector (e.g. hydrogen, (m)ethanol, electric vehicles, compressed natural gas) and (b) to introducing defensive (road safety) and energy efficient driving styles, which based on international experience is estimated to reduce vehicle emissions by at least 10% among trained vehicle drivers. The GEF project will assist in the implementation of pilot fuel-switch investments and introduce programs for eco-driving training to reduce the carbon and energy intensity of the transport sector.

Oil & gas production sector

Currently, there are about 80 mln m³ of gas aired yearly from off-shore and 29 mln m³ from SOCAR's on-shore oil fields. Out of this on-shore amount about 27 mln m³ of gas is aired from Siyazanneft Oil and Gas Production Unit, one

of six SOCAR's on-shore facilities, located 100 km North of Baku, which has been monitored by SOCAR's Ecology Department.

Under a *business-as-usual scenario*, associated gas, a form of natural gas, which is commonly found associated with deposits of oil or gas, is released as a waste product or is, due to the remote location of many oil fields, either at sea or on land, simply burnt off in gas flares. The flaring of associated gas is controversial as it is a pollutant, a source of global warming and is a waste of a valuable fuel source.

Technically, several options exist for handling associated gas[7].

- Preparing it as a fuel in various forms (i.e. dried pipeline gas, LPG and exporting it via a pipeline)
- Gas reinjection for later recovery
- Generation of electricity for transmission or on-site needs
- Processing such as LNG or LPG and exporting via tankers
- Conversion to petrochemical industry feedstock
- Processing gas-to-liquids and gas-to-solids
- Conversion to other forms of energy for such uses as thermal for district heating

As in the case of the Siyazanneft, that owns about 550 wells in the approx. 2,000 hectares territory, collection of the associated gases is not performed basically due to its unfavorable conditions (remote area, low utilisation opportunities so far, outdated technology of existing production facilities). Currently, about 73.2 thousand m³ of gas is aired daily or about 27 million m³ yearly. The amount of methane in the associated gas is up to 80% and corresponding to 21 mln m³. Since the gas is therefore not been collected and/or flared at the on-shore locations of Azerbaijan at all, it is being evaporating to the atmosphere as methane (CH4) and therefore contributing significantly to global warming. The corresponding CO2 eq is about 313,000 tonnes annually.

Under the *GEF project scenario* best available technology will be used to capture the associated gas and reduce venting of the low pressure associated gas at Siyazanneft. The recovered low-pressure associated gas will be collected, compressed and transported to a gas processing plant (GPP). The GPP receives natural gas and associated gas which are mixed prior to processing. The processed and clean gas will be provided to the gas grid and utilized to nearby villages and communities to supply family houses as well as production facilities (e.g. chicken farms) with fuel. Households and partly smaller sized companies in rural areas currently mostly use wood or very expensive kerosene and LPG in low-quality stoves, which will be upgraded to a fossil fuel source that is however provided as by-product from a large scale by-gas capturing program with a major reduction of the greenhouse gases. The measures addressed by the GEF project will initially tackle the energy production sector, however generate significant benefit to lower the primary energy demand of the end-use sector.

BAU Component 4: Monitoring, Reporting and Verification (MRV) for mitigation actions in oil & gas end-use sectors

There is currently no comprehensive system in place to monitor the impact of mitigation measures at sectoral or national level. National GHG inventory prepared by the National Climate Change Center under MENR and SOCAR's corporate GHG inventory represent the first building blocks of such system. Technical knowledge and understanding of mitigation activities gathered by the private and public sector through concrete project experiences (e.g. CDM projects developed) and the capacity development programs executed in Azerbaijan during last 10 years (World Bank CF-Assist, UNDP Capacity Building for CDM and EU-TACIS program) serves as a stepping stone for post- 2012 scaled up market mechanisms and sectoral MRVs.

While the UNFCCC does not provide specific requirements for the measurement or monitoring of NAMAs, it has produced guidance for reporting and/or verification purposes of mitigation actions in general (thus including NAMAs). For instance, on reporting, National Communications that are required from developing countries every four years (or on a discretionary basis for Least Developed Countries and Small Island Developing States) should include basic

[7] Source: http://www.clarke-energy.com/gas-type/associated/

information on mitigation actions and their progress. National GHG Inventories that are included in the National Communications are also expected to reflect impacts from mitigation actions.

MRV enables the assessment of the effectiveness implemented NAMAs by tracking their impacts including greenhouse gas (GHG) emission reductions and non-GHG related impacts such as sustainable development benefits. MRV also supports improved policy design and decision making through systematic progress reporting and is a key tool to ensure accountability of NAMA stakeholders.

Transparency of mitigation actions and their impacts is a key principle in reporting progress on implementation to the UNFCCC and is a necessity for those stakeholders involved in the NAMA who need to assess its effectiveness from various perspectives. For instance, host countries are expected to use MRV to track progress towards domestic objectives - which could be either GHG related or non-GHG related - to improve policy design and implementation and to increase trust amongst NAMA stakeholders, in addition to complying with UNFCCC and funder requirements.

Feasibility and cost effectiveness of the MRV system are also important aspects to consider when designing the MRV system. Taking into account the NAMA's characteristics and country's MRV capacities enables the design of a feasible and customised MRV system and process, which facilitates the effective implementation and monitoring of NAMAs.

Under *business-as-usual conditions*, there is mainly a lack of data and corresponding information prevailing that also leads to weakly justifiable or incomplete databases being used for development of national GHG inventories and thus provide only unsuitable decision-making tools to measure actual performance of energy end-use sectors in terms of consumption, specific energy intensities and greenhouse gas and other relevant emissions.

Under the *GEF project scenario*, the development of NAMAs will require an effective monitoring, reporting and verification system that will be based on goals and indicators that are *SMART: Specific, Measurable, Achievable, Relevant and Timely*. SMART indicators facilitate development of a robust system that is adapted to local circumstances and the selection of realistic target values for each indicator.

In addition to monitoring the impacts of the NAMA, it will be foreseen that the project will develop mechanisms and methodologies to monitor progress of implementation of the activities under the NAMA. While MRV of impacts monitors the achievement of objectives through impact indicators (e.g. tCO2e reduced, reduction in energy consumption, GHG abatement cost, etc.), MRV of progress looks at whether the planned NAMA activities have been fully implemented at the time foreseen through progress indicators (e.g. trainings delivered, etc.). Both dimensions are important for the success of NAMAs and learning for future activities. However, they need to be approached differently and with distinct sets of indicators.

Barrier Analysis

Having reached the peak of the currently available oil and gas production, Azerbaijan needs to establish a viable medium and long term strategy for managing and utilizing its energy resources. One important component of such strategy is introducing appropriate measures to reduce the energy consumption. As a result, energy efficiency in several energy end-use sectors will increase.

Currently, there are several initiatives led by the Government and the national oil & gas company, SOCAR, which clearly contribute towards this objective; nevertheless it has to be recognized that the overall system of Azerbaijan's energy efficiency and renewable energy policy is still in its early stages of its rationalisation and implementation.

A couple of fundamental barriers pertain to improving the effectiveness of the country's energy and climate change policy but shall be properly considered within the GEF project with specific focus on their removal.

Barrier 1: Policy/regulatory barriers:

Public policies in the field of energy efficiency are still underdeveloped or missing. The *State Programme for the Development of the Fuel and Energy Sector (2005-2015)* targets reducing losses and prevent inefficient use of energy in order to cover the electric power and natural gas demands. Additionally, Azerbaijan has drafted the State Program of

Development, Technical Regulation & Standardization of Energy Efficiency: the program has been submitted for consideration of the Azerbaijani Cabinet of Ministers in 2011, but its approval is pending since then.

The *State Programme on the Use of Alternative and Renewable Energy Sources* in Azerbaijan defines short-term (5 year), mid-term (10 year) and long-term (to 2030) targets for introduction of RES and EE technologies as follows: (1) share of RES in gross domestic power consumption reaches 30% by 2030; (2) efficient use of resources result in saving of equivalent of 3,060 mln m³ of natural gas by 2030; and (3) GHG emissions reduced by 30% in 2030 as compared to 2010 baseline.

Presently, although the Government sets the targets for an energy efficient economy, there is no legal framework in place specific to energy efficiency activities. The Energy Charter Secretariat assessed in its *In-Depth Review of the Energy Efficiency Policy of Azerbaijan* (drafted in September 2012) that energy efficiency in Azerbaijan still needs further developments in terms of strategy, action plans and legislation. Moreover, the few energy efficiency measures that exist are the ones that are financed by the EU or other donor projects, being implemented by NGOs.

Although the impact of missing policy framework is considered significant the project will not be able to provide the means to work on this barrier removal since it foresees to address stakeholders at the level of mitigation investment and action rather than the policy-makers. The project's outcome 2 (NAMA development) and outcome 3 (NAMA implementation) will facilitate the transformation to lower emission development pathways through which the country's policy makers will have the opportunity to systematically map the improvements in the prevailing climate-related policy landscape.

Barrier 2: Lack of capacity on the institutional and professional level

Among the country's main environmental problems are the significant GHG emissions from end-use sectors such as buildings, industrial plants and vehicles. As Azerbaijan improves its economic performance, integrating environmental concerns into sector policies remains a key challenge for the future in terms of mitigating negative environmental impacts from high-impact economic sectors, including the oil and gas extracting industries. As most energy in Azerbaijan is generated by burning hydrocarbons, a reduction in emissions might be possible through gains in efficiency, energy saving and the use of alternative energy sources, whereas the transfer from liquid fuel to gas has already been completed in the power sector.

The 2004 State Programme on the Use of Alternative and Renewable Energy Sources in the Azerbaijan Republic for 2005–2015 focuses on the development of new energy resources, however, it covers the construction sector only to a very limited extend. Action 15 of this programme urges different ministries to cooperate in providing buildings with renewable energy resources, prompting them to provide heat to residential, institutional, and other buildings by using geothermal (e.g. heat pumps) or solar thermal energy. The Ministry of Energy is also working to forecast heating and energy demands relating to on-going construction projects, as it manages the country's gas and oil reserves. During the last 5-7 years, meters for energy and gas consumption have been installed almost everywhere, which has led to a reduction of losses and a more rational use of these services by the population.

Although construction activities in Azerbaijan have increased recently and many national projects have been carried out to develop the country's infrastructure, the housing sector still faces significant problems. Housing-related issues are not coordinated by one State institution responsible for national housing policy and relevant activities. There is no single document that sets out State housing policy. Housing-related issues are regulated by a number of normative acts, and legislation is unclear and incomplete in regard to minimum energy performance requirements. The project will not be able to close the legal gap per se, but will implement pilot activities that will utilise existing best available technologies with international experience to demonstrate the benefits of energy efficiency retrofits to building developers, architects/designers and public decision makers under technical, economical and operational perspectives.

In terms of GHG inventory development the barriers are mainly referring to missing information and awareness among the involved stakeholders, together with the overall low level of capacity of the appropriate institutions that are assessing primary statistical information sources (e.g. energy consumption in buildings) to be made available to other institutions. The project will address the need for improved capacity to elaborate a suitable basis for developing national GHG inventories that are harmonised with the national statistics and sectoral information. Training component will be introduced to especially close the existing methodological and data availability gap and make involved institutional players more aware on better information & data sources.

Barrier 3: Technological barriers

Due to the unsuitable policy conditions and driven by the country's low energy prices energy efficiency has not created favorable conditions for neither energy saving technologies nor renewables to gain a large momentum in the country. Unfamiliarity with new technologies in relation to energy efficiency or renewables is also a kind of a social barrier. The population is accustomed to traditional electricity supply and has yet not been made aware about the benefits of e.g. building refurbishments or application of renewable energy technologies in their buildings (e.g. solar thermal installations for hot water production). In the business sector, low energy prices are even more hindering the introduction of new energy efficient technologies. Low level of awareness on the negative impact of climate change and advantages of application of renewable energy sources or energy efficiency investments (e.g. in building and industry) remain among such barriers.

Non-compliance of standards and certification is another important barrier to technology deployment. Standards for technology devices or products (e.g. energy labelling of products) have not yet been identified and the certification mechanism is not in place. Lack of qualified specialists in this field is also an important barrier.

Hindering the implementation of the technology is weak capacity and lack of information for consumers on use and advantages of new technologies. The same could be said for local authorities, state and private organizations. There is weak access to information on current opportunities in the renewable energy and energy efficiency sector, as well as insufficient market availability and competitiveness of energy-efficient materials and products.

Lack of energy efficiency concern in construction and management of buildings

Given the abundance of gas and oil resources in Azerbaijan, energy efficiency in the construction sector does not seem to be a major concern yet. There is also no statistics or data available on the amount and type of reconstruction activities or comprehensive refurbishments of existing building stock. The only indication is provided by the State Statistical Committee of Azerbaijan, according to which in 2009 out of total construction work about 63% of the activities accounted for (new) primary construction and expansion activities, 19% for capital repair, and only 5% for minor repairs. The main problems are leaking and unsafe roofs, non-functioning elevators, the lack of proper insulation, neglected common areas and structural problems with buildings, apart from the low thermal quality of the building structure (poor insulation, low quality of windows).

The project will clearly address such lack of technological experience and will provide a focus on the demonstration of well-established energy efficiency and renewable technologies at the residential, commercial and public building levels to sensitize public and private stakeholders about the benefits of improved building standards. SOCAR as a major player and implementer of large construction volumes will provide a selection of own buildings suitable for pilot investments.

Barrier 4: Economic and financial barriers

In spite of the fact that the country's economy is in the development stage, the government has established a strategy for the development of alternative energy sources taking into account its environmental, economic and social advantages. The current tariff policy does not stimulate the economic environment, which leads to a decrease in the interest level of private sectors investing in new energy supply or energy efficiency technologies. Current electricity tariffs are low, and are not attractive to private sector investors that would expect rather low payback periods to.

There are many reasons for low tariff rates: the economy is still in transition phase, GDP per capita and average salary levels are not high, and there are about 1 million internally displaced persons[8] living under difficult conditions who are in need of social and economic support from the government. Macroeconomic indicators of the country are improving year-by-year, however at the present time increase of tariff rates is not an expedient step.

The main barrier to RES development is the low feed-in tariffs that were set in 2007 and are still valid, with e.g. 3.2 US¢/kWh for small hydropower plants (HPPs) and 5.7 US¢/kWh for wind. Another barrier is the lack of a legal basis

[8] The internally displaced persons are mainly ethnic Azerbaijanis from Nagorno-Karabakh and the seven adjacent rayons, which are controlled by the self-proclaimed Nagorno-Karabakh Republic.

for connection rules. In order to overcome the barriers to developing RES in Azerbaijan it is relevant to improve the legislation in the field of RE and EE, and increase adoption of international best practice.

The project will address these barriers by considering implementation of economically feasible technologies through private-sector investments as well as proper financial mechanisms, such as the option of a revolving fund on energy, to increase the low penetration of energy efficiency and renewable energy technologies in the country. Links to other programs, such as EBRD's Caucasus Energy Efficiency Program, will be providing value-added for investors at commercial and residential levels since that financing facility provides targeted financing and grant subsidy schemes for energy efficiency in buildings as well production sectors.

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:

International Context of Nationally Appropriate Mitigation Actions (NAMAs)

The concept of Nationally Appropriate Mitigation Actions has been evolving since it was brought forth in paragraph 1(b) (ii) of the Bali Action Plan 2007 (Decision 1 CP/13) which called for "*Nationally Appropriate Mitigation Actions by developing country Parties in the context of sustainable development supported and enabled by technology, financing and capacity building, in a measurable, reportable and verifiable manner.*" NAMAs emerged as a way for countries to meet their "*common but differentiated responsibilities*" and to enable developing countries to receive support in mitigating greenhouse gas emissions.

In the Cancun Agreements reached on December 11 2010, the Parties further agreed that "*developing country Parties will take nationally appropriate mitigation actions in the context of sustainable development, supported and enabled by technology, financing and capacity-building, aimed at achieving a deviation in emissions relative to 'business as usual' emissions in 2020.*"

The Cancun Agreements recognized two types of NAMAs—those developed with domestic resources (*unilateral NAMAs*) and those requesting international support in the form of financing, technology transfer or capacity building (*supported NAMAs*)[9]. *Credited NAMAs* have also been discussed, whereby a developing country earns credits that can be sold in the global carbon market by reducing emissions below an agreed crediting baseline. The Cancun Agreements also agreed to "set up a registry to record nationally appropriate mitigation actions (NAMAs) seeking international support, to facilitate the matching of finance, technology and capacity-building for these actions." Progress was made on modalities and guidelines for NAMAs at COP 17 in Durban in 2011 and COP 18 in Doha in 2012, and steps were taken to develop a web-based registry for NAMAs.

NAMAs do not represent a legal obligation under the UNFCCC. NAMAs are rather voluntary actions taken by developing countries and economies in transition to reduce GHG emissions to levels below those of "business as usual" (BAU). The determination which "national appropriate mitigation action" to be taken is defined by the country itself and relative to the country's particular national circumstances. Common characteristic of all NAMAs is that they either constitute a transformational change to a sector of the economy or provide support for such change. So a NAMA's point of departure from existing development objectives and priorities might consist of re-evaluating these objectives and placing additional emphasis on options for emissions reduction possibilities in the country.

Transforming a NAMA from idea to practice usually takes a significant amount of time and involves the establishment of an institutional dialogue for making it happen. Of vital importance throughout the NAMA development is the engagement of all stakeholders within the relevant institutions. Although initial NAMAs are either project- or policy-based, the ideal is to generate transformational change in the NAMA host country, so that the concept of emissions reduction is being aligned with sustainable development at the highest levels of nationwide government and resulting in a top-down approach to lowering GHG emissions.

[9] UNFCCC (2010). *The Cancun Agreements: Outcome of the work of the Ad Hoc Working Group on Long-term Cooperative Action under the Convention*, Decision 1/CP.16, FCCC/CP/2010/7/Add.1, paragraph 53.

Nevertheless, a bottom-up approach might be useful for NAMAs in the case there is low experience with or unavailability of governmental policies and strategies addressing sustainable development. In this case, NAMAs are based on programmatic activities on specific project or sector levels and laying the foundation for low emission or sustainable development strategies on the country level. The bottom-up activities within e.g. different programmatic NAMAs are thus used to aggregate options for lowering the overall country's GHG emissions. Given the current circumstances, it is therefore being considered for Azerbaijan the most feasible to develop such bottom-up approach to NAMA development.

All NAMAs, either initiated under top-down or bottom-up considerations, do have in common the transparent measurement, reporting and verification (MRV) of GHG emission reductions. MRV is an important tool for managing mitigation actions since it involved parameters for measuring the progress of the implementation of a NAMA as well as for measuring or estimating its impacts in terms of emission reductions and related sustainable development benefits, the latter of which are often the underlying motivation for the activity. As within the implementation phase of the NAMA itself the MRV system needs firm, dependable organizational structures wherever possible to ensure commitment and dedication of stakeholders and actors involved in it.

Project Rationale:

The proposed project is set within the country's ambitions to reduce GHG emissions and energy intensity of major energy end-use sectors in Azerbaijan and simultaneously introduce renewable energy technologies. Since the institutional and legal framework as well as incentives to enhance national programs and measures is still weak, there is a requirement to highlight that country needs to put stronger efforts and achieve a greater momentum within its national energy efficiency and renewable energy policies.

The project will address on the one hand the existing potential to improve the energy performance of main end-use sectors on the Azeri market, namely buildings (new and existing residential, service and public buildings) and transportation (passenger cars, trucks, buses, special purpose vehicles). On the other hand, the oil & gas production sector being one of the main sources for GHG emissions in Azerbaijan, will be addressed in terms of mitigation activities that will indirectly benefit the energy end-use in the country through capturing of associated gases escaping/venting from existing on-shore oil and gas fields. The associated gas is going to be compressed and provided as a fuel source via a gas network to residential areas that are closely located to these oil and gas fields, but currently lack access to modern energy carriers and rely extensively on fuelwood thus causing large-scale deforestation in the area.

As a key market player, SOCAR, the national oil company of Azerbaijan, will be directly involved as a main stakeholder and implementing partner, since the company is – out of its core business (oil & gas sector related production, processing and distribution) – involved as a major energy user and greenhouse gases emitter. The concept of NAMAs, as described above, represents a valuable opportunity for a large enterprise, such as SOCAR, to developing and implementing a large scale GHG mitigation program that is in line with the company's long-term sustainable development strategy and a simultaneously will replicate to the national level and thus influence the country's overall GHG emission regime.

There is tacit understanding that the business sector is among the largest sources of investment flows for low-carbon technologies and, therefore, has to play a major role in the design and implementation of NAMAs. Under these considerations this project is placed within the existing national framework of Azerbaijan, but provides a particular focus on a programmatic NAMA approach that reflects specific greenhouse gas mitigation measures to be implemented by SOCAR. It is for the first time that the corporate sector will be directly involved in the design and implementation of NAMAs and based on the project outcomes provide the grounds for larger scale replication activities that will target the country's institutional & policy framework, address appropriate mechanisms and result in activities to realise significant GHG emission reduction achievements in the long term.

Innovativeness: The project involves application of highly innovative mechanisms in the Azerbaijani and global context, such as, for example, innovative financing mechanisms, like a "domestic gas offset scheme" , where gas, replaced by energy saving ("saved gas") is used by SOCAR for export and the difference between domestic and international price of gas is used to subsidize investment in energy saving measures. It is the project ambition to use a scaled-up approach for emission reductions in main oil & gas end use sectors by piloting implementation of prioritized

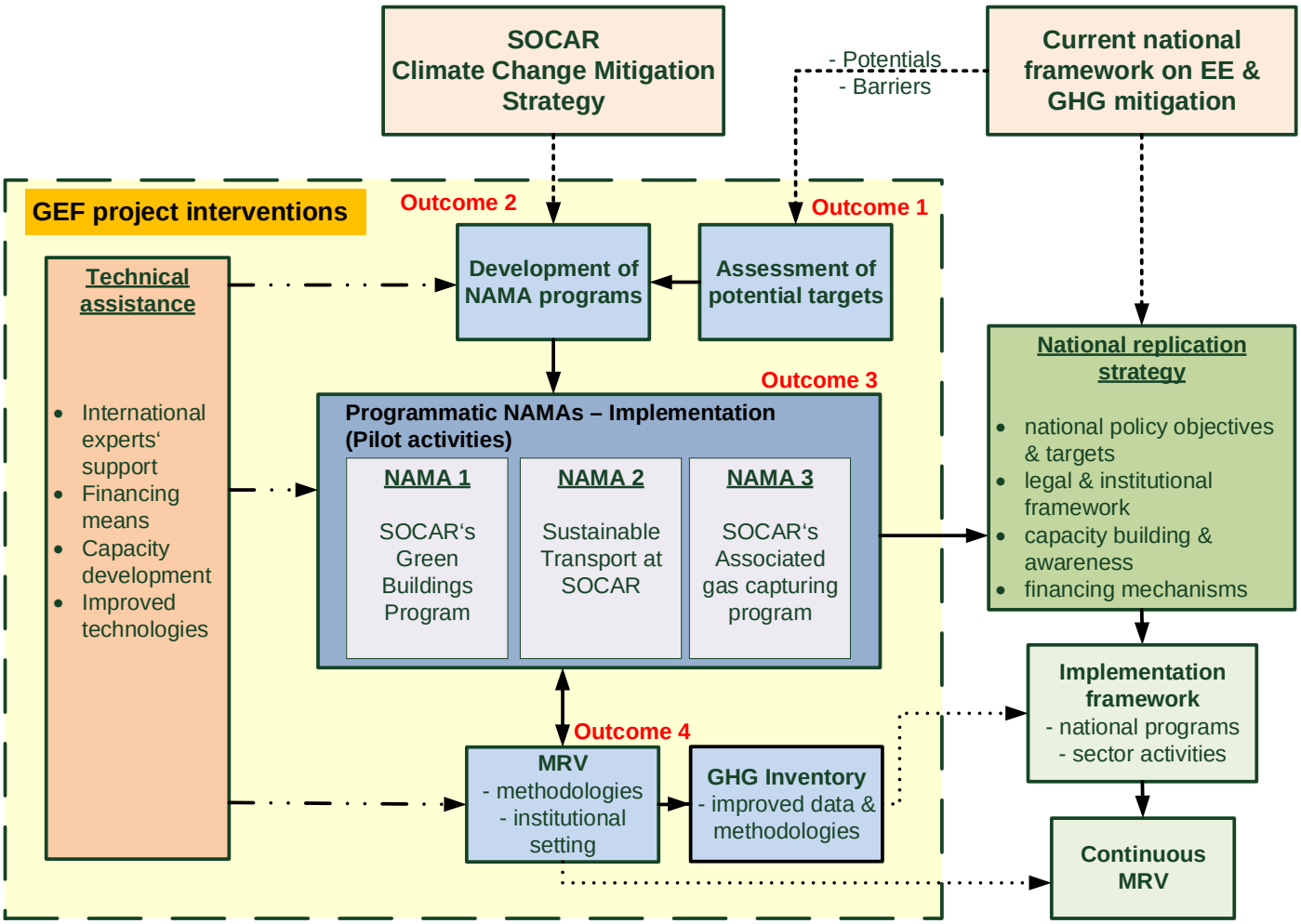
NAMAs through a "Programmatic Approach" and as a result, adoption of sectoral targets on the country level. Innovations will be triggered in the fields of building energy efficiency (new and existing residential and commercial buildings), sustainable transport as well as the SOCAR's oil & gas production regime that currently leads to significant amounts of associated gases being emitted as methane to the atmosphere, whereas the project is expected to support the implementation of state-of-the-art technologies to capture these gases while making them usable by residents from nearby villages. Targeting the three business areas where SOCAR is involved as a project developer (buildings), operator (transportation) or supplier (oil & gas sector) will allow the project to demonstrate the potential for low-carbon low-energy technologies to be become applicable in the Azeri market. During the pilot projects implementation, methodologies for continuous monitoring, reporting and verification will be developed and capacity at SOCAR and involved national stakeholders strengthened to improve the MRV mechanism as well as improving the data and methodologies applied in the development of the national GHG Inventory. By supporting this mechanism the project will provide a contribution to enhance the country's climate change mitigation strategies and programmes initiated by introducing appropriate technologies and financial mechanisms that will further support the implementation of the national policy objectives and targets (see graph below). During the pilot projects implementation, methodologies for continuous monitoring, reporting and verification will be developed and capacity at SOCAR and involved national stakeholders strengthened to improve the MRV mechanism as well as improving the data and methodologies applied in the development of the national GHG Inventory. By supporting this mechanism the project will provide a contribution to enhance the country's climate change mitigation strategies and programmes initiated by introducing appropriate technologies and financial mechanisms that will further support the implementation of the national policy objectives and targets (see graph below).

Sustainability: Sustainability of the project will be ensured by embedding the concept of NAMA in SOCAR's corporate programs and strategies. To accomplish this, the project will seek to complement and provide incremental support to existing baseline activities already underway by SOCAR (Climate Change Mitigation Strategy, pilot investments directed towards low energy technologies in building, transport and production sectors). The project will rely upon and build the competencies and technical skills within the institutions of the executing partners to implement the project activities thus ensuring that required competencies are in place to ensure sustainability of NAMA implementation. Finally, byt putting in place financial mechanisms, a sustained and dedicated source of financing for low-carbon measures will be established thus providing essential means for follow-up actions.

Potential for scaling-up:

The project will target sectors, which bear highest potential for GHG emission reduction in the country: buildings, transport and oil&gas production (as was demonstrated in earlier Section). By designing and piloting pilot NAMA activities in these sectors in partnership with SOCAR, the project will show-case how this potential can be practically realized and propose concrete mechanisms, including financial, which can be used to effectively scaled them up in SOCAR and nation-wide. Estimates of potential for scaling-up of pilot NAMAs are presented under outputs 3.1- 3.3.

The following chart illustrates how the GEF project will use SOCAR's climate change mitigation strategy as a platform to identify, pilot and demonstrate scalable NAMAs. It has to be emphasized that each supported NAMA will include not only implementation of pilot investment, but design of specific mechanism and measures to ensure their replication within the SOCAR.



Project Objective, Outcomes and Outputs

Project Objective:

The objective of the project is to reduce GHG emissions in the key oil&gas end-use sectors in Azerbaijan by supporting the State Oil Company SOCAR in the design, implementation and scaling-up of national appropriate mitigation actions (NAMAs) and embedding climate change mitigation measures in all SOCAR's production and operational activities. Based on the outcomes of the project a national commitment for an improved political and institutional framework including required capacities will be facilitated; as a result, the country will be able to utilise this experience gathered with new energy efficiency and renewable energy technologies to reduce its GHG intensity across main oil&gas end-use sectors.

Outcome 1: Assessment of GHG emission mitigation potentials and target setting

Azerbaijan needs to develop a viable medium and long-term strategy for managing and utilizing its energy resources. One important component of such strategy is introducing appropriate measures to reduce the energy consumption, thus increasing the energy efficiency in several energy end-use sectors. There are some initiatives led by the Government and the national oil & gas company, SOCAR, which clearly contribute towards governmental objectives; nevertheless, it has to be recognized that the overall system of Azerbaijan's energy efficiency and renewable energy policy is still in its early stages of its rationalization and implementation, and as a result lacking appropriate national target setting mechanisms. Outcome 1 will be targeted to address all relevant barriers, identify potential areas for GHG mitigation implementation and based on the most promising technical and economic directions align the results of NAMA pilot activities (outcome 3) with prospective directions towards a national replication program being uptaken by the

Government of Azerbaijan. Furthermore, activities under outcome1 will build upon and utilize findings of other country-specific or regional projects funded (e.g. ADB Project on "Economics of Climate Change in Western and Central Asia.

Output 1.1. Relevant barriers that hinder the development and implementation of GHG mitigation measures assessed

A detailed barrier analysis will be developed reviewing the main end-use sectors and identifying the specific obstacles for each sector considering:

- Institutional development
- Policy / Legal framework
- Technology use
- Reflecting capacity and awareness of stakeholders, decision-makers market actors and end-users

Each type of barrier will described, evaluated against its priority and specific response and recommendations provided in order to overcome the barriers.

Result:
Based on these recommendations, a way forward to assess and design appropriate mitigation activities using the NAMA approach will be elaborated and defined. Each set of activity – under the elaborated mitigation programme – will be reviewed further in terms of their appropriateness regarding national objectives as well as their marginal abatement cost.

Output 1.2. Main oil & gas end-use sectors regarding status of energy performance and potential for decreasing energy intensity are analysed"

In the case of Azerbaijan, identification and prioritization of greenhouse gas mitigation and climate change adaptation technologies, as well assessment of opportunities (and barriers) for the implementation of energy efficiency and renewable energy technology deployment are important steps in developing the country's low carbon and climate resilient strategy. The basis for the assessment are identified technical potentials in energy end-use sectors, being founded on firm basic (statistical) data and sector reviews considering final energy consumption and intensities in the addressed main end-use sectors. SOCAR as an important player on Azeri market has published its own Climate Change Mitigation Strategy in 2010, however with a great focus on GHG emission reductions from their main technological processes and less focused on activities that are beyond their core business (such as building construction & operation, energy supply to end-users, transportation within companies' premises or staff transportation). Such detailed potential analyses for main energy end-use sectors such as buildings or transportation are required to confirm the country's way forward in terms of strategy and policy development and will benefit SOCAR to provide extra focus within their companies' GHG mitigation strategy.

- **Building sector review**

  Energy consumption of buildings can be reduced significantly by 40-50% of the current level in case of new housing if a more intelligent decision-making process regarding design of the buildings (minimisation of thermal losses and maximisation of passive solar heating), proper design and operation of HVAC system, proper operation and maintenance of the building and equipment, purchase of energy efficient electrical appliances takes place. In case of existing housing, up to 50% of energy savings are feasible through refurbishment of building envelope (insulation, windows) and more efficient heating systems.

  At present, national statistics on building energy consumption are compiled based on data from centralized energy suppliers. There exists no widespread or methodologically standard system for collecting data on energy consumption in individual buildings. The Project will support the assessment of energy performance in the building sector including most relevant types of buildings (residential, private & public service buildings) by providing extended reviews of (a) types of energy uses (heating/cooling, electricity demand), (b) energy intensity in the building sector (e.g. review of typical energy consumption in kWh/m²a in different types of buildings: residential, public services, private services) and (c) detailed characterisation of building types and classifications (e.g. typical size and number of apartments/buildings, building age classification, construction techniques and building standards implemented for different building periods).

Building Energy Audits for selected buildings will be required to support the basic assessment of building types according their energy performance and energy use. Assessment of normative energy consumption (maximum normative energy demand for new and reconstructed buildings) based on existing building codes and standards will be conducted. Definitions will include the existing thermal performance of buildings and a review of energy usage at different levels:

- Building needs: gross heat losses from building envelope (windows, walls/roofs) and ventilation;
- Energy consumption at building level: needs plus indoor heating and regulation efficiency; and
- Fuel energy consumption needed by major fuel types (e.g. natural gas) consumed by boilers.

Research and proposal for technical solutions is needed to comply with a vision of improved thermal performance requirements of buildings defined: insulation type and thickness for walls, basement and roof, type of windows, building location and orientation, building shape coefficient, window size and orientation, and heating system, based on which overall energy saving potentials of different building types will be formulated.

- **Transportation sector review**

The transport sector is the third-largest consumer of energy in Azerbaijan and will account for a significant increase of primary oil use over the next decades. In view of this, it is important to note the relevance of the road transport energy paradigm, which can be split into three main parameters:

$E_{road\ transport}$ = *(vehicle fuel efficiency) x (vehicle travel) x (the vehicle population)*

where the vehicle fuel efficiency is determined by the technical energy efficiency; vehicle travel denotes the type of travel/driving and the number of miles driven; and the vehicle population is the number of vehicles on the road.

A national baseline needs to be established that reveals the efficiency of the current Azeri vehicle fleet. Specific analysis is required on more accurate data about fuel economy (specific consumption, e.g. l/100 km) as for different types of vehicles (light & heavy vehicles), average mileage and fuel and transportation mix representing the national vehicle and transportation market. By determining the average fuel economy baseline, national potentials need to be developed to see how fuel economy policies may impact the country's overall vehicle fleet and result in the introduction of more efficient vehicles and thus reduction of average CO2 emissions and the achievement/contribution to specific low-energy and low-carbon targets. One methodology that allows countries to establish their baselines (also in cases with limited data availability) has been developed as part of the first project (GEF4) on "Global Fuel Economy Initiative (GFEI)". This GEF project will make reference to the GFEI and anticipate relevant technological and market opportunities for improving the current fuel mix which is 98% depending on gasoline and diesel engines, with the main aim to identify technological solutions for decarbonized fuel types to be introduced into the Azeri transportation sector (e.g. hydrogen, (m)ethanol, electric vehicles, compressed natural gas).

Result:

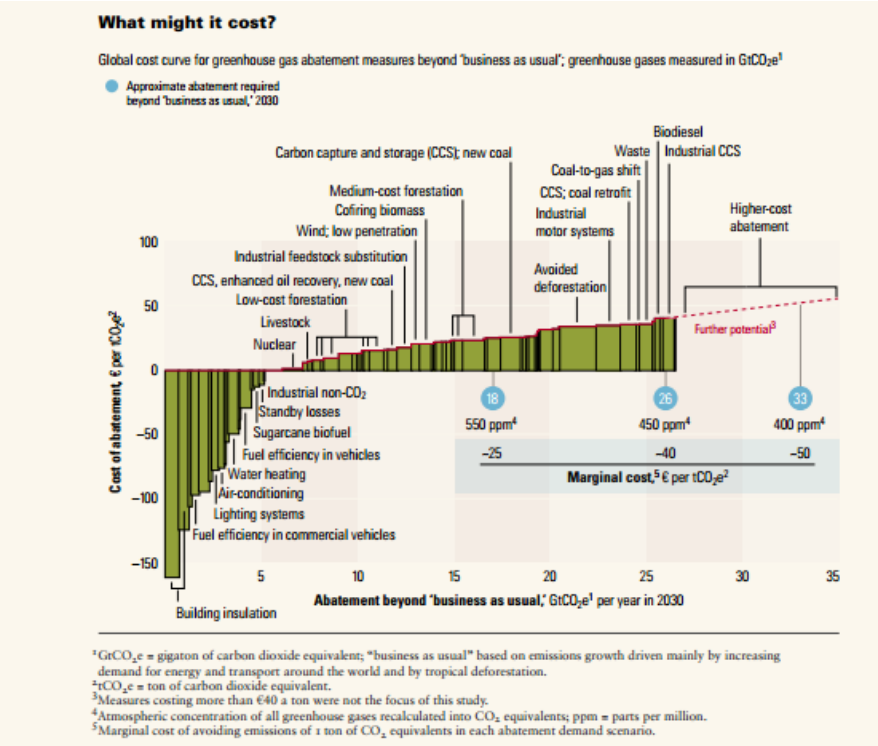
The result of this activity will be a detailed assessment of main energy end-use sectors aiming to quantify the energy efficiency and GHG mitigation potentials on a country level based on which economic scenarios (including MAC curves) can be deployed under a national view. Additionally, the potential assessment will provide SOCAR with further directions to strengthen its own CC Mitigation Plans in regard to GHG mitigation activities.

Output 1.3. Detailed marginal abatement cost curves for the oil & gas end-use sectors developed to demonstrate effective mitigation policies and economic scenarios

Any commitments to reduce CO2 emissions require policy makers to find cost-efficient means to meet the obligations. The concept of carbon abatement curves has been applied since the early 1990s to illustrate the cost associated with carbon abatement. Marginal abatement cost (MAC) curves have frequently been used in this context to illustrate the economics associated with climate change mitigation. A variety of approaches are used to generate MAC curves with different strengths and weaknesses.

A marginal abatement cost curve is defined as a graph that indicates the cost, associated with the last unit (the marginal cost) of emission abatement for varying amounts of emission reduction (in general in million/billion tons of CO2). Therefore, a baseline with no CO2 constraint has to be defined in order to assess the marginal abatement cost against this baseline development. A MAC curve allows one to analyse the cost of the last abated unit of CO2 for a defined abatement level while obtaining insights into the total abatement costs through the integral of the abatement cost curve.

The average abatement costs can be calculated by dividing the total abatement cost by the amount of abated emissions. A typical presentation of a MAC curve is presented below.



Source: UCL Energy Institute

As for each relevant sector to be considered for NAMA development, i.e. building construction, transportation sector, and energy production, detailed MAC will be developed reflecting the situation in Azerbaijan. MAC curves will be used as a decision-making aid in developing the prospects of country-specific development targets.

Result:
Country-specific MAC curves will be produced investigating the possibilities for reducing greenhouse gas emissions in Azerbaijan over a period 2015-2030, and as a result their financial costs and benefits across the economy estimated for most relevant GHG mitigation activities.

Output 1.4. Awareness among governmental institutions increased and the development of a national replication strategy supported

Future energy strategies and policies in Azerbaijan need to be effectively aligned with consistent target-setting and should consider initiating programmes for energy efficiency and renewable energy based on short and long-term objectives for key sectors. Examples are the support of the development of appropriate energy performance criteria for buildings or effective policies for the transportation sector focussing on light and heavy vehicle emission standards or minimum requirements on fuel efficiency. At the same time increased awareness is required of major stakeholders and market actors involved in policy development and decision-making processes.

Since the GEF project is linked towards pilot investments initiated around the concept of *Nationally Appropriate Mitigation Activities*, results and experiences made during the implementation of the pilot activities will be highlighted. Periodically, **roundtables/stakeholder workshops** (at least once in a year) will be organised to gather relevant

stakeholders and decision-makers from public institutions and provide them with regular updates and presentations on progress achieved in the implementation of the project's activities framework.

Elements of a national support strategy will be discussed and formulated in these roundtables, focussed around follow-up action required in the medium to long-term:

- Introducing effective policies and programmes for improving EE and RE in the various energy end-use sectors, including specific targets and monitoring systems for their implementation;
- Enhancing inter-administration co-operation between energy and other public policy makers, in particular for those concerned with the environment, transport, housing and industry;
- Supporting the efforts of various stakeholders, including local authorities, universities, research centres and NGOs, need through governmental initiatives and incentives to further up-scale and promote EE and RE in Azerbaijan;
- Providing effective economic and financial stimulus and incentives for market actors (industry & businesses, households, public administration) to be able to implement low energy/low carbon projects and benefiting from energy cost savings and improved comfort of living in a clean environment.

Result:

As a result of the programmatic NAMA approach being developed and implemented by the Project it is expected that governmental stakeholders will provide clearer attention and focus towards the benefits of greenhouse gas mitigation potentials to be implemented across different energy end-use sectors in the country. The pilot NAMAs will thus provide the grounds for larger scale replication activities that will influence the country's institutional & policy framework, and address appropriate mechanisms to realise significant GHG emission reduction achievements in the long term.

Output 1.5. Voluntary emission reduction targets in the oil & gas end-use sectors are established and validated

There is a need to establish an updated GHG business-as-usual reference baseline and build upon relevant emission reduction targets for main oil & gas end-use sector and subsectors. This will enhance and complement the national GHG inventory that is being conducted by the Ministry of Ecology and Natural Resources through the Third National Communication to the UNFCCC (TNC).

Taking into consideration all analytical assessment work including the need for improved inventories and inventory mechanisms to be elaborated (see also component 4), voluntary targets for two key end-use subsectors, buildings and transport, will be proposed and their adoption facilitated.

Result:

Based on analysis and finding of sectoral baselines and abatement potential, sectoral GHG emission targets will be proposed and adoption initiated. These sectoral targets will be consistent with national and corporate targets, as defined in the State Programme for the Development of the Fuel and Energy Sector and SOCAR's Climate Change Strategy.

Outcome 2: Development of mitigation actions (NAMAs) and instruments in oil & gas end-use sectors

This component will support the identification and development of appropriate mitigation options (NAMAs) including establishment of innovative financial instruments for financing mitigation actions. The objective of NAMAs is to facilitate transformation to lower emission development pathways. Moving from intention to implementation of NAMAs requires clearly outlining steps and detailed plans. Through the process of preparing NAMA proposals, the country will have the opportunity to systematically map its current climate-relevant policy landscape, identify possible gaps and restructuring needs, consider ways to address barriers to mitigation, and apply for support for an increasingly streamlined, coherent climate policy. It is, therefore, important to understand the data and information required to describe these steps, and build an implementation plan for a specific mitigation action.

Within this project component, NAMAs will be identified to be developed by and within the framework of SOCAR's implementation arrangements and their detailed feasibility assessed.

The approach to operationalizing NAMAs requires a bottom-up approach to define the NAMA activities and its local validation to ensure potential NAMAs are nestled in the country's development priorities and reflect local input. Thus, the GEF project aims at involving SOCAR as a relevant actor on the Azeri market in the development process of a "pilot" NAMA framework to demonstrate specific measures and actions that will lead to substantial GHG emission reductions in the long term.

Output 2.1: Three designed programs for the implementation of selected prioritized feasible NAMAs in main oil & gas end-use sub-sectors

There is in general no pre-defined methodology for developing a NAMA, although the process followed within this GEF project is in line with the methodology proposed below and will include identifying several options for lower GHG emissions alternatives within the given SOCAR's development plan (and with reference to its Climate Change Mitigation Strategy) and determining whether or not such emissions reduction is viable and worthwhile.

The methodological approach to conceptualize specific NAMAs can be summarised as follows:

Approach	Information
Step 1 – Set context **Obtain all important data, documents, and other material required to undertake project work.**	Collect data to estimate emission baselines and forecasts and to analyse the country's current and future state in terms of economic sectors and overall development
Step 2 – Analysis **Review all collected documents. Selectively pull and categorize information.**	Prepare a profile of each sector (Energy, Residential, Transport, Industry, etc). Determine historical GHG emissions from 1990-present. Forecast emissions using modelling.
Step 3 – Long List **Screen documents for potential NAMA opportunities.**	Put together a long list of potential NAMA opportunities based on information collected in the above steps.
Step 4 – Short List **Screen long list of NAMAs against a set of criteria to develop a short list of potential NAMAs.**	Screen long list according to the following criteria: • Estimate reduction potential from GHG forecast and associated abatement costs • Assess sustainable development co-benefits • Validate assumptions and analysis with country experts
Step 5 – Validate / Finalize **Validate NAMA opportunities with key stakeholders. Suggest priority NAMA opportunities.**	Present to high-level government officials. Determine collaboratively which NAMAs represent highest potential. Identify financing options. If desired, develop NAMA proposals.

Step 1 and *Step 2* will be implemented basically as a result from outputs 1.2/1.3 (analysis of potentials and MAC curves) and 4.1 (GHG inventories).

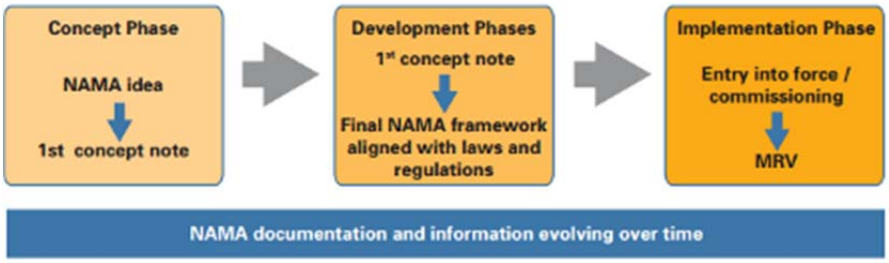
Determining which actions to take under a NAMA is within the country's sovereign right, since the definition of "appropriate mitigation action" is relative to the party's particular national circumstances. In general, NAMAs are designed to support efforts towards sustainable development, as interpreted by the host country. To this end and within this GEF project, national stakeholders from the political and private sector in Azerbaijan, as well as representatives from international institutions will be invited to learn and debate about different Azeri NAMA proposals on the basis of a Multi-Criteria Analysis[10]. Differentiation will be made also between the typologies of the so called "*Policy NAMAs*" (actions at the policy/regulatory level) and the "*Project NAMAs*", which are under the focus of this GEF initiative.

Project NAMAs are specific investments, generally in cleaner infrastructure or machinery. These NAMAs may occur within broader frameworks, EE building initiative, whose ultimate goal is a top-down process through which appropriate mitigation actions are formulated. Examples of this type of NAMA include solar and wind power plants, or the promotion of energy-efficient buildings or transportation means.

Step 3 (Long list for NAMA opportunities) and *Step 4* (Short list) will be therefore elaborated in dedicated workshops with relevant representatives from SOCAR and other national stakeholders to:

- elaborate a common understanding of the process of NAMA development and of the requirements for supported NAMAs in the case of Azerbaijan;
- screening potential interventions to be focused under the NAMAs and based on a long list of potential projects;
- result in the enhancement of NAMA prioritization process through discussion of selection criteria and relative weights of criteria.

The graph below summarises the main phases in NAMA development, from *conceptualisation* (identification and prioritisation of areas of national or sectorial development plans or policies in which GHG emissions reduction is feasible and desirable) towards the *development* of project ideas towards ready NAMAs to be *implemented* (including details agreed: scope and activities, responsible stakeholders and actors, financing means and financial contributions, formalising MRV mechanisms and other evaluation tools). It is important to remember the iterative nature of this process. No single one of these activities under each phase are isolated from the others; all are interdependent, and many will need to be repeated and adjusted throughout the NAMA process. Institutional development and stakeholder involvement are on-going throughout this process, as is the development of the necessary reporting and registering documentation. Therefore, there is external guidance, development and co-ordination support to be required as the evolvement of the NAMA program will go along.



Source: Perspectives Climate Change (2013)

Result:
The output of this project phase will be a prioritized list of sectors and activities agreed under stakeholder involvement that will be developed under the final NAMA framework (chosen "Programmatic NAMA" approach). Under the GEF project it is foreseen that 3 programmatic activities will be designed and proposed for implementation. For each of the

[10] Multi-Criteria Analysis (MCA) is a decision-making tool developed for complex problems. When multiple criteria are involved and multidisciplinary teams need to reach a consensus, confusion can arise if a logical, well-structured decision-making process is not followed. With MCA, team members don't have to agree on the relative importance of the criteria or the rankings of the alternatives. Each member enters his or her own judgements and makes a distinct, identifiable contribution to a conclusion that is reached jointly.

three programs proposed, a detailed NAMA proposal (equivalent to a feasibility study) will be developed based on available NAMA Design Templates.

Output 2.2: Fully capable and qualified stakeholder involvement in the design and implementation of NAMAs

Sustainable development benefits should not be diminished when designing NAMA proposals aimed at satisfying the emissions-reduction agenda. Successful NAMAs require strong host-country commitment and support. If key stakeholders are to have a sense of ownership of a NAMA, continue to dedicate resources, and maintain their engagement, it is crucial that NAMA development be integrated with current country development processes.

SOCAR's role as a state-owned company and foreseen project owner is key for designing the NAMA program since it combines the opportunity of large enterprise with a significant public agenda in terms of provision of key energy infrastructure and influencing as developer and operator energy end-use in dominant sectors such as buildings, transportation or energy supply. Aligning SOCAR's long-term GHG mitigation strategy with a programmatic NAMA approach and with a detailed implementation plan will thus require thorough preparation and management of common expectations in order to avoid unwarranted disappointment, financial shortfalls and premature program abandonment. GEF resources will be wisely spent to focus on awareness-raising and capacity-building activities, starting from the NAMA design and development stage already, among SOCAR's headquarter and project-related staff and departments. The project will have to reach out to several entities and departments and involve a large number of stakeholders within SOCAR to make the NAMA concept work. Among these stakeholders are SOCAR's Department of Ecology as main counterpart, the departments of construction and transportation being among the involved entities to address the main end-use sectors within SOCAR Corporation, as well as the Siyazanneft Oil and Gas Production Department within the Azneft Production Unit that is developing oil and gas fields within SOCAR and thus to be addressed for the issue of associated gas capturing.

The NAMA program will be designed with focus on identified oil & gas end use sectors and ranking them among their highest implementation possibility within SOCAR's development objectives. The project will furthermore – on the side of SOCAR and its implementing entities as well as public authorities involved in energy supply, environmental protection and infrastructure development (buildings, transport) – in the design and implementation of mitigation programmes and the identification of funding sources and options, as well as MRV requirements.

Result:
The result of this project phase will be to develop a fully-fledged set of three NAMA proposals that will allow:

- SOCAR as NAMA developer together with the managing entity to provide a well-structured vision of all the key aspects of the proposed NAMAs in a logical and coherent manner;
- SOCAR as main project sponsor and thus NAMA financier sufficiently understand the relevance of their role and responsibilities, and enable them to assess benefits and risks; and
- the host Government of Azerbaijan and its involved relevant authorities (national and/or local) to understand the actions, costs and benefits associated with the proposed NAMAs and how they will align/contribute to current policies, regulations and development goals.

Information provided through the NAMA Design Template will need to be supported by documentation or evidence (e.g. in a similar manner as Designated Operational Entities are requiring evidence for CDM project development), containing at least the information provided in the Annex F.

Output 2.3: Defined and established financial instruments mitigation actions in the oil & gas end-use sectors

To capture the profitable returns from proposed energy-efficiency and/or renewable energy investments, the project will identify options for sustainable financing mechanisms to be applied in the course of the pilot NAMA implementation. GEF resources will be used to develop financial instruments and incentives; SOCAR will be involved in the design of such mechanism during the NAMA feasibility stage.

Examples of prospective directions for financing mechanisms are:

- A *"Green buildings investment (or loan) fund"* that can significantly leverage financing for internally-financed projects. Initial investment using own capital expenditures will be made available for one or more energy-efficiency projects. As savings accrue from avoided energy costs, some or all of the savings are earmarked for repayment to a kind of internal revolving fund, thus replenishing the initial investment. Any surplus savings in excess of costs are profits that allow the fund to grow in the future. These funds may be reinvested in additional green building projects across the country. As the energy savings compound, so do the returns to the fund and the profits that can be reinvested. This fund can also be expanded to cover any climate change mitigation activities leading to cost savings.
- For at least one of the selected NAMA, potential scaled up mitigation market mechanisms will be explored and designed, in particular *sectoral crediting and voluntary sectoral domestic carbon markets*. The sectoral crediting mechanism will require the establishment of sectoral targets and dynamic baseline levels: a sectoral emission target, set below the business as usual (BAU) emissions, will be established, to be accomplished in a given timeframe through the implementation of domestic policies and investment. Through an agreement established with an Annex I country, the Government of Azerbaijan would issue, at the end of the period agreed (ex post), carbon credits for any additional emission reductions below the established targets. Such piloting approach would provide an innovative financing mechanism utilising the monetarisation opportunities of the carbon market.
- Another option is exploiting the difference between the domestic gas prices and export gas prices that can provide an offset subsidy to renewables. The project will explore the feasibility of establishing a *"gas offset scheme"* where gas, replaced by energy saving ("saved gas") is used for export and the difference between domestic and international price of gas (100 AZN/1000 m^3 – domestic price vis-à-vis 300 AZN/1000 m^3 – export price) could subsidize energy saving in prioritized NAMAs.

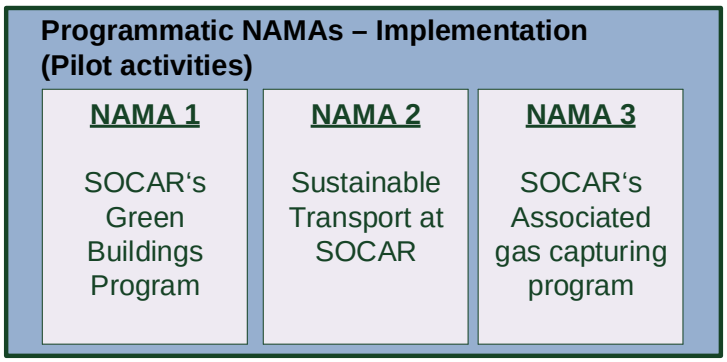
In that respect SOCAR's full engagement is critical: the company is the only entity in Azerbaijan which can monetize the domestic/international oil and gas price difference and thus serve as a source of additional financing for NAMA implementation. Other instruments to be assessed are fiscal incentives, a feed-in tariff, and energy performance contracting with ESCOs.

Result:
Within the development framework of the NAMA program, suitable financial mechanisms will be identified that could be made available as an additional source for financing of the pilot mitigation activities, through SOCAR's involvement and by making use of carbon markets. The most promising mechanisms will be identified and applied to the pilots.

Outcome 3: Implementation of NAMAs in the oil & gas end-use sector

The third project component will support the implementation of prioritized NAMAs within a pilot program focused on the oil & gas end-use sectors. Based on a feasible NAMA program developed in the second project phase, the pilots will trigger investments with the involvement of SOCAR in the direction of most promising GHG mitigation potentials resulting in the long-term in reduced energy intensities.

GEF support will be used to make international best practice and expertise available to support the introduction of new EE and RE technologies in the Azerbaijani market. The *NAMA program* will be consisting of three possible *NAMA projects*, each focussing on a significant energy end-use sector. The selection of the sectors: (a) buildings, (b) transportation, and (c) utilisation of captured associated gas for final energy users is based on detailed reviews and discussions with SOCAR throughout the PPG stage; the NAMAs currently designed as pilot activities are considered to create high impact in terms of environmental and economic benefits and provide potential for replication on a wider level across the country.



The exact list of investment projects to be implemented will be defined based on the marginal abatement cost curves (to be developed under Component 1) and detailed NAMA feasibility studies to be conducted to verify the final NAMA program design. Following the consultations with SOCAR during the PPG stage the most promising investment projects based on the preliminary analysis are:

- **Energy use in buildings/heat generation (energy saving/fuel switch)**: energy efficient (integrated) building design for new buildings and retrofits in public and residential buildings, introduction of renewable energy generation for on- and off-grid solutions;
- **Energy efficient transportation means** for public and private mobility, considering fuel efficient vehicles, innovative technologies for decarbonized fuel and eco-efficient driving practices;
- **Natural gas captured from SOCAR's oil & gas fields** and supplied to nearby villages will significantly reduce methane emissions during oil & gas production and benefit end consumers to receive cleaner energy sources.

Investments required for implementation of NAMAs will be funded through a combination of sources: in case of *supported NAMAs* they will be implemented by a combination of domestic public & private resources and GEF contribution, as for the case of *credited NAMAs* they will be financed from the revenues raised through international carbon markets. GEF resources will not be used to support implementation of credited NAMA to avoid double-counting of resulting GHG emission reductions.

It is to be emphasized that the description of pilot NAMAs are tentative and subject to results of full-fledged NAMA development process and analysis under outcome 2. Furthermore, each of the NAMAs implemented will be aligned to local/national regulations concerning environmental and social impact analysis or assessment (depending on the size and type of project and in line with state regulations).

Output 3.1: Potential NAMA 1: SOCAR's Green Building Program

Objective:

According to studies available, making use of energy efficient technologies and practices in new and existing buildings could save as much as 34 percent of the projected primary energy consumption in buildings by 2020. Increasing the efficiency of energy use could therefore also significantly curtail GHG emissions from the residential sector in Azerbaijan.

The objective of this NAMA program is to create awareness among SOCAR as a building and housing developer/constructer and implement activities that will (1) demonstrate best-practice in green building technologies and design practices in building construction, (2) transfer new technologies to Azerbaijani building design and construction and (3) support SOCAR in becoming an important stakeholder in further up-scaling activities under national programs (e.g. State Programme on the Use of Alternative and Renewable Energy Sources) to better reflect the building energy efficiency component of existing and new building stock in Azerbaijan. The NAMA is addressing a topic that is part of the wider Azerbaijan national energy strategy; nevertheless, the energy strategy does so far not provide a specific program on energy efficiency in buildings.

Analysis of current situation:

1. SOCAR is one of the largest single-owners of building stock in Azerbaijan. The total size of usable floor space of residential, commercial/administration as well as social buildings amounts to about 400,000 square meters or ca. 0.5 % of the country's total building stock. In terms of new construction, the share of developed space compared to overall country development is higher (about 1.5-2%), since SOCAR is involved in lots of building site developments and constructions (e.g. also for public sector) that are being transferred to other owners after implementation.
2. The annual average final energy demand in buildings is approx. 400 kWh/m² (from which ca. 100 kWh/m².year dedicated to electricity demand, incl. HVAC, lighting, etc.). A minimum saving potential of 50% is a realistic market potential for new and rehabilitated buildings.
3. Construction volume in the country is significant; though, it was slightly slowed in the result of the financial crisis, it is still very dynamic. However, there is also an (unofficial) significance of construction in the country that are not being legalized, especially urban areas of Baku, which are beyond control of proper building standards being considered. In general, the compliance level is quite low and shall be addressed in the future through best-practice in building construction.
4. Energy efficiency materials and products are available on the market but need to be almost 100% imported. A system for certification of own local products and construction materials would enhance the dynamic of locally assembled materials or products with energy efficiency considerations.
5. There is no proper building statistic reflecting the amount of heat & electricity demand being used. These information are however relevant for assessing properly the status quo and corresponding improvement potentials, including the data provided to GHG inventory.

Activities foreseen under the NAMA program:

- **Activity 1 - Selection of 2-3 demonstration buildings**, from which one will be ideally a new construction and at least 1-2 requiring substantial building retrofit. The following building types will be considered: residential buildings (typical multi-family house, floor area between 2,500-3,000 m²), office or service buildings at SOCAR's Eco Park or Oil Rock industrial settlement (approx. 1,000 m²) and/or an administrative & service building at "Azerkimya" Production Unit in Sumgayit (ca. 5,800 m²)[11]. New or existing buildings are either developed by SOCAR, are under their ownership or regular building maintenance (in case of existing buildings). Implementation shall ideally commence in the years 2015-2016 to allow finalization and monitoring of new/retrofitted buildings during the project implementation period.
- **Activity 2 - Developing preliminary design concept for each building type**: based on feasibility studies for each building a preliminary design concept will be developed including *energy certificates* for the new/refurbished buildings, based on international best-practice and adapted to the Azeri conditions and climatic zone together with support and experience from international architects/planners to reflect integrated building design approach (IBDA) together with a significant improvement in building energy performance and use of improved building materials and technology;
- **Activity 3 - Design and construct at least two demonstration buildings** (matter of available budget) to illustrate compliance with the proposed technologies and integrated building design practice, practical use of renewable energy, and showcase the new approaches and technologies in the Azeri building sector. SOCAR as owner of the demonstration buildings will be involved as main investor; GEF project will be covering incremental costs, i.e. additional costs of design requirements for improved energy performance against existing business-as-usual, including selection of technologies for energy management in buildings as well as renewable energy applications. Green building technologies applied within demonstration projects will highlight the savings from strategic use of use of insulation, better windows, and enhanced heating/cooling systems – e.g. solar thermal installations (hot water supply), solar PV, heat pumps (heating, ventilation and cooling), etc. to demonstrate a variety of existing technologies that could be possibly introduced to the Azerbaijani market – that directly impact energy bills and realization of cost savings.
- **Activity 4 - Monitoring energy performance of demonstration buildings:** covering at least one full year (including a winter and a summer season to reflect energy consumption during different periods of the year). Energy consumption will be measured using typical monitoring devices (heat & electricity meters, monitoring & control

[11] Refer to Annex F for further details available on potential demonstration buildings foreseen by SOCAR.

software), calculating energy savings and emissions reductions from the project and preparing a report on the measurement of savings for replication and awareness purposes.

- **Activity 5 – Awareness raising and capacity building among building designers and users**. Architects and designers involved in the implementation of demonstration buildings will be trained on topics such as integrated building design practices & technologies, implementation of energy audits in buildings including energy certificates as well as building energy management systems. As a part of dissemination activities within the NAMA, green building certifications for demonstration projects (e.g. according LEED[12] or GreenBuilding standard) will be foreseen.
  SOCAR will initiate an information campaign building on the results of the demonstration buildings to increase the awareness of tenants and the public on economic and environmental benefits of integrated building design, EE materials, and technologies used. Campaign materials will be specifically targeted to different building types and their users.

Investment costs & GEF contribution:

- Total investments will mainly consider SOCAR's investment costs for the defined number of demonstration projects.
- GEF contribution is expected to support increment of improved building design expertise to be provided through technical assistance (international experts), and support for additional investment costs of energy efficiency and renewable technologies including soft measures (monitoring, awareness raising & training) being applied up to 15%.

Pilot NAMA 1: SOCAR's green building program			
Outcome: Design & implementation of pilot building energy refurbishments	**Baseline:** absence of energy efficiency building standards for new and existing buildings and availability of green building technologies	**Project Alternative**: Implementation of an investment program to cover 2-3 demonstration building new constructions and/or refurbishments using improved design and EE & RE technologies	**GEF Increment**: Technical assistance & share of additional design and implementation costs
Cost estimation:	average investment costs of 500-700 USD/m² useful floor area (retrofit/new construction)	up to 15% additional design & investment costs of EE (insulation, windows, heating system, energy management) and RE technologies (e.g. solar thermal, heat pumps)	Incremental cost (GEF contribution) of about 600,000 USD
Residential building 1,000 m²	680,000	790,000	190,000
Office / service building 1,000 m²	680,000	790,000	190,000
Service building 5,800 m²	2,900,000	3,335,000	435,000
Additional cost of training and awareness building in USD	Not implemented under baseline	100,000	100,000
Total cost USD (investment & soft measures)	**4,260,000**	**5,015,000**	**915,000**

[12] LEED: Leadership in Energy & Environmental Design

Output 3.2: Potential NAMA 2: Sustainable Transport at SOCAR

Objective:

The transport sector is the third-largest energy consumer in Azerbaijan, after the residential sector and industry. The sector depends almost exclusively on petroleum products (98%); at the same time the number of motorized vehicles in Azerbaijan has significantly increased (especially for passenger cars). In general, as also experienced in many other developed countries and economies in transition, the challenges are currently availability and implementation of sustainable and sound transportation means and increasing the penetration of new technologies of low and zero emission vehicles such as hybrid, electric and other-fuelled vehicles. At SOCAR, there are over 6,000 vehicles operating, of which more than 80% are using gasoline. Annually, the vehicle fleet is using approximately 17 thousand tons of gasoline.

The objective of this NAMA is to address fuel economy at SOCAR's transportation fleet by introducing alternative fuel sources such as electric vehicles, methanol/ethanol and other technologies resulting in a lower energy intensity of the transportation sector. SOCAR will be furthermore introduced to energy efficient fleet management practices including eco-driving training for its staff.

Analysis of current situation:

1. The number of motorized vehicles in Azerbaijan has increased at an average annual rate of 8% within the last 5 years. Under the current scenarios, the dynamics of vehicle increase will lower but still significantly grow and thus further increase the demand for traditional fuels (gasoline, diesel).
2. The low fuel prices and missing incentives to improve the overall environmental and energy performance of vehicles (emission standards, fuel economy) keep the penetration of alternative fuel systems currently at a nearly-zero level in the country.
3. There are no governmental programs so far propagating alternative fuel sources and energy efficient transport modes and behavior; however, experience from other countries highlight the need for introducing master plans for the transport sector thus leading to benefits in terms of fuel and greenhouse gas savings.
4. SOCAR is a major user of different kinds of vehicles for transportation within its own facilities (and beyond); however, there is lack of experience with using state-of-the-art technologies apart from petroleum products so far.

Activities foreseen under the NAMA program:

- **Activity 1 – Analysis of status-quo and assessment of alternative fuel options within SOCAR's vehicle fleet.** Understand baseline emissions by surveying SOCAR's vehicle fleet (using monitoring equipment), including key factors such as vehicle type, age, fuel type, fuel efficiency and annual mileage, as well as recording usage patterns (typical route lengths, typical load types, typical load weights, use of air conditioning and lights, etc.). The analysis will be used to segment the company's transport fleet into sub-sectors that can be potentially targeted by specific alternative fuel technologies and usage patterns (influencing the fuel demand). The detailed assessment will provide methodological input to the company's GHG inventory, and furthermore be used for developing country-specific emission factors for different freight vehicle-types and fuels based on typical Azeri usage conditions.

  Based on status-quo analysis feasibility studies for different alternative fuel systems will be established. The studies will look into available state-of-the-art technologies and assess the conditions under which they could be used at the Azeri market – either as single fuel option or blending (e.g. methanol mixed with gasoline). Examples of technologies currently available: electric vehicles (incl. hybrid technology), methanol (existing production facility in AZ), (bio-) ethanol (based on different agricultural wastes). Environmental and economic effects of different technologies will be reviewed to see how they benefit SOCAR's Climate Change Strategy.
- **Activity 2 – Implement pilot investments to showcase best-available technologies at SOCAR.** Under a pilot investment program SOCAR will select most feasible technologies for fuel switching of own operated vehicles. It will be targeted to switch minimum 10 of SOCAR's vehicles (passenger cars, trucks, buses) in a period of 5 years after initiation of the program. In the case of electric vehicles, electricity production from renewables will be considered either through new installed capacities (e.g. wind power, photovoltaic, hydro power, etc.) or by enhancing existing SOCAR's own renewable energy production facilities. Electric vehicles are planned to be used for SOCAR's bus fleet that is operated at Azerkimya Production Unit and to be extended to able to increase the

number of shift workers commuting to/from the production sites (usually from Baku or its outskirts). As for other alternative fuel sources the installment of new pilot production capacities will be considered.
New or upgraded vehicles will be equipped with monitoring (recording) devices to measure user behavior (time vehicles used, typical mileage, turnover rates) and total consumption of fuel and corresponding savings to existing transportation means.

- **Activity 3 – Based on results of pilot activities, develop a concept for sustainable vehicle fleet management within SOCAR's transportation system.** Introduction of an "energy efficient fleet management" will consider in the medium to long-term to optimize SOCAR's vehicle fleet in terms of fuel consumption and emission standards, an improved logistics system (to optimize transportation routes within or without SOCAR's facilities) and include awareness raising measures among vehicle users. SOCAR's energy efficiency fleet management will become exemplary for other large companies or vehicle fleet owners to improve their transportation system and thus showcase sustainable transportation systems within the country.
- **Activity 4 – Introduce Eco-driving practices at the company's vehicle fleet. Training for drivers of heavy-load vehicles (trucks, buses) and passenger cars.** Eco-driving means smarter and more fuel-efficient driving. Eco-driving represents a new driving culture that makes best use of advanced vehicle technologies, while improving road safety. An important component of sustainable mobility, Eco-driving considerably contributes to climate protection and pollution reduction.
  The NAMA activity will foresee to introduce the "golden rules" for Eco-driving and train staff operating SOCAR's vehicle fleet in regard to best-practice driving techniques. Based on international experience the estimated fuel saving is about 10-15% in the long-term which provides significant potential to improve transport efficiency at SOCAR. Training programs will be developed with international expertise and delivered to major staff involved in vehicle operation at SOCAR. As a result and for further uptake a "National Program on Eco-driving" is expected to unveil a larger fuel and emission saving potential that the NAMA will likely want to address.

Investment costs & GEF contribution:

- Total investments will encompass SOCAR's involvement in pilot projects and costs for different soft measures (awareness raising and training).
- GEF contribution is expected to support incremental costs of new or improved transportation systems implemented under the NAMA, and support for soft measures considered to introduce energy efficient fleet management and an Eco-driving program at SOCAR.

Pilot NAMA 2: Sustainable transport at SOCAR			
Outcome: Introduce new fuel technologies for SOCAR's company vehicle fleet and a sustainable vehicle fleet management	**Baseline:** low penetration of alternative fuel systems and technologies including low awareness among vehicle users	**Project Alternative**: Implementation of pilot investments in new alternative fuel sources or vehicles with improved emission standards and development of a company's sustainable fleet management including trainings on eco-driving practices	**GEF Increment**: Technical assistance & share of incremental costs of new technologies

Cost estimation: (based on increment of alternative fuel technologies)	• Passenger cars: approx. 900 x 30,000 USD x 2% = 0.5 MUSD • Trucks: approx. 200 x 250,000 USD x 2% = 1.0 MUSD • Buses: approx. 120 x 100,000 USD x 2% = 0.24 MUSD • Total: 1.7 MUSD	GEF support will be sought to fund the incremental costs of new technologies (up to 40%) for demonstration activities: • Cars: GEF increment: 0.1 MUSD (2-3 demo cars to be introduced) • Trucks: GEF increment: 0.1 MUSD (1-2 demo trucks to be introduced) • Buses: GEF increment: 0.15 MUSD (4-5 demo buses to be introduced) • Total 0.35 MUSD increment	Incremental cost (GEF contribution) of about 350,000 USD
Investment costs for introducing alternative fuel technologies	**1,700,000**	**2,050,000**	**350,000**
SOCAR's Sustainable fleet management	Not implemented under baseline	50,000	50,000
SOCAR's Eco-driving program	Not implemented under baseline	150,000	150,000
Total cost USD (incl. soft measures)	**1,700,000**	**2,250,000**	**550,000**

Output 3.3.: Potential NAMA 3: SOCAR's Associated Gas Capturing Program

Objective:

As referred to in the First and Second National Communication already, associated gases are one major sources of GHG emission in Azerbaijan requiring supported action. Addressing the huge amount of low-pressure associated gas being produced at one of SOCAR's largest on-shore oil & gas production units at Siyazan (Siyazanneft), major efforts shall be taken to support the company in implementing best available technology to be able to utilize most of the by-gas venting from the wells and at the same time follow the recommendations provided in the NC. Associated gas is a by-product of oil and gas production; apart from the significant GHG emission potential and avoidance of the equivalent of 21 million m^3 per year of methane into the atmosphere, the NAMA will provide direct benefit to the energy end-use of the residential sector and nearby enterprises by collecting associated gas, processing and distributing it through a local (or regional) gas network. SOCAR is aware of this major environmental problem and therefore the outcomes of this NAMA are exemplary and at the same time to provide a major replication potential to (1) upgrade the outdated and decayed technology at SOCAR's oil & gas production sites and thus reduce the energy intensity of the production process, (2) provide the captured and processed gas for alternative end-uses that are currently lacking proper energy services (mainly residential and small businesses), and (3) leading to major GHG emission reductions. By providing natural gas to nearby residential end-users the problem of local deforestation will be minimized and SOCAR encouraged to support an afforestation program through the NAMA.

Analysis of current situation:

1. In total 554 wells belonging to Siyazanneft are venting about 27 million m³ of gas per year; since the gas is not flared at on-shore wells, it evaporates as methane into the atmosphere at an equivalent of about 21 million m³ annually. This equals to a calculated equivalent of about 313,000 tonnes of CO2 annually.
2. SOCAR as owner of the wells does not consider the further utilization of the associated gas so far since its outdated technology would not make it economically feasible and thus not realistic to invest into such major projects. Initiating a larger scale program that would allow most of the associated gas to be used would be in favor and implemented in the scope of SOCAR's Climate Change Mitigation Programme.
5. Nearby (between 8 and 25 km distance) the Siyazanneft oil & gas production unit there are several villages with an estimated population of 15,000 and smaller production companies. The villages are considered rural areas and thus most of the housing is single family houses that are currently using wood as main resource for heating & hot water production. As a result of the significant wood use, there have been increased forest cutting activities resulting in unsustainable use of the local resource.

Activities foreseen under the NAMA program:

- **Activity 1 – SOCAR's National Program on capturing associated on-shore gases**. The NAMA shall identify the overall potential and replication possibilities of best practice in capturing of associated gas as demonstrated at Siyazanneft. As a result, similar technologies or concepts could be applied to other (mainly on-shore, but eventually also off-shore) oil& gas production units in Azerbaijan. The estimated reduction of gas leakages into atmosphere leading to avoidance of methane emissions will be assessed and combined with overall potentials to provide captured gas to energy end-use sectors such as residential buildings or businesses. In the long-term, the NAMA shall provide ground for upgrading or implementing required policy and legal framework as well as creating proper incentives for regulating the exploration, production, and distribution of oil & gas in such production regimes across the country. Recommendations for a nation-wide initiative to reduce the amounts of associated gas and best available technology being used to capture it will be provided. Furthermore, improved environmental and social standards will be considered.
- **Activity 2 - Implementation of a feasibility study to provide captured associated gas at Siyazanneft to nearby villages and small and medium-sized companies**. The assessment will estimate the benefits of introducing energy end-use improvement measures at residential buildings and small scale businesses and thus identifying the most effective use of captured natural gas. The collection of associated gas will contribute both to the solution of social, as well as local ecological problems. In particular, the collection of associated gas on the one hand will provide the population with the gas, on the other hand will prevent emission into atmosphere and prevent trees cutting, thus saving local forest resources.
- **Activity 3 – Pilot investment at Siyazanneft and supply of nearby villages with natural gas[13].** Under baseline conditions, there is outdated technology (compressors of low quality) used to capture associated gases especially at on-shore sites which makes the capturing process for SOCAR inefficient and not economically feasible. In order to avoid large amounts of gas leakages from oil & gas wells in the future, modern technology shall be applied to 1-2 existing wells and provide significant improvement of the current gas collection & production regime at SOCAR's on-shore wells. This specific NAMA activity will be dedicated to apply best available technologies at the selected Siyazanneft site and include a utilization concept for the collected gas to be provided to end-use sectors. NAMA component will apart from the process optimization at SOCAR's facilities mainly address the demand side and support pilot investments to reach end-users (residential areas, businesses) and thus provide a significant GHG benefit to the company's GHG balance and this pilot activity to be extended to other oil & gas production facilities in the region. The captured gas will be made usable by end consumers from 12 nearby villages (approx. 600 households, pop. 2,500), that are located between 10 and 25 km away from the Siyazanneft oil & gas fields. Incremental costs of improved technology including a specific concept to provide end-users with captured gas for heating (or combined heat and power) purposes will be at the core of GEF's support.
- **Activity 4 – Monitoring of results and GHG benefits achieved.** Since the NAMA is expected to provide significant effects on SOCAR's and thus also the country's greenhouse gas balance, there will be a detailed monitoring mechanism for the gas capturing process as well as the avoided emissions at potential end-users to be

[13] Refer to Annex G for further details available on potential demonstration foreseen by SOCAR.

connected to a gas distribution system implemented. The monitoring of energy and CO2 savings will be further integrated into SOCAR's energy balance and GHG inventory. The estimated GHG emission savings through avoided gas leaking at on-shore wells is about 300,000 ton of CO2equ per year, whereas on the demand side at residential level the CO2 emissions will increase in short term (through switch of wood as main fuel to natural gas, which is not renewable), but lead to other long-term benefits such as containment of local deforestation (which in turn makes forests available as carbon sink). In this regard SOCAR will be encouraged to support local afforestation programs under the NAMA program resulting in further environmental benefits initiated through the project.

Investment costs & GEF contribution:

- Total investments will need to consider gas capturing (purchase of compressors), gas processing and cleaning facility as well as required distribution network. Replacement of existing heating systems at end-user (mainly residential, eventually also public or other private service buildings) will be considered.
- GEF contribution is expected to provide investment support for the Siyazanneft pilot site (technical upgrade of capturing technology) as well as connection of pilot areas in villages to gas network, e.g. by developing local combined heat & power stations that would allow absorbing the huge available gas amount from the gas capturing process and in case the gas supply program is being compensated by major afforestation activities in affected villages.
- GEF will further engage to support capacity building activities and know-how transfer at SOCAR as well as addressing through the NAMA supporting activities to improve the legal and policy framework related to the oil & gas production sector in the coming years, as well as providing guidance to major stakeholders (SOCAR, public authorities) and develop a the framework for a national program on mitigating the effects of associated gas from the oil& gas production industry.

Pilot NAMA 3: SOCAR's Associated Gas Capturing Program benefiting End-use Sector			
Outcome: Introduce best available technologies for SOCAR's associated gas program and support compensating activities in the energy end-use sectors	**Baseline:** capturing of associated gases is suffering from outdated technology and thus no incentives at SOCAR to go for it. On the other hand, nearby end-users are relating to low quality heating systems leading to deforestation of local forests	**Project Alternative**: Implementation of pilot investments into new gas capturing technologies applied to selected pilots of 1-2 wells, and the captured gas will be made usable by end consumers from 12 nearby villages (approx. 600 households, pop. 2,500) incl. businesses and thus mitigating the GHG emissions significantly. SOCAR will be encouraged to support a local afforestation program in surrounding villages.	**GEF Increment**: Technical assistance & share of incremental costs of new technologies
Cost estimation:	Old technology used at oil & gas capturing processing: locally fabricated compressors (low energy efficiency), gas processing units, closure of wells, capturing and piping of natural gas with low energy efficiency (ca. 6.6 mln. USD).	Improved EE technology to be used for gas capturing process, e.g. including the installation of high-efficiency compressors and closing of existing wells: 10 x 80,000 USD = 0.8 mln. USD for compressors, closure of wells, capturing and piping of natural gas with low energy efficiency (ca. 6.6 mln. USD).	Incremental cost (GEF contribution) of about 800,000 USD
Investment costs for baseline and alternative project solution	**6,600,000**	**7,400,000**	**800,000**
SOCAR developing a replication strategy and getting involved in national gas capturing program	Not implemented under baseline	200,000	200,000
SOCAR's afforestation	Not implemented	100,000	100,000

program	under baseline		
Total cost USD (incl. soft measures)	**6,600,000**	**7,700,000**	**1,100,000**

Outcome 4: MRV system and national registry for mitigation actions in the energy generation and end-use sectors

A key element of the framework for developing country mitigation actions, is the concept of Measurement, Reporting, and Verification (MRV). MRV has been widely used in many contexts at national and international levels to ensure transparency and help in effective implementation. The key elements of MRV, based on the Cancun Agreements (UNFCCC, 20109, ibid.) and the Durban Outcomes (UNFCCC, 2011a10, ibid.), which define the requirements for MRV of mitigation efforts undertaken by the developing countries, are:

- All NAMAs, domestically and internationally supported, will be measured, reported and verified domestically. NAMA implementation could result in GHG emissions reduction, both, directly (such as construction of wind energy power generation plants) and indirectly (such as enforcement of policy on energy efficiency norms for appliances). Estimating the impact of NAMA implementation requires establishing a BAU scenario, as well as a methodology to estimate the impact on GHG emission sources affected by NAMA implementation. Measurement methodologies should include parameters to tracks the GHG emissions impact of NAMA implementation, and a method for measuring these parameters.
- The domestic MRV of domestically supported NAMAs will be in accordance with general guidelines
- The actual number of residential units that have incorporated energy efficiency standards and received subsidy under the NAMA will be tracked;
    - Sample-based measurement of energy use of the new energy efficient residential units, by identifying the key energy consumption parameters to be monitored;
    - Survey a baseline group that consists of residential units built without using energy efficient standards. This group will be monitored every three to four years, to establish the baseline of energy consumption and
    - Estimate emission factor for energy consumption of residential units. This factor is multiplied by the difference in energy consumption between energy efficient residential units and baseline group, to estimate the GHG emissions reduction.
- Internationally supported NAMAs will also be subject to international MRV.

This component will focus on establishing a GHG business-as-usual reference baseline and emission reduction targets for main oil & gas end-use sector and subsectors that will be used as a baseline for the implementation of NAMA projects. This will enhance and complement the national GHG inventory that is being conducted by the Ministry of Ecology and Natural Resources through the Third National Communication to the UNFCCC (TNC).

On another level, the GHG inventory being developed by SOCAR in 2007 that is being updated annually has similar shortfalls as the GHG inventory on the country level, mainly related to weak measurement (for example: measurements of gas leakages at wells is not available at all production sites), data collection and reporting methodologies for their own company GHG balance. Furthermore, since SOCAR is representing a group of companies with very different strategic divisions and also management capabilities, the directions and requirements for conducting GHG inventories are also manifold, which leads in practice to a very heterogeneous picture of how inventories are being conducted. The project component will be also dedicated to increase capacities within SOCAR, in a first step within the divisions and departments involved in the NAMA project implementation, to be rolled out to other departments later on, with the aim to improve the overall quality of SOCAR's overall GHG inventory.

Output 4.1: Define and establish sectoral and subsectoral reference baselines for oil & gas end-use sectors

One focus will be to improve the quality of inventories: The project will use a flexible, programmatic approach over its five-year lifetime to improve the quality of GHG inventories to be developed. In a first step, an improved *GHG inventory methodology* for regular (annual or bi-annual) reporting and future National Communications will be compiled in a sustainable manner; the inventories will be of a higher quality than those prepared for the Initial and 2nd National Communications so far.

Secondly, clear organizational and operational boundaries establishing the framework for structuring a GHG emission inventory are required. Organizational boundaries define the operations, facilities, and sources that are to be included in a GHG emission inventory, while operational boundaries categorize the emissions associated with the operations, facilities, and sources as resulting either directly or indirectly from the organisation's activities. Determining how to set these boundaries will be a critical step in developing GHG emission inventories: this step will define what is included in an inventory and what is not.

A key-source analysis will be carried out to determine the sectors with significant emissions where resources can be targeted. This activity will also include training in and capacity building on the use and application of the 2006 IPCC Guidelines for National Greenhouse Gas Inventories, the IPCC Good Practice Guidance on National Greenhouse Gas Inventories and Uncertainty Management, and the IPCC Good Practice Guidance on Land Use, Land Use Change and Forestry and related applications of geographic information systems and remote sensing techniques.

Result:

As a result of this activity, number of trained experts available in the country shall be increased: 5 training workshops will be held under the project to improve the existing capacity of experts involved in the elaboration of GHG inventories; 1-2 during the start-up phase on incorporating good-practice procedures corresponding to latest 2006 IPCC Revised Guidelines into national arrangements and 3-4 in the following years on quality assurance and quality control procedures. Minimum 50 national experts will attend these workshops. Additional training in the 2006 IPCC Revised Guidelines for the specific end-use sector may be required to ensure that national methodologies are harmonised and comparable. Some training needs may also be identified prior to the commencement of activities on developing emission factors.

In a next step, inventories for key end-use sectors will be developed based on the updated methodology and capacities of national inventory experts increased.

Output 4.2: Establish sub-sectoral GHG inventories for key oil & gas end-use sub-sectors

Current GHG inventory mechanisms, including stakeholders involved, gaps and existing shortfalls in data collection systems and methodology will be identified. The project will establish relevant sectoral GHG inventories as required by UNFCCC's TNC.

Data collection systems and management will need to be improved: For the selected key sources, activity data gaps will be reduced and data collection strategies will be improved. The national arrangements and organisation for collecting, managing and archiving data in the country will be documented and described for a given sector of the national inventory. Issues to be addressed are likely to include: inter-agency co-ordination for the collection of relevant information (e.g. Ministry of Ecology and Natural Resources, Ministry of Economy, Ministry of Energy, State Statistics Committee, etc.), management, archiving and quality control of national data, interagency mandates, roles and responsibilities for inventory preparation; peer review of the national data; state legislation for data collection.

Result:

Calculation of relevant emission factors will be improved and disseminated: Assumptions and methods for emission factors will be documented to increase their reliability and to reflect appropriate country circumstances. The emission factors will also be disseminated through the IPCC emission factor database. As a result, based on improved data collection mechanisms and methodologies, GHG inventories for key end-use sectors will be developed: energy generation, buildings and transport taking into consideration existing inventories and data collection mechanisms

Output 4.3. Established and operational national registry mechanism for mitigation actions in the oil & gas end-use sector

Measurement enables assessment of the implementation of plans, the achievement of objectives/goals and taking any necessary corrective steps that may be required to improve the effectiveness of any GHG mitigation activity. Reporting and verification ensure communication of consistent and reliable information to appropriate authorities in order to facilitate assessment. MRV is thus a management tool for monitoring achievement of goals and objectives, whether they are related to organisational, institutional or governance issues of a country.

To measure the progress of a NAMA, key parameters and data for estimating specific impacts need to be identified. Identification of key parameters should take into account direct and indirect impacts as well as the causality of impacts. Measurement of GHG data and impacts of emission reductions are defined by the baseline. To support the MRV of a NAMA, a plan that includes the following details should be developed:

- frequency of measurement and reporting of parameters;
- responsibilities of the different actors with regard to measurement and reporting;
- assumptions/default values applied and sources of the values;
- sources of measured parameters; and
- description of the data storage and archiving plan.

As part of the process of establishing NAMAs, the Ministry of Ecology, as the governing body in Azerbaijan for climate change, will be in charge of setting a ***national registry mechanism for mitigation actions***. The registry will be linked to the database of potential mitigation actions that will be established through the component 3. A specific section of the registry will be for actions implemented in the energy end-use sector. Close coordination will be carried out between the Ministry of Ecology and Ministry of Energy in the establishment of the registry of mitigation actions for the energy generation and end-use sector.

Furthermore, ***specific measurement, reporting and verification systems will be established and implemented*** for the three NAMAs implemented within component 3 of the project. The MRV system will be designed to comply with internationally accepted standards and, in the case of Supported and Credited NAMAs, must be accessible to international MRV systems established through the UNFCCC or by countries providing financial support to NAMA implementation.

Key parameters to be monitored will be selected, both quantitative and qualitative. This will allow to monitor precisely the mitigation benefits of the three implemented NAMAs in terms of GHG emission reduction, and additional parameters will be selected to evaluate the benefits. A monitoring plan including these parameters will be designed and implemented for the three selected NAMAs in conjunction with the implementation of the mitigation actions. Furthermore, national MRV guidelines and standard methodologies for the selected subsectors will be developed.

An ***MRV committee will be established*** for each selected NAMAs that will have the responsibility of measuring and collecting data (M), communicate results based on the data collected (R) and verifying the data (V). The committee will also identify specific needs of capacity development for local technical professionals in order to ensure a quality MRV of the NAMAs.

Trainings will be organized on MRV requirements and procedures to enhance technical capacity and ensure the availability of capable and qualified local technical professionals to conduct MRV for NAMAs in the energy end-use sector.

Results:

A ***national MRV guideline*** will evolve from the definition of the national registry for mitigation activities in Azerbaijan which will comprise the MRV methodologies as well as key parameters to be monitored in the NAMA implementation process. Lessons learned and best practice from pilot NAMAs will be analysed, published and disseminated and addressed to SOCAR and governmental institutions for further replication.

Furthermore, the GEF project has to undergo a Mid-Term (MTE) and Final Evaluation (FE) which is formally conducted under the GEF M&E activities.

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:

Project risks and risk mitigation measures are described below.

IDENTIFIED RISKS AND CATEGORY	IMPACT	LIKELIHOOD	RISK ASSESSMENT	MITIGATION MEASURES
LEGAL & POLICY FRAMEWORK The lack of proper energy efficiency and renewable energy legislation and policy measures (strategies, actions plans, monitoring activities) remains within the country framework	High	Moderately likely	**Moderate**	The project has not the means nor does it address the right project stakeholders that would lead to direct improvements on the legal and policy level. Nevertheless, the development and implementation of NAMAs for selected end-use sectors will align them to existing development plans and policies required to be implemented by the Government of Azerbaijan with significant effect (benefit) to end-users. Appropriate resources (human and financial) will be allocated by the project stakeholders.
FINANCIAL SOCAR does not commit adequate resources and funding support to ensure that project investments during, and beyond the term of the project are properly maintained.	High	Moderately likely	**Moderate**	The project outputs have been identified, and project activities developed, in close collaboration with SOCAR in order to incrementally build on the existing foundation of financial resources and institutional capacities, rather than impose an unwanted and unsustainable suite of activities on the government. Careful attention is being paid to ensuring the long-term sustainability of project investments. Project shall also make specific proposals to implement suitable financial mechanisms to de-risk increased level of investments into energy end-use sectors.
STRATEGIC Low market readiness to implement GHG mitigation programs in place	Moderate	Moderately likely	**Moderate**	Low level of experience in uptaking strategic framework programs that would trigger scaling-up of EE implementation mechanisms will be addressed by the Project. NAMAs will be implemented to introduce new technologies to the market and increase the awareness about energy efficiency in main energy end-use sectors
INSTITUTIONAL CAPACITY Expert capacity and institutional know-how on appropriate GHG inventory methodologies lacking	Low	Low	**Low**	The project will address the existing gaps on the level of institutional know-how and methodologies used for preparation of GHG inventories, making use of improved statistical and other data sources to be compiled and institutionalised through sufficient training and capacity-building activities. In fact the project duration will allow monitoring the progress made in regard to institutional capacity building by developing GHG inventories, sub-sectoral reference baselines based on IPCC guidelines and international best practice.
ENVIRONMENTAL The NAMA Programme does not materialise in the proposed way and therefore GHG mitigation potential is not realised	High	Low	**Moderate**	The project design foresees the implementation of a programmatic NAMA approach, i.e. a set of different projects addressing different energy end-use sectors across Azerbaijan. The project ideas have been commonly developed with SOCAR and are founded within SOCAR's corporate CC Mitigation strategy. Nevertheless, in order to confirm that project will be implemented within the 3 proposed NAMAs, a feasibility phase has been added to confirm that (a) project ideas are still valid, (b) can be implemented as

IDENTIFIED RISKS AND CATEGORY	IMPACT	LIKELIHOOD	RISK ASSESSMENT	MITIGATION MEASURES
				foreseen and (c) can achieve significant GHG mitigation and replication after the implementation of the GEF activity. In all investment projects, relevant local/national environmental regulations, including environmental & social impact assessments (ESIA) – if relevant and required – will be implemented.

A.7. Coordination with other relevant GEF financed initiatives

The proposed project will be closely coordinated with the following on-going initiatives:

The *Energy Reform Support Program* funded by the European Union will assist the Azerbaijani Government to review the national energy strategy in order to develop an overall, coherent, integrated and transparent energy strategy that covers the supply, transportation, transit and use of all the energy resources and the further reforms to be undertaken.

UNDPs *Promoting Development of Sustainable Energy Project* supports development of conducive policy and regulatory framework for energy efficiency and renewable energy, builds technical and institutional capacities for policy enforcement, and facilitates implementation of demonstration sustainable energy projects (such as small hydro power).

The development of Azerbaijan's *Third National Communication to UNFCCC* will focus on national, sector level inventories, whereas this GEF project will prepare detailed sub-sectoral GHG inventories, (e.g. electricity generation, heat generation, buildings, urban transport), reference baseline scenario for identified sub-sectors, and alternative/low-carbon scenarios with accelerated implementation of energy efficiency and renewable energy measures in key sub-sectors.

Azerbaijan's First Biennial Update Report to the UNFCCC is targeted to assist the country in mainstreaming and integration of climate change consideration into national and sectoral development policies by giving continuity to the institutional and technical capacity strengthening process, partly initiated and sustained by the National Communications. Specific cross-links to this project are related to the GHG inventories for the period 1990 - 2005 recalculated (based on IPCC 2006 software used) and the support of domestic Measurement, Reporting and Verification (MRV) arrangements.

The global "*Technology Needs Assessment"* is already finished and was funded by GEF and implemented by the United Nations Environment Program (UNEP), coordinated in Azerbaijan by MENR in close collaboration with all relevant ministries, agencies, institutions, non-governmental organizations, private sector and independent experts. The final report from 2013 provides a comprehensive analysis of technological options for renewable energy deployment and the application of energy efficiency measures in the building sector which are relevant for this GEF project activity.

The coordination with ongoing projects and initiatives will be ensured via the Project Board where all representatives of related projects will be invited. Project Board will formally meet once a year to review, approve and revise, as needed, annual UNDP-GEF project work plan, at which stage linkages and collaborative actions with other initiates can be proposed and incorporated in project work program.

B. ADDITIONAL INFORMATION NOT ADDRESSED AT PIF STAGE:

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

Stakeholder identification:

1. The **State Oil Company of the Azerbaijan Republic (SOCAR)** is involved in exploring oil and gas fields, producing, processing, and transporting oil, gas, and gas condensate, marketing petroleum and petrochemical products in domestic and international markets, and supplying natural gas to industry and the public in Azerbaijan. Main involved entity in the project will be *SOCAR's Ecological Department.* The Department is responsible for improving the environmental performance of SOCAR's divisions including implementation of SOCAR's Climate Change and Mitigation Strategy (from 2010).

   Anticipated Role in the Project: SOCAR will be the main executing partner and will be involved mainly in the design (component 2) and implementation (component 3) of the NAMAs, and benefit from methodologies on GHG Inventories and MVR developed under project component 1 and 4. The concept of NAMAs, as described above, represents a valuable opportunity for a large enterprise, such as SOCAR, to developing and implementing a large scale GHG mitigation program that is in line with the company's long-term sustainable development strategy and, simultaneously, will replicate to the national level and thus influence the country's overall GHG emission regime.

2. **Ministry of Ecology and Natural Resources (MENR)** is the key governing body in charge of climate change, emission accounting and regulation on natural resources use, it serves as Designated National Authority (DNA) for CDM and NAMAs. MENR will be one executing partner; it will take the lead in implementation of Components 1 and 4 and ensure coordination with the UNDP-GEF project on preparation of the 3rd National Communication and Biennial Update Report (BUR).
3. **National Climate Change Center (NCCC**) – is a public organization under MENR, which is developing national GHG inventory, National Communication and other analysis on national/sectoral GHG abatement potential and costs. NCCC team was leading the work on TNC preparation and will also take the lead on complimentary activities envisaged under Components 1, 2 and 4 thus ensuring the necessary level of coordination and synergies between these projects.
4. **Ministry of Energy** will be the key counterpart for development of policy instruments for NAMA implementation in light of its overall mandate in energy sector.

Stakeholder involvement plan

The project's design will ensure ongoing and effective stakeholder participation in the project's implementation. The mechanisms to ensure and facilitate involvement of different stakeholder in the project implementation will comprise the following elements:

(a) Project inception workshop to enable stakeholder awareness of the start of project implementation

The project will be launched by a multi-stakeholder workshop. This workshop will provide an opportunity to provide all stakeholders with the most updated information on the project and the project work plan. It will also establish a basis for further consultation as the project's implementation commences.

(b) Constitution of Project Board to ensure representation of stakeholder interests in project

A Project Board (PB) will be constituted to ensure broad representation of all key interests throughout the project's implementation.

(c) Establishment of a Project Management team to oversee stakeholder engagement processes during project

The Project Management team - comprising of a Project Manager (PM) and Project Assistant (PA) - will take

direct operational and administrative responsibility for facilitating stakeholder involvement and ensuring increased local ownership of the project and its results. The PM and PA will be in close contact with SOCAR and MENR to ensure smooth coordination among key stakeholder organizations at the national level during the project period.

(d) Project communications to facilitate ongoing awareness of project

The project will develop, implement and maintain a communications strategy to ensure that all stakeholders are informed on an ongoing basis about: the project's objectives; the projects activities; overall project progress; and the opportunities for involvement in various aspects of the project's implementation.

(e) Capacity building

All project activities are strategically focused on building the capacity - at systemic, institutional and individual level - of the institutional and community stakeholder groups to ensure sustainability of initial project investments. Significant GEF resources are directed at building the capacities of SOCAR's or public authorities' staff. The project will invest in training and capacity building activities on the level of experts (e.g. engineers, building designers) and administrative staff in governmental institutions (e.g. NCCC).

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 project is targeted at oil & gas end use sectors and will address the significant potential for using energy and fuel energy efficiently across major energy consumers, such as buildings and transportation systems. Energy savings of 10-50% are realistic to be achieved through pilot investments; these energy savings are equivalent to energy cost savings, which will be revealed by the pilot NAMAs. Direct beneficiaries will be tenants and occupants in case of residential buildings or SOCAR as owner/operator of buildings and transportation systems benefiting from lower operating costs and increased comfort. Further socio-economic and environmental benefits are to be expected in the villages close to Siyazanneft oil & gas fields addressed by NAMA 3, who will benefit from improved energy supply (avoiding low quality fuels, such as kerosene or exploiting local biomass resources) and reduced environmental impacts being the result of major afforestation activities. The GEF activity is expected to create further value-added after the end of the project by highlighting replicable energy efficiency and GHG mitigation technologies that will be made available in the Azeri market.

There are no specific gender issues addressed by this project.

The project, namely the NAMA number 3 addressing the Associated Gas Capturing Programme will provide benefit to women, since the improved gas supply for nearby villages will reduce the collection of brushwood, dung and other bio-resources used for heating and cooking in the rural region which is currently mainly organized by women.

Calculation of Global Environmental Benefits to be achieved by the Project:

<table>
<tr><th>GHG emission reductions</th><th>Project Component</th><th>t CO_{2eq} (cumulative)</th><th>Assumptions/Formula</th></tr>
<tr><td>Direct</td><td>Outcome 3: Investment in 3 pilot NAMAs</td><td>561,137 t CO_2 (sum of direct CO_2 emission from NAMA 1-3)</td><td>
<u>Direct GHG emission reductions:</u>

NAMA 1 – SOCAR's Green Building Programme

Implementation of demo projects (project lifetime 25 years): 10,500 t CO_{2eq} (see GEF CC TT – Objective 2 lifetime direct GHG emissions avoided)

<table>
<tr><td>Demo site area, m²
(a)</td><td>Baseline energy use, MWh/ m²/a
(b)</td><td>GEF alternat. energy use, MWh/ m²/a
(c)</td><td>Annual energy saving, MWh
(d)=(a)x(b-c)</td><td>CO2 EF, tCO2eq/ MWh
(e)</td><td>Annual direct ER, tCO2eq/a
(f)=(d)x(e)</td><td>Total project direct ER, tCO2eq
(g)=fx25</td></tr>
<tr><td>8,000</td><td>0.3</td><td>0.15</td><td>1,200</td><td>0.35</td><td>420</td><td>10,500</td></tr>
</table>

NAMA 2 – Sustainable Transport

GEF support will be sought to fund the incremental costs of new technologies (up to 40%) for demonstration activities, switching from fossil fuel to electricity (project lifetime – 10yrs.) – 98.2 t CO_{2eq}
20% of car users and 50% of heavy vehicles will be undergoing energy efficient driving practices (project lifetime – 10yrs.) – 1,495 t CO_{2eq}
total 1,593 t CO_{2eq} (see GEF CC TT – Objective 4 lifetime direct GHG emissions avoided)

<table>
<tr><td>Type of vehicle
(a)</td><td>No. of vehicles
(b)</td><td>Fuel baseline l/100km
(c)</td><td>Fuel saving l/100km
(d)</td><td>Vehicle mileage km/a
(e)</td><td>Fuel demand l/a
(f)=(e)/100x (d)x(b)</td><td>Total project direct ER, tCO2eq
(g)=fx0.35x10</td></tr>
<tr><td colspan="7">Fuel switch</td></tr>
<tr><td>Cars</td><td>3</td><td>9</td><td>4</td><td>15,000</td><td>1,800</td><td>6.3</td></tr>
<tr><td>Trucks/ buses</td><td>7</td><td>55</td><td>15</td><td>25,000</td><td>26,250</td><td>91.9</td></tr>
<tr><td colspan="7">Efficient driving practices</td></tr>
<tr><td>Cars</td><td>180</td><td>9</td><td>1</td><td>15,000</td><td>27,000</td><td>94.5</td></tr>
<tr><td>Trucks/ buses</td><td>160</td><td>55</td><td>10</td><td>25,000</td><td>400,000</td><td>1,400</td></tr>
</table>

NAMA 3 – Gas capturing Programme

approx. 600 households in closest villages to Siyazanneft will be connected to natural gas grid using captured associated gases (assumption: HH 50% heated by kerosene and 50% by biomass, 300 kWh/m².a demand, 25yrs. lifetime): 549,044 tCO2eq (see GEF CC TT – Objective 1 lifetime direct GHG emissions avoided)

Baseline emissions:
</td></tr>
</table>

<table>
<tr><th>GHG emission reductions</th><th>Project Component</th><th>t CO_{2eq} (cumulative)</th><th>Assumptions/Formula</th></tr>
<tr><td></td><td></td><td></td><td>
<table>
<tr><th>No. of house-holds
(a)</th><th>Average HH size m²
(b)</th><th>Baseline energy demand, MWh/
(c)=(a)x(b) x0.3</th><th>NG demand Nm³/a
(d)=(c)x1000 /10.25/80%</th><th>Methane content Nm³/a
(e)=(d)x80%</th><th>Methane content t/a
(f)=(e) x 0.72[14]/1000</th><th>CH_4 x 21 GWP tCO2eq/a
(g)=(f) x 21</th></tr>
<tr><td>600</td><td>80</td><td>14,400</td><td>1,756,100</td><td>1,404,880</td><td>1,011</td><td>21,241</td></tr>
</table>
<table>
<tr><th>Energy demand (kerosene)
(h)= (c) x 50%</th><th>CO2 EF tCO2/ MWh
(i)</th><th>Baseline GHG emission tCO2/a
(j) = (h)x(i)</th><th>Total baseline GHG emissions tCO2eq/a
(k) = (g)+(j)</th></tr>
<tr><td>7,200</td><td>0.35</td><td>2,520</td><td>23,761</td></tr>
</table>
Project emissions:
900,000 Nm³/a x 0.002 t CO_{2eq}/Nm³ = 1,800 t CO_{2eq}/a
Total direct emission reductions: 23,761 – 1,800 = 21,962 t CO_{2eq}/a x 25 years = 549,044 t CO_{2eq}
</td></tr>
<tr><td>Indirect (top-down)</td><td>Component 3: Replication potential for NAMA implementation</td><td>339,610 t CO_2 /year or

6,242,500 t CO_2 over project influence period</td><td>
<u>Indirect GHG emission reductions:</u>
NAMA 1: Replication potential – energy efficient buildings at SOCAR:

existing building stock:

specific energy demand lowered by 20% at project end and 40% 10 years post-project compared to baseline
penetration rates: 3% full-compliance at project mid-term, 7% at project end, 15% full-compliance 10 years after project
building energy consumption reduced by 3% at project end and 14% 10 yrs. after project end.

new buildings:

SOCAR’s share in new construction is about 2% of country overall construction activity (ca. 2.2 mln. m² in 2012), with annual increase by 3%
Energy demand is assumed to be 50% of baseline energy consumption (i.e. 145 kWh/m²a at project mid-term, 138 kWh/m².a at project end and 113 kWh/m².a 10yrs. after project end

GHG emission reduction: average 86,100 t CO_{2eq}/a in 10yrs. post-project period, equivalent to 2,153,100 t CO_{2eq} over 25 years lifetime (ca. 1,291,855 t CO_{2eq} with 60% causality factor - see GEF CC TT – Objective 2 lifetime indirect GHG emissions avoided)

NAMA 2: Replication potential – sustainable transport at SOCAR:

10% of SOCAR vehicles (of ca. 6,000, i.e. 600) use alternative

</td></tr>
</table>

[14] Assumption: density of methane: 0.72 kg/Nm³

GHG emission reductions	Project Component	t CO_{2eq} (cumulative)	Assumptions/Formula
			fuels (electricity or others) 10 years after project end • 50% of SOCAR vehicles (ca. 3,000) are trained and applying energy efficient driving practices • GHG emission reduction: average 1,600 t CO_{2eq}/a in 10yrs. post-project period, equivalent to 16,100 t CO_{2eq} over 10 years lifetime ***(ca. 9,666 t CO_{2eq} with 60% causality factor - see GEF CC TT – Objective 4 lifetime indirect GHG emissions avoided)*** NAMA 3: Replication potential – gas capturing programme: • SOCAR's ambitions are assumed to be extended to reach up to 9,000 households (multiplicator of 15 x 600) close to Siyazanneft with captured gas and thus reducing the impact of methane emissions at oil & gas wells as well as further use of kerosene/wooden biomass in residential areas. • Indirect GHG emission reductions to reach about 329,400 t CO_{2eq}/a or 8,235,700 t CO_{2eq} over 25 years lifetime ***(ca. 4,941,000 t CO_{2eq} with 60% causality factor - see GEF CC TT – Objective 1 lifetime indirect GHG emissions avoided)***. Total lifetime emission reduction target: 10,404,000 Mt CO_2 GEF Causality Factor: 60% **Total indirect emission reduction: 6,242,900 Mt CO_2**
TOTAL		**6.804 mln t CO2eq**	**Global Environmental Benefit**

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

The project will seek to achieve a major contribution of corporate sector investment to achieve a long-term financial sustainability of a low-carbon low energy result across major energy end-use sectors in Azerbaijan. Costs incurred in project implementation will focus on those additional actions required to provide key incremental assistance to SOCAR and other project implementing partners in their undertaking and significant engagement to improving the financial viability of energy efficiency and renewable energy projects implemented.

To accomplish this, the project will seek to complement and build upon existing baseline activities already underway by SOCAR (Implementation of SOCAR's Climate Change Mitigation Strategy, pilot investments directed towards low energy technologies in building, transport and production sectors). Wherever possible, the project will use the competencies and technical skills within the institutions of the executing partners to implement the project activities. Where applicable, project resources will also be deployed to strengthen and expand existing initiatives and programmes and at the end provide the ground for further scaling up appropriate policy instruments on the national level (e.g. *Action Plan for Efficient Use of Energy for 2013-2015*, *State Programme on Renewable and Alternative Sources of Energy*).

The project is considered cost-effective for the following primary reasons:

(i) The "programmatic NAMA approach" will ensure the implementation of cost-efficient means in introducing energy efficiency and renewable energy technologies in major energy end-use sectors in

Azerbaijan. During the development and design of specific sectoral NAMA activities, *marginal abatement cost curves (MAC)* will be developed and ensure that abatement of CO2 emissions will be realized at least cost.

(ii) As a result of project investments, innovative technologies for increasing the energy efficiency of buildings (i.e. reducing specific heat and hot water demand in residential, public and private service buildings) and transportation (increased vehicle fuel efficiency) will be introduced to Azeri market. Significant amount of co-financing of the corporate sector will be ensured to demonstrate that low carbon and low energy technologies do provide a significant market and create benefits for energy end-users on the residential and public/private sector levels.

(iii) Its cost-effectiveness of GEF-supported investment achieved in terms of GHG abatement: the total direct project emission reductions over project lifetime are calculated at 561,160 tons CO_{2eq}/year, which brings the GHG abatement costs for the planned GEF contribution of USD 3.57 million down to 6.36 USD/t CO_{2eq} (see calculation in chapter B.2).

(iv) Project support to the introduction of business planning approaches and tools for improved energy efficiency across SOCAR's relevant corporate sectors is expected to improve the cost-effectiveness of the their operations by: (a) strengthening capacity and individual skills of technical and operations management staff involved in implementation of the company's Climate Change Mitigation Strategy; (b) supporting the development of innovative financing mechanisms that will create additional financial re-flows in the medium to long-term; (c) improving overall quality of inventories of GHG emissions and linking the quality of CO2 emission reductions monitored to strategy of further carbon mitigation; and (e) finally, as result of project demonstrations, advocating increased investment into energy efficiency and renewable energy technologies by government and other donors.

(v) GEF resources will be used to develop financial instruments and incentives to be able to capture profitable returns from proposed energy efficiency and renewable energy investments. SOCAR will be involved in the design of such mechanisms, such as a "green buildings investment fund" or "gas offsetting scheme" that is expected to significantly leverage internally financed projects. Any surplus savings in excess of costs are profits that will allow the fund to grow in the future and thus allocate additional financial means to be reinvested in additional project activities.

(vi) Under the selection of project NAMAs, sectoral crediting and voluntary sectoral domestic carbon markets will be explored and designed to potentially scale-up market mechanisms that will lead to additional carbon mitigation, e.g. through an agreement established between the Government of Azerbaijan and any Annex I country of the Kyoto Protocol, to allow issuing carbon credits for additional emission reductions achieved below established mitigation targets.

(vii) Project funding for developing an output-based, results-oriented management plan (comprising a strategic plan, annual work program and subsidiary plans) and organizational structure (organogram, post descriptions) for the proposed NAMA Programme will ensure the optimal deployment of limited institutional resources and capacity building within the project.

C. DESCRIBE THE BUDGETED M &E PLAN:

MONITORING AND REPORTING

The project will be monitored through the following Monitoring and Evaluation (M&E) activities.

Project start-up:

A Project Inception Workshop will be held within the first 3 months of project start with those with assigned roles in the project organization structure, UNDP country office and where appropriate/feasible regional technical policy and programme advisors as well as other stakeholders. The Inception Workshop is crucial to building ownership for the project results and to plan the first year annual work plan.

The Inception Workshop should address a number of key issues including:

a) Assist all partners to fully understand and take ownership of the project. Detail the roles, support services and complementary responsibilities of UNDP CO and the UNDP/GEF Regional Office vis-à-vis the project team. Discuss the roles, functions, and responsibilities within the project's decision-making structures, including reporting and communication lines, and conflict resolution mechanisms. The Terms of Reference for project staff will be discussed again, as needed.
b) Based on the project results framework and the relevant GEF Tracking Tool, if appropriate, finalize the first Annual Work Programme (AWP). Review and agree on the indicators, targets and their means of verification, and recheck assumptions and risks.
c) Provide a detailed overview of reporting, monitoring and evaluation (M&E) requirements. The Monitoring and Evaluation work plan and budget should be agreed and scheduled.
d) Discuss financial reporting procedures and obligations, and arrangements for annual audit.
e) Plan and schedule Project Board meetings. Roles and responsibilities of all project organization structures should be clarified and meetings planned. The first Project Board meeting should be held within the first 12 months following the inception workshop.

An Inception Workshop report is a key reference document and must be prepared and shared with participants to formalize various agreements and plans decided during the meeting.

Quarterly:

Progress made shall be monitored in the UNDP Enhanced Results Based Management Platform.

Based on the initial risk analysis submitted, the risk log shall be regularly updated in ATLAS. Risks become critical when the impact and probability are high.

Based on the information recorded in Atlas, a Project Progress Report (PPR) can be generated in the Executive Snapshot.

Other ATLAS logs can be used to monitor issues, lessons learned etc. The use of these functions is a key indicator in the UNDP Executive Balanced Scorecard.

Annually:

Annual Project Review/Project Implementation Reports (APR/PIR): This key report is prepared to monitor progress made since project start and in particular for the previous reporting period. The APR/PIR combines both UNDP and GEF reporting requirements.

The APR/PIR includes, but is not limited to, reporting on the following:

- Progress made toward project objective and project outcomes - each with indicators, baseline data and end-of-project targets (cumulative)
- Project outputs delivered per project outcome (annual).
- Lesson learned/good practice.
- AWP and other expenditure reports
- Risk and adaptive management
- ATLAS QPR
- Portfolio level indicators (i.e. GEF focal area tracking tools) are used by most focal areas on an annual basis as well.

Periodic Monitoring through site visits:

UNDP CO and the UNDP RCU will conduct visits to project sites based on the agreed schedule in the project's Inception Report/Annual Work Plan to assess first hand project progress. Other members of the Project Board may also

join these visits. A Field Visit Report/BTOR will be prepared by the CO and UNDP RCU and will be circulated no less than one month after the visit to the project team and Project Board members.

Mid-term of project cycle:

The project will undergo an independent Mid-Term Evaluation at the mid-point of project implementation. The Mid-Term Evaluation will determine progress being made toward the achievement of outcomes and will identify course correction if needed. It will focus on the effectiveness, efficiency and timeliness of project implementation; will highlight issues requiring decisions and actions; and will present initial lessons learned about project design, implementation and management. Findings of this review will be incorporated as recommendations for enhanced implementation during the final half of the project's term. The organization, terms of reference and timing of the mid-term evaluation will be decided after consultation between the parties to the project document. The Terms of Reference for this Mid-term evaluation will be prepared by the UNDP CO based on guidance from the Regional Coordinating Unit and UNDP-GEF. The management response and the evaluation will be uploaded to UNDP corporate systems, in particular the UNDP Evaluation Office Evaluation Resource Center (ERC).

The relevant GEF Focal Area Tracking Tools will also be completed during the mid-term evaluation cycle.

End of Project:

An independent Final/Terminal Evaluation will take place three months prior to the final Project Board meeting and will be undertaken in accordance with UNDP and GEF guidance. The final evaluation will focus on the delivery of the project's results as initially planned (and as corrected after the mid-term evaluation, if any such correction took place). The final evaluation will look at impact and sustainability of results, including the contribution to capacity development and the achievement of global environmental benefits/goals. The Terms of Reference for this evaluation will be prepared by the UNDP CO based on guidance from the Regional Coordinating Unit and UNDP-GEF.

The Terminal Evaluation should also provide recommendations for follow-up activities and requires a management response which should be uploaded to PIMS and to the UNDP Evaluation Office Evaluation Resource Center (ERC).

The relevant GEF Focal Area Tracking Tools will also be completed during the final evaluation.

During the last three months, the project team will prepare the Project Terminal Report. This comprehensive report will summarize the results achieved (objectives, outcomes, outputs), lessons learned, problems met and areas where results may not have been achieved. It will also lay out recommendations for any further steps that may need to be taken to ensure sustainability and replicability of the project's results.

Learning and knowledge sharing:

Results from the project will be disseminated within and beyond the project intervention zone through existing information sharing networks and forums.

The project will identify and participate, as relevant and appropriate, in scientific, policy-based and/or any other networks, which may be of benefit to project implementation though lessons learned. The project will identify, analyze, and share lessons learned that might be beneficial in the design and implementation of similar future projects.

Finally, there will be a two-way flow of information between this project and other projects of a similar focus.

Communications and visibility requirements

Full compliance is required with UNDP's Branding Guidelines. These can be accessed at http://intra.undp.org/coa/branding.shtml, and specific guidelines on UNDP logo use can be accessed at: http://intra.undp.org/branding/useOfLogo.html. Amongst other things, these guidelines describe when and how the UNDP logo needs to be used, as

well as how the logos of donors to UNDP projects needs to be used. For the avoidance of any doubt, when logo use is required, the UNDP logo needs to be used alongside the GEF logo. The GEF logo can be accessed at: http://www.thegef.org/gef/GEF_logo. The UNDP logo can be accessed at http://intra.undp.org/coa/branding.shtml.

Full compliance is required with the GEF's Communication and Visibility Guidelines (the "GEF Guidelines"). The GEF Guidelines can be accessed at: http://www.thegef.org/gef/sites/thegef.org/files/documents/_C.40.08_Branding_the_GEF%20final_0.pdf. Amongst other things, the GEF Guidelines describe when and how the GEF logo needs to be used in project publications, vehicles, supplies and other project equipment. The GEF Guidelines also describe other GEF promotional requirements regarding press releases, press conferences, press visits, visits by Government officials, productions and other promotional items.

M & E work plan and budget

Type of M&E activity	**Responsible Parties**	**Budget US$** *Excluding project team staff time*	**Time frame**
Inception Workshop and Report	▪ PM ▪ UNDP CO, UNDP GEF	Indicative cost: 5,000	Within first three months of project start up
Measurement of Means of Verification of project results.	▪ UNDP GEF RTA/PM will oversee the hiring of specific studies and institutions, and delegate responsibilities to relevant team members.	To be finalized in Inception Phase and Workshop.	Start, mid and end of project (during evaluation cycle) and annually when required.
Measurement of Means of Verification for Project Progress on *output and implementation*	▪ PM	To be determined as part of the Annual Work Plan's preparation.	Annually prior to ARR/PIR and to the definition of annual work plans
ARR/PIR	▪ PM ▪ UNDP CO ▪ UNDP RTA ▪ UNDP EEG	None	Annually
Thematic status/ progress reports	▪ PM ▪ Key Experts	57,800	bound to finalisation of components
Mid-term Evaluation	▪ PM ▪ UNDP CO ▪ UNDP RCU ▪ External Consultants (i.e. evaluation team)	Indicative cost: 25,000	At the mid-point of project implementation.
Final Evaluation	▪ PM ▪ UNDP CO ▪ UNDP RCU ▪ External Consultants (i.e. evaluation team)	Indicative cost : 25,000	At least three months before the end of project implementation
Project Terminal Report	▪ PM ▪ UNDP CO ▪ local consultant	0	At least three months before the end of the project
Audit	▪ UNDP CO ▪ Project manager and team	Indicative cost per year: 5,000	Yearly (5 times throughout project duration)
Visits to field sites	▪ UNDP CO ▪ UNDP RCU (as appropriate) ▪ Government representatives	For GEF supported projects, paid from IA fees and operational budget	Yearly
TOTAL indicative COST *Excluding project staff (PM and PAA) time and UNDP staff and travel expenses*		US$ 137,800	

*Note: Costs included in this table are part and parcel of the UNDP Total Budget and Work Plan (TBW) in the PRODOC, and not additional to it.

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)*
Husein Baghirov	Minister GEF Operational Focal Point	Ministry of Environment and Natural Resources	12/13/2012

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
Adriana Dinu UNDP-GEF Executive Coordinator and Director a.i		August 7, 2014	Marina Olshanskaya; Regional Technical Advisor, EITT	+421-907-840-152	marina.olshanskaya@ undp.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).

	Indicator	Baseline	Target/s (End of Project)	Source of verification	Risks and Assumptions
Project Objective To support the development, implementation and monitoring of NAMAs in the low-carbon end-use sector, in order to build upon a strong national commitment for the reducing the energy demand of oil & gas end use sectors	Number of NAMAs in energy end-use sectors implemented	No strategic programme in place that prioritises EE and RE requirements	3 NAMAs implemented by the end of the project	• National NAMA registry	**Assumptions:** – Government is focussing its legal and policy framework to align with international best-practice in energy efficiency and renewable energy – National efforts on institutional level to mitigate the effects of GHG emissions in oil & gas end-use and production sectors are being strengthened. – SOCAR is implementing its Climate Change strategy to get engaged in energy efficiency and renewable energy investments. **Risks:** – The lack of proper energy efficiency and renewable energy legislation and policy measures (strategies, actions plans, monitoring activities) maintains within the country framework – The Government does not commit adequate resources and funding support to sustain project investments in energy efficiency and renewables. – SOCAR does not commit adequate resources and funding support to sustain the maintenance of project investments during, and beyond the term of, the project.
	Direct and indirect GHG emission reduction and energy savings facilitated by the project	0	Total lifetime direct GHG emission reductions of about 0.56 mln. t CO_{2eq} Total lifetime indirect GHG emission reductions of 6.24 mln. t CO_{2eq} Total lifetime energy saved approx. 200,000 toe	• GHG emissions growth reduced as result of activities implemented under NAMAs • Projects will be monitored using specific MRV methods	
	Co-financing leveraged for implementation of prioritized NAMAs	0	30,000,000 US$	• NAMA implementation report	

	Indicator	Baseline	Target/s (End of Project)	Source of verification	Risks and Assumptions
Outcome 1: Assessment of GHG emission mitigation potentials and target setting completed	**Outputs:** 1.1 Relevant barriers that hinder the development and implementation of GHG mitigation measures assessed 1.2 Main oil & gas end-use sectors regarding status of energy performance and potential for decreasing energy intensity are analysed" 1.3 Detailed marginal abatement cost curves for the oil & gas end-use sectors developed to demonstrate effective mitigation policies and economic scenarios 1.4 Awareness among governmental institutions increased and the development of a national replication strategy supported 1.5 Voluntary emission reduction targets in the oil & gas end-use sectors are established and validated				
	Sub-sector voluntary GHG emission reduction targets established	Lack of governmental planning and target setting for energy and carbon intensive sub-sectors prevailing	Voluntary GHG emission reduction targets to be defined at least for main sub-sectors: • Residential/Housing • Transport • Energy Production	• National Climate Strategy in place • Sub-sectoral targets for short-, medium- and long-term • Action Plans for GHG mitigation (min. 3-5 years ahead)	**Assumptions:** – Overall system of Azerbaijan's energy efficiency and renewable energy policy is still in its early stages of its rationalization and implementation – lacking appropriate national data and information basis target setting mechanisms for EE and RE – GHG mitigation measures are to be effectively tackled (at mitigation costs < USD 25/t CO_{2eq}) **Risks:** – Lack of proper energy efficiency and renewable energy legislation and policy measures (strategies, actions plans, monitoring activities) within the country framework – underestimation of available potentials for GHG mitigation No national replication of measures as result of NAMA project implementation
	Marginal abatement costs curves for oil & gas end-use sectors defined	No detailed economic reviews and scenarios that compare the effectiveness of GHG mitigation technologies and	Develop detailed marginal abatement cost curves for the oil & gas end-use sectors to demonstrate effective mitigation policies and economic scenarios and under which conditions GHG mitigation could be effectively realised: margin < USD25/tCO2eq	• Technology reviews and documents • Economic assessments and scenarios • Comparison of MAC with international best-practice • Progress Report Outcome 1	
Outcome 2 NAMAs in oil & gas end-use sectors developed	**Outputs:** 2.1 Three designed programs for the implementation of selected prioritized feasible NAMAs in main oil & gas end-use sub-sectors 2.2 Fully capable and qualified private and public sector entities in the design and implementation of NAMAs 2.3 Defined and established financial instruments mitigation actions in the oil & gas end-use sectors				
	Sectors for prioritized and feasible NAMAs are identified and selected	GHG mitigation activities are subject to increased governmental focus. Without proper strategies	By end year 2: Feasibility of at least 3 NAMAs in selected oil & gas end-use sectors is identified:	• 3 feasibility studies for NAMA sectors available • Stakeholder workshops implemented	**Assumptions:** – NAMAs are facilitating transformation to low carbon low energy pathways

	Indicator	Baseline	Target/s (End of Project)	Source of verification	Risks and Assumptions
		and framework in place there is no proper focus established	• Targeting to significant deviation from baseline emissions • Comprehensive program to be implemented	• Specific NAMA criteria for selection in place	– NAMA Programmatic approach will support replicability on the national level – SOCAR can contribute as a relevant actor on the Azeri market to substantial GHG emission reductions in key energy end-use sectors **Risks:** – SOCAR does not commit adequate resources and commitment during NAMA project design – NAMA implementation strategy for selected energy end-use sub-sectors is abandoned – Lack of stakeholder commitment hinders the development of sector-specific GHG mitigation programmes
Outcome 3: NAMAs in the oil & gas end-use sector implemented	**Outputs:** 3.1 Potential NAMA 1: SOCAR's Green Building Program implemented 3.2 Potential NAMA 2: Sustainable Transport at SOCAR implemented 3.3 Potential NAMA 3: SOCAR's Associated Gas Capturing Program implemented				
	SOCAR's Green Building Programm is implemented and replicated	No strategic programme in place that prioritises EE and RE requirements of buildings constructed within SOCAR	• By end of project: Implementation of an investment program to cover 2-3 demonstration building new constructions and/or refurbishments using improved design and EE & RE technologies for commercial and/or residential buildings • Green building certifications for 2-3 demo projects available • Integrated building design approach applied to new/refurbished	• Direct (10,500 t CO_{2eq}) & Indirect (1.29 mln t CO_{2eq}) lifetime emission reductions from project activities (pilot investments, about 8,000 m² useful area) • Target energy consumption of new/refurbished buildings at least 50% below baseline • Monitoring energy performance of demo buildings • Information campaign on EE buildings implemented	**Assumptions:** – NAMA Programme is based on identified project opportunities in 3 energy end-use sectors, having high impact for replication – List of project ideas is based on SOCAR's corporate development and CC Mitigation Strategy – International best-practice in building EE, **Risks:** – NAMA Projects do not materialize as planned – SOCAR does not commit

	Indicator	Baseline	Target/s (End of Project)	Source of verification	Risks and Assumptions
			buildings and approx. 80-100 architects/designers trained	by SOCAR targeted on designers/architects	adequate financial and personal resources during NAMA project implementation – NAMA Projects do not result in replicable activities due to lack of technical, economical or organisational feasibility
	SOCAR's Sustainable Transport Initiative implemented and replicated	There are no measures to address fuel economy or efficient/alternative technologies for vehicles in place	• Implementation of 25 pilot investments in new alternative fuel sources or vehicles with improved emission standards by end of project • Development of a sustainable fleet management programme to optimize SOCAR's vehicle fleet and intra-company transportation logistics within 5 years after project end • Training programme on eco-driving practices initiated and delivered by project end	• Direct (1,600 t CO_{2eq}) & Indirect (9,700 t CO_{2eq}) lifetime emission reductions from project activities (pilot investments) • Monitoring results of demo investments and fleet management practices • Minimum 10 of SOCAR's vehicle fleet switched to alternative fuel sources • Minimum 200 of SOCAR's light vehicles and 500 of heavy vehicles drivers trained on eco-driving practices and leading to estimated 10-15% fuel saving 5 years after project end	
	SOCAR's associated gas capturing programme implemented and nearby villages supplied with natural gas, to avoid significantly methane emissions at SOCAR's oil & gas production units.	About 21 mln m³ of methane/year are evaporating from Siyazanneft oil & gas field; nearby villages are having problems with low-quality heating	• By end of project, SOCAR's gas capturing programme will be combined with a pilot programme to connect about 600 households from 12 nearby villages to a clean and safe gas network • Improved technologies introduced at SOCAR for gas capturing • Monitoring of GHG emission reductions will be integrated into SOCAR's GHG Inventory by project end • Afforestation	• Direct (0.55 mln t CO_{2eq}) & Indirect (4.94 mln t CO_{2eq}) lifetime emission reductions from project activities (pilot investments) • Approx. 600 households/local businesses connected to gas network • Monitoring GHG benefits of demonstration activities • Progress Report Outcome 3	

	Indicator	Baseline	Target/s (End of Project)	Source of verification	Risks and Assumptions
			programme initiated by SOCAR to mitigate loss of village forests by end of project		
Outcome 4 MRV system and national registry for mitigation actions in the energy generation and end-use sectors developed	**Outputs:** 4.1 Defined and established sectoral and subsectoral reference baselines for oil & gas end-use sector sectors 4.2 Established sub-sectoral GHG inventories for key oil & gas end-use sub-sectors 4.3 Established and operational national registry mechanism for mitigation actions in the oil & gas end-use sectors				
	Regular GHG Inventory conducted	Poor institutional capacity and support to develop proper GHG inventories based on lack of appropriate legal & policy framework to enhance low energy low carbon strategies	By end of project, GHG inventories will be annually available and to benefit from a stronger data quality	• Annual GHG inventories developed • Peer reviews organised during Project • Progress Report Outcome 4	**Assumptions:** – MRV requirements are to be introduced based on international standards and experience (e.g UNFCCC) – All NAMAs require the MRV mechanism to be applied accordingly – Lack of technical capacity to apply specific MRV methodologies or implement internal processes to ensure data quality; – Data collection mechanism and institutionalisation will be in line with activities under component 1 **Risks:** – Lack or resistance of institutional co-operation maintained – Lack of availability of proper data for MRV or GHG Inventory development – NAMA implementation is not enough bound to deliver replication potentials on national level
	National registry mechanism for implemented NAMAs in place	Lack of institutional capacity to monitor GHG mitigation activities	NAMA reporting at national level through a domestic mitigation registry implemented by end year 3 will ensure compliance with international MRV requirements	• National registry institutionalised • Web-based registry of each NAMA at UNFCCC • Progress Report Outcome 4	
	Mechanism to validate GHG emission reduction targets in place	Without accurate databases the GHG targets setting mechanisms are weak and without strong backing	MRV Guideline for AZB developed by the end of the project to validate new baseline scenarios/GHG emission reduction targets against actual emission reduction achievements	• Continuous monitoring of NAMA implementation • Specific benchmarks for GHG mitigation targets monitored and achieved • Progress Report Outcome 4	
	Training & capacity building programme for national institutions implemented	Governmental institutions involved in data collection, statistical analysis and planning do have own methods in place, without proper exchange and review mechanisms available	A series of specific training & capacity building programs will be implemented by end of project (minimum 5 trainings): • Improvement of Statistical database • Sectoral baselines • GHG Inventory Methodologies	• Training materials • Inventory manuals • Database of GHG emissions • Compatibility with IPCC 2006 Revised Guidelines • Progress Report Outcome 4	
	Replication strategy for	Only basic awareness	Lessons-learned about	• Sector-specific best-	

	Indicator	Baseline	Target/s (End of Project)	Source of verification	Risks and Assumptions
	different mitigation measures in energy end-use sectors developed	raising and information activities provided on energy end-use and carbon mitigation activities	implemented NAMAs are disseminated and published by the end of the project; SOCAR to replicate project results within implementation of company's Climate Mitigation Strategy and up to 10 years after project end	practice cases • Publications • Media coverage • Follow-up investments initiated by SOCAR to multiply lessons-learned in pilot NAMAs	

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).

Comments	Responses	Changes made in full project
STAP Scientific and Technical Screening of the PIF ***Minor revision required***		
STAP welcomes this proposal that requests GEF support to help identify, develop and leverage finance for NAMAs in the oil-gas end-use sector in Azerbajan. It is a clearly written proposal that includes a robust outline of NAMA design and implementation milestones, including establishment of MRV. The end-use sub-sectors listed to have a marginal abatement cost-curve produced include electricity generation, residential, and transport (page 8) - which leaves out commercial buildings - an important energy-intensive user. Table B, page 1 includes "buildings" as a key end-use sector so maybe commercial buildings are meant to be included. If not, STAP suggests including this sub-sector under the umbrella of this project. Renewable energy projects are mentioned as being a possible option based on an abatement cost-curve yet to be developed. However, the level of interest by SOCAR seems to be relatively small (a 40 kW wind pilot; 20kW solar projects; a1.5 MW wind farm on Jilov Island) and unspecified future plans under its Climate Change Strategy. This will involve "cost-effective GHG emission reduction activities". Given that the most cost-effective measures in an abatement cost curve are usually from EE activities, and with the limited mitigation potential possible from the proposed $15 M SOCAR investment, perhaps this proposal should concentrate on energy efficiency measures should scaling up of the 1.5 MW wind project prove to be less viable in terms of $/ t CO2 avoided. Calculating GHG emission reduction potential (as in the GEB table) from driving investment costs by an assumed carbon price is not acceptable methodology (especially when $25 was used but currently it is closer to $2.50 or	GEF support will be used to make international best practice and expertise available to support the introduction of new EE and RE technologies in the Azerbaijani market. The NAMA program will be consisting of three possible NAMA projects, each focussing on a significant energy end-use sector. The selection of the sectors: (a) buildings, (b) transportation, and (c) utilisation of captured associated gas for final energy users is based on detailed reviews and discussions with SOCAR throughout the PPG stage; the NAMAs currently designed as pilot activities are considered to create high impact in terms of environmental and economic benefits and provide potential for replication on a wider level across the country. Buildings are one major direction for a potential NAMA to be designed, since they represent one sector with biggest replication potential for low carbon EE technologies. Commercial buildings may have not been explicitly mentioned in the PIF, but they are definitely considered by SOCAR. At least one of pilot activities to be implemented within a “Green Buildings NAMA” will be a commercial building. Renewable energy does have significant potential in the country, but seems less cost-effective than investing into energy efficiency measures in the 3 sectors proposed. Though, SOCAR is planning to invest into pilot activities within its own Eco-Park, no major roll-out of renewable technologies is foreseen at this stage, especially without public co-financing available. The calculation of GHG emission reduction potential has been revised according to the GEF Manual for “Calculating GHG Benefits of GEF Projects: Energy Efficiency and Renewable Energy Projects.” (GEF/C.33/Inf.18). The cost-effectiveness of GEF-supported investment achieved in terms of GHG abatement has been calculated: the total direct project emission reductions over project lifetime are calculated at 561,160 tonnes CO2eq/year, which brings the GHG abatement	The project outcomes and outputs/activities originally identified in the PIF have now been more explicitly defined in the CEO Endorsement Request. The project has been designed around a “Programmatic NAMA” Approach that is foreseeing to develop and implement feasible mitigation actions among the most relevant energy end-use sectors, such as buildings, transport and associated gas capturing. The selected sectors are slightly different as proposed in the PIF, but provide great chances for replication of innovative, low carbon technologies and thus stimulate the market for energy efficient technologies by applying new financing mechanisms at the corporate sector. Associated gas capturing has been added to the NAMA pilot activities. Although it is not a measure to reduce energy intensity at end-use level, it provides incremental benefits to nearby villages and thus final consumers by providing cleaner and more reliable fuel energy and avoiding methane

Comments	Responses	Changes made in full project
less). The STAP methodology for calculating abatement from energy efficiency would be a useful tool here. See http://stapgef.org/node/792	costs for the planned GEF contribution of USD 3.57 million down to USD 6.36 (see B.3).	emissions. The associated gas capturing programme will also allow the mitigation of large-scale deforestation by connecting villages to gas network and thus removing the pressure of local forests to provide cheap fuel to population. SOCAR will also invest into afforestation, as part of NAMA 3 proposed.
Comments by Germany on Work Program (June 2013)		
Component 3 defines as one expected output among other things at least one NAMA utilizing carbon market mechanisms. This output is dependent on UNFCCC negotiations, a fact that should be reflected in the risk assessment and monitoring. Further clarification is required in how far credits sold via the carbon market require GEF funding in terms of incremental reasoning.	GEF funding is mainly sought for the assessment, prioritisation and showcasing of innovative low-carbon technologies in those end-use sectors that are typically resistant to foster fast innovations and have not yet experienced a significant presence on the Azeri market: buildings and transportation systems. Both sectors are relevant in terms of GHG emissions and sector growth (significant construction activities and number of vehicles) and thus justify the project activities. Furthermore, GEF support is required to build capacity among project stakeholders to improve the current databases of energy end-use sectors regarding energy performance and sectoral statistics as a basis for improved GHG inventories (complementary GEF activities supported the development of inventories but still require more support on the methodologies) and target setting in those sectors. There is currently no comprehensive system in place to monitor the impact of mitigation measures at sectoral or national level. National GHG inventory prepared by the National Climate Change Center under MENR and SOCAR's corporate GHG inventory represent the first building blocks of such system. Yes, among one output it is expected that at least one NAMA will be utilizing carbon market mechanisms (e.g. CDM or Voluntary Carbon Market). Though the investment projects are not defined yet in detail (result of a bottom-up development approach sought), investive measures required for implementation of NAMAs will be funded through a combination of sources: unilateral NAMAs will be financed by domestic sources, Supported NAMAs will be implemented by a combination of domestic resources and GEF, and Credited NAMA will be financed from the revenues raised through international carbon markets. GEF resources will not be used to	No relevant changes in project design.

Comments	Responses	Changes made in full project
	support implementation of credited NAMA to avoid double-counting of resulting GHG emission reductions.	
Component 1 and component 2 are about the establishment of GHG BAU reference baselines, emission reduction targets, and MACs. It is not clear if this represents a duplication of the activities executed under the "ADB Economics of Climate Change in Central and West Asia"-program.	In a very nutshell, the envisaged scope of activities and time-frame of the ADB project "Economics of Climate Change in Western and Central Asia" in regard to Azerbaijan is as follows: - Report on economics of climate change in Azerbaijan covering Energy and Transport sector (including MACs for these two sectors). The report is being prepared by Stockholm Environmental Institute (SEI) and it is expected in fall 2014. There is no draft yet available. There is some potential overlap with the scope of the project's work under Outcome 1 (outputs 1.2 and 1.3 - NAMA Strategy paper or similar type of documents that will outline key direction of proposed NAMAs in Azerbaijan - it will only be released around November and will be based on the findings of the above strategy. At the moment the project has only very preliminary ideas what the directions can be, i.e. most likely about renewable energy (also because ABEMDA is their main counterpart) - Investment concept note(s) for one or few prioritized NAMA - sort of project concept fish for the Government and ADB to prioritize subsequent investment. Again, no specific information about activities was available at the time of CEO Endorsement preparation with regard to potential direction of these concepts.	Any work under component 1 will build upon and utilize the findings of ADB-funded research to make sure work is not repeated throughout the projects.
Component 3 talks about a contribution of 15 mln US$ for the implementation of the climate strategy. Clarification is sought whether the implementation of the strategy is excluded from the indicated co-financing as it constitutes a baseline investment.	SOCAR is implementing a large-scale Climate Change Strategy that will encompass a set of activities to be implemented by 2020 that will systematically contribute to lower GHG emissions of the enterprise. Among these measures are ongoing investments into renewable energy production (e.g.wind power, photovoltaics, etc), the Ecological Park which is a unique project developed on the basis of ecologically clean non-waste technologies for the purpose of preserving and recovering biodiversity, ecological education, training and experience exchange. Nearly 40% of the Park's electricity demand is satisfied by renewable sources of energy:four 10 kW wind generators and 20 kW solar batteries are installed in the Park. Apart from these measures, where SOCAR is going to invest further money, a large-scale installation programme of gas metering in households and buildings is taking place which constitutes a significant contribution of the company towards using clean fuels	No major changes envisaged as a result of this comment.

Comments	Responses	Changes made in full project
	and implementing energy efficiency measures in production and buildings. Therefore, the total co-financing contribution of SOCAR is to be taken into account to justify a significant contribution to the country's GHG mitigation attempts on the one hand, but on the other hand investment opportunities to be generated through this GEF project, where SOCAR is willing to provide its (financial and personal resources) contributions in terms of cash (for additional investments under the NAMA programme to be implemented) as well as in-kind support (through participation in the project and providing staff and office/working facilities to the GEF project).	
Comments by USA on Work Program (June 2013)		
We are concerned that implementation of NAMAs will be difficult given the strong orientation of the economy toward oil and gas. The final project documentation should consider as well the presence of any energy subsidies and potential impact on the project's likelihood of success.	Strong orientation of Azeri economy toward oil&gas and the existence of large subsidies for domestic consumption of these resources is indeed one of the major barriers to climate change mitigation in Azerbaijan's oil&gas end-use sector. Realizing this limitation and also the absence of political will to phase them out in the short-term, the chosen approach is to work with SOCAR, as the only stakeholder in Azerbaijan which clearly realizes the importance of subsidy removal and the impact it would have on its business operation, in terms of increased revenues and export potential. In order to put this issue high on the political agenda, the project in partnership with SOCAR will help assess the real scope of domestic oil&gas subsidies and potential for energy saving/additional revenue generation in case of their effective removal or phasing-out.	Replication activities targeted at the country's institutional and policy framework will be reviewed and considered under outcome 2.3. to provide a sustainable basis for financing of GHG mitigation activities (e.g. green buildings investment fund, offsetting schemes, voluntary carbon markets).

ANNEX C: STATUS OF IMPLEMENTATION OF PROJECT PREPARATION ACTIVITIES AND THE USE OF FUNDS[15]

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

The PPG phase of the project achieved its main outcome of developing a Full-Size Project Proposal for submission to GEF. To accomplish this task, the team of one international and four local experts have been formed. During the PPG period series of consultations were held with the primary implementing agency for the Project, the State Oil Company of Azerbaijan Republic (SOCAR), and also with the Ministry of Ecology and Natural Resources (MENR), the National Climate Change Center, the National Focal Point on Climate Change and other stakeholders. The work of experts was supported by the UNDP Regional Technical Advisor, which undertook a mission to Azerbaijan in July 2013, and also by UNDP Principal Technical Advisor.

Primary entities within SOCAR that worked closely with UNDP team on the development of the Project Document included the office of the Vice-President on Ecology, the Department of Ecology, Azerkimya Production Unit, Siyazanneft, legal, financial and transportation departments. The discussions and consultations started from SOCAR's SOCAR's Climate Change Mitigation Strategy adopted by the company on December 16 2010. The main directions of SOCAR's Climate Change Mitigation Strategy were matched then, with UNFCC and GEF priorities, and in the result several most potential mitigation options were identified for further considerations. Then, the work has started on more in-depth analysis of those options. Field trips were undertaken to the Siyazan oil field, to Sumgayit, to SOCAR's Ecopark and to other sites.

In parallel with this work on potential NAMAs, the analysis of legal and institutional environment for mitigation measures were conducted and previous experience of the country and potential for developing a continuous MRV system were analyzed. Meetings were held also with all major international organizations having programs or projects related to the climate change and environment to avoid possible redundancy and to look for potential synergies. These works helped to identify three most potential NAMAs, do design the project component on MRV system and to set realistic emission reduction targets.

In addition to designing and developing the Project Document these meetings, consultations, field trips and discussions helped to build good working relations and identify potential local partners and stakeholders. This will ensure prompt start-up of the project immediately after its approval. Taken overall, these steps revealed country and SOCAR's leadership strong commitment to the protection of environment, which will create a very positive and conducive milieu for project implementation.

PPG Grant Approved at PIF: US$ 100,000			
Project Preparation Activities Implemented	***GEF Amount (US$)***		
	Budgeted Amount	***Amount Spent To Date***	***Amount Committed***
1. Baseline information collection, country and industry analysis	28,000	28,000	0
2. Development of pilot NAMAs in low-carbon oil&gas end-use sectors	34,880	34,880	0
3. Feasibility and risk analysis, strategy development and budget, environmental and social screening	15,120	13,000	2,120
4. CEO Endorsement Letter preparation	22,000	9,920	12080
Total	**100,000**	**85,800**	**14,200**

[15] 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: EXISTING POLICIES, STRATEGIES AND BASIC LAWS RELATED TO EE

- Azerbaijan ratified both the Energy Charter Treaty and the Protocol on Energy Efficiency and Related Environmental Aspects (PEEREA) in 1997. By ratifying PEEREA, countries commit to implementing policies to improve energy efficiency (EE) and reduce the environmental impacts of the energy cycle.
- Improvement of Azerbaijan's legislation relating to Renewable Energy Sources (RES) and Energy Efficiency (EE) and its bringing in conformity to the EU legislation is one priority. The Ministry of Energy (MoE), is the central executive authority implementing state policy and regulation for the energy sector. Regulatory policy is implemented primarily by the MIE, and also by the Ministry of Economic Development (MED) and the Tariff Council. The Tariff Council acts pursuant to authority granted to it by the Presidential Decree (26 December 2005), the Regulations on the Tariff (Pricing) Council, and the Resolution by the Cabinet of Ministers (9 March 2006).
- The draft "Law On the Use of Alternative and Renewable Energy Sources" has been prepared by the State Agency on Alternative and Renewable Energy Sources at the end of 2012 and submitted to the Ministry of Energy, which in turn submitted it to Cabinet of Ministers. No further moves with the draft were made since then.
- Azerbaijan has adopted the following sectoral policies in the field:

  (a) *State Programme for the Development of the Fuel and Energy Sector (2005–2015)* has been adopted which identifies and sets development targets for the various sub-sectors within the energy sector along with a package of specifically defined measures aimed at achieving the aforementioned targets and goals within the prescribed period of the 10 years. However, there is no documented agreed policy on EE.

  (b) *State Programme for the Socioeconomic Development of the Regions of Azerbaijan* for the period 2009–2013, which is the continuation of the State programme for the period 2004–2008. Its objective was to achieve a balanced development of the economy through directing oil and gas revenues, that was increasing on annual basis as a result of successful oil strategy, to the non-oil sector.

  (c) In 2011-2012 the State Agency has prepared the *Strategy of Azerbaijan on Alternative and Sustainable Energy Development*. This Strategy was presented to the Ministry of Industry and Energy (now, the Ministry of Energy), and then, through them to the Cabinet of Ministers. Cabinet of Ministers has send this document to the President's office and this is currently under their consideration. There is also an Action Plan for 2013-2015 prepared by the State Agency on Alternative and Renewable Energy. This Action plan expires in 2015. The State Agency is planning to create a new Action Plan for the years 2016-2020 on the basis of a new Strategy as soon as it is being confirmed by the Government".

  (d) *Action Plan for Efficient Use of Energy for 2011-2012* and *Medium-term Action Plan for Efficient Use of Energy for 2013-2015*. About 80% of the activities not achieved in the first Action Plan for 2011-2012 were reflected in the latter one for 2013-2015. The Action Plan for 2013-2015 consists of two objectives:

  The objective of the first part is:

  - To ensure Primary Energy Resources savings by implementation of production and services with minimum energy consumption, under conditions of development of the energy market relations in all of the energy supply entities (generation, transmission systems and distribution networks), in accordance with the State Program on development of fuel-energy complex of the Republic of Azerbaijan (2005-2015);
  - Reduction of high losses in power networks, as well as reduction of auxillary power consumption and fuel consumption at powers stations;
  - Creation of the initial (primary) conditions and tendencies to approximate (20%) saving indicators of primary energy resources to European level.

  The objective of the second part is:

  - Development of regulatory rules ensuring energy efficiency of end-users in Azerbaijan, which are consistent with the European Energy Services Directives (ESD);
  - Transforming the Action Plan for Energy Efficiency to an integral part of the State Policy on Sustainable Energy Development;
  - Ensuring that any achievements of end-users in population, industry, commercial activity, agriculture, transport and other sectors will result in minimum energy consumption;

- Placing a special priority to energy efficiency by the Azerbaijan Government, as is the case in EU countries.

- In Azerbaijan there are four main (basic) laws related to energy sector:

  (a) The *Law on Energy* (Baku, 24 November 1998, No. 541-IQ) is focused on major legal foundations of state control over petroleum, gas and electric power sectors of power industry and covers the following:

  - *activities in the sphere of power resources;*
  - *arrangement, construction and operation of plants for implementation of specified activities;*
  - *measures on protection and efficient use of power (resources), and also prevention or mitigation of negative impact of activities in the sphere of power resources on the environment.*

  (b) The *Law on Electric Energy* (Baku, 13 June 1998, No. 723) determines legal grounds for the output, transportation, distribution, purchase and sale, as well as consumption of electric and thermal power. The purpose of the Law is to provide rational utilization of power resources and social-economic rationality of power output with consideration of environment and its supply to power market with account of consumers' interests.

  (c) The *Law on the Usage of Energy Resources* (Baku, 30 May 1996) identifies economic measures to secure rational usage of energy resources.

  (d) The *Law On Electric and Thermal Plants* (Baku, 28 December 1999, No.84-IG) determines the legal basis of projecting, construction, exploitation and utilization of permanent plants (power plants) generating electric and thermal energy.

- Legislation concerning Building sector:

  - *Constitution of Azerbaijan Republic*
  - In June 29, 2012 the new *Urban Planning and Construction Code (UPCC*) of the Republic of Azerbaijan was adopted and it came into force on January 1, 2013.
  - The official website of The State Committee for Standardization, Metrology and Patent of the Republic of Azerbaijan (http://azstand.gov.az/?id=29&sub_id=47&lang=1) contains a large number of national standards (AZS) applicable in different sectors of construction activity. The list of valid construction normative documents in the Republic of Azerbaijan can be downloaded from the official website of The State Committee of Urban Planning and Architecture of the Republic of Azerbaijan (http://www.arxkom.gov.az/?/az/content/257/). The normative, methodological and regulatory guidance documents regarding thermal performance of buildings effective in the Republic of Azerbaijan (Situation as for 01.01.2011) is specified in Annex C hereto. Building codes are the same for refurbished and new residential buildings.
  - *Interstate and national standards* on construction, technical terms, enterprise standards, area directories of building structures and production (GOST, ST SEV, AZS, OST, RD, TShAZ, TK and etc.).
  - *The Housing Code (HC) of the Republic of Azerbaijan* was adopted in June 30, 2009. In accordance with the Law on Approval, Coming into Force of Housing Code of Azerbaijani Republic and Connected Issues of Legal Regulation, the Code came into force on October 1, 2009.

ANNEX E: NAMA DESIGN INFORMATION ITEMS:

1. **NAMA Summary**

A brief account of the proposed action, policies and measures to be devised, boundaries and GHG emissions reduction estimates

2. NAMA Description

An overall treatment of the proposed NAMA and its boundaries, including current policies, regulations and practices and proposed changes (baseline scenario and future scenario). Described are primary technologies, primary financing models or alterations of cash flows and priorities, along with central stakeholders and their endorsement.

3. NAMA Proponent(s)

The contact person for the NAMA Template development and his/her affiliation, the government department responsible for the NAMA (at development and/or implementation stage), along with their skills and expertise and responsibilities.

4. Implementation Schedule

A tentative schedule for the implementation of the activities that constitute the NAMA, over periods of development, implementation and operation. The main milestones are identified.

5. Costs, Means and Modalities of Finance

The financial plan for the NAMA initially relates to public-sector financing and implementation financing. Investment costs external to the financing plan (e.g., investments expected by the private sector in response to new policy instruments) are not included, but parallel financial structuring for related NAMAs must be listed. Costs for NAMA development, e.g., expenses for documentation, third party services for MRV etc., may be included.

6. Estimation of GHG Emissions Reduction

An estimate of the expected GHG emissions reduction from the activities listed under the NAMA. Types & levels of gases.

7. Success Indicators (Key Performance Indicators)

KPIs may be aligned with implementation milestones, providing assessments of both progress and impact/outcomes expressed through key societal, environmental and economic indicators. KPI targets may be added.

8. Overall Benefits (direct and indirect)

Primary benefits expected from the NAMA (environmental, economic and/or social). Indirect benefits such as technology improvement, capacity and skills enhancement, increased overseas investment can be added as relevant

9. Relevant National Policies Strategies, Plans and Programmes and/or other Mitigation Actions

The NAMA's legal and regulatory basis, either directly or indirectly, indicating the boundaries of the NAMA and other supporting initiatives or other areas of activity (emissions reduction) that are influenced by the NAMA.

10. Barriers

Barriers that hinder or have hindered development and proposed means to eliminate or overcome these barriers – be they economical, societal or technological.

11. Measurement, Reporting & Verification

Measurement methodology is developed aligned with the KPIs to track progress and measure outcome/impacts of successful implementation of the NAMA. Methodology refers to the data to be collected, sources of data and data storage methods. The international focus is on MRV of emissions reduction, while KPIs and MRV frameworks are usually broader. MRV of financial flows must be included. Final MRV modalities may be agreed on with third party financiers. Verification is undertaken by a third party and is a process that should be defined by the MRV authority or providers of support.

ANNEX F: BACKGROUND INFORMATION TO PILOT NAMA 1 (SOCAR'S GREEN BUILDING PROGRAM)

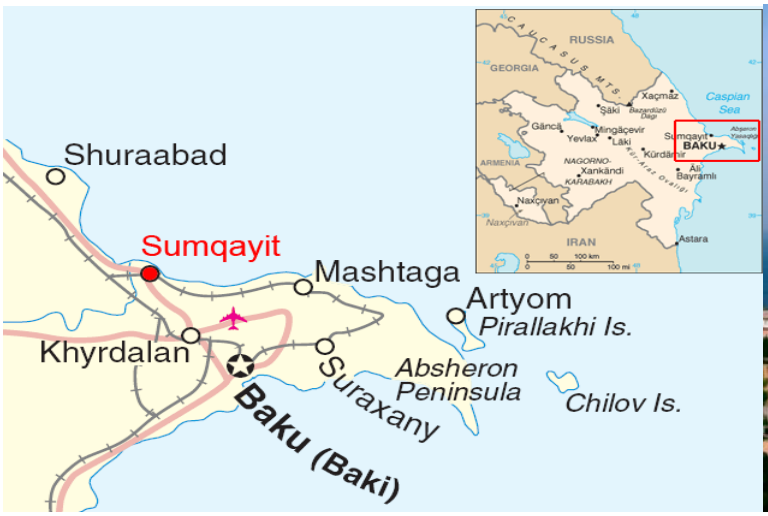
Project location: City of Sumgayit

Established in 1949, Sumgayit was one of the biggest centers of chemical, petro-chemical and metallurgical industry in the former Soviet Union. The collapse of the Soviet Union with the subsequent collapse of centralized economy resulted in 90% of those enterprises being shut down, with tens of thousands workers laid out, dilapidated infrastructure, and heavily polluted environment. As a capital of USSR industry in the end of 1980's, Sumgayit was the city of plants and modern factories producing synthetic rubber, fertilizers, superphosphates, detergents, aluminums, steel pipes (for the oil industry), petrochemicals etc. For the first time in Sumgayit Rubber Plant was obtained ethyl alcohol from oil (1952).

After gaining independence and some years of obduracy Sumgayit has regained strategic status for country industry. The city is located near the coast of the Caspian Sea on a plain relief, about thirty one kilometers (19 miles) north of the capital Baku. Sumgayit is the third largest city of the country with a territory of 83 square kilometers and a population over 310,000. It has extensive communication and improved transportation network, educational and cultural institutions.

As a result of Soviet planning of the industrial boom era the city became heavily polluted. In 1989 Sumgayit was considered by scientists to be the most ecologically devastated part of Azerbaijan. Soon after Azerbaijan's independence, part of industrial sectors went into decline so the environment of the city became unbended for several years.

Today Sumgayit is one of the industrial centers of Azerbaijan. The city's industry is represented both heavy and light industrial enterprises with the chemical and petrochemical plants, textile producing factories etc.



Pilot Project: Refurbishment of a 4-floor administrative/service building of "Azerkimya" Production Unit

The administrative/service building was built in 1986 and was so far never remodeled in full. In 2011, there was partial renovation of the roof. The administrative/service building consist of 2 parts. One part is 2-storey building with around 4,000 m², the other part is a 4-storey adjacent building with about 1,800 m² useful floor size.

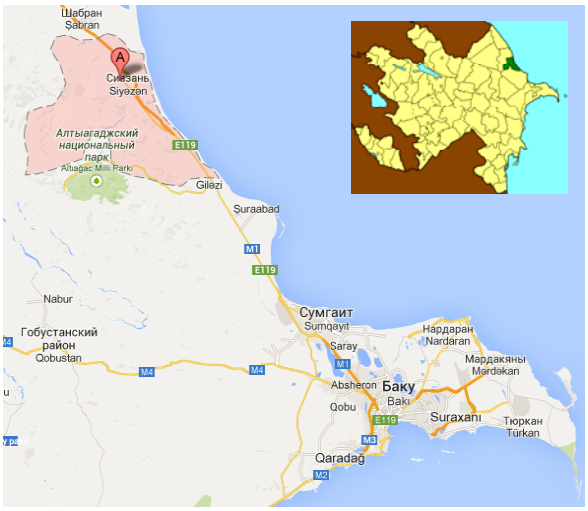
The main building characteristics is as follows:

- It is used as administrative building by Azerkimya PU, a company owned by SOCAR, and hosts office space (46 offices), a canteen for about 80 employees and a wardrobe/dressing rooms and bathrooms in the building for about 700 persons.
- The administrative/service building house was previously heated by production steam (by steam released from "Azerkimya" processes), which is not operated anymore.
- There is no cooling system available in the building, air-conditioning system has been installed but is out of use.
- Energy demand of the building is 80,000-85,000 kWh per year (excluding cooling and heating).
- A full refurbishment of the building (including building structure, windows, ceilings, heating & cooling system, electric and plumbing works, CCTV and fire protection, etc.) is likely to take place in 2015-2016.

ANNEX H: BACKGROUND INFORMATION TO PILOT NAMA 3 (SOCAR'S ASSOCIATED GAS CAPTURING PROGRAM)

Project location: Siyazan Rayon

Siyazan rayon is located 80-90 km to the North-West from Baku, – in the eastern part of the Caspian Sea shore of the Major Caucasus. Siyazan rayon occupies 703 square km and has 38 thousand inhabitants, about 60% of which, or 23 thousand live in Siyazan city, administrative center of rayon. Despite being rich with the natural resources, such as oil, natural gas, limestone, gravel, clay, etc and good location, after gaining independence the Siyazan rayon, as many other rural rayons in Azerbaijan still suffers from lack of jobs, There is extensive transportation (highway, railway) and communication network in the territory of rayon. The main highways and railways linking the Republic of Azerbaijan and the Russian Federation pass through its territory. Rayon has also good tourism potential, which has started being utilized already.



One of major problems in the rayon is heating. Despite close proximity to one of the major oil and gas fields, there is no centralized supply of natural gas to the households. The associated gas from both functioning and abandoned wells is vented or flared. This results not only in heating problems for population and methane being released into atmosphere, but also in cutting nearby forests. Thus, collecting, processing and supply of natural gas to citizens will have 3-fold benefits: economic, social and environmental.

Some Statistics:

Total territory, [sq.km]	703.00
Total number of population	37365
Number of villages	32
Number of settlements	1
Number of big and middle enterprises	3
Number of infant schools	5
Number of general education schools	24
Number of vocational and secondary schools	1
Number of higher schools	0
Number of hospitals and medical enterprises	2
Number of culture centers	31

Information on major economic activities

There are 6 large and medium, 6 small industrial enterprises (such as flour mills, bread and bakery shops, carpet shop, furniture shops) in Siyazan. The major part of the economy of the region is dedicated to oil and gas industry. Production base of agriculture of the region is livestock products (poultry farming) and grain farming. In recent years, due to the dynamically development in agricultural sector especially in the area of poultry increased meat and egg production.

Major industrial activity

The biggest enterprise in Siyazan district is SOCAR's ***Siyazanneft Production Unit***. This unit is completely engaged to the oil and gas sector. On 29 september, 1939 the first debut of the drilled oil well in the territory of Siyazan-Nardaran was 20 ton per day. Since then there has been commenced the industrial production activities of the Niyazanneft. In the end of 2007 Niyazanneft shared 27% of total industry production of Siyazan district.

Another large enterprise in the territory of the district is ***Siyazan Poultry Farm "Siyəzən Broyler"*** was built and given to the use of people in 1980. Currently, the farm is one of the biggest poultry farms of the country and working at full speed.

"Siyəzən kərpic" (Brickyard) is the largest producer of construction materials in the district. The plant produces various kind of bricks by using local raw materials. The plant was built and given to use in 2003 and the same year started producing.

Pilot Project Location: Connection of Villages to Natural Gas Network

Villages closest to Siyazanneft Mine # 2, field #3

Nr.	Name of the village	Distance from the well in km	Number of households	Number of residents
1.	Daşlı Calğan	2	70	300
2.	Orta Calğan	2	30	120
3.	Qoz ağacı	2.5	80	320
4.	Meşrif	3	120	500
Total			**300**	**1,240**

Villages closest to Siyazanneft Mine # 3, fields # 1 and 2

Nr.	Name of the village	Distance from the well in km	Number of households	Number of residents
1.	Düzbilgi	3	50	235
2.	Zağlı	1	19	42
3.	İzmara	0.3	12	35
4.	Xəlfələr	5	77	335
5.	Qorğan	3	93	525
6.	Bilici Qorğan	3.5	6	25
7.	Çinarlar	3	15	24
8.	Yelkəsən	5	27	120

Total		**299**	**1,341**