



United Nations Development Programme
Country: Ukraine
PROJECT DOCUMENT

Project Title: Removing Barriers to increase investment in Energy Efficiency in Public Buildings in Ukraine through the ESCO modality in Small and Medium Sized Cities

UNDAF Outcome(s): #2 – Reduced energy, resource and carbon intensity of economy through the application of energy efficient technologies, renewable and alternative sources of energy.

UNDP Strategic Plan Environment and Sustainable Development Primary Outcome: Mainstreaming environment and energy.

UNDP Strategic Plan Secondary Outcome: Mobilising environmental finance.

Expected CP Outcome(s): Policy frameworks and mechanisms adopted to ensure reversal of environmental degradation, climate change mitigation and adaptation, and prevention and response to natural and man-made disasters.

Expected CPAP Output(s): Output 6: National and local capacities for climate change resilient policies and practices enhanced.

Executing Entity/Implementing Partner: Ministry of Regional Development, Construction, Housing and Communal Services (MinRegion).

Implementing Entity/Responsible Partners: United Nations Development Programme.

Brief Description: The objective of this project is to accelerate implementation of energy efficiency measures in public buildings in Ukraine through the ESCO modality, utilising EPC contracts, by leveraging over significant private sector investment over its five-year implementation period, including through the launching of a financial support mechanism, as well as by introducing a single nationwide energy management information systems (EMIS) for Ukraine. Over the same period, the 10 pilot EPC energy savings projects scheduled for implementation in 10 different municipalities in Ukraine will save 2,346 MWh of thermal energy and 268 MWh of electrical energy. Moving forward, these 10 pilots will annually save 1,870 MWh of thermal energy and 166 MWh of electrical energy until the useful equipment life of 20 years, resulting in a total reduction of 8,893 tons of CO₂ over the 20-year equipment lifetime. Indirect post-project emission reduction over the next 10 years after project completion are expected to be 1,440,000 tons of CO₂ avoided, which translates into an abatement cost of \$ 3.80 of GEF funds per tCO₂ reduced. The project will achieve this target by introducing a conducive regulatory framework for the establishment and operation of ESCOs through the EPC modality and by putting in place a financial support mechanism that, together, will facilitate private sector participation in implementing energy efficiency measures in public buildings. This will be combined with a single nationwide energy consumption data base for energy consumption in public buildings and energy management information system (that will operate in at least 20 cities in Ukraine by the end of the project) which will facilitate additional investments in energy-efficiency. It is envisaged that this project will enable Ukraine to substantially reduce GHG emissions in the country over the coming years; consistent with its National Communications, total GHG emissions were almost 398 million tCO₂ in 2012 and, in the absence of mitigation measures, were forecasted to see a two-fold increase to 790 million tCO₂ by 2030. At the end of the project, it will be very important that local banks in Ukraine will understand the ESCO business model and that lending will be available to ESCOs in Ukraine with the commercial financing of local banks.

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|--------------------------|-----------|
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| | |
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| Total resources required: | US\$ 62,153,195 |
| Total allocated resources: | US\$ 62,153,195 |
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| GEF | US\$ 5,480,000 |
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LIST OF ACRONYMS

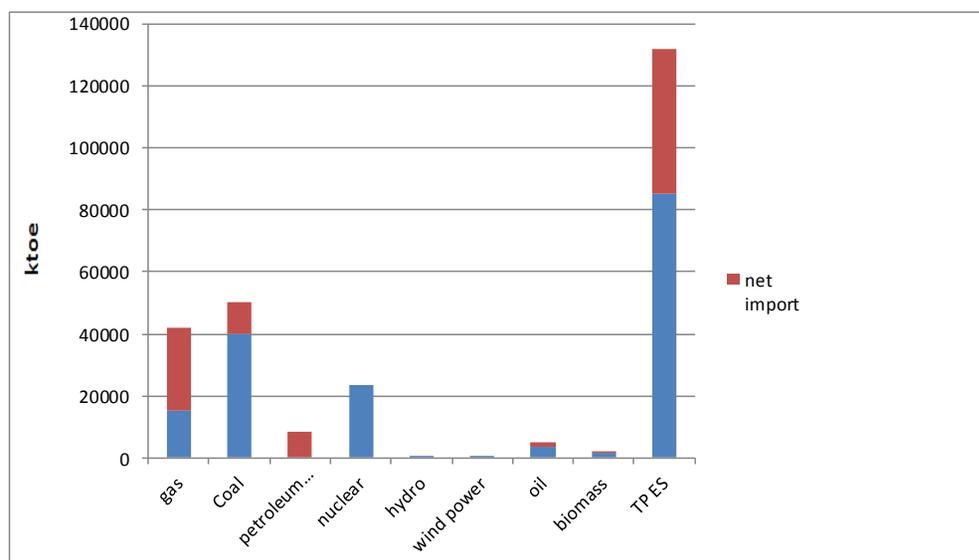
| | |
|-------------------|---|
| APR | Annual Project Review |
| BTOR | Back-to-Office Report |
| CHP | Combined Heat and Power plant |
| CO | UNDP Country Office |
| CO ₂ | Carbon dioxide |
| CTA | Chief Technical Advisor |
| SAEEES | State Agency on Energy Efficiency and Energy Savings of Ukraine |
| EE | Energy Efficiency |
| EMIS | Energy Management Information System |
| EU | European Union |
| FSM | Financial Support Mechanism |
| GEF | Global Environment Facility |
| GHG | Greenhouse Gas |
| kW _{TH} | Kilowatt Thermal |
| kWh _{TH} | Kilowatt-hour Thermal |
| M&E | Monitoring and Evaluation |
| MinRegion | Ministry of Regional Development, Construction, Housing and Communal Services |
| Mtoe | Million tons of oil equivalent |
| MW _{TH} | Megawatt Thermal |
| MWh _{TH} | Megawatt-hour Thermal |
| NGO | Non-Governmental Organization |
| QPR | Quarterly Progress Report |
| PIF | Project Identification Form |
| PIR | Project Implementation Review |
| PMU | Project Management Unit |
| PPG | Project Preparation Grant |
| RSC | UNDP Regional Service Centre |
| RTA | UNDP Regional Technical Adviser |

| | |
|--------|---|
| toe | Tons of oil equivalent |
| TPR | Tripartite Review |
| TTR | Terminal Tripartite Review |
| UNDAF | United Nations Development Assistance Framework |
| UNDP | United Nations Development Programme |
| UNFCCC | United Nations Framework Convention on Climate Change |

1. SITUATION ANALYSIS

The need for energy independence is very often the subject of discussions at the highest levels of Government, especially when these target Ukrainian domestic and foreign policy; consequently, its energy policy undergoes adjustments in such a manner so as to help support it in keeping this course. In 2012 (figures for 2013 will be released by the National Statistics Service in December 2014), for example, the country's total primary energy supply (TPES) of 132.5 million tons of oil equivalent (Mtoe) (Fig. 1) was largely based on natural gas (34.8%), coal (34.6%), nuclear (19.2%) and oil (9.6%), with the remaining 1.8% supplied by biomass, hydro and wind power. Even though domestic production covered a substantial share of its energy needs, Ukraine still had to import some 35% of its needed energy resources (amounting to approx. 46 Mtoe), primarily natural gas and oil. This had and continues to have the net effect of putting an ever increasing burden on the national economy due to increasing energy prices and poses a threat to national energy security.

Fig. 1: Ukraine's primary energy supply, 2012



Source: National Statistics Service of Ukraine, 2012

Ukraine consumed 50.4 billion m³ of gas in 2013, down 8% from the previous year; of this, 21 billion m³ (42 %) was produced locally. The balance was supplied by Russian natural gas, imported through the Bratstvo and Soyuz pipelines. Unfortunately, because of the on-going crisis in the eastern part of the country, the

economy is expected to contract by 5 – 9% this year (2014) and, consequently, gas consumption is expected to be lower. Ukraine currently has 13.5 billion m³ of natural gas in underground storage (Source: Wall Street Journal, 14 June 2014). Most of the country's primary energy consumption in 2012 was fuelled by natural gas (about 34%), coal (about 41%) and nuclear (about 19%). Only a relatively small portion of the country's total energy consumption is accounted for by petroleum and other liquid fuels, almost 75% of which is imported from Russia, with smaller volumes originating in Kazakhstan and Azerbaijan, and renewable energy sources.

The “Energy Strategy of Ukraine to 2030”, that was approved by the Cabinet of Ministers in 2006, was updated in 2012 to, among others, “address and provide for the growing importance of energy of energy efficiency. This was in the context of a world of rising oil and gas prices, where there is greater emphasis on security of supply and on the need to reduce emissions of GHG. It is precisely because of energy efficiency's direct and positive impact on the economic, social and environmental dimensions of energy systems that it is widely recognised by policy makers as the priority in achieving early and sustained progress on energy and climate goals” (Source: In-Depth Review of the Energy Efficiency Policy of Ukraine, Energy Charter Secretariat, 2013).

The Energy Charter Secretariat report goes on to state that “Internationally, there is plenty of evidence to show that in captive markets, where effective regulation is lacking and especially where energy prices are subsidised, energy consumption increases with little or no commensurate increase in welfare or output. Waste is not merely tolerated; it is effectively encouraged. Furthermore, when energy prices rise, as they have in Ukraine, the response from consumers is often delayed, and delayed indefinitely”. As per the updated 2012 Strategy, it is expected that a comprehensive programme of energy efficiency will result in a reduction in energy consumption in the economy by 30-35% by 2030, thus reducing the energy cost burden and increasing the energy independence and competitiveness of the economy. In this connection, the IEA 2012 Ukraine review estimated that the energy saving potential of the country to be 27 Mtoe equivalent, constituting almost 22 % of the country's annual primary energy supply.

The State Policy regarding efficient use of energy resources and energy efficiency is formulated by the “State Agency of Ukraine for Energy Efficiency and Energy Saving” (SAEEES). As per Decree of the President of Ukraine # 462/2011 of 13 April 2011, SAEEES is “the central executive authority, all activities of which are governed and coordinated by the Cabinet of Ministers of Ukraine through the Minister of Economic Development and Trade of Ukraine”. It is entrusted with implementing “state policy in the areas of efficient utilization of fuel and energy resources, energy saving, renewable energy sources and alternative fuels”. As such, SAEEES's mission is to coordinate energy efficiency and alternative energy policies and activities among various Government Ministries, as well as to monitor and improve the use of energy in the public sphere and it accomplishes this through drafting the state target and approving sectoral and regional programmes “in the areas of efficient utilization of fuel and energy resources, energy saving, renewable energy sources and alternative fuels, exercise control of implementation of state target programmes in this area”.

The State Agency for Environmental Investment (SAEI) of Ukraine, established by order of the Cabinet of Ministers, No. 612 of 4 April 2007, is the central executive body established for country-wide coordination of the UNFCCC and the Kyoto Protocol. At the present time (discussions are on-going regarding whom it will report to in the future), it operates under the purview of the Ministry of Ecology and Natural Resources and its main functions are:

- To participate in establishing and providing for the execution of the state national investment policy in the environmental protection sector area as well as and the state policy in the field of regulation of anthropogenic negative impact on climate change;
- To execute the provisions set in the United Nations Framework Convention on Climate Change and implement the mechanisms of the Kyoto Protocol including implementation of greenhouse gases (GHG) mitigation projects, attracting investments to the environmental protection;
- To establish and ensure the operation of the national system for the assessment of the GHG emissions and absorption.

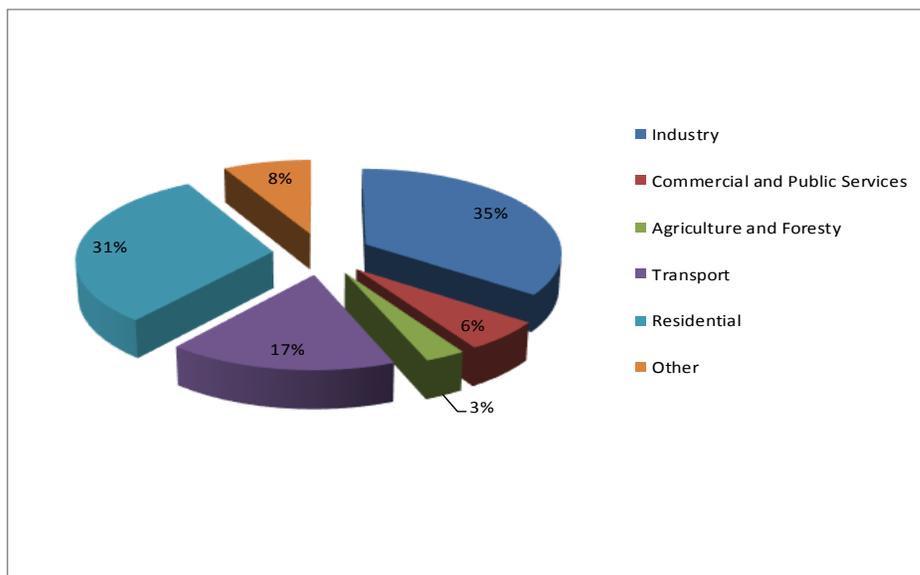
SAEI has on-going signed Memoranda of Understanding (MOU) with several Governments, including those of Canada, Denmark, France, Japan and others, for implementing Joint Implementation projects under Ukraine's Green Investment Scheme and the funds received have already been invested in implementing energy efficiency measures (improving insulation of window frames, walls and roofs) in several public buildings, e.g. educational, medical and other public facilities in various regions of the country.

1.1 Baseline Situation and Problem to be addressed

The Ukrainian economy is characterized by high-energy consumption and high carbon intensity throughout almost all sectors of the economy, including both residential and public buildings. In 2005, the level of carbon intensity in of the Ukrainian economy topped the chart worldwide at 3.67 kg of CO₂/\$ of GDP, 3 times as much as that in the US and almost 7 times that of France. As per Ukraine's Report on Demonstrable Progress under the Kyoto Protocol (2006), that level was expected to drop down to 2.6 kg of CO₂/\$ of GDP by 2015. The main reasons for the high levels of carbon intensity include obsolete and outdated capital stock in the power generation and industrial sectors dating back to when Ukraine was part of the Soviet Union, as well as old and outdated building stock in the government, private and communal sectors. Ukraine has substantial unrealised energy efficiency potential; the IEA's Ukraine 2012 estimate puts it at 20-30% of the energy supply - a magnitude that should ensure that it is accorded a high priority in a sustainable energy policy. Also, STAP's study on "Climate Change: A Scientific Assessment for GEF" (STAP, 2012) shows that "in moderate and cold climates, it is feasible and cost-effective for both new buildings and retro-fits to reduce heat energy needs by 70 to 90% compared to standard practice".

The energy sector alone contributes 75% of the country's overall greenhouse gas emissions. (Source: National Communications to the UNFCCC, 2006). In addition, low prices for gas until 2005 and locally-produced coal meant that there was limited incentive to pursue opportunities in energy-efficiency to improve productivity and reduce greenhouse gas emissions. Overall, greenhouse gas emissions in Ukraine, including LULUCF, fell from 870 million tonnes of CO₂ in 1990 to 371 million tonnes of CO₂ in 2012 due to the dramatic fall in industrial output following the collapse of the Soviet Union.

Figure 2: Total Energy Final Consumption by Sector, 2011



Source: IEA online electronic statistical database and national statistics provided by Ukrainian authorities.

The building sector (residential, commercial and public services – Fig. 2) consumes 37% of total heat and 25% of all electricity in Ukraine, making this sector a major contributor to greenhouse gas emissions. Energy efficiency in buildings in Ukraine is on average approximately three to four times lower than that in West European countries (GIZ, 2014). In 2012, the gas consumption level was just under 55 billion m³. The heavy industry is the largest consumer of natural gas, accounting for 40% of domestic consumption, followed by households (over 30%, excluding heating) and communal heating systems supplying both government buildings and residential properties (20%). It is estimated that 9% of gas is wasted. The outdated codes regulating the construction of buildings do not allow for exploiting economic and environmental benefits of district heating, which is extremely inefficient in Ukraine. The lack of control equipment, metering systems and consumption-based billing has meant that there are no incentives to implement energy-efficiency measures. This is unlike the case of the neighbouring Russian Federation where the end of 2009 saw the introduction of a new law on energy which promotes and encourages energy-efficiency, including through setting of standards and requiring for mandatory energy-audits and energy passports for companies; no similar law, except for one in draft form related to energy efficiency in buildings, yet exists in Ukraine.

The majority of the building stock in the country dates back to the Soviet era (80% of buildings were constructed prior to 1950) and, hence, needs immediate modernization or even replacement. Typical building types are brick buildings constructed during 1950-1999, 5-storeyed walk-up panel buildings (commonly known as Khrushchovkas) date to 1960 - 1970s and taller panel buildings from the 1970s and 1980s. Some of them, in particular the Khrushchovkas, have been

projected for rather short lifetimes of about 25 years and are currently due for a massive reconstruction; in fact, MinRegion estimates that all buildings constructed prior to 1990 need to undergo reconstruction. Moreover, during the construction boom of 2003 – 2008, new buildings were constructed according to old Soviet era (GOST) standards. And, at the present time, there are no requirements for buildings, public or private, to meet minimum energy efficiency codes. In addition, public buildings do not have energy managers responsible for energy management and best practice for energy management in public buildings is not followed. Unlike in some other countries, there is no nation wide data base of energy consumption in public buildings across Ukraine. In Ukraine, the housing sector consists of 1.1 billion m² (in 2012/2013) of residential space (19,288,000 apartments). Approximately 67% of the total number of apartments is situated in multi-apartment buildings, housing approximately 34 million people, with 95% of households having private ownership of their housing – privatisation of apartments started in 1992; the remaining 5% is still state-owned and are mainly utilised by Government officials. Some estimates indicate that at least 80% of the refurbishment needs of the existing buildings are either related to energy savings or energy distribution. As most buildings do not have regulators/thermostats, they get “overheated” in winter and it is very common for residents to regulate their indoor temperature during the heating season by simply opening up a window or leaving a “window leaf” (fortochka) permanently open, thus dumping heat to the cold weather outside. Also, suffice it to say that most of the apartment buildings have no Homeowners Association or Management Board; hence, no maintenance or repair is undertaken on the “common property”, resulting in the shells/roofs of the buildings falling apart.

Poor physical conditions, absence of metering and heat consumption measurement data of, low heat properties of walls/shells, lack of regulators/thermostats and the fact that consumers do not have the technical option for thermal energy use management lead to extremely high levels of heat and water consumption. The condition of more than a third of water, sewage and heating networks is critical. Modernization/reconstruction is currently required for approx. 30% of thermal points, 40% of pumping equipment and boilers, more than 20 thousand elevators, etc.

Specific fuel usage for thermal energy production in the country is consistently high – 169.2 kg of specific fuel/1 Gcal of heat. Water leakages account for as much as 38.5% on average. Specific electricity consumption for water supply and sanitation remains considerable – the average indicator is 1.57 kWh/m³ of water and only 51.4% of consumers are equipped with water meters.

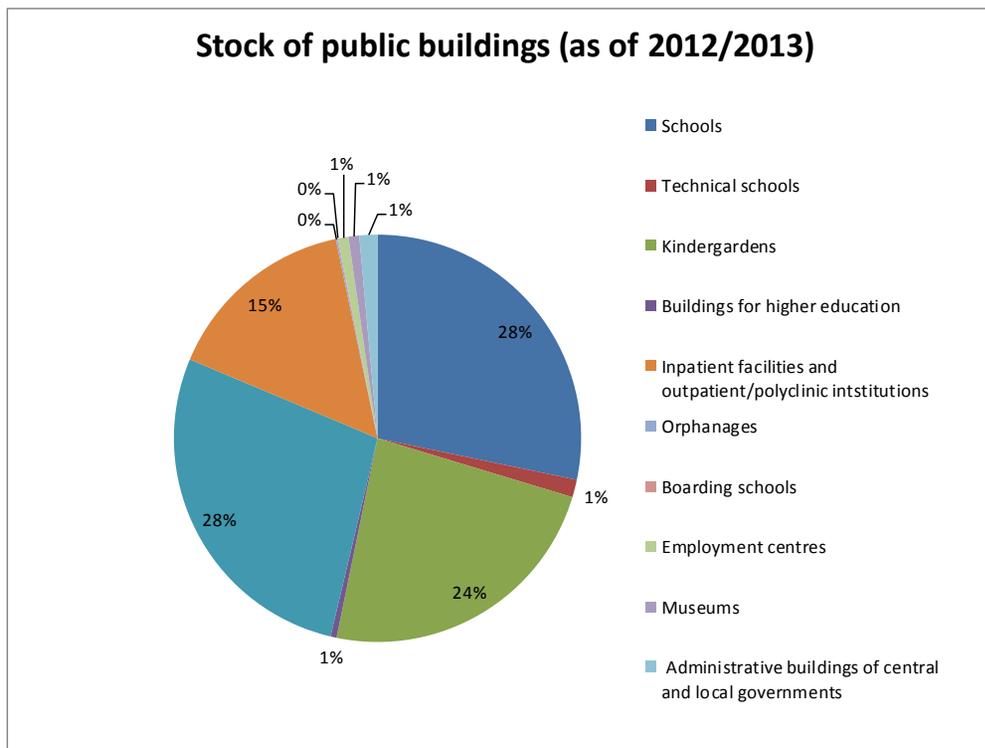
Table 1: Existing tariffs for energy carriers in public buildings of Ukraine (August 2014).

| No. | Type of energy carrier | Tariff (\$) |
|-----|--|-------------|
| 1 | Thermal energy when heat meters are installed (average tariff in Ukraine), \$/Gcal | 69.13 |
| 2 | Hot water supply, \$/m ³ | Up to 2.04 |
| 3 | Water supply, \$/m ³ | 0.06-0.57 |
| 4 | Electricity, \$/kWh | 0.1 |

For comparison purposes, the average tariff for thermal energy in the US when heat meters are installed is \$ 48/Gcal; thus, the tariff in Ukraine (Table 1) is 44% higher than that in the US. With such a high price of thermal energy, it makes eminent sense for Ukraine to reduce its thermal energy consumption without compromising on the quality of life through implementing energy efficiency in public buildings. And, given the substantial volume of energy-consuming infrastructure and service equipment in public buildings (Table 1), these constituted a total of 110 million m² in 2012/2013 (Fig. 3), the energy efficiency and savings potential in the Ukrainian public building sector is considerable. However, the traditional building design and centralized district heating system pose

significant limitations to all energy saving efforts. The main issue is that the reconstruction of separate buildings will not be sufficiently effective on its own unless a comprehensive approach is implemented, involving the optimization of the whole building system that addresses the building's panelling, glazing as well as interaction and control of mechanical and electrical systems. This could also include state-of-the-art retrofit building ventilation systems with modules that remove indoor air pollutants such as carbon dioxide, enabling the indoor air to be recycled while greatly reducing the amount of outside air ventilated into the building and reducing the loads on the heating and ventilation (HV) system and implementation of advanced lighting controls (ALCs), which turn off or dim lights when they are not in use. The financial crisis of 2008 has significantly put on hold construction activities due to a lack of available capital for investment in new construction projects, including new construction projects involving public buildings; thus, the time is now appropriate to put in place a national policy framework for energy-efficiency in public buildings.

Fig. 3: Stock of Public buildings (as of 2012/2013)



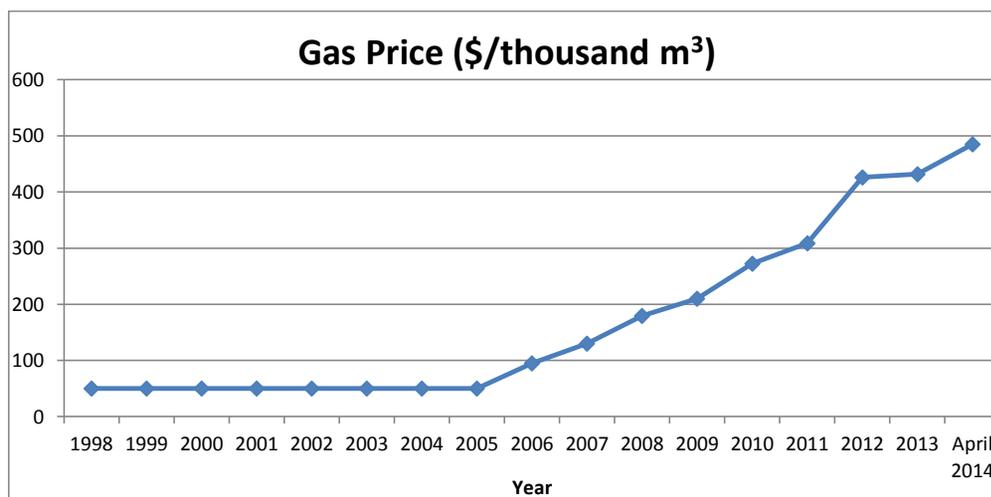
Residential and public buildings that were built in Ukraine during the 1950s did not take into account energy efficiency in view of the then inexpensive cost of primary energy sources. Consequently, they have poor heat engineering performance that leads to excessive loss of heat of up to 50% during the heating season that lasts 6 – 7 months every year. According to energy audits performed last year in a sample of such buildings, it was confirmed that the biggest culprit is heat loss through walls that accounts for 42%, followed by windows - 16%, roofs -7%, basements - 5% and 30% through the process of air interchange. As stated earlier, energy efficiency in buildings in Ukraine is on average approximately three to four times lower than that in West European countries. In particular, the use of primary energy reaches 3,000 m³ – 4,500 m³ of natural gas for heating an average (60 m²) “not rehabilitated” apartment in Ukraine; in West European countries 1,000 m³ – 1,500 m³ of natural gas is needed for a “rehabilitated” apartment of similar area.

Energy efficiency is measured using the annual primary energy requirement of a building as well as the thermal insulation of the building envelope. The heat transfer resistance value (R-value) is a measure of thermal resistance and the higher it is for a given surface/construction material, the better the thermal insulation. For example, the R-value of the external envelope (walls) of the first mass series building developments of the 1960s to 1995s in the country is in the range of 0.63 - 1.0 m².K/W (metre square Kelvin per W) that is 3 to 5 times lower than the values specified in the regulatory requirements under the current Amendment No.1 of 1 July 2013 to DBN (State Building Regulations) V.2.6 – 31:2006 “Heat insulation of buildings”. Thus, it is obvious that comprehensive rehabilitation of existing public buildings to make them energy efficient is a necessary measure that will enable a considerable decrease in their energy consumption and, consequently, lead to a reduction in greenhouse gas emissions.

The Price of Natural Gas in Ukraine.

As indicated earlier, households and communal heating systems supplying both government buildings and residential properties consume over 50% of natural gas in the country, with 60% of the gas being imported from Russia.

Fig. 4: Price of gas in Ukraine over the last 15 years



As per Fig. 4 above, the price of imported natural gas has been steadily increasing since 2005 from approx. \$ 50/thousand m³ to \$ 485/thousand m³ in April 2014, a ten-fold increase in ten years. In September/October 2014, the price for gas imported from Russia remained unchanged from that prevailing in April 2014, although the Government disputed this price. It has been reported that Ukraine has been dependent, since June 2014, on the goodwill of its Hungarian

and Polish neighbours to send some gas from Gazprom (the Russian supplier) coursing backward through pipelines in a process called “reverse flow”. Those supplies are clearly not enough to cover all of Ukraine’s needs and Gazprom has said that they were illegal” (Reuters, 30 September 2014), resulting in Hungary very recently putting an end to its share of the “reverse flow”. The price of gas imported by Ukraine from Russia was quite high then, compared to the world average price of \$ 385/thousand m³. Russia and Ukraine did announce an agreement on 31 October 2014 under which Ukraine would be charged \$ 385/thousand m³ on the understanding that it would pay Gazprom a \$ 3.1 billion debt, for gas already supplied, by the end of 2014; the first tranche of \$ 1.45 billion was paid by Naftogaz (Ukraine) to Gazprom with the assistance of the European Union on schedule. The balance of \$ 1.65 billion was settled in December 2014. It is not expected that the price of gas from Russia would ever come down to prices that were prevailing around 2005, despite whatever agreement on gas supply that will eventually get worked out with the suppliers. Also, since early-December 2014, Gazprom has switched to a pre-payment scheme for all future deliveries of gas to Ukraine, “with the transfer of \$378 million to Russia’s Gazprom for the delivery of 1 billion cubic meters of gas on Friday” (Source: Sputnik International, Tuesday, 9 December 2014). And just to make it through this winter (2014/2015), Ukraine needs “5 to 12 billion m³ of gas beyond what it has already stored” (Reuters, 30 September 2014). Hence, it makes eminent sense for the country to focus on activities aimed at improving energy efficiency in the various sectors of the national economy.

In addition, under the \$ 17 billion IMF loan approved in April 2014 designed “to restore macroeconomic stability, promote sustainable growth, and strengthen economic governance and transparency”, gas and heating tariff increases are envisaged and these will lead to increases in the share of household budgets spent on utilities. “Energy prices in Ukraine are exceptionally low. Currently, the gas price for households in Ukraine is \$85 for one thousand cubic meter. In Russia—a gas producing and exporting economy—the price is \$158 for one thousand cubic meter. The regional differences are even larger with prices in Ukraine being 4 to 9 times lower than in neighbouring gas-importing economies. In January 2014, Romania’s citizens paid about \$ 414, Moldova’s \$ 432, and Poland’s \$ 687 for one thousand cubic meter. Even after the programmed increases in 2014, the price of gas and heating for the population will remain several times lower than in other gas-importing European countries”. (Source: IMF, 30 April 2014). This low price of gas is a big disincentive to energy efficiency in the country.

In order to “hedge” against their ever-increasing expenditures for energy services, some 130 industries and commercial enterprises/supermarkets operated by the private sector (e.g. JSC “Dolynskiy Khibokombinat” (Bakery located in Ivano-Frankivsk), Hotel “Spartak ” (Donetsk region), Keramikbudservice Ltd ,(Ceramics factory in Ivano-Frankivsk region), Confectionery Factory “A.V.K. Company” (Dnipropetrovsk), Hostomel glass factory “Vetropak” (Kyiv region), PJSC “Kupyansk Dairy” (Kharkiv region), JSC “Shostka Dairy” (Sumy region), “Silpo” Supermarket chain, etc.) have invested/are investing their own resources in making improvements in energy efficiency at their enterprises with a view to reducing their energy costs and, thereby, improving their profitability. For them, it only makes eminent economic sense. Moreover, on-going or planned donor-supported activities in the country mainly focus on the promotion of energy efficiency in existing and new privately-owned residential buildings. This results in public sector buildings being left behind as the “orphan” of the national economy, energy efficiency-wise; hence, they are the target of this project. Regarding public sector buildings, the problem is deeply rooted not only in the absence of a legal framework, but also in the way the budgeting process is undertaken by Government authorities: public buildings annually receive a budget allocation for running expenditures. The public building administration is not allowed to borrow funds for improvement of its infrastructure nor will any lending institution provide it with any credit for lack of collateral. Should the building administration, anyway, implement modest energy-efficient improvements with its existing resources, it is not allowed to keep the resulting savings from its administrative budget; these have to revert back to the Government. To compound the problem, the building administration may see its allocation for the subsequent year getting reduced by the amount that it saved through implementation of energy efficiency measures. Hence, administrators of public buildings get into a Catch-22 situation that provides them with absolutely no incentive to implement any cost-saving measures, including those related to energy efficiency. The only “escape route” then to implement energy efficiency activities is to convince the building owner, normally the “local government organ” (village, town or city councils) to borrow funds (and guarantee repayment) and these funds are then passed on to the requesting building administration for use as per prior agreement. The “local government organ”, as per the Law “On Local Self-Government”,

owns real estate and receives income from taxes levied on businesses and individuals; hence, in the eyes of a lender, it can provide collateral and possesses the required loan reimbursement capacity. Unfortunately, because of the complexity of the issue, this option is pursued in very rare cases (it constitutes the exception rather than being the norm), mainly when there is a “financial push” by a donor agency.

Consequently, the objective of this project is to focus on public buildings (these include administrative buildings of central and local governments, hospitals, boarding/technical/vocational schools, buildings for higher education, kindergartens, orphanages, pharmacies; employment centres, libraries, museums, etc.) to enable them to directly implement energy efficiency measures that would be beneficial to both the country’s economy and to the global environment, through the reduction of greenhouse gas emissions, without the necessary blessing of their “local government organ”. Such a measure will help public buildings to implement market-ready solutions to reduce energy costs through improved efficiency, while also reducing carbon pollution. Last year, for example, public buildings consumed about 5% of all energy used in Ukraine at an estimated cost of nearly \$ 420 million (Source: <http://energoauditor.biz/2013>, 14 October 2013), and were responsible for approx. 2 million tons of CO₂ emissions in the country. However, a sine qua non to achieving this would require changing the Government’s mind-set to implement a multi-year budgeting process for public buildings. In addition, this would require providing incentives to public building administrators to implement energy efficiency measures, rather than penalising them by claiming back any savings they make. Also, it would require the Government enabling public buildings to borrow funds from lenders to make energy efficiency improvements and to use their property as collateral for credit purposes. The reason the project focuses on energy-efficiency in public buildings (instead of private buildings) is that there are several other donors working with residential and private sector buildings.

Table 2 below provides information on the proportion of the total area of public buildings located in cities and villages that are provided with such services as central heating, plumbing, sewage, etc.

Table 2: Proportion of Total Area of Public Buildings in Cities and Villages that are provided with communal services.

| Proportion of the total area equipped with: | 2006 | | 2007 | | 2008 | | 2009 | | 2010 | |
|---|--------|----------|--------|----------|--------|----------|--------|----------|--------|----------|
| | Cities | Villages |
| Plumbing | 76.7 | 20.6 | 76.9 | 21.6 | 77.3 | 23.3 | 77.5 | 25.2 | 77.9 | 27.1 |
| Sewage | 75.4 | 16.3 | 75.7 | 17.4 | 76.1 | 19.1 | 76.4 | 21.1 | 76.7 | 23.2 |
| Central Heating | 74.6 | 25.3 | 74.7 | 26.9 | 75.5 | 31.4 | 76.0 | 33.6 | 76.7 | 36.1 |
| Gas | 81,9 | 84,3 | 82,2 | 84,5 | 82,3 | 84,5 | 82,2 | 84,6 | 82,6 | 84,5 |
| Hot water | 59.2 | 5.7 | 59.4 | 6.3 | 60.3 | 7.5 | 60.6 | 9.5 | 60.9 | 11.5 |
| Bathroom | 71.7 | 14.1 | 72.0 | 15.1 | 72.4 | 16.7 | 72.6 | 18.7 | 73.1 | 20.6 |
| Floor electrical plates | 5.4 | 0.1 | 5.4 | 0.1 | 5.5 | 0.1 | 5.6 | 0.1 | 5.6 | 0.2 |

Source: Sixth National Communication of Ukraine to the UNFCCC, 2013.

The Present Situation regarding ESCOs in Ukraine

There are several organisations (Annex 4) that operate under the loose denomination of “ESCO” in Ukraine and they focus their activities, mainly as works contractors, on implementing energy efficiency measures both in public and private buildings in some cities and municipalities. Many were set up with the support of donor agencies, e.g. KievESCO and UkrESCO established with the support of the World Bank and EBRD, respectively, several Municipal ESCOs established with the support of GIZ (e.g. Dnipropetrovsk Municipal Energy Management Company) and by NEFCO in Vinnytsia and Zhytomyr, just to name a few. Some like ESCO ECOSYS LLC were established over 20 years ago (Annex 4). However, these ESCOs undertake more traditional fixed-fee energy-efficiency contracts without a guarantee or a performance-based remuneration element as either a portion, or the mainstay, their business **and they are providing technical solution as opposed to a technical + financial solution**. As such, they perform energy audits and implement the required measures/equipment installation or retailing utility services like heat and hot water, e.g. ESCO-Rivne. They (the loosely-denominated ESCOs) do not operate truly as ESCOs in a manner that is well-known and common practice in other countries in the West, i.e. through Energy Savings Performance Contracts, often simply referred to as Energy Performance Contracts (EPCs) **which include where the ESCO both arranges the financing and then at the same time provides a performance guarantee**.

UNDP learned a number of very important lessons in implementing the UNDP-GEF ESCO-Rivne project over the period 2001-2010, the most important of which was that the use of grants for boiler reconstruction and project implementation combined with high financing costs meant that the ESCO-Rivne acted like a heat supply company and not like a true ESCO. ESCO Rivne was in full agreement to implement heat supply projects with grants offering a standard technical solution but it was not involved in financing or EPC, despite the fact that many training programmes were carried out in this area. High bank interest rates and difficulties in providing appropriate guarantees meant that ESCO Rivne **, as well as the absence of a law to support ESCO and EPC contracts**, did not operate as a true ESCO and did not implement projects using the EPC modality. Learning from the lessons from the UNDP-GEF ESCO-Rivne project, this project proposes a different approach from ESCO-Rivne (which used grants to try to stimulate the ESCO market which did not work) to using a financial support mechanism (FSM) to aim to stimulate the ESCO market instead. Based on analysis and the experience in other countries, UNDP believes that this approach has a higher chance to succeed, given that high bank rates are a serious barrier and relying almost exclusively on grant funding is not a sustainable proposition. A similar type of approach using a financial support mechanism as the main catalyst for ESCO activity is currently being implemented since late 2014 by UNDP in Republic of Moldova (UNDP GEF ESCO Moldova project) and synergies and cooperation between Ukraine and Moldova on this similar type of projects will be carried out. ESCOs (those operating in the true sense of the word which undertake EPC) have terms that are usually from two to five years, but can be as long as ten years while payback periods can be as short as one year, but as long as five to ten years. Average payback periods, particularly in energy-intensive developing countries, often fall in the one- to two-year range (IISD, ESCOs in Developing Countries, May 2010).

In May 2015, the Ukrainian parliament adopted the Law # 327-VIII on ESCO which is called “The introduction of new investment opportunities, guaranteeing the rights and legal interests for businesses within major energy modernization projects”. The purpose of this law is to create a legal framework for the introduction of new investment opportunities while ensuring the rights and legal interests of business entities while conducting large scale energy efficiency projects using energy performance contracts (EPC). The law defines the concept of ESCO and EPC. In addition, the new law establishes the basic conditions to regulate the relationship between the customer and the energy service providers, defines the mechanism for value assessment of services allowing budgetary institutions to be involved into multi-year ESCO contracts, secures payments for investors, provides the exclusive guarantee of payment to the investor for savings achieved within the framework of the EPC and defines a transparent mechanism for tender selection procedures for municipal tenders for selecting ESCOs.

UNDP has consulted widely with ESCO experts, both in Ukraine and in other countries, to understand what remaining barriers (following the introduction of the new ESCO law in Ukraine in May 2015) are likely to prevent the ESCO market from really taking off in Ukraine. There are two very significant barriers. The first significant barrier is the high interest rates which make it difficult and expensive to secure loans at reasonable interest rates in Ukraine through

commercial banks (currently 22% +) and the project will aim to address this barrier through component 2, the sustainable financing mechanism by developing a set of standardized banking products in order to train banks on the advantages of ESCOs and the lower and reduced risks in order to help bring down interest rates. By the end of the project, it is expected that the first commercial loan(s) will have been made by local commercial banks for ESCO activities in Ukraine, using the EPC as the guarantee or security on the loan. In other words, there will not be a requirement for ESCOs to provide a separate asset as a guarantee of the loan as the EPC will serve as the guarantee. This will help develop a local commercial banking market for ESCO in the future. The second significant barrier is that ESCOs typically run out of spare cash after financing the first few investments and there is no secondary market for selling energy performance contracts in order to provide for liquidity in the market that would then allow an ESCO to re-invest in new energy savings contracts at a much faster rate. By focusing on this area of ESCO market development, the work that UNDP will be undertaking will be fully complementary to the work that EBRD is undertaking in this area and helping a long-term sustainable market for ESCOs to develop and grow in Ukraine.

A real ESCO can be defined as a company that provides all three the following three services:

- Turnkey Service – The ESCO provides all of the services required to design and implement a comprehensive energy efficiency project at the customer facility, from the initial energy audit through undertaking the necessary works and leading to long-term Monitoring and Verification (M&V) of project savings.
- Project Financing – The ESCO arranges for long-term project financing that is provided by a third-party financing company.
- Project Savings Guarantee – The ESCO provides a guarantee that the savings produced by the project will be sufficient to cover the cost of project financing for the life of the project. In return, it is either paid a fixed fee per month or receives an agreed-to percentage of the actual monthly savings in energy costs.

Previously, all ESCO type contracting in Ukraine has been either engineering companies calling themselves ESCOs but in reality providing only a technical solution or Quasi ESCO whereby the so called 'ESCO' is providing a turnkey service and a project savings guarantee but the project financing is provided separately from the performance guarantee which means that if this project is successful it will be either the first or one of the first initiatives to successfully support real ESCO market development in Ukraine. The following table illustrates the difference

Table 3: Comparison of EBRD and Proposed UNDP GEF Project Approach to ESCO in Ukraine

| EBRD Approach to ESCO & Energy Performance Contracting (EPC) | UNDP Approach to ESCO and Energy Performance Contracting (EPC) |
|--|--|
| | |

| | |
|--|---|
| Energy audits and feasibility studies help to define the range of energy savings measures in public buildings that can be implemented and energy savings projects are selected. EBRD provides a low interest loan to the municipality in return for the municipality undertaking a commitment to design and implement energy savings measures ESCO guarantees the savings by signing an Energy Performance Contract (EPC) with the municipality. EBRD has arranged the project financing for the municipality, not the ESCO itself which provides the savings guarantee. On the regulatory side, EBRD works on model EPC contracts for public buildings and model public procurement procedures for ESCO. At the current time, EBRD does not provide financing directly to Ukrainian ESCOs to design, finance, implementation of energy savings measures in public buildings in Ukraine. | Energy audits and feasibility studies help to define the range of energy savings measures in public buildings that will be implemented. ESCO arranges financing for the energy savings measures and designs and implements project , signing with the municipality a multi-year EPC where the financing solution is provided by the ESCO and it guarantees the savings by signing an Energy Performance Contract (EPC) with the municipality. UNDP will work on secondary regulations related to ESCO market development including ability to sell EPCs to third parties and standardized banking products. UNDP will work closely with local commercial banks (with IFC and under the financial support mechanism) to encourage them to lend for ESCO type activities, using the energy performance contract as the guarantee to the loan. |
| ESCO provides Turnkey Service – YES | ESCO provides Turnkey Service – YES |
| ESCO provides Project Financing – NO | ESCO provides Project Financing – YES |
| ESCO gives a Project Savings Guarantee – YES | ESCO gives a Project Savings Guarantee - YES |

The new law on ESCO is designed to enable ESCOs to be able to successfully operate in the country simply as contractors or through the EPC modality, which was not possible previously as it was not possible to sign a contract with a municipality related to energy services for more than one year. However, with the coming into force of the new legal framework in May 2015, and with the assistance of this project , working closely with EBRD and others donors on secondary regulations , it is hoped that a fully fledged ESCO market, supported by local banks, can and will develop within the next several years in Ukraine.

Barriers to Energy Efficiency in Public Buildings in Ukraine

Several existing barriers prevent the widespread investment in energy efficiency in public buildings. A summary of these barriers and the strategy for addressing them are presented in Table 2a below (detailed information on the barriers is provided under Section A.5 of the Request for CEO Endorsement).

Table 2a: Summary of barriers and mitigation strategies

| Barrier | Present Situation | Strategy for addressing barrier |
|---------|-------------------|---------------------------------|
|---------|-------------------|---------------------------------|

| | | |
|------------------------|--|--|
| Legal/Regulatory | Absence of secondary legislation that supports the effective implementation of the new laws related to ESCO | <p>Component 1: Support for secondary legislation to support new Law # 327-VIII on ESCO</p> <p>Component 1: Regulations to support the development of secondary market for EPC contracts in order that the contracts can be sold to investors to provide for further liquidity and additional investment</p> <p>Component 4: Implementation of Energy Management and Smart Metering Systems.</p> |
| Policy | Absence of policies in place at the city level which promote investments in sustainable energy | Component 1: Assistance to Cities with signature of EU Covenant of Mayors and preparation of Sustainable Energy Action Plans (SEAPs) as well as setting energy-efficiency targets, appointing energy managers, and installing meters in all public buildings. |
| Financial | Absence of a Financial Support Mechanism (FSM) to promote investment in energy efficiency made by private sector developers/investors (ESCOs) and to enable local commercial banks to lend for ESCO activities | <p>Component 2: Establish an FSM with IFC to make it easier for ESCO companies to implement EPC contracts in Ukraine working with public buildings and working closely with local banks to enable them to lend to ESCOs, using the EPC as the security on the loan</p> <p>Component 2: Capacity development of and technical support to ESCOs, including the publishing of an ESCO Help Guide and the setting up of a Help Desk, to implement energy efficiency measures in public buildings using the EPC modality.</p> |
| Technical | Absence of full energy audits undertaken for public buildings. | <p>Component 1: Completion of at least 20 energy audits in public buildings.</p> <p>Component 3: Implementation of energy efficiency measures in at least 10 pilot public buildings through the ESCO modality.</p> |
| Promotion and Outreach | Lack of promotional/outreach activities and absence of project experience/best practices. | Component 4: Implement outreach/promotional activities and document project experience. |
| Information and Data | Absence of detailed information and reliable data on energy consumption in public buildings. | Component 4: Development and implementation of a nation-wide Energy Management Information System for all public (and other) buildings in the country. |

2. STRATEGY

- *Project rationale and policy conformity*

The project's goal is to reduce GHG emissions by creating favourable legal, regulatory and market environment and building institutional, administrative and technical capacities to promote the implementation of energy efficiency measures in public buildings, utilising the ESCO model through EPC contracts model and by supporting improved energy management for public buildings.

Without this project, energy management and ESCO activities would be very unlikely to take place in small and medium sized cities in Ukraine. Organizations such as World Bank, EBRD, and IFC would continue to support large cities with whom they already have considerable experience and a track record of working with. Only the large cities, which are already receiving assistance would likely have comprehensive energy management information systems in place by the end of the project. Smaller and medium sized cities would continue not to employ the EPC contracting modality and new investments in energy savings projects will be limited and in energy savings projects using the ESCO modality will likely be zero. The combined focus on Energy Management Systems and ESCO market development in Ukraine is innovative in that it is new and has not really been tested on both. Other donors work on ESCO market development or on energy management systems but nobody is currently supporting a combined and integrated approach to ESCO market development and energy management. The baseline problem that this project seeks to address is that the investment required to promote and stimulate large investment in energy savings projects in public buildings in Ukraine is in the billions of dollars. Yet, the public resources available for such investments are minimal and not nearly enough for the scale of investment required. Recognizing this fact, the Ukrainian government has adopted in May 2015 a new law on ESCO to promote private investment in energy savings projects in both industrial, commercial and buildings sectors. The advantage of the ESCO approach for energy efficiency in buildings is that private capital is used to rehabilitate the building and the investor(s) take their return from the guarantee of savings and the return of a percentage of money saved from the energy saved calculated over a period of a number of years.

In the baseline project, the attention that is being paid to energy-efficiency in public buildings continues to develop in a haphazard manner. The focus of other donors for energy efficiency in public buildings continues to be on larger cities. Smaller and medium sized cities will continue to be neglected when it comes to innovative approaches for introducing greater energy savings measures in public buildings. ESCO projects will, for the most, part be likely to follow a Quasi-ESCO model and energy management will not be done at a national level following a single standardized approach. In summary, without this project ESCO and energy management in public buildings will not be carried out to such a high level. Over the past two years in Ukraine, the economic situation has been getting worse. The country has been pre-occupied with the conflict in the eastern part of Ukraine and with security related issues.

There have been high interest rates and significant currency devaluation, government has significant budget deficits and significant reforms are ongoing. This project seeks to address a gap in the market for energy efficiency in Ukraine. This gap in the market is that the ESCO market still does not function effectively and energy management is still not being done properly in most Ukrainian cities. There remains no national registry of public buildings in Ukraine containing energy consumption data and no national energy management information system.

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The objective of this project is to assist the Government of Ukraine, as outlined in the “Energy Strategy of Ukraine to 2030”, to “address and provide for the growing importance of energy efficiency” within “the context of a world of rising oil and gas prices, where there is greater emphasis on security of supply and on the need to reduce emissions of GHGs. It is precisely because of energy efficiency’s direct and positive impact on the economic, social and environmental dimensions of energy systems that it is widely recognised by policy makers as the priority in achieving early and sustained progress on energy and climate goals”. In the business as usual scenario, implementation of energy efficiency measures in public buildings with reliance on budgetary resources and without the participation of the private sector, will take a very long time to materialise. The project will accomplish this by supporting the Government of Ukraine in:

- Creating attractive and competitive business terms and conditions for investors/ESCOs, such as initial support in the preparation of feasibility studies and in terms of an investment grant for 10 pilot projects, which will give developers long-term stability and provide for sufficient investment return;
- Establishing an Innovative Financing Mechanism to make it easier for ESCOs to obtain commercial financing in order to implement EPC contracts
- Developing financial incentives to be provided to ESCOs to invest in Energy Efficiency in public buildings such as income tax holiday for a specific period of time, duty and tax exemptions on equipment and services.
- Providing capacity development to ESCOs to promote investment in support of Energy Efficiency in public buildings.
- Supporting improved energy management in public buildings in Ukraine, through more metering and energy management information systems, as tools to encourage and promote additional investments in energy efficiency

- ***Institutional Structure***

The Ministry of Regional Development, Construction, Housing and Communal Services (MinRegion) is the central body responsible for formulating and implementing the Government's policy in the field of construction, architecture, town planning, housing and communal services. In this capacity, it defines priority directions of development regulating the supply of electricity, heat and hot water supply to buildings, both public and private, in addition to ensuring compliance with regulations and standards of building infrastructure constructed with state budgetary funds. As such, it will be in the first line of support to implementing the project under the UNDP Direct Implementation Modality (DIM). At the local level, the main project partners will be the city administrations of the 10 small and medium sized cities selected and who will sign MoUs with UNDP to work with the project on ESCO market development and improved energy management.

- ***Financial Support Mechanism***

Investment in energy efficiency on the demand side (and also on the supply side) makes economic sense to the consumer of energy services, is beneficial to the environment and assists in postponing investments in new capacity at the utility level. However, such projects often require to be supported with financial incentives, at least initially, because they present certain levels of uncertainty. The degree to which cost and risk factors apply varies according to technology and geographical location and investors expect to get a higher return on their investment to compensate them for taking on additional financial risks, or the financial risks need to be reduced through providing more revenue certainty.

Then, there is the technological uncertainty depending on the time it takes for clean technologies to become widely available: the more widespread their availability, they cheaper they become. Finally, there is the uncertainty related to changing climatic conditions that can affect, for example, the expenses incurred for heat supply depending on the fluctuations of outdoor temperatures. To add to all these, the biggest uncertainty to the investors, as confirmed by them during implementation of the PPG, relates to the fact that the commercial interest rates are so high in Ukraine and there is a lack of confidence in being repaid under the EPC that they would prefer to offer a technical engineering solution and get paid rather than operate as a real ESCO and provide a financial and technical solution.

In the case of Ukraine, financial support to investors/ESCOs in energy efficiency in public buildings can take the form of either an upfront investment grant or a buy-down in the level of uncertainty that project developers will get paid for the services they supply to public buildings or both. As per the WB/IFC "Doing Business 2014" data, Ukraine ranks 128 out of 189 economies in protecting investors and, in discussions with private project developers, it was clear that this concern was very much present in their minds. In their view, as investing in energy efficiency activities is fairly well-known among lending institutions throughout the world, securing loans in the international finance market for investment in this area does not pose much of a problem, as long as the legal framework is in place for the private sector to invest in public buildings, e.g. in the form of an Energy Service Company (ESCO). However, of real concern is the probability that investors/ESCOs may not get paid for the services they supply to these public buildings which is why many companies who call themselves ESCO are actually engineering companies who provide a technical service as part of a fee for service but they do not provide any financial solution or performance guarantee. Investments in energy efficiency are made for a contractual period of approx. 10 years with the ESCO (although the useful life of the equipment is normally 20 years) and any doubt in the minds of developers regarding the business climate in a particular country will make them reluctant to invest which means that in a country with interest rates of 22 percent plus, it is very difficult for ESCOs to operate

In order to employ the ESCO model, where energy efficiency is treated as a service and not as a product (under the ESCO model, the public building/customer/end-user pays for the actual savings and does not bear the risk of an underperforming project) a property owner/administrator, be it commercial, public, residential, etc., must establish an Energy Performance Contract (EPC) with an Energy Service Company (ESCO), which can range from small and medium-sized enterprises to larger multi-national corporations. The ESCO is then responsible for developing, implementing, and financing (or arranging financing through equity/debt) for

the energy efficiency project. In all instances, the ESCO starts by performing an in-depth analysis of the property, designing an energy efficient solution, installing the required equipment and maintaining the system to ensure energy savings during the payback period. These energy cost savings are used to pay back the initial capital investment and return a profit to the ESCO and reduced energy expenditures to the building owner/administrator.

There is, of course, a fundamental question of sustainability of resources available under the FSM for this financial support to ESCOs beyond the projects' lifetime of 5 years. Neither the project nor the Government wants such an important modality for reducing the country's volume of imported fuel through energy efficiency measures not to be sustainable. In fact, the project expects that the experience gained through the operation of the FSM will act as a magnet to other donors (and the Government) to further capitalise it beyond the initial \$ 2 million, with a target of a total of \$ 10 million, so that the country can benefit from additional investment in energy efficiency in public buildings during the project lifetime and beyond. In addition, there is the possibility to combine the financial support mechanism or to link it with the new S21 energy efficiency fund being established by the Government of Ukraine which can and will be further explored during the project implementation. Hence, for all practical purposes, the FSM is not expected to be a short-lived mechanism; in fact, it will have to be operational for at least 10 years, equivalent to the normal duration of an EPC contract between the ESCO and the public building manager. Box 1 on the next page provides more information on how the FSM should operate. The FSM is meant to be in operation until such time that investors/ESCOs, embarking on investments/EPC contracts while the project is on-going, gain sufficient confidence that the risk of owners/administrators of public buildings in defaulting on their payments has been minimised through the project. Still, in addition to the FSM, ESCOs will be encouraged to develop their own financial instruments with private insurance providers and in case of default of payment by the public building, the FSM will step in as "subordinated insurance" to reimburse that portion of default not covered by the ESCOs' own insurance companies.

It has been clarified above that the purpose of the FSM is to reduce the overall risk profile of the private investment and to make it easier for investors to raise finance to undertake energy savings contracts using the EPC modality for public buildings. In discussions with project developers, they made it clear that high interest rates and lack of confidence in being paid back were the main risks associated with ESCO market development in Ukraine.

In addition to the above, non-FSM funds under component 3 will be utilised to support the preparation of feasibility studies/business plans (FS/BP) in up to 20 public buildings and investment in 10 of them (Table 5 – Annex 2) as pilot energy efficiency projects targeting such buildings using the EPC contract modality. This will be achieved through the provision of a grant to the targeted public building in an amount of up to 50% for the costs involved for the feasibility study/business plan and investment grant, with a maximum per project allocation not exceeding \$ 50,000 per project. This grant will be utilised for services to be provided by the private investor/ESCO, selected on the basis of competitive bidding, to implement the works and disbursements in tranches would be made as per a set of established benchmarks.

Operationalising the FSM

Project analysis and investment in ESCO projects requires a critical and highly specialized skill that directly impacts the bottom line of the project in terms of economic and financial terms. Hence, when analysing an ESCO proposal as a prospective investment, it is vital to make sound economic evaluations of project, its risk and return profile in order to make successful investments with short payback periods.

The viability of an ESCO project (for any project, for that matter) depends on several analyses, viz. technical, financial, economic and environmental. In this connection, the feasibility study constitutes the basis for the success of the project and is prepared to present an in-depth techno-economic analysis so that ESCO

can make a proper investment decision; in this lies a solid financial analysis that includes a discounted cash flow (DCF) to evaluate the attractiveness of the investment, the determination of the net present value (NPV) and internal rate of return (IRR), taking into account the debt/equity ratio.. Typically, when looking at a specific company/ESCO, a financial analysis will focus on the income statement, balance sheet, and cash flow statement. In addition, one key area of financial analysis involves extrapolating the company's past performance into an estimate of the company's future performance, while there cannot be any guarantee that the future performance will materialise. The result of this analysis will show the preferred solution that is financially feasible and economically viable.

IFC has indicated and confirmed its interest to assist in operationalising the FSM including its development and filling with necessary financial resources from its existing programmes with particular attention to be given to the support that the IFC intends to provide the the S21 National Energy Efficiency Fund, to be established within the State Agency for Energy Efficiency. In this connection, its support will be very important during project implementation to work with potential ESCOs to undertake financial analyses of the proposed investments. This will include designing an appropriate economic and financial analysis programme that will be utilised by the ESCO to determine the viability of a project on the basis equity, debt, any grant, interest rate, etc.

IFC has an office of 60 staff based in Ukraine focused on financing of investments related to development. Within the IFC office in Ukraine there are four staff who are specialized on development of FSM in energy-efficiency. Attraction of available IFC knowledge and using IFC experience to run component 2 of the project guarantees efficient utilisation of its modest resources and avoid difficulties that UNDP rules and regulations put on partnership with banks and private sector. Partnering with IFC also allows the project to benefit from the experience of the World Bank.

To safeguard the proper work of the IFC constancy team, project hires UNDP International Consultant on Financial Support Mechanism **and to work with training local banks on standardized banking products and raising awareness about the proposed mechanism.** The main task of the International Consultant will be to oversight work of IFC and to ensure consistency of IFC product with UNDP internal procedures. The person should ideally have extensive knowledge of UNDP Operational and Financial procedures.

Exit Strategy: As non-grant resources under the fund will be managed by IFC, and as these are non-GEF resources, there is no need to determine what needs to be done with unused GEF funds at the end of the project related to the financial support mechanism. The GEF funds under component 2 of the project (\$700,000) are being treated as professional services and they will form the basis of the agreement between UNDP and IFC on the implementation of the financial support mechanism, including technical assistance to be provided to the mechanism in terms of training, awareness raising, and capacity building both for banks and for ESCOs. At the end of the project , the GEF funds will have been disbursed as technical assistance to support with the implementation of this financial support mechanism and it is the goal of the project that commercial lending for ESCO activities will have started. The continuation of the fund beyond the lifetime of the project is likely and possible, given that the financial support mechanism intends to have a broader mandate than purely support for ESCO projects. The fund is designed to provided a broader level of support to both renewable energy and energy efficiency projects in Ukraine and in the case of this project to incentivize the local banking sector to have confidence to lend to ESCOs. Experience from other countries shows that this is the only long-term solution if the ESCO market development is to be scaled up and to work properly.

If the project succeeds, at the end of the project (i) local commercial banks will be lending for ESCO activities just using the EPC as the guarantee for the loan (i.e – not requiring the pledge of additional assets from the ESCO) and (ii) over time there will be evidence that commercial bank interest rates for EPC lending are going down as banks gain familiarity and comfort with the ESCO concept and approach.

- **Country ownership: country eligibility and country drivenness**

Energy efficiency in buildings, especially in public buildings which has not been the focus of much attention to date, is one of the important mitigations options that the Government of Ukraine has endorsed and wishes to pursue for reducing greenhouse gas emissions in the country. In this connection, Ukraine's Third, Fourth and Fifth National Communications to UNFCCC prepared in 2009 (all three issued in one document) indicate that the energy sector is the one producing the main emission of greenhouse gases in the country. This was reaffirmed in the Sixth National Communication issued in 2013 and in a separate report prepared in 2014 by the Ministry of Ecology and Natural Resources. As per these National Communications, total GHG emissions were 361.7 million tCO₂ in 2000 and, in the absence of mitigation measures, were forecasted to climb as high as 790 million tCO₂ by 2030. Hence, increased use of energy efficiency is one of the options in a basket of measures that the Government wants to pursue to reverse the trend in GHG emissions.

Table 3: GHG Emissions in Ukraine (million tons of CO₂)

| Year | 1990 | 1995 | 2000 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
|--------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Energy Sector | 746.2 | 402.1 | 322.8 | 330.0 | 340.6 | 338.0 | 325.3 | 282.1 | 293.4 | 312.0 | 308.2 |
| Total for Country (excluding LULUCF) | 940.2 | 514.4 | 412.5 | 416.9 | 434.0 | 436.0 | 421.0 | 365.2 | 383.2 | 404.9 | 397.9 |
| Total for Country (including LULUCF) | 870.4 | 465.7 | 361.7 | 378.5 | 392.5 | 382.0 | 410.6 | 346.9 | 345.2 | 398.1 | 371.0 |

Source: National inventory of greenhouse gas anthropogenic emissions by sources and removals by sinks in Ukraine in 1990-2012 - State Environmental Investment Agency– Kyiv, 2014.

Table 3 above indicates a downward trend in GHG emission, due to a slow-down in the economy after the country's independence in 1990, a gradual pick-up from 2005, another slow-down in 2009 and, finally, a slight pick-up in the following year. Emission figures for 2013 have not been released yet, but all indications are that they bottomed out in 2012 and will go on the rise over the coming years, when the economy gradually picks up. However, from Table 3 above, it is clear that the energy sector, and that includes heating and hot water services, accounts for 85% of the country's GHG emission in any given year. This is the reason that motivates the Government to focus on energy efficiency in buildings, including public buildings, as one of its options to reduce GHG emission in the country. In the context of Ukraine, public buildings include the following: administrative buildings of central and local governments, hospitals, boarding/technical/vocational schools, buildings for higher education, kindergartens, orphanages, pharmacies; employment centres, libraries, museums, etc., in short, those that are under Government and/or Communal ownership; they exclude apartment buildings which are 95% privatised, with the remaining 5% of apartments/apartment buildings still mostly State-owned and presently utilised by Government officials – these remaining 5% of apartments which are still in the public domain are not included for consideration under the present project.

The project is also in line with national priorities as outlined in the following national laws/draft laws and will contribute to meeting the objectives of the Government on global warming, air pollution and energy development.

The Verkhovna Rada approved the “Law On Energy Saving” (No. 74/94) as far back as on 1 July 1994 (with subsequent amendments over the years, with the latest one being on 16 October 2012) and it is presently the only law that defines the key principles of the state policy in the area of energy saving and sets the underlying legal, economic, social and environmental provisions for energy saving for a wide range of enterprises, corporations and organizations of Ukraine regardless of their ownership and governance structure and for citizens of the country. As per this law, the fundamental principles of state policy in the area of energy saving involve, among others:

- development of economic and legal incentives for energy saving for legal entities and individuals by the government;
- implementation of the state regulations of the activity in the area of energy saving on the base of economic and regulatory-technical management instruments;
- identification of priorities in energy saving requirements in carrying out business, governance and other activities related to extraction, treatment, transportation, storage and application of fuel and energy sources;
- academic substantiation of standards in the area of energy saving and norms of fuel and energy sources use, the need to comply with the energy standards when utilizing fuel and energy sources; and
- development of energy efficient material production based on comprehensive economical and energy saving approaches with due account of environmental concerns and wide implementation of the novel energy saving technologies.

To broaden the 1994 “Law On Energy Saving” to include promotion of energy efficiency in residential and public buildings, a draft law “On Energy Efficiency in Residential and Public Buildings”, spearheaded by the Ministry of Regional Development, Construction, Housing and Communal Services of Ukraine (in future referred to as MinRegion), and formulated with the participation of national stakeholders and international partners, was presented to the Verkhovna Rada through the Cabinet of Ministers on 12 January 2012. This draft law (in the Ukrainian context, what is commonly referred to as “draft law” is, in fact, a “Bill” that becomes a “Law” after approval by the Parliament or Verkhovna Rada) introduced such concepts like “public buildings”, “residential buildings”, “energy efficiency of buildings”, “minimum requirements to energy efficiency of buildings”, “optimal microclimatic conditions”, “optimal level of energy consumption”, “thermal modernization of buildings”, etc. It proposed reviewing the minimum requirements for energy efficiency of buildings once every 5 years. Mandatory certification for energy efficiency in buildings would be introduced by MinRegion for new building construction, thermal modernisation, reconstruction, and complete overhaul of stand-alone existing buildings of state and communal ownership¹. The certificate (or passport) would be valid for a 10-year period. At the same time, according to the draft law, certification of existing buildings, unless reconstruction or complete overhaul were to be carried out, was not going to be obligatory and could be undertaken at the request of the building owner/administrator or an agency authorized by such owner/administrator. It also planned to create a unified state register of energy efficiency certificates of buildings.

Public buildings, which are the subject of the present project, may be in state and/or communal/municipal ownership. The draft law “On Energy Efficiency in Residential and Public Buildings” was not approved during its second reading by a Parliamentary Committee of the Verkhovna Rada due to certain shortcomings in its substance and removed from consideration on 10 October 2013. The drawbacks noted during the second reading relate to, among others, “the absence of responsibility for failure to obtain energy performance certificates; absence of responsibility for poor quality certification of buildings; the issue of certification of buildings that do not meet the minimum requirements for energy efficiency and absence of rules governing the rights of citizens in the field of energy efficiency

¹ Ukraine has 3 types of ownership that are officially recognized: Private – property is owned by individuals and legal entities; State/Public – property is owned by Ukraine represented by ministries, government agencies and other public bodies; and Communal/Municipal – property is owned by cities, villages and towns represented by respective municipalities or local councils.

in buildings”. A Working Group headed by the Department for Reform Strategy and Housing and Communal Services of the Ministry of Regional Development, Construction, Housing and Communal Services (MinRegion) has held several meetings, the last one being on 5 June 2014, to come up with a revised draft of the law that would incorporate issues raised at the second reading.

To encourage the reduction of energy consumption in buildings, the revised draft law would provide for “passportisation” and certification of energy performance and would be consistent with best practice as it is carried out in the European Union through the Energy Efficiency Performance Buildings Directive. Passportisation would be carried out to obtain information on the specified energy performance rates of buildings (or their constituent components), while certification would be undertaken to obtain information on their actual energy performance. Passportisation would be mandatory for new buildings, as well as for reconstruction and complete overhaul of existing buildings and would form part of the design documentation. At the same time, energy efficiency certification would also be required for existing buildings that do not need complete overhaul and reconstruction. Certification would be mandatory for existing buildings with a total heated area of more than 500 square meters. Information about energy performance passportisation and certification of buildings would be in the public domain and would be posted on the websites of state administrations, local authorities or executive authorities in the sphere of housing and utility services. The latest version of the draft law provides for the minimum requirements to energy efficiency in buildings, which are revised ones per 5 years, in order to ensure adequate level of energy efficiency of construction objects. In addition, this draft law stipulates that funding mobilised for energy efficiency measures “is the property of building owners, city and local budgets, energy efficiency funds, financial resources received as a result of public-private partnerships, as well as funds from other sources not prohibited by law”. State support of energy efficiency in buildings can be facilitated through a variety of measures, including availability of low-interest loans, and provision of state and local loan guarantees.

The latest revised draft law, which has now been re-named “On Energy Efficiency in Buildings” (with “residential and public” having been dropped from the wording) also contains regulations governing the basic principles of state policy and information support on energy efficiency in buildings, designates the competent authorities in the field of energy efficiency in buildings, defines the conditions for granting state support, outlines responsibility for violation of energy efficiency legislation and provides a list of possible measures to ensure the energy efficiency in buildings. With Ukraine having signed the association agreement to join the European Union, the draft law will need to comply with the provisions of EU’s “Directive 2010/31/EU – Energy Performance of Buildings” and be in accordance with Ukraine’s obligations under the Energy Community Treaty. No indication is available at the present time as to when the revised draft law “On energy efficiency in buildings” will come up for debate and approval up by the Verkhovna Rada.

In addition and with a view to supporting the operation of Energy Service Companies (ESCO) in public buildings (in the Ukrainian context, these are referred to as “budget-funded entities”), a package of draft laws were submitted in July 2013 to the Verkhovna Rada of Ukraine and, this package was adopted in May 2015. This makes the timeliness of this project very appropriate as new laws to support ESCO market development in Ukraine have now been introduced and now secondary legislation is required to support the implementation of the new laws. The new laws are as follows:

- NewLaw on the specifics of procuring energy services (No.2548a, 5 July 2013): This draft law introduces and explains such concepts as “baseline energy consumption”, “energy service purchase contract”, “energy services”, “customer’s commitment under energy service contract”. It will apply to all customers, including state and local authorities, that purchase energy services with the use of public funds (fully or partially), regardless of the value of purchases.
- NewLaw on Amendments to the Budget Code of Ukraine relating to the legal framework of energy service contract performance (No.2549a, 5 July 2013): This draft law regulates the relations between the central and local authorities, that are administrators of budgetary funds, and energy service companies

that provide services under energy service contracts signed. Amendments are introduced to articles No.51, No.55, No.76 of the Budget Code of Ukraine, which will provide protection to the interests of energy service companies by requiring administrators of budgetary funds to ensure full settlements under energy service contracts.

➤ NewLaw on Amendments to Certain Legislative Acts of Ukraine relating to the legal framework of energy service contract performance (No.2550a, 5 July 2013): This newlaw regulates the special features related to the procurement of energy services. It amends the following 2 laws: (a) Law “On Public Procurement” and (b) Law “On Energy Saving”. Amendments to the Law “On Public Procurement” provide budget-funded entities with the legal authority to procure energy services while amendments to the Law “On Energy Saving” are designed to introduce such concepts “energy services” and “energy service contracts”. In addition, it provides for mandatory provisions to be included in an energy service contract (baseline energy consumption, guaranteed annual reduction in consumption costs, procedures and methods for determining the level of reduction in energy consumption costs, etc.)

➤ NewLaw on Amendments to Certain Legislative Acts (relating to the implementation of energy efficiency measures in budget-funded entities) (No.3013, 23 July 2014): This newlaw amends the laws “On Energy Efficiency”, “On Public Procurement”, “On Local Self-Government in Ukraine” and the “Code of Administrative Offences”. It stipulates the conditions which must necessarily be included in the energy service contract (including a list of energy service measures, terms and conditions of their implementation; the level of targeted cost savings in monetary terms; term of the contract; etc.) and details the specifics of concluding contracts with budget-funded entities.

➤ NewLaw “On Amending the Budgetary Code of Ukraine (On Introduction of New Investment Opportunities and Guarantees of Rights and Interests of Businesses to Perform Large-Scale Energy Modernization)”: When approved, this law will grant the “budget holder, which is managing the buildings”, “the right for long-term commitments for energy services based on the basis of the energy services obligatory conditions prescribed by law in the area of state procurement and approved by the central executive body which establishes the state budget policy”. This draft law was registered with the Verkhovna Rada on 11 December 2014 (Registration No. 1409) and went through its first reading on 5 February 2015 – the language used on the Verkhovna Rada website states “The Draft Law passed in the first reading on 05/02/2015”. Following Committee reviews, and the new law was adopted in May 2015..

➤ In addition to the above, another newlaw entitled “On Introduction of New Investment Opportunities and Guarantees of Rights and Interests of Businesses to Perform Large-Scale Energy Modernization” which proposes to establish “legal and economic principles of implementation of new investment opportunities, guarantees of rights and interests of (private) businesses to perform large-scale energy modernization by introducing modifications to the mechanism of state procurement of energy services” (Verkhovna Rada Registration No. 1313 of 9 December 2014) also went through its first reading on 5 February 2015 and was adopted in May 2015

It is noted that the 2 important draft laws referred to immediately above and having just recently gone through their first reading in the Verkhovna Rada is a step in the right direction that will enable public buildings in the country to enjoy multi-year budget allocations (a significant departure from the present single-year budgeting) and allow ESCOs to implement energy efficiency activities in these buildings, utilising the EPC modality. Both these draft laws, which address the very crux of the problem aimed at removing the barriers to implementing the ESCO modality in country, have had very strong support over the last few years from, among others, EBRD, GIZ, USAID and, recently, UNDP (since implementation of the present PPG), and benefitted from the “green vision” of some very dedicated lawmakers of the recently-reconfigured Verkhovna Rada.

- ***Design principles and strategic considerations***

The project will promote a market-driven approach to encourage the participation of the private sector/ESCO to implement energy efficiency services in public buildings under ESCO contracts. In line with GEF requirements, “the emphasis will be upon developing policies and regulatory frameworks that provide limited incremental support to strategically important investments”, such as investment in renovating existing public buildings to make them energy efficient, allowing the country to move towards energy independence and increased energy security in an environmentally and climate-friendly way. Further, the “host country

willingness to adopt favourable policies and to follow through on the initiatives” was demonstrated by the Government through the adoption of the guiding document entitled “Energy Strategy of Ukraine to 2030” with a view to “address and provide for the growing importance of energy efficiency” within “the context of a world of rising oil and gas prices, where there is greater emphasis on security of supply and on the need to reduce emissions of GHG”. Thus, the project will assist the Government to realize the objectives of the Strategy, design and adopt regulations and provide investment support aimed at promoting energy efficiency measures in public buildings.

- ***Project objective, outcomes and outputs/activities***

To date, several donors (see Section “Other non-GEF-related Initiatives” below) have implemented technical assistance projects in energy efficiency under which public buildings were targeted for demonstration of the benefits that energy efficiency could provide. These demonstrations by other donors have been useful, but have not resulted in the expected multiplier effect that Government would implement similar activities in other public buildings. In particular, this project focuses on filling the gap left by other donors by (i) proposing a pure ESCO approach as opposed to a quasi-ESCO approach for the financing of energy efficiency in public buildings, working closely with the financial support mechanism being designed with IFC, (ii) proposes a nationwide energy consumption data base and energy management information system and (iii) proposing to work in small and medium sized cities in Ukraine where other donors are not active. These are all new activities which have not been successfully carried out before in Ukraine.

Furthermore, there is no national database of energy consumption for public buildings and no single energy management system in use in Ukraine, with different donors piloting their own models. In addition, ongoing or planned energy efficiency activities in buildings in Ukraine focus essentially on its promotion in existing and new privately-owned residential buildings and no donor-supported activities have looked at public buildings from the point of view of creating an enabling environment for investment in energy efficiency with the assistance of a third party, an ESCO or private sector, for example. A detailed table can be found in Annex 8 outlining in detail the activities of various other donors in the field of energy efficiency in Ukraine. Public buildings are the target of this project as end-users of energy services, because they represent considerable potential for investment, not by the Government because of the competing demands for its limited resources, but by non-Government entities, e.g. private sector under an ESCO business model acceptable to both parties. In addition and as explained above, the only “escape route” for public buildings administrators to implement energy efficiency activities at their locations is to convince the building owners, normally the “local government organ” (village, town or city council) to borrow funds (and guarantee repayment) and these funds are then passed on to them for use as per prior agreement. The “local government organ”, as per the Law “On Local Self-Government”, owns real estate and receives income from taxes levied on businesses and individuals; hence, in the eyes of a lender, it can provide collateral and possesses loan reimbursement capacity. Unfortunately, because of the complexity of the issue, this option is pursued in very rare cases (it constitutes the exception rather than being the norm), mainly when there is a “financial push” by a donor agency. Hence, the rationale for this project to target existing/old buildings in the public sector to enable their building administrations to directly solicit loans from lending institutions for investment in energy efficiency activities in their respective buildings through creation of the necessary environment that would enable them to provide their intangible assets as collateral and use their savings from implementing energy efficiency activities to reimburse their loans.

This project will aim to develop an approach consisting of education, training, outreach and incentives to provide increased focus on energy use in public buildings and to encourage public sector organisations to increase their level of investment in energy efficiency in these buildings. Along these lines, it would provide capacity development and technical support to ESCOs interested in implementing energy efficiency measures in public buildings using the EPC modality, including the setting up of a Help Desk to provide quick and targeted responses to requests for assistance and/or guidance on specific issues from ESCOs, i.e. standards required for equipment and renovation works, interpretation of EPC contracts in case of disagreement between an ESCO and a public building manager,

etc. It will also develop and present best practices of energy efficiency for existing public buildings, which then can be replicated nationwide and it will aim to learn from the experience that UNDP has had in implementing energy efficiency projects in other countries. Technical, as well as institutional, capacities required for successful replication will be developed, including the training of designated “Energy Managers” to monitor energy use in public buildings through a nationwide Energy Management and Information System and propose/implement necessary energy efficiency measures. Furthermore, the implementation of this proposed project will provide comprehensive information on recommended technologies, equipment, procedures and services, costs and financing options, energy savings and related CO₂ reduction potentials. All these are aimed at generating the interest for and encouraging interest in additional investment totalling at least \$ 21 million in energy efficiency in public buildings using the ESCO/EPC business model. Finally, as demonstration activities, the project will implement 10 pilots in four types of public buildings in 10 different municipalities, at least one of each being a school, kindergarten, hospital or government building.

As indicated above, the Ministry of Regional Development, Construction, Housing and Communal Services (MinRegion) is the central body responsible for formulating and implementing the Government’s policy in the field of construction, architecture, town planning, housing and communal services. In this capacity, it defines priority directions of development regulating the supply of electricity, heat and hot water supply to buildings, both public and private, in addition to ensuring compliance with regulations and standards of building infrastructure constructed with state budgetary funds. As such, it will be in the first line of support to implementing the project under the UNDP Direct Implementation Modality (DIM).

The project consists of four components as outlined below. It is recognised that on-the-job training will be provided by the recruited consultants, both local and international, during the normal course of their support to the relevant project activities. This will be in addition to Components 2 and 4 that, respectively, deal with capacity development on financial and technical issues required by key Government and Financial institutions. Moreover, the project will seek to achieve gender equality through the empowerment of women to fully participate in all project activities and specifically those related to capacity development under the various components. This will be achieved through working, for example, with NGOs like “Krona”, the Ukrainian Women’s Fund, La-Strada, School of Equal Opportunities, All-Ukrainian Women Centre of Information and Social-Economic Adaptation, Association of Energy Auditors, etc.

Component 1: To formulate and introduce a streamlined and comprehensive legal, regulatory, and policy framework to promote energy efficiency in public buildings through strengthening of monitoring and enforcement mechanisms. The expected outputs under this component are:

- Signature of MoUs with 10 small and medium sized cities in Ukraine to work on ESCO and energy management
- Support for the preparation of Sustainable Energy Action Plans (SEAPs) and signature of EU Covenant of Mayors (as required)
- Development and adoption of secondary legislation to support new law including financial incentives provided to ESCOs to invest in Energy Efficiency in public buildings such as income tax holiday for a specific period of time, duty and tax exemptions on equipment and services they provide.
- Regulations to support the development of secondary market for EPC contracts in order that the contracts can be sold to investors to provide for further liquidity and additional investment

Component 2: To promote private investment in energy efficiency in public buildings through appropriate catalytic financial incentives, including the establishment of a Financial Support Mechanism (FSM). The FSM will be operated in partnership with IFC and be operated in the context of joint UNDP IFC cooperation on energy-efficiency. The financial support mechanism will build upon and expand upon the financial support mechanism being designed and

Commented [J01]: This work has already been done by other donors, Dr Hurry. If you had met the other donor you would understand this.

developed under the UNDP GEF Commercializing Bioenergy Technologies in Ukraine project. Component 2 of the project will include the following: The expected outputs are:

- Financial Support Mechanism (FSM) established and capitalized to support private/ESCO investment in energy efficiency in buildings through guaranteeing payment to project developers/ESCOs for services provided.
- Model Municipal EPC Procurement package for launching EPC tenders in selected 10 cities is prepared and launched
- MOUs signed with banks that are active in small and medium sized cities in Ukraine to use the financial support mechanism
- Capacity development of and support to banks with standardized banking products to support development of ESCO market using the EPC modality
- Capacity development of and technical support to ESCOs, including setting up of a Help Desk, to implement energy efficiency measures in public buildings using the EPC modality.
- The Help Desk will consist in, among others, capacity development of ESCO staff in core aspects of ESCO business, training and support in active market development and in project development, and support in project implementation. It will also include review of individual projects prepared by ESCOs for their technical and financial soundness prior to their submission to lending institutions. The Help Desk, as a single point of contact, will be staffed with trained personnel to provide quick and targeted responses to requests for assistance and/or guidance on specific issues from ESCOs, i.e. standards required for equipment and renovation works, interpretation of EPC contracts in case of disagreement between an ESCO and a public building manager, etc.

During the course of the scheduled project mid-term review, an assessment of the FSM will be undertaken to ensure that it is performing as planned, including an analysis of the sustainability of the FSM. The mid-term review will also ascertain possible enhancements to improve and strengthen the financial support mechanism.

Commented [J02]: Its too early to say about decrease and gradual phase out when we don't know what it looks like.

Component 3: To implement at least 10 pilot projects in selected public buildings (Annex 5 (a)) using the EPC modality with companies selected by municipal EPC tender approach in order to demonstrate the energy and cost-saving potential of energy efficiency measures in different municipalities. The innovativeness of these demo projects and what makes them different from other demonstration energy savings projects in buildings in Ukraine is that they will only be implemented using a full ESCO approach whereby the ESCO designs, develops, finances, guarantees and monitors energy savings using a long term EPC signed directly between the ESCO and the municipality. Other IFIs working in this space in Ukraine have been using a Quasi-ESCO approach whereby the IFI provides a municipal loan directly to the municipality and the ESCO then provides a guarantee of savings meaning that the ESCO itself is providing the technical solution and the guarantee of savings but not the financial solution. The full ESCO approach, that this project aims to adopt, is where the ESCO itself provides both a financial and technical solution to the municipality.

Each of the 10 pilot projects will follow international best practice which includes the setting of energy efficiency targets and the full usage of an appropriate energy management information system in place. In order to show that they are developing or plan to develop sustainable appointed energy management and are employing or will shortly information systems. The full criteria for selecting the cities is document.

The project will support the pilots with up to a maximum of the co-financing for the FS/BP, with an upper limit of \$ 50,000 per will provide a contribution of up to \$50,000 per city for metering

receive a GEF grant , cities must energy action plans, have employ energy management provided in Annex 7 of this

50% of the total cost, including project. In addition, the project in each participating city



provided that there is also a commitment from the city over time to install meters in all public buildings throughout the city.

The expected outputs are:

- Metering and Energy Management Information Systems (EMIS) in all public buildings in the selected city
- Completion of at least 20 energy audits in public buildings (Annex 5 (a) & (b)). Selection of the public buildings will be undertaken in collaboration with the parent Ministries (e.g. Education, Health, etc.) to ensure that no building scheduled for closure/demolition in the foreseeable future will be scheduled for an audit.
- Selection of at least 10 pilot public buildings in different small and medium sized cities in Ukraine, including at least one each from the following categories: schools, kindergartens, hospitals and administrative government buildings.
- Signed contracts with potential investors ESCOs for feasibility and design study and implementation of energy efficiency measures using EPC approach, working with the financial support mechanism of the project or with other financial incentives in Ukraine for energy-efficiency.
- Completion of energy efficiency improvement measures and validation by a third party supervising the works.
- Issuance of certificates of completion of works to building owners/administrators, including monitoring schedule to determine actual energy savings.
- Capacity development of designated “Energy Managers” to monitor energy use in public buildings through an Energy Management Information System (EMIS) and propose/implement necessary energy efficiency measures.
- At least 20 walk-through days organised for senior public officials to view pilot projects.

Component 4: To establish an institutional basis and comprehensive nation-wide Energy Management and Information System (one single energy management system adopted for public buildings in Ukraine) to support energy efficiency in public buildings and to formulate an outreach programme and document/disseminate project experience/best practices/lessons learned for replication within the country (and in the region). The EMIS will be closely linked to the national database of energy consumption in public buildings in Ukraine. The expected outputs are:

- Capacity of “State Agency of Ukraine for Energy Efficiency and Energy Saving” (SAEES) strengthened to implement a training and outreach programme for and to monitor, increase and enforce building energy code compliance.
- An approved mandatory national energy audit program for promoting larger number of energy audits of public buildings with approved budget.
- Agreed methodology and sustainable institutional arrangements for annual monitoring of energy efficiency in public buildings through implementation of a nation-wide Energy Management and Information System. This will provide data and information that demonstrate the cost-effectiveness of investing in energy efficiency projects and will be linked closely to the nation wide database of energy consumption for all public buildings in Ukraine which will be developed under this component.
- A database of public buildings re. energy consumption established and an energy monitoring and information management system put in place for public buildings in the country. In undertaking this, the project will liaise with USAID and GIS to explore options for adapting the Energy Management/Smart Metering Systems they each are introducing or have introduced for verifying energy and water services performance under their respective activities dealing with energy efficiency in non-government buildings in Ukraine. The goal of this work will be to aim at ensuring that there is one nationwide energy management information system (EMIS) adopted for all public buildings in Ukraine, one national database of energy consumption in public buildings and one system of monitoring and reporting. In addition, the project will aim to ensure that at least 20 cities in Ukraine are actually implementing EMIS by the end of the project. In addition, the project will consult with UNDP Croatia regarding exploring the possibility

of integrating any additional features from its Energy Management and Information System into the one to be used nation-wide in Ukraine. **City Wide Energy Consumption Databases for Public Buildings established and maintained for 10 small and medium sized cities in Ukraine**

- **Energy Management Information Systems implemented in at least 10 selected Ukrainian small and mid-size cities which includes installation of meters in all public buildings in the selected cities. It is envisaged that GEF funding will be able to make a contribution of approximately \$50,000 USD for meters in each participating city, but that the rest of the cost of installing meters in all public buildings will need to come from the city budget. It will be absolutely essential that the building or buildings selected for the demo EPC project or projects will have meters installed.**
- Published materials on project experience/best practices and lessons learned, advocating the benefits of energy efficiency measures in public buildings, and project website designed and regularly updated. The website will serve as a vehicle for “better information for better decisions” regarding energy performance and show how energy efficiency can result in lower energy bills.
- International Conference organised on energy efficiency in public buildings in Ukraine, with the participation of building managers, designated “Energy Managers” of individual buildings, ESCOs, decision-makers, etc.

Annex 5 provides a list of potential projects selected on the basis of an expression of interest from various categories of public buildings. These projects constitute a preliminary list that may be subject to change depending on confirmation by public building “managers” that they can mobilise at least 75% of the total rehabilitation/reconstruction costs from their long-term budget allocation or through signed EPC contracts with private sector developers/ESCOs. **Taking into account, the need for economies of scale, it is clear that it is more cost-effective to select an ESCO to rehabilitate several buildings at the same time, rather than just one building, so where possible it is recommended to rehabilitate additional buildings using the EPC approach and contracting modality.** Similarly, and based on an expression of interest, a list of candidates for energy audits only at this stage, but with potential for development later, is provided in Table 6. All reconstruction works will involve heating, lighting and replacement of inefficient appliances, where necessary; with regard to hot water, its production and supply are normally not individualised, but centralised. The figures for annual energy savings and CO₂ reductions are preliminary and are based on “walk-through” audits; refined investment costs, energy savings (for comparison sake, the present heat and electrical energy usage for each building are indicated in parenthesis in the Tables) and GHG emission reduction to be achieved will become available once comprehensive energy audits have been completed.

- ***Key indicators, assumptions and risks***

Indicators

Key indicators of the project’s success will include:

- Indirect post-project GHG reduction (with replication over next 10 years of project influence) of 1,440,000 tons of CO₂.
- 2,346 MWh of thermal energy and 268 MWh of electrical energy saved by project end.
- Investment of \$ 21 million expected from ESCOs in energy efficiency in public buildings under EPC contracts.
- Some 3,000 green jobs created in energy efficiency in buildings.
- Financial Support Mechanism established to facilitate investment in energy efficiency by ESCOs, operating under EPCs.
- Project experience, best practices and lessons learned documented, published, presented at international conference and available on website.

Detailed indicators are provided in the Project Results Framework below.

Assumptions

The assumptions are outlined in the Project Results Framework below.

Risks

The project presents some risks which are discussed in the Table 6 below:

Table 6: Risks, Rating and Impact/Mitigation Approach

| Risks | Rating (Probability of Occurrence) | Impact/Mitigation Approach |
|---|---|--|
| Political: Lack of political will to adopt a necessary policy and legal/regulatory framework. | High | This issue is of concern: there are several draft laws that have been formulated by MinRegion, with the support of the donor community and these are awaiting approval by the Verkhovna Rada, not because of a lack of political will, but because of the Rada’s other pressing priorities in dealing with the conflict situation in the eastern part of the country. However, there were very recently some positive developments when 2 draft laws dealing with multi-year budgeting and operation of ESCOs, respectively, went through their first reading in the Verkhovna Rada and when the ESCO related laws were all approved as a package in May 2015. Also, some improvement of the situation in the eastern part of the country is on the horizon, assuming that the new ceasefire holds. There are several donors active in energy efficiency in the country and this “coalition” has been working together to nudge the Government into encouraging and supporting investment in energy efficiency in the buildings sector, focusing mainly in the western “quiet” part of the country. |
| Institutional: Apprehension that the likelihood of a programme for energy efficiency in buildings may not take off. | Medium | Lack of institutional support is very unlikely: MinRegion is fully committed to implementing energy efficiency measures in all buildings in Ukraine, irrespective of old and new ones. To achieve this, it benefits from the support of its multilateral partners who, in addition to implementing pilot projects, have assisted and are assisting the Ministry to move forward with having the right regulatory and institutional framework in place. |
| Technology failure. | Low | Energy Efficiency measures/technologies for the buildings sector are generally well known and are widely used in the rest of the world, including in neighbouring EU countries; hence, this is very unlikely. The project will be designed and implemented to identify, transfer and adopt best available energy efficiency technologies and practices in Ukraine. There are also several industries and commercial enterprises/supermarkets operated by the private sector that have invested or are investing their own resources in making improvements in energy efficiency at their |

| | | |
|--|--------|--|
| | | enterprises with a view to reducing their energy costs and, thereby, improving their profitability. For them, it only makes eminent economic sense. |
| Environmental/ Climate Change | Medium | Coal, gas and oil constituted 78% of the country's total energy consumed in 2012 and any environmental or climate change will have little effect on this energy supply mix, although the share of each energy source may be subject to change. However, implementation of energy efficiency measures will have a positive effect on the total amount of fossil fuel energy being utilised, resulting in a decrease in GHG emissions. |
| Financial: Lack of commitment from private and public sector to invest in energy efficiency in public buildings using ESCO approach | High | Already during the project design stage several potential investors signified their interest and commitment to invest in energy efficiency in public buildings provided a conducive and appropriate investment environment is created, including the law allowing ESCOs to operate in the country and the budget code be amended to allocate for multi-year budgeting. These are on their way to materialising in the near future. However, high interest rates in Ukraine make commercial financing difficult. Therefore, as an additional incentive, the project will establish a Financial Support Mechanism with IFC to provide confidence to investors/developers that they will receive payment for energy efficiency services that they provide to public buildings and to work with local commercial banks to encourage them to provide loans to ESCOs. Finally, the likelihood that energy prices in Ukraine will return to the those low ones prevailing in the "old days", thus rendering energy efficiency in buildings uneconomical, is almost zero. In the event, that financing using a real ESCO approach is not possible, as an adaptive management measure the project will consider putting all resources in a selected city into energy management. However, this will only be carried out as a last step if it proves impossible to demonstrate the ESCO model. |
| Insufficient Information and Awareness of Public Officials on actual benefits of implementing energy efficiency measures un buildings. | Low | Development and implementation of a single, nation-wide Energy Management Information System for public buildings in the country, in collaboration with other donors (e.g. GIZ and USAID) working on this issue. In addition, at least 20 walk-throughs of the pilot projects will be organized for senior Government officials who regularly participate in decision-making in budget allocation and technical specifications for public buildings. This will, no doubt, raise their awareness in energy efficiency measures in public buildings and assist them in making the right decisions beneficial both to the national economy and the environment. |

| | | |
|--|-------------|--|
| Political Instability and armed conflict makes investment in Ukraine highly unattractive for investors to invest using EPC modality in EE in Public Buildings. | High | Capital flight from Ukraine and lack of investment is a real risk in the current situation. It must be noted that this risk is outside the control of this project. While eastern parts of Ukraine have seen armed conflict in 2014 and into 2015 also, the Minsk agreement signed in September 2014 and subsequent talks and agreement between affected parties should hopefully lead to improvements in the overall political situation. While it is clear that armed conflict significantly reduces the likelihood of investors making EPC type investments in Ukraine, it is hoped that the situation will improve and that by the start of the project this risk will not pose any significant concern. |
| Overall Risk Rating | Medium High | |

- **Financial modality**

The project is aimed at policy development, capacity building, technical assistance and the provision of financial incentives to catalyse private sector/ESCO investment in energy efficiency in public buildings through EPC contracts. A major part of GEF resources will be allocated to support investment under a Financial Support Mechanism to make financing of EPC contracts more affordable and less risky. Capacity development of local banks and ESCOs will aim to increase levels of familiarity and confidence in the ESCO mechanism to make it easier to obtain financing. The project objective will be attained through technical assistance and facilitating third parties/ESCO investment in energy efficiency in public buildings combined with support for both a nationwide energy management information system as well as city wide energy management systems in each of the 10 participating cities. Grant co-financing will be provided to support 20 energy audits and implementation of energy efficiency measures in at least 10 public buildings. No loan or revolving-fund mechanisms with GEF funds are considered appropriate, and, therefore, grant-type funding is considered as the most suitable to enable successful delivery of the project outcomes.

- **Cost-effectiveness**

The cost-effectiveness of the approach comes from making sure the ESCO projects using EPC are integrated into the pilot demo activities. In order to benefit from the reduction in energy consumption in public buildings, the project proposes to first focus on the 10 buildings that are identified for implementation as pilots, working in 10 small and medium sized cities in Ukraine that have signed MoUs with UNDP to cooperate on ESCO market development and energy management. This will enable these buildings to enter into agreements with ESCOs to undertake full energy audits, put in place comprehensive energy management information systems, prepare feasibility studies and business plans and have fully-signed EPC contracts to implement the necessary energy efficiency measures. Following this, the project will target the remaining 10 buildings for energy audits and, it is expected, that discussions between the buildings managers and potential ESCOs would have sufficiently advanced, leading to implementation of energy efficiency measures to commence soonest. The experience gained by ESCOs with implementing the pilots through EPC contracts will facilitate their scaling-up of energy efficiency activities in public buildings using the same modality and beyond the 5-year project life-time. It is therefore hoped and envisaged that by the end of the project, significantly more than 10 public buildings in Ukraine will have been supported using a full ESCO approach.

It is also assumed that while start of activities on the 10 public buildings will be staggered, implementation of energy audits and construction works will run concurrently; thus, there will be no need to await completion of a comprehensive audit and implementation in one public building before work on the next one

can start.

It is expected that the project will be approved in time for implementation to start during the first half of 2016. Under this assumption and given the lead time required for project operations to reach cruising speed, it is further expected that the ESCOs would commence implementation of activities by the end of 2016 as per the following schedule:

- Year 2016: Signature of MoUs with 10 small and medium sized Ukrainian Cities as soon as possible, following the commencement of the project
- Year 2016: Implementation of 4 energy audits and completion of works in 2 public buildings by the end of the year using EPC approach. Metering installed in 10 cities in public buildings. Financial Support Mechanism is launched and training of local/commercial banks and ESCOs starts under the financial support mechanism;
- Year 2017: Implementation of an additional 6 energy audits and completion of works in another 4 public buildings using EPC. Energy Management Information Systems are in place in 10 cities. Ongoing training of banks and ESCOs under the financial support mechanism;
- Year 2018: Implementation of an additional 6 energy audits and completion of works in another 4 public buildings using EPC approach. Ongoing training of banks and ESCOs under the financial support mechanism continues under the financial support mechanism;
- Year 2019: Implementation of remaining 4 energy audits. Local commercial banks are lending for ESCO activities in Ukraine, using the EPC contract as the guarantee for the loan.

Under the above scenario, the first two energy audits (Table 5) will be implemented in late 2016, with the expectation that completion of works in the 2 targeted public buildings will be achieved within the first 9 months of that year. In addition, it will be important that the financial support mechanism is launched by the end of 2016. Under this assumption, the energy savings in that year from the 2 pilot projects will be in the amount of 81 MWh_{TH} in terms of thermal energy and 15 MWh of electrical energy (see attached Excel file); in the subsequent years, the annual energy savings from these 2 pilots will be 162 MWh_{TH} and 61 MWh, respectively. Following this, it is expected that completion of energy efficiency measures in the 4 additional public buildings, together with 6 energy audits, will be completed by June 2017 and in the remaining 4 public buildings, together with another 6 energy audits, by June 2018. The remaining 4 energy audits will be completed in 2019. All of the demonstration projects will only be implemented using EPC modality. If it proves not possible to use the EPC modality for a specific demonstration project, then another building or set of buildings will be chosen.

The implementation of activities under the project, which includes the renovation and modernization of the electrical and thermal power and systems for public buildings together with the increase of their energy efficiency, would reduce the consumption of heat and electricity, resulting in a corresponding reduction of GHG emissions associated with their production; simply put, reducing energy consumption results in less CO₂ emissions. In the absence of this project, all of the equipment and systems installed at public buildings will continue to operate in the business-as-usual mode, without any reduction of emissions.

As per the above schedule, all 10 energy efficiency pilots shall be completed by June 2018. By then, 2,346 MWh_{TH} of thermal energy and 268 MWh of electrical energy would have been saved. From July 2018 onwards, these 10 pilots will annually save 1,870 MWh_{TH} of thermal energy and 166 MWh of electrical energy until the useful equipment life of 20 years. Utilising the emission coefficient for heat production from gas as equal to 0.223 tons of CO₂ per MWh_{TH} and the one for electricity as equal to 0.5631 tons of CO₂ per MWh (Source: Ukraine's Sixth National Communication, 2013), the first 5 years of project implementation will

provide for a total reduction of CO₂ emissions of 1,238 tons (4,423 MWh_{TH} x 0.223 tons of CO₂ /MWh_{TH} + 447 MWh x 0.5631 tones CO₂/MWh).

In addition, these projects will continue to provide an annual reduction of CO₂ emissions of 510 tons/year over the remaining 15 years of equipment service life. Considering the 20-year life of the equipment, the 10 demonstration projects to be implemented over the 5-year duration of the project, would result in a total reduction of CO₂ emissions of 8,893 tons.

However, the project will have assisted the Government in introducing a conducive environment for more ESCOs to enter the field with EPC contracts with an initial target of \$ 21 million and for this to happen it will be absolutely critical to make a main focus of this project to be working with local commercial banks, encouraging them to use standardized banking products to evaluate new ESCO projects and to lend for ESCO activities. If local commercial banks are able to lend for ESCO activities using only the EPC as the guarantee then this will no doubt lead to further energy efficiency measures being implemented at many additional public buildings, resulting in a much further reduction in heat and electricity consumption, bringing Ukraine close to West European norms for specific energy consumption in public buildings, and a corresponding reduction in GHG emissions. Consequently, the indirect post-project emission reduction estimates related to only the additional plants – on the basis of a conservative policy scenario, targeting a total market potential of 50 % of the 110 million m² of existing public buildings over the next 20 years, and a GEF causality factor of 80% (top-down approach) -- can be estimated at 1,440,000 tons of CO₂ avoided, which translates into an abatement cost of \$ 3.80 of GEF funds per tCO₂ reduced. In the case of the bottom-up approach, with a replication factor of 3, the indirect post-project emission avoided would be 535,580 tons of CO₂. Table 9 below summarises the direct and indirect total CO₂ emissions reduction during implementation of the project and beyond.

Table 7: Project GHG emission reduction impacts

| Time-frame | Direct project without replication (20-year projected equipment life). | Indirect post-project (with replication over next 10 years of project influence). |
|--|--|---|
| Total CO ₂ emissions reduced (tons) | 8,893 | 1,440,000 |

- **Sustainability**

From a technical point of view, the viability of implementing energy efficiency measures in buildings using the ESCO approach has been proven in the international market, both in the context of developed and, to some extent, developing countries. ESCOs are, by definition, sustainable if they work because they invest private capital and not public money. They have the ability to reinvest revenues and profits into new energy savings projects thereby creating a sustainable business model. Even in Ukraine, several private businesses/building owners have implemented such measures on their own in order to both reduce their expenditures for energy services and to go “green”, probably in that order but not using EPC. Some public buildings in Ukraine have also gone the “energy efficiency way” with the support of donors. However, in order to accelerate the process and recognizing the limitations of using the public budget for retrofits, especially in view of the difficulties that the country faces to meet the ever-increasing energy needs of its population related to old and inefficient building infrastructure stock. Hence, the project will bring a new paradigm shift that will facilitate investment in energy efficiency in public buildings on the part of private investors through the ESCO modality involving EPC contracts and at the same time by introducing modern concepts of energy management. By addressing the

non-technical barriers that impede the implementation of energy efficiency measures in public buildings in Ukraine, the project will assist in creating a sustainable niche through strengthening the policy, institutional, legal, regulatory and operational capabilities of the key national institutions, supporting the development of national capabilities and disseminating information. These efforts should ensure the long-term sustainability of energy efficiency measures in the country.

Furthermore, the project will support the integration of local industries into the energy efficiency sector. This will be achieved through the provision of focused support to ESCOs, local engineering firms/specialised engineering workshops for construction, installation, operation, maintenance and repair of equipment. With the increase over time in the provision of energy efficiency services to buildings, it is envisaged that such efforts will intensify with opportunities being created for additional players to provide such services.

- ***Replicability***

The Project's potential for replicability throughout the whole country is very good, since it will adopt a bottom-up approach within the overall policy/investment framework that is envisaged to be developed to promote energy efficiency in public buildings. The replicability of the project approach will rest, to a large extent, on the ability of local banks to lend to ESCOs on the back of signed EPC contracts as this will be a key tool in encouraging and facilitating further investments and further activities by ESCOs in other cities in Ukraine. In particular, the project will focus on the setting of energy efficiency targets by local authorities and the implementation and usage and nationwide adoption of energy management systems. A national database of energy consumption in public buildings in Ukraine will provide a platform for investments. Technical assistance for barrier removal and institutional strengthening to be provided under the project will facilitate such replicability since it will create the required institutional, policy, and technical conditions to enable the generation of renewed investor/ESCO interest for the implementation of additional energy efficiency projects. Moreover, the lessons learned will be of great value to the neighbouring countries sharing similar resource base, should they wish to improve on their experience with the implementation of energy efficiency measures in the buildings stock in their respective countries.

- ***Coordination with other GEF-related initiatives***

There are presently 5 on-going climate change projects funded by GEF in Ukraine. Two of them deal with renewable energy (UNDP: Development and Commercialization of Bioenergy Technologies in the Municipal Sector in Ukraine; EBRD: Creating Markets for Renewable Power in Ukraine) and, therefore, have no direct bearing on this project, except that the common thread is GHG emission reduction. The third one (UNDP: Transforming the Market for Efficient Lighting) is directly relevant to this proposed project as energy efficient lighting will definitely be a component in a package of measures aimed at implementing energy efficiency measures in public buildings. The ongoing UNDP GEF Commercialization of Bioenergy Technologies in Ukraine has already started to work with IFC in the design of a financial support mechanism to support renewable energy projects in Ukraine. It is envisaged that when this project starts the financial support mechanism, currently being designed, can be expanded to also include support for energy-efficiency projects, using the ESCO modality.

The remaining 2 GEF-funded projects are:

➤ The UNIDO project "Improving Energy Efficiency and Promoting Renewable Energy in the Agro-Food and other Small and Medium Enterprises (SMEs) in Ukraine" has a GEF budget of \$ 5.23 million and commenced activities in May 2011, with a target completion date of April 2016. It is aimed at developing a market environment for introducing energy efficiency and enhanced use of renewable energy technologies in the agro-food and other energy intensive manufacturing small and medium enterprises (SMEs) in Ukraine, as a basis for promoting their competitiveness while ensuring an integrated approach for lower carbon intensity and improvement in their productivity and local environment.

To date, activities related to modernising boilers and heat distribution systems have been implemented or are under implementation at PJSC "Crimea milk", Private Enterprise "Crimea paper", PJSC "Concern Khlibprom" (LvivHlib), Private Enterprise "Technosoyuz", Private Enterprise "Kilgan", installation of a solar

hot water supply system at PJSC “Krymmoloko”, etc. Implementation of activities under the project has resulted in decreases in energy consumption of up to 40%. In addition, study tours were organised to Germany and Austria in June 2014 for Ukrainian counterparts to learn about best practices and to familiarise them with modern policies of the EU and its Member States with regard to energy efficiency and renewable energy.

➤ The 5-year UNIDO project “Introduction of Energy Management System Standard in Ukrainian Industry” with a GEF budget of \$ 5.63 million was approved on 21 October 2013. It aims at improving energy management in Ukrainian industry by promoting widespread implementation of energy management systems (EnMS) that comply with ISO 50001 international energy management system standard. Project activities have only recently commenced.

During implementation of the proposed full project, regular consultations with both UNEP and UNIDO would be maintained for the mutual benefits of the project stakeholders and to eliminate the possibility of any duplication in project activities. In addition, the project management unit will ensure its full participation in the EBRD convened donor roundtables on energy efficiency in buildings, which are held once every three months in Kiev.

Other non-GEF-related Initiatives

The four most relevant non GEF initiatives working in the area of energy efficiency in public buildings to this project are as follows:

- (i) The EBRD is currently running the \$22.5 million USD Legal Energy Infrastructure project which started in August 2013 and is ongoing. The EBRD infrastructure project is a first step in the longer-term process of EBRD efforts to develop a private sector led and financed ESCO/EPC market in Ukraine. EBRD is using the ESCO approach to finance energy savings investments in the city of Dnipropetrovsk. However, the EBRD model being employed is a Quasi-ESCO model in that EBRD lending (to the municipality) is the pre-requisite for the EPC contract which is different from a pure ESCO approach where the ESCO company is financing, and guaranteeing energy savings. This project will coordinate its activities closely with the EBRD Legal Energy Efficiency Infrastructure project to ensure full complementarity. This includes participation in all of the EBRD donor coordinated meetings on energy efficiency, held every three months in Kiev. IFC is also an active participant in such meetings so all donors will be aware of the new joint UNDP IFC financial support mechanism on energy efficiency.
- (ii) The GiZ implements the Energy Efficiency in Municipalities Project (2013 – 2018) which is aimed at supporting municipalities in different parts of Ukraine on how to introduce appropriate energy management. One focal area of the project is the development of energy management systems. The consortia are in Dnipropetrovsk (4 municipalities); Chernivtsi (2 municipalities); Luhansk (4 municipalities); Poltava (4 municipalities); and Zhytomyr (3 municipalities). The UNDP GEF EE public buildings project will coordinate with the GiZ project the work on energy management systems, in particular when it comes to developing and adopting one nation wide EMIS envisaged by component 1 of the UNDP GEF EE Public Buildings Project. The projects will assure full complementarity of approach and to avoid duplication, the UNDP GEF project will choose to work in cities that the GiZ project is not working in. Typically, the GiZ project works in larger cities whereas the UNDP GEF EE public buildings project will work more in smaller and medium sized cities.
- (iii) The USAID manages the Municipal Energy Reform Project which is ongoing with the second phase starting in October 2013 and which, inter alia, is supporting the introduction of energy management/energy metering systems in various cities in Ukraine. The project will liaise with USAID to explore options for adapting the Energy Management/Smart Metering Systems they each are introducing or have introduced for verifying energy and water services performance under their respective activities dealing with energy efficiency in non-government buildings in Ukraine. The goal of this work will be to aim at ensuring that there is one nationwide energy management information system (EMIS) adopted for all public buildings in Ukraine, one national database of energy consumption in public buildings and one system of monitoring and reporting. USAID supports energy management systems in selected

cities but it does not support a nation wide energy management information system or the development of the national energy consumption database for all public buildings. An important criteria, for selecting cities to work with under the UNDP GEF EE public buildings project will be that they are not already working with the USAID project.

- (iv) IFC has the Sustainable Energy Finance Programme in Ukraine with approximately \$471 million USD available for lending for sustainable energy related activities. UNDP will work closely with IFC on component 2 of the project, the financial support mechanism and it is envisaged that IFC will be the responsible party for component 2 of the project and that UNDP and IFC will jointly design, establish, and implement the financial support mechanism which will aim to facilitate lending to ESCOs from commercial banks with the goal of establishing the private for ESCOs in Ukraine that functions effectively. This is something that nobody has done yet.

At the request of the GEF, Annex 8 of this project document provides a detailed overview of all the activities of other donors in Ukraine related to energy-efficiency and includes both GEF related and non-GEF related initiatives.

Innovation, Sustainability, Potential for Scaling Up and Market Transformation

ESCOs are by definition innovative as they provide both a technical + financial solution. The project is innovative in that it has really studied and made an analysis of what has worked with ESCOs and with financing mechanisms in Ukraine and in other countries in the region in order to learn from those experiences in order to best learn the lessons as well as looked at the previous difficult history of ESCOs in Ukraine. There is much greater analysis in the revised proposal of what needs to be done in order to make the ESCO market work. Sustainability of the project will be ensured by the success of the new secondary legislation which will facilitate ESCO market development which can and will continue to operate after the lifetime of the project, without any donor support. Secondly, the financial support mechanism to be developed UNDP and IFC will continue to operate beyond the lifetime of this project meaning that there is a long term commitment to ESCO market development. Profitable businesses, which are environmentally friendly, are by definition sustainable. ESCOs have enormous potential for scaling up in Ukraine. The commitment of local banks to finance ESCO activities in Ukraine using EPCs as the main loan guarantee will be a key indicator in determining whether or not the results of the project can be successfully scaled up. Once the business model of EPC has proven that it can work and is profitable at an acceptable level of risk, and once local banks can lend for ESCO activities without asset backed guarantees, many more new ESCO companies will enter the market and sign EPC with municipalities. The ESCO market will continue to grow and to thrive even without donor support. By the end of the project, the ESCO business model will be applied to other parts of the country as commercial/local banks will be more ready to lend and profit driven ESCOs will seek to expand their activities. ESCOs (if and when they work) will transform the market for energy efficiency because ESCO solves the problem of scarce public resources not being enough for the huge investment needs to EE in public buildings. Once private financing is available the level of investment flowing into the sector will be much greater. Previous projects on ESCO have failed in Ukraine because previously the legislation was not in place to sign long term EPCs (this has now changed) and because previous efforts did not successfully work directly with local/commercial banks in an attempt to get them to lend for EPC and ESCO related activities. This project is different from previous efforts because working with local/commercial banks is at the core of the project strategy.

3. PROJECT RESULTS FRAMEWORK

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| <p>This project will contribute to achieving the following Country programme Outcome as defined in CPAP or CPD:</p> <p>Outcome # 10: Government adopts policy frameworks and mechanisms adopted to ensure reversal of environmental degradation, climate change mitigation and adaptation, and prevention and response to natural and man-made disasters.</p> |
| <p>Country Programme Outcome Indicators:</p> <p>Indicator 1: Number of newly adopted environmental policy frameworks.</p> <p>Indicator 2: Number of active green investment schemes (GIS) and energy efficient (EE) projects.</p> <p>Indicator 3: % of national budget allocated to environment and energy sectors.</p> |
| <p>Primary applicable Key Environment and Sustainable Development Key Result Area (same as that on the cover page):</p> <p>Output 6: National and local capacities for climate change resilient policies and practices enhanced</p> |
| <p>Applicable GEF Strategic Objective and Programme: To promote investment in energy efficiency technologies.</p> |
| <p>Applicable GEF Expected Outcomes: Total avoided GHG emissions from implementing energy efficiency measures in public buildings.</p> |
| <p>Applicable GEF Outcome Indicators: Avoided GHG emissions from implementing energy efficiency measures in public buildings (tons CO₂) and \$/t CO₂.</p> |

| | Indicator | Baseline | End of Project Targets | Sources of Verification | Risks and Assumptions |
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| Objective | | | | | |
| To assist the Government in addressing the barriers to transform the market for investments in energy efficiency in public buildings in the country. | Emission reductions (in tCO ₂ over 20-yr timeline). Investment in energy | The building sector (housing, institutional/communal and commercial) consumes about 40% of total heat and 25% of all electricity in | 8,893 tons of CO ₂ reduced over 20-year equipment lifetime. Indirect post-project GHG reduction of 1,440,000 tons of CO ₂ . | Project's annual reports, GHG monitoring and verification reports. | Continued commitment of project partners, including Government agencies and private |

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| | <p>efficiency.</p> <p>Energy saved by capacity installed (MWh/MWh_{Th}).</p> <p>Number of green jobs created.</p> | <p>Ukraine making it a major contributor to greenhouse gas emissions.</p> <p>Energy consumption in existing buildings is on average approximately four times higher than that in Western European countries.</p> <p>No investment taking place to improve energy efficiency in existing buildings.</p> | <p>Investment of \$ 21 million from ESCOs.</p> <p>3,000 green jobs created.</p> | <p>Project mid-term review and terminal evaluation reports that provide a more accurate estimate of expected CO₂ reduction.</p> | <p>stakeholders.</p> |
| Outcomes | | | | | |
| Outcome 1: Streamlined and comprehensive legal and regulatory framework to promote energy efficiency in public buildings through strengthening of monitoring and enforcement mechanisms. | Existence of adequate policy and regulatory framework. | None available at the present time. | Completed within 12 months of project initiation and approved by Government by the end of year 2. | Published documents. Government decrees/laws. | Commitment of the various Government institutions. |
| Output 1.1: Signature of MoUs with 10 small and medium sized cities in Ukraine to work on ESCO and energy management | Signed MoUs between UNDP and 10 small and medium sized cities in Ukraine to work on ESCO and energy management | No signed MoUs | At least 10 signed MoUs | Signed MoUs | Commitment from the 10 small and medium sized cities to ESCO and energy management |

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| <p>Output 1.2:Support for the preparation of Sustainable Energy Action Plans (SEAPs) and signature of EU Covenant of Mayors (as required)</p> | <p>SEAPs prepared and published for 10 Ukrainian small and medium sized cities</p> | <p>SEAPs have not been prepared EU Covenant of Mayors may not have been signed</p> | <p>SEAPs prepared EU Covenant of Mayors Signed</p> | <p>Published documents</p> | <p>Commitment from the 10 small and medium sized cities to signing EU Covenant of Mayors and SEAP preparation</p> |
| <p>Output 1.3: Development and adoption of secondary legislation to support new law including financial incentives provided to ESCOs to invest in Energy Efficiency in public buildings such as income tax holiday for a specific period of time, duty and tax exemptions on equipment and services they provide.</p> | <p>Existence of secondary regulations to support ESCO market development</p> | <p>At the present time there are no secondary regulations to support the May 2015 Law on ESCO</p> | <p>Completed within 2 years of project initiation.</p> | <p>Project documentation.</p> | <p>Continued interest of stakeholders.</p> |
| <p>Output 1.4: Regulations to support the development of secondary market for EPC contracts in order that the contracts can be sold to investors to provide for further liquidity and additional investment</p> | <p>Existence of secondary regulations concerning sale of EPCs</p> | <p>At the present time there is no secondary legislation to support the sale of EPCs</p> | <p>Completed within 2 years of project initiation.</p> | <p>Project documentation</p> | <p>Continued interest of stakeholders</p> |

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| Output 1.5: Regulations to support the adoption of nation and city wide energy management for public buildings | Existence of secondary regulations concerning city wide energy management systems | At the current time, there are no secondary regulations concerning city wide energy management systems for public buildings | Completed within 2 years of project initiation. | Project documentation | Continued interest of stakeholders |
| Outcome 2: Innovative Financing Mechanism is adopted and capacity development is provided for ESCOs to promote investment in support of Energy Efficiency in public buildings. | Innovative Financing Mechanism established and working. | None exists at the present time. | Completed within 24 months of project initiation and applied by all stakeholders. | Project documentation. | Cooperation of all stakeholders. |
| Output 2.1: Financial Support Mechanism (FSM) established and capitalized to support private investment (ESCO) in Public Buildings in Ukraine. | Financial Support Mechanism (FSM) established and capitalized. | Not available at the present time. No investment taking place at the present time. | Completed within 12 months of project initiation and applied thereafter. \$ 21 million invested in energy efficiency in public buildings. | Project report. Project reports. | Cooperation of public and private sector stakeholders. Continued interest of investors. |
| Output 2.2: Model Municipal EPC Procurement package for launching EPC tenders in selected 10 cities is prepared and launched | Municipal EPC Procurement Package is Available | None presently available. | Completed within 12 months of project initiation. | Project documentation. | Continued cooperation of the public and private sector. |

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| <p>Output 2.3: MOUs signed with banks that are active in small and medium sized cities in Ukraine to use the financial support mechanism</p> | <p>Signed MoUs with banks</p> | <p>None at present</p> | <p>Signed MoU with banks and commercial financing available and accessible for ESCO financing</p> | <p>Interviews with banks</p> | <p>Continued interest of banks in financing ESCO operations in public buildings</p> |
| <p>Output 2.4: Capacity development of and support to banks with standardized banking products to support development of ESCO market using the EPC modality</p> | <p>Training package with standardized banking products prepared and delivered</p> <p>Commercial loan(s) for ESCO are made in Ukraine using the EPC as the security for the loan by the borrower</p> | <p>No standardized banking products for ESCO lending and financing available for banks</p> <p>No commercial loan has ever been given for an EPC in Ukraine, using the EPC as the security to guarantee the loan</p> | <p>Standardized banking products being used by banks in Ukraine to provide financing for ESCO related activities</p> <p>Project has supported the first commercial loan(s) for an ESCO (using market rates and on a project finance basis) are made in Ukraine. (i.e – loan made using the EPC as the guarantee not on the bank of separate assets pledged by the ESCO)</p> <p>This project has supported directly or indirectly Local/Commercial banks to conclude loan agreements with ESCOs and it can be shown that the activities of the</p> | <p>Interviews with banks (including on level of the interest rates)</p> | <p>The level of risk is acceptable to banks in order to provide commercial financing for ESCO market development and for loans using the EPC as the security on the loan</p> |

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| | | | project have contributed to reduced interest rates. | | |
| Output 2.5: Capacity development of and technical support to ESCOs, including setting up of a Help Desk, to implement energy efficiency measures in public buildings using the EPC modality. | Help Desk established. | No such activity at the present time. | Capacity of 20 -30 ESCOs developed and at least 20 cities in Ukraine have energy managers in place using EMIS and funded by government | Project reports | Continued interest of private sector. |
| Outcome 3: Pilot projects in selected public buildings which demonstrate energy and cost-saving potential of new energy efficient measures. | Pilot projects completed. | No such ESCO modality-driven implemented at the present time. | Completed within 48 months of project start. | Project documentation | Growth of programme will be sustained. |
| Output 3.1: ESCO Market Help Guide prepared to support the implementation of EPC energy savings projects in Ukraine in public buildings | ESCO Market help guide completed , focused on ESCOs support for investments in public buildings and on commercial financing for ESCO activities working with local banks | No ESCO Market Help Guide exists | Completed within 24 months of the start of the project | Project Documentation | Continued interest of stakeholders |
| Output 3.2: At least 20 energy audits carried out in schools, kindergartens, hospitals, and administrative government buildings | Audit completion reports. | None available at the current time. | Completed within 12 months of the start of the project | Published Reports | Commitment of the various municipal authorities |

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| Output 3.3: Pilot projects in schools, kindergartens, hospitals and administrative government buildings using the ESCO/EPC modality. | 20 energy audits completed. 10 pilot EPC projects completed. | None at the present time. | At least 20 energy audits and 10 pilot EPC projects completed within 48 months of project initiation. | Project documentation. | Support of concerned municipal authorities. |
| Output 3.4: Capacity development of designated “Energy Managers” to monitor energy use in public buildings through EMIS and propose/implement necessary energy efficiency measures. | Capacity available. | Not available at the present time. | Capacity of 40-50 “Energy Managers” developed and Energy Managers are employed in at least 20 cities across Ukraine | Training manual. Project reports. | Interest and willingness of designated “Energy Managers” to participate. |
| Output 3.5: Walk-through days with senior public officials to view the demonstration projects. | 20 walk-through days completed. | None at the present time. | Implementation completed 6 months prior to project completion. | Project documentation. | Interest and willingness of senior public officials to participate. |
| Outcome 4: (a): Institutional basis for supporting energy efficiency in public buildings and implementing a nation-wide Energy Information Management System (EMIS) is in place. (b): Documented, disseminated and institutionalized project | Existence of adequate framework. | No such organisational structure exists at the present time Lack of sufficient information to effectively pursue programme. | Organisational structure in place within 24 months of project initiation. At least 20 new cities in Ukraine are implementing EMIS by the end of the project | Project documentation. | Continued support of Government. Growth of programme will be sustained. |

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| results providing a basis for further replication. | | | and at least 5 cities implementing EMIS by the half way point Increased awareness among stakeholders in place to promote and develop the market for energy efficiency in public buildings. | Project terminal report and website. | |
| Output 4.1: Fully mandated and capacitated state agency (SAEEES) with a responsibility to monitor and enforce the energy savings and CO ₂ emission reductions in public buildings through EMIS and with approved annual budget to carry out this function. | Existence of adequate framework. | No monitoring and/or enforcement undertaken at the present time. | Monitoring/enforcement activities completed at 40 - 50 public buildings 6 months prior to project completion. | Monitoring/enforcement reports. | Continued interest and participation of Government. |
| Output 4.2: An approved national energy audit programme for promoting larger number of energy audits of public buildings with approved budget. | Existence of national audit programme. | None exists at the present time. | Completed within 12 months of project completion. | Project documentation. | Continued public-private sector partnership. |
| Output 4.3: Developed and published public awareness raising materials and completed nation-wide awareness and | Availability of reports. | Lack of information on best practices and lessons learned. | Completed within 3 months of project end. | Project documentation available in print | Successful completion of project. |

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| information campaign advocating the benefits of energy efficiency measures in public buildings (incl. project website). | | | | form and on website. | |
| Output 4.4: National Database of public buildings re. energy consumption established and energy monitoring and information management system put in place to eventually cover all public buildings in Ukraine | Availability of national database on energy consumption in public buildings | No national database on energy consumption in public buildings exists | Completed by the end of the project | National Database on Energy Consumption in Public Buildings | Continued interest of the Government in creating a national database |
| Output 4.5: City Wide Energy Consumption Databases for Public Buildings established and maintained for 10 small and medium sized cities in Ukraine | Availability of city wide energy consumption databases | No city wide energy consumption databases exist | Completed within 24 months of the start of the project | City Wide Database on Energy Consumption in Public Buildings | Continued interest of municipal authorities in energy management |
| Output 4.6: Energy Management Information Systems implemented in at least 10 selected Ukrainian small and mid-size cities which includes installation of meters in all public buildings in the selected cities | Availability of energy management information systems (EMIS) in selected cities | No energy management information systems (EMIS) exist | Completed within 36 months of the start of the project | Existence of energy management information system (EMIS) in selected cities | Continued interest of municipal authorities in energy management |
| Output 4.7: Agreed methodology and sustainable institutional arrangements for annual monitoring of energy | Existence of methodology. | No such arrangements exist at the present time. | Annual monitoring of 20 public buildings 24 | Monitoring reports. | Continued interest and participation of stakeholders. |

| | | | | | |
|---|--------------------------------------|---|--|--|---|
| efficiency in public buildings through adoption and implementation of an Energy Management and Information System (EMIS). | | | months after project initiation. | | |
| Output 4.8: International Conference on energy efficiency in public buildings in Ukraine. | Existence of conference proceedings. | No international conference on energy efficiency held in the country. | Completed within 3 months of project completion. | Proceedings of international conference. | Interest of local and international participants. |

Total Budget and Work Plan

| Award ID: | 00088958 | | | Project ID(s): | 00095405 | | | | | | | |
|---|---|---------|------------|------------------------------|----------------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|----------------|--------------|
| Award Title: | Removing Barriers to increase investment in Energy Efficiency in Public Buildings in Ukraine through the ESCO modality in Small and Medium Sized Cities | | | | | | | | | | | |
| Business Unit: | UKR 10 | | | | | | | | | | | |
| Project Title: | Removing Barriers to increase investment in Energy Efficiency in Public Buildings in Ukraine through the ESCO modality in Small and Medium Sized Cities | | | | | | | | | | | |
| PIMS no. | 4114 | | | | | | | | | | | |
| Implementing Partner (Executing Agency) | Ministry of Regional Development, Construction, Housing and Communal Services (MinRegion). | | | | | | | | | | | |
| GEF Outcome/ Atlas Activity | Responsible Party/ Implementing Agency | Fund ID | Donor Name | Atlas Budgetary Account Code | ATLAS Budget Description | Amount Year 1 (USD) | Amount Year 2 (USD) | Amount Year 3 (USD) | Amount Year 4 (USD) | Amount Year 5 (USD) | Total (USD) | Budget Notes |
| Outcome 1: Streamlined and comprehensive legal and regulatory framework to promote energy efficiency in public buildings through strengthening of monitoring and enforcement mechanisms. | MinRegion | 62000 | GEF | 71200 | International Consultants | 100,000 | 75,000 | 75,000 | 75,000 | 75,000 | 400,000 | 1 |
| | | | | 71300 | Local Consultants | 60,000 | 40,000 | 40,000 | 30,000 | 30,000 | 200,000 | 2 |
| | | | | 71600 | Travel | 30,000 | 30,000 | 20,000 | 20,000 | 20,000 | 120,000 | 3 |
| | | | | 72100 | Contractual Services - Companies | 100,000 | 100,000 | 0 | 0 | 0 | 200,000 | 4 |
| | | | | 74200 | Audio Visual&Print Prod. Costs | 10,000 | 10,000 | 10,000 | 10,000 | 10,000 | 50,000 | 5 |
| | | | | 75700 | Training, Workshops and Confer | 5,000 | 10,000 | 10,000 | 10,000 | 10,000 | 45,000 | 6 |
| | | | | 74500 | Miscellaneous | 5,000 | 5,000 | 5,000 | 5,000 | 5,000 | 25,000 | 7 |

| | | | | | | | | | | | | |
|---|------------------|-------|-----|-------|----------------------------------|----------------|----------------|----------------|----------------|----------------|------------------|-----------|
| | | | | | Total Outcome 1 | 310,000 | 270,000 | 160,000 | 150,000 | 150,000 | 1,040,000 | |
| Outcome 2: Innovative Financing Mechanism is adopted and capacity development is provided for ESCOs to promote investment in support of Energy Efficiency in public buildings. | MinRegion | 62000 | GEF | 74100 | Professional Services | 161,000 | 219,000 | 235,000 | 60,000 | 25,000 | 700,000 | 8 |
| | | | | | Total Outcome 2 | 161,000 | 219,000 | 235,000 | 60,000 | 25,000 | 700,000 | |
| Outcome 3: Pilot projects in selected public buildings which demonstrate energy and cost-saving potential of new energy efficient measures. | MinRegion | 62000 | GEF | 71200 | International Consultants | 75,000 | 25,000 | 50,000 | 50,000 | 50,000 | 250,000 | 9 |
| | | | | 71300 | Local Consultants | 25,000 | 25,000 | 20,000 | 20,000 | 20,000 | 110,000 | 10 |
| | | | | 72100 | Contractual Services Companies | 175,000 | 100,000 | 150,000 | 225,000 | 15,000 | 665,000 | 11 |
| | | | | 71600 | Travel | 10,000 | 20,000 | 15,000 | 15,000 | 15,000 | 75,000 | 12 |
| | | | | 72200 | Equipment and Furniture | 150,000 | 550,000 | 550,000 | 200,000 | 130,000 | 1,250,000 | 13 |
| | | | | 74500 | Miscellaneous | 10,000 | 5,000 | 5,000 | 5,000 | 5,000 | 30,000 | 14 |
| | | | | | Total Outcome 3 | 515,000 | 325,000 | 790,000 | 515,000 | 235,000 | 2,380,000 | |
| Outcome 4: (a) Institutional basis for supporting energy efficiency in public buildings and implementing a nation-wide Energy Information | MinRegion | 62000 | GEF | 71200 | International Consultants | 135,000 | 72,000 | 58,000 | 33,000 | 58,000 | 356,000 | 15 |
| | | | | 71300 | Local Consultants | 55,000 | 30,000 | 30,000 | 30,000 | 30,000 | 175,000 | 16 |
| | | | | 71600 | Travel | 10,000 | 10,000 | 10,000 | 10,000 | 10,000 | 50,000 | 17 |
| | | | | 74200 | Audio Visual&Print Prod Costs | 54,000 | 20,000 | 40,000 | 25,000 | 15,000 | 154,000 | 18 |
| | | | | 72100 | Contractual Services – Companies | 100,000 | 100,000 | 75,000 | 50,000 | 25,000 | 350,000 | 19 |

| | | | | | | | | | | | | |
|---------------------------|------------------|-------|-----|-------|--------------------------------|------------------|------------------|----------------|----------------|------------------|------------------|----|
| | | | | 74500 | Miscellaneous | 3,000 | 3,000 | 3,000 | 3,000 | 3,000 | 15,000 | 20 |
| | | | | | Total Outcome 4 | 357,000 | 235,000 | 216,000 | 151,000 | 141,000 | 1,100,000 | |
| Project Management | MinRegion | 62000 | GEF | 71400 | Contractual Services - Individ | 27,500 | 27,500 | 27,500 | 27,500 | 27,500 | 137,500 | 21 |
| | | | | 74100 | Professional Services | 0 | 0 | 0 | 15,000 | 0 | 15,000 | 22 |
| | | | | 74598 | Direct Project Cost - GOE | 6,500 | 6,500 | 6,500 | 4,000 | 4,000 | 27,500 | 23 |
| | | | | 64398 | Direct Project Cost - Staff | 16,000 | 16,000 | 16,000 | 16,000 | 16,000 | 80,000 | |
| | | | | | Total Management | 50,000 | 50,000 | 50,000 | 62,500 | 47,500 | 260,000 | |
| | | | | | 1,393,000 | 1,099,000 | 1,451,000 | 938,500 | 598,500 | 5,480,000 | | |
| PROJECT TOTAL | | | | | | | | | | | | |

Budget Notes:

1. Partial costs of Chief Technical Advisor and consultants for policy/regulatory framework.
2. Local consultants' fees for creation of database of energy consumption in public buildings.
3. International and local travel to project sites.
4. Energy audits and cost-efficiency analyses in 20 buildings
5. Diffusion of strategy document, criteria, etc.
6. Inception Workshop
7. Miscellaneous expenses (office supplies, communication, utilities)
8. Costs for establishment of Innovative Financial Support Mechanism through IFC
9. Fees of Chief Technical Advisor for pilots
10. Local Consultants costs for pilots
11. Costs for pilots construction works and software development
12. Local travel to project sites
13. Purchase of Star-up equipment for pilots.
14. Miscellaneous expenses (office supplies, communication, utilities)
15. Cost of international consultant for EMIS, Mid-Term Review and Terminal Evaluation.
16. Monitoring, Outreach programme and lessons learned.
17. International and local travel to project sites.

- 18. Publication and translations costs
- 19. Costs for Awareness Raising
- 20. Miscellaneous expenses (office supplies, communication, utilities)
- 21. Personnel costs
- 22. Audit Costs
- 23. Direct Project Costs

Summary of Funds^[1]:

| | Amount Year 1 | Amount Year 2 | Amount Year 3 | Amount Year 4 | Amount Year 5 | Total (\$) |
|-------------------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| GEF | 1,304,000 | 988,000 | 1,446,000 | 1,108,500 | 633,500 | 5,480,000 |
| UNDP | 180,000 | 180,000 | 180,000 | 180,000 | 180,000 | 900,000 |
| National Government | 2,669,683 | 2,669,683 | 2,669,683 | 2,669,683 | 2,669,684 | 13,348,416 |
| Private Sector | 3,400,000 | 3,400,000 | 3,400,000 | 3,400,000 | 3400000 | 17,000,000 |
| Bilateral Aid Agencies | 5,084,956 | 5,084,956 | 5,084,956 | 5,084,956 | 5,084,955 | 25,424,779 |
| TOTAL | 12,638,639 | 12,322,639 | 12,780,639 | 12,443,139 | 11,968,139 | 62,153,195 |

^[1] Summary table should include all financing of all kinds: GEF financing, co-financing, cash, in-kind, etc...

4. MANAGEMENT ARRANGEMENTS

The project will be implemented through the NIM execution modality by the Ministry of Regional Development, Construction, Housing and Communal Services (MinRegion) as the National Implementing Partner (NIP). MinRegion will provide office space to the project team as part of its contribution. The Ministry will assign a senior officer as the National Project Director (NPD) to: (i) coordinate the project activities with activities of other Government entities like the Ministry of Ecology and Natural Resources, Oblast Administrations, State Agency on Energy Efficiency and Energy Savings; (ii) certify the expenditures in line with approved budgets and work-plans; (iii) facilitate, monitor and report on the procurement of inputs and delivery of outputs; (iv) approve the Terms of Reference for consultants and tender documents for sub-contracted inputs; and (v) report to UNDP on project delivery and impact.

The National Project Director will be assisted by a Programme Management Unit headed by the International CTA and supported by a National Project Manager (PM). Both the International CTA and the National Project Manager will share one Project Assistant for support for administrative matters. The International CTA supported by the National PM will be responsible for overall project coordination and implementation, consolidation of work plans and project papers, preparation of quarterly progress reports, reporting to the project supervisory bodies, and supervising the work of the project experts and other project staff. The CTA and PM will also closely coordinate project activities with relevant Government and other institutions and hold regular consultations with project stakeholders. In addition, a Project Assistant (PA) will be recruited to support the PM on administrative and financial issues.

The CTA and Project Manager will be supported by the several short and long-term international and national experts/consultants who will support implementation of specific technical assistance components of the project. Contacts with experts and institutions in other countries that have already gained more experience in implementing EE projects, related policies and financial support measures are also to be established.

UNDP will provide the Implementing Partner with the following major support services for the activities of the project in accordance with UNDP corporate regulations, such as: (i) Identification and/or recruitment of project personnel; (ii) procurement of goods and services; (iii) financial services.

As GEF Implementing Agency, UNDP is ultimately accountable and responsible for the delivery of results, subject to their certification by the Ministry of Regional Development, Construction, Housing and Communal Services, as Implementing Partner. UNDP shall provide project cycle management services that will include the following:

- Providing financial and audit services to the project
- Overseeing financial expenditures against project budgets,
- Ensuring that activities including procurement and financial services are carried out in strict compliance with UNDP/GEF procedures,
- Ensuring that the reporting to GEF is undertaken in line with the GEF requirements and procedures,
- Facilitate project learning, exchange and outreach within the GEF family,
- Contract the project mid-term and final evaluations and trigger additional reviews and/or evaluations as necessary and in consultation with the project counterparts.

At the request of the Government of Ukraine, UNDP shall also provide Direct Project Services (DPS) specific to project inputs according to its policies and convenience. These services, and the costs thereof, are specified in the Letter of Agreement in Annex 6. In accordance with GEF requirements, the costs of these services will be part of the executing entity's Project Management Cost allocation identified in the project budget. The management of UNDP Ukraine reserves the right to decide on the most appropriate management arrangements taking into account the political situation in Ukraine.

Through its global network of highly qualified international experts and with support from technical specialists at the UNDP Istanbul Regional Hub, UNDP Ukraine can not only provide exposure to best practices and innovations, tried and tested in other countries of the world, as well as partnerships, it can also bring in practical hands-on experience of concrete development challenges for the benefit of the country, including through the experience of having carried out the UNDP GEF ESCO Rivne project and learned important lessons which will be applied to this project. UNDP Ukraine will be responsible for the overall management of the project and, in particular, for achieving the expected outputs. UNDP will also be accountable for the use of project resources. The Project's management arrangements are designed using the PRINCE2 project management methodology. PRINCE2 has been adopted globally by UNDP as the standard methodology to be used in managing all UNDP projects.

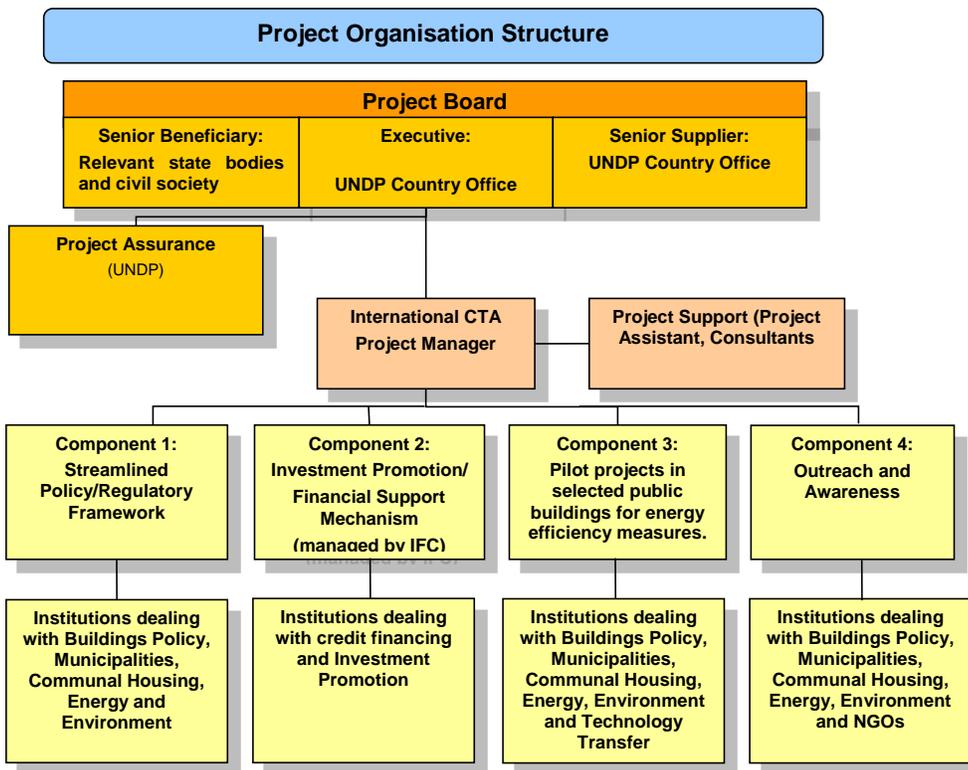
Project Board: The Project Board is responsible for making, on a consensus basis, management recommendations for a project when guidance is required by the International CTA and the National Project Manager. The Project Board will meet at least once per year. In particular, the Project Board will have the responsibility to review/endorse project documents and revisions thereto, annual work plans, quarterly and annual project reports. It is envisaged that the following organizations and institutions will be represented on the Project Board: Ministry of Regional Development, Construction, Housing and Communal Services, State Agency on Energy Efficiency and Energy Saving, and Ministry of Ecology and Natural Resources, Ministry of Economy, Representatives of Oblast Administrations and UNDP. Representatives of the NGO community (e.g. Association of Energy Auditors, "Krona", the Ukrainian Women's Fund, La-Strada, School of Equal Opportunities, All-Ukrainian Women Centre of Information and Social-Economic Adaptation, etc.) as well as those of the private sector may be invited to participate as observers.

The Project Board has three roles:

Executive representing the project ownership to chair the group. For this project, the Resident Representative will assume the role of Project Board Executive.

1. Senior Supplier role to provide guidance regarding the technical feasibility of the project. This role will be assumed by UNDP's Deputy Resident Representative2
2. Senior Beneficiary role to ensure the realization of project benefits from the perspective of project beneficiaries. This role will be fulfilled by relevant line ministries, as well as regional and local government. To discuss the strategic issues of the project activities and its impact, and to ensure that best available international and national expertise is given due consideration in formulating the project strategy, the Project Board may decide to invite to its meetings other stakeholders.
3. Project Assurance: The Project Assurance role supports the Project Board by carrying out objective and independent project oversight and monitoring functions. This role ensures appropriate project management milestones are managed and completed. This role will be performed by relevant UNDP Ukraine Programme Managers.

Finally, the UNDP CO will provide specific support services for proper project implementation, as required, through its Administrative, Programme and Finance Units and through support from the Istanbul Regional Service Centre. Specific support services will include support for annual PIR review (project implementation review), mid-term review and final evaluation. An organogram representing the implementation arrangement is presented below.



Project implementation will be governed by the provisions of the present Project Document and Programme and Operations Policy and Procedure (POPP). UNDP Ukraine will maintain oversight and management of the overall project budget, utilizing a direct payment modality.

5. MONITORING AND EVALUATION

UNDP Ukraine will be responsible for monitoring and evaluation (M&E), including organizing project evaluations, approving annual implementation work plans and budget revisions, monitoring progress, identifying problems and suggesting remediating actions, facilitating timely delivery of project outputs and supporting the coordination and networking with other related initiatives and institutions in the country and in the region.

During implementation, proper care will be exercised to have adequate communication and co-ordination mechanisms in place to ensure that areas of common interest can be addressed in a cost-efficient way.

The project will be monitored through the following M&E activities. The M&E budget is provided in the table below.

Project start:

A Project Inception Workshop will be held within the first 2 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 and it will absolutely essential to invite to the inception workshop both banks and ESCOs as well as the selected municipal partners of the project.

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 RCU staff 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 plan. 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 organisation 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. Note that for UNDP GEF projects, all financial risks associated with financial instruments such as revolving funds, microfinance schemes, or capitalization of ESCOs are automatically classified as critical on the basis of their innovative nature (high impact and uncertainty due to no previous experience justifies classification as critical).

- Based on the information recorded in Atlas, a Project Progress Reports (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 (30 June to 1 July). 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 UNDP 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 Review at the mid-point of project implementation around September/October 2015. The Mid-Term Review 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 review will be decided after consultation between the parties to the project document. The Terms of Reference for this Mid-term review 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 Centre \(ERC\)](#).

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

End of Project:

An independent Final 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 review, 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 Final 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, analyse, 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 also 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.

Where other agencies and project partners have provided support through co-financing, their branding policies and requirements should be similarly applied.

Monitoring and Evaluation (M&E) Work Plan and Estimated Associated Budget.

| Type of M&E activity | Responsible Parties | Budget US\$ <i>Excluding project team staff time</i> | Time frame |
|---|--|---|---|
| Inception Workshop and Report | <ul style="list-style-type: none"> ▪ CTA, Project Manager ▪ UNDP CO, UNDP GEF | Indicative cost: 12,000 | Within first two months of project start up |
| Measurement of Means of Verification of project results. | <ul style="list-style-type: none"> ▪ UNDP GEF RTA/ CTA/ Project Manager 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. | <ul style="list-style-type: none"> ▪ Oversight by CTA, Project Manager ▪ Project team | 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 | <ul style="list-style-type: none"> ▪ CTA, Project Manager and team ▪ UNDP CO ▪ UNDP RTA ▪ UNDP EEG | None | Annually |
| Periodic status/ progress reports | <ul style="list-style-type: none"> ▪ CTA, Project Manager and team | None | Quarterly |
| Mid-term Review | <ul style="list-style-type: none"> ▪ CTA, Project Manager and team ▪ UNDP CO ▪ UNDP RCU ▪ External Consultants (i.e. evaluation team) | Indicative cost : 25,000 | At the mid-point of project implementation. |
| Terminal Evaluation | <ul style="list-style-type: none"> ▪ CTA, Project Manager and team, ▪ 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 | <ul style="list-style-type: none"> ▪ CTA, Project Manager and team ▪ UNDP CO ▪ local consultant | 0 | At least three months before the end of the project |
| Audit | <ul style="list-style-type: none"> ▪ UNDP CO ▪ CTA, Project Manager and team | Indicative cost per year: \$ 3,000 (Total: \$ 15,000) | Yearly |
| Visits to field sites | <ul style="list-style-type: none"> ▪ UNDP CO ▪ UNDP RCU (as appropriate) | For GEF supported projects, paid from IA | Yearly |

| Type of M&E activity | Responsible Parties | Budget US\$ <i>Excluding project team staff time</i> | Time frame |
|--|--|---|------------|
| | <ul style="list-style-type: none"> ▪ Government representatives | fees and operational budget | |
| TOTAL indicative COST Excluding project team staff time and UNDP staff and travel expenses | | US\$ 77,000 | |

6. LEGAL CONTEXT

This document together with the CPAP signed by the Government and UNDP which is incorporated by reference constitute together a Project Document as referred to in the SBAA and all CPAP provisions apply to this document.

Consistent with the Article III of the Standard Basic Assistance Agreement, the responsibility for the safety and security of the implementing partner and its personnel and property, and of UNDP's property in the implementing partner's custody, rests with the implementing partner.

The implementing partner shall:

- a) put in place an appropriate security plan and maintain the security plan, taking into account the security situation in the country where the project is being carried;
- b) assume all risks and liabilities related to the implementing partner's security, and the full implementation of the security plan.

UNDP reserves the right to verify whether such a plan is in place, and to suggest modifications to the plan when necessary. Failure to maintain and implement an appropriate security plan as required hereunder shall be deemed a breach of this agreement.

The implementing partner agrees to undertake all reasonable efforts to ensure that none of the UNDP funds received pursuant to the Project Document are used to provide support to individuals or entities associated with terrorism and that the recipients of any amounts provided by UNDP hereunder do not appear on the list maintained by the Security Council Committee established pursuant to resolution 1267 (1999). The list can be accessed via <http://www.un.org/Docs/sc/committees/1267/1267ListEng.htm>. This provision must be included in all sub-contracts or sub-agreements entered into under this Project Document.

Audit Clause: The project will be subject to an annual audit that will be conducted in accordance with UNDP Financial Rules and Regulations, and applicable audit policies for UNDP projects.

7. ANNEXES

Annex 1 – Offline risk log

Annex 2 – Terms of Reference

Annex 3 – Letters of Co-financing and Support from the Government

Annex 4 – List of some so-called ESCOs in Ukraine

Annex 5 – List of potential pilot projects and candidate sites for energy audits.

Annex 6 – Direct Project Costs

ANNEX 1: OFFLINE RISK LOG

| # | Description | Date identified | Type | Impact & Probability | Countermeasures / Mgt response | Owner | Submitted, updated by | Last Update | Status |
|----|---|-------------------------|--------|----------------------|---|----------------|-----------------------|-------------|--------|
| 1. | Political: Lack of political will to adopt a necessary policy and legal/regulatory framework. | During PIF formulation. | Policy | P = 4 I = 4 | This issue is of concern: there are several draft laws that have been formulated by MinRegion, with the support of the donor community and these are awaiting approval by the Verkhovna Rada, not because of a lack of political will, but because of the Rada's other pressing priorities in dealing with the conflict situation in the eastern part of the country. However, there were very recently some positive developments when 2 draft laws dealing with multi-year budgeting and operation of ESCOs, respectively, went through their first reading in the Verkhovna Rada. Also, some improvement of the situation in the eastern part of the country is on the horizon, assuming that the new ceasefire holds. There are several donors active in energy efficiency in the country and this "coalition" has been working together to nudge the Government into encouraging and supporting investment in energy efficiency in the buildings sector, focusing mainly in the western "quiet" part of the country. | CO to monitor. | | | |

| # | Description | Date identified | Type | Impact & Probability | Countermeasures / Mgt response | Owner | Submitted, updated by | Last Update | Status |
|----|---|-------------------------|-------------|----------------------|--|----------------|-----------------------|-------------|--------|
| 2. | Institutional: Apprehension that the likelihood of a programme for energy efficiency in buildings may not take off. | During PIF formulation. | Policy | P = 3 I = 3 | MinRegion is fully committed to implementing energy efficiency measures in all buildings in Ukraine, irrespective of old and new ones. To achieve this, it benefits from the support of its multilateral partners who, in addition to implementing pilot projects, have assisted and are assisting the Ministry to move forward with having the right regulatory and institutional framework in place. | CO to monitor. | | | |
| 3. | Technology failure. | During PIF formulation. | Technical | P = 2 I = 2 | Energy Efficiency measures/technologies for the buildings sector are generally well known and are widely used in the rest of the world, including in neighbouring EU countries. The project will be designed and implemented to identify, transfer and adopt best available energy efficiency technologies and practices in Ukraine. | CO to monitor. | | | |
| 4. | Environmental/ Climate Change | During PIF formulation. | Operational | P = 3 I = 3 | Coal, gas and oil constituted 78% of the country's total energy supply in 2012 and any environmental or climate change will have little effect on this energy supply mix, although the share of each energy source may be subject to change. However, implementation of energy efficiency measures will have a | CO to monitor. | | | |

| # | Description | Date identified | Type | Impact & Probability | Countermeasures / Mgt response | Owner | Submitted, updated by | Last Update | Status |
|----|---|-------------------------|---------------|----------------------|--|----------------|-----------------------|-------------|--------|
| | | | | | positive effect on the total amount of this energy being utilised, resulting in a decrease in GHG emissions. | | | | |
| 5. | Financial: Lack of commitment from private and public sector to invest in energy efficiency in public buildings and for banks in Ukraine to lend for ESCO type activities using the EPC contract as the guarantee on the loan | During PIF formulation. | Operational | P = 4 I = 4 | Already during the project design stage several potential investors signified their interest and commitment to invest in energy efficiency in public buildings provided a conducive and appropriate investment environment is created, including the law allowing ESCOs to operate in the country and the budget code be amended to allocate for multi-year budgeting. As an additional incentive, the project will establish a Financial Support Mechanism to provide confidence to investors/developers that they will receive payment for energy efficiency services that they provide to public buildings. A key effort and focus of the project will need to be on working with local banks to encourage them to lend for ESCO/EPC activities, to facilitate commercial lending with the EPC as the guarantee on the loan and to bring down interest rates over time. | CO to monitor. | | | |
| 6. | Insufficient Information and Awareness of | During PIF formulation. | Environmental | P = 2 I = 2 | Development and implementation of a nation-wide Energy Management Information System | CO to monitor. | | | |

| # | Description | Date identified | Type | Impact & Probability | Countermeasures / Mgt response | Owner | Submitted, updated by | Last Update | Status |
|----|---|-----------------|-------------|----------------------|--|----------------|-----------------------|-------------|--------|
| | Public Officials on actual benefits of implementing energy efficiency measures un buildings. | | | | for public buildings in the country. In addition, at least 20 walk-throughs of the pilot projects will be organized for senior Government officials who regularly participate in decision-making in budget allocation and technical specifications for public buildings. This will, no doubt, raise their awareness in energy efficiency measures in public buildings and assist them in making the right decisions beneficial both to the national economy and the environment. | | | | |
| 7. | Political Risk: Instability and armed conflict makes investment in Ukraine highly unattractive for investors to invest using EPC modality in EE in Public Buildings | PIF Formulation | Operational | P = 4 I = 4 | The project will be implemented using Direct Implementation Modality (DIM). By using the DIM modality the CO is improving the chances of the project being able to be successful while operating in a difficult political situation. It is hoped that during the lifetime of this project that this political risk will be significantly reduced. | CO to monitor. | | | |

P = Probability on a scale from 1 (low) to 5 (high). I = Impact on a scale from 1 (low) to 5 (high).

ANNEX 2: TERMS OF REFERENCE

The PMU will have a maximum of five full time positions, an international CTA, a Project Manager, a Task Leader on ESCO Market Development, a Task Leader on Energy Management, and a Project Assistant. Additional support to the PMU will be provided by part-time national and international consultants, as required.

I. Project Manager

| | |
|-------------------------|--|
| Post title: | National Project Manager (Full-time) |
| Office: | Project Management Unit (PMU) |
| Organisation: | MinRegion |
| Duration of Employment: | One year with possibility of extension |
| Duty station: | Kyiv, Ukraine |

II. Duties

Under the Supervision of the Head of the Sustainable Development Cluster of UNDP Ukraine and the International CTA the National Project Manager will

- Lead, manage and coordinate the day-to-day activities of the PMU to be established within MAPF including administration, accounting, technical expertise, and actual project implementation and reporting;
- Take a lead role in ensuring that at least 10 MoUs are signed between UNDP and 10 different small and medium sized cities, at the start of the project
- Manage the Task Leader on ESCO Market Development, the Task Leader on Energy Management in Public Buildings, and the Project Assistant
- Lead the development of project design including preparation of consultants’ and sub-contractors’ terms of reference, identification and selection of national and international sub-contractors/consultants, cost estimation, time scheduling, contracting, and reporting on project activities and budget;
- Take a lead role in the operationalization of the FSM (financial support mechanism)
- Take a lead role to ensure that at least 10 cities in Ukraine use EMIS by the end of the project
- Take a lead role to ensure that at least 10 EPC contracts have been signed in 10 different cities by the end of the project
- Monitor and follow-up on the status of delivery by consultants, sub-contractors, etc.
- Coordinate activities of consultants including contract management, direction and supervision of field operations, logistical support, review of technical outputs/reports, measurement/assessment of project achievements and cost control;
- Assist in the design, supervision and outreach activities of the project;
- Provide technical support to energy efficiency policy discussions and development;
- Act as a liaison/facilitator among the various stakeholders, including the private sector, international and national partners;
- Assume responsibility for the quality and timing of project outputs;
- Establish and maintain relationships and act as the key focal point with UNDP CO to ensure that all programming, financial and administrative matters related to the project are transparently, expediently and effectively managed, in line with established UNDP Rules and Regulations.
- Undertake other management duties that contribute to the effective implementation of the project.

| | |
|--|--|
| <ul style="list-style-type: none"> • Reports to both the International CTA and to the Head of the Sustainable Development Cluster, UNDP Ukraine | |
| III. Qualifications and Experience | |
| Education: | <ul style="list-style-type: none"> • Master's degree or equivalent in engineering, economics, international development, social sciences, public administration, business, or other relevant field. |
| Experience: | <ul style="list-style-type: none"> • Minimum of 5 years of experience in management, preferably in the energy field. • Proven ability to draft, edit and produce written proposals and results-focussed reports. • Proven experience working with Government, civil society, international organizations or donors in combination with the knowledge of economic and financial analysis, institutional, regulatory and policy frameworks. • Good knowledge of and experience GEF Climate Change issues, operational modalities and familiarity with UNDP-GEF procedures would be an advantage; • Familiarity with UNDP rules, regulations and administrative procedures; • Prior knowledge and experience of the political, social and environmental factors and issues related to energy development and climate change mitigation in island countries; • Experience in the use of computers and office software packages (MS Word, Excel, etc.) |
| Language Requirements: | <ul style="list-style-type: none"> • Excellent Ukrainian, Russian and English, both written and oral. |

2. Task Leader on ESCO Market Development

| | |
|-------------------------|--|
| Post title: | Task Leader on ESCO Market Development (Full-time) |
| Office: | Project Management Unit (PMU) |
| Organisation: | MinRegion |
| Duration of Employment: | One year with possibility of extension |
| Duty station: | Kyiv, Ukraine |

II. Duties

Under the Supervision of the Project Manager and the International CTA, the Task Leader on ESCO Market Development will:

- Lead, manage and coordinate the activities of the project related to ESCO market development
- Lead the development of the ESCO Help Guide including providing substantive inputs and contributions to the guide, writing much of the guide himself/herself, and making sure that work on the Guide starts shortly after the task leader has been contracted
- Provide support related to the development of secondary regulations to support the development of the ESCO market in Ukraine
- Work with 10 selected small and medium sized cities in Ukraine to support ESCO market development including support for launching at least 10 EPC municipal tenders to select companies to carry out the ESCO investments in public mechanism

- Take a lead role in ensuring that the UNDP-IFC financial support mechanism is used to support the demonstration projects, envisaged under this project
- Assume responsibility for the quality and timing of project outputs related to ESCO market development;
- Support the development of capacity building, training, and awareness related activities related to ESCO market development in Ukraine
- Participate in seminars, workshops, conferences related to energy-efficiency in public buildings in Ukraine with a focus on ESCO market development
- Undertake other duties that contribute to the effective implementation of the project.
- Reports to the Project Manager and the International CTA

III. Qualifications and Experience

| | |
|------------------------|---|
| Education: | <ul style="list-style-type: none"> • Master's degree or equivalent in engineering, economics, international development, social sciences, public administration, business or other relevant field. |
| Experience: | <ul style="list-style-type: none"> • Minimum of 5 years of experience in management, preferably in the energy field. • Proven ability to draft, edit and produce written proposals and results-focused reports. • Excellent understanding of the concept of ESCO, its possibilities and limitations, as demonstrated on the interview (detailed understanding of the ESCO modality) • Proven experience working with Government, civil society, international organizations or donors in combination with the knowledge of economic and financial analysis, institutional, regulatory and policy frameworks. • Prior knowledge and experience of the political, social and environmental factors and issues related to energy development and climate change mitigation in island countries; • Experience in the use of computers and office software packages (MS Word, Excel, etc.) |
| Language Requirements: | <ul style="list-style-type: none"> • Excellent Ukrainian, Russian and English, both written and oral. |

3. Task Leader on Energy Management in Public Buildings

| | |
|-------------------------|--|
| Post title: | Task Leader on Energy Management in Public Buildings (Full-time) |
| Office: | Project Management Unit (PMU) |
| Organisation: | MinRegion |
| Duration of Employment: | One year with possibility of extension |
| Duty station: | Kyiv, Ukraine |

II. Duties

Under the Supervision of the Project Manager, and the international CTA the Task Leader on energy management in public buildings will:

- Lead, manage and coordinate the activities of the project related to energy management in public buildings

- Support the appointment of energy managers in the participating cities and working closely with the energy managers to ensure that activities and outputs are carried out in a timely manner. This includes organizing meetings every three months with the energy managers in order to coordinate work and inputs
- Lead the work related to undertaking at least 20 energy audits in the 10 selected small and medium sized cities in Ukraine
- Lead the work related to the establishment of a national energy consumption database for all public buildings in Ukraine
- Lead the work related to the establishment of a national energy management information system (EMIS) for Ukraine, including the appointment of the relevant State Agency responsible for its maintenance and upgrading
- Lead the work to ensure that all cities participating in the project have a city wide database of energy consumption in place , with the support of the project
- Assume responsibility for the quality and timing of project outputs related to energy management on the project including the utilization of an energy management information system in each of the participating cities
- Support the development of capacity building, training, and awareness related activities related to energy management in public buildings in Ukraine
- Participate in seminars, workshops, conferences related to energy-efficiency in public buildings in Ukraine with a focus on energy management in public buildings
- Undertake other duties that contribute to the effective implementation of the project.
- Reports to the Project Manager and the International CTA

III. Qualifications and Experience

| | |
|------------------------|--|
| Education: | <ul style="list-style-type: none"> • Master's degree or equivalent in engineering, economics, international development, social sciences, public administration, business, or other relevant field. |
| Experience: | <ul style="list-style-type: none"> • Minimum of 5 years of experience in management, preferably in the energy field. • Proven ability to draft, edit and produce written proposals and results-focussed reports. • Excellent understanding of the concept of energy management in public buildings and, if possible, prior experience working with energy management information systems • Proven experience working with Government, civil society, international organizations or donors in combination with the knowledge of economic and financial analysis, institutional, regulatory and policy frameworks. • Prior knowledge and experience of the political, social and environmental factors and issues related to energy development and climate change mitigation in island countries; • Experience in the use of computers and office software packages (MS Word, Excel, etc.) |
| Language Requirements: | <ul style="list-style-type: none"> • Excellent Ukrainian, Russian and English, both written and oral. |

4. Project Assistant

| I. Position Information | |
|---|--|
| Post title: | Project Assistant (Full-time) |
| Office: | Project Management Unit (PMU) |
| Organisation: | MinRegion |
| Duration of Employment: | One year with possibility of extension |
| Duty station: | Kyiv, Ukraine |
| II. Functions | |
| Under the overall supervision of both the International CTA and the National Project Manager, the Project Assistant will: | |
| <ul style="list-style-type: none">• Support the activities of international/national experts, potential investors and sub-contractors;• Provide administrative support re. typing, filing, arranging visas for international experts/sub-contractors, maintaining project's financial records, etc.;• Administer project accounting as per UNDP procedures;• Assist the Project Manager in organising workshops, meetings of the Project Board and other events.• Assist in procurement of goods and services;• Draft letters of invitation and agendas for meetings of Project Board/workshops;• Prepare background information, briefing materials, reports, etc., as required;• Draft minutes of meetings, monitor/follow-up on actions required. | |
| III. Qualifications and Experience | |
| Education: | |
| <ul style="list-style-type: none">• Higher education in economics, management, accounting, finance or other related field.• Specialized training in finance is desirable | |
| Experience: | |
| <ul style="list-style-type: none">• 3 years of relevant administrative, accounting and financial experience at national and/or international level.• Experience in the usage of computers and office software packages (MS Word, Excel, etc.).• Previous experience of working for nationally executed programme (s) funded by bilateral/multilateral organisations.• Practical experience in procurement working with an international organization or with a large company will be an asset. | |
| Language Requirements: | |
| <ul style="list-style-type: none">• Excellent Ukrainian, Russian and English, both written and oral. | |

5. International Chief Technical Adviser

| | |
|-------------------------|---|
| Post title: | International Chief Technical Adviser (P4) |
| Office: | Project Management Unit (PMU) |
| Organisation: | Min Region |
| Duration of Employment: | One year, (220 working days per annum) renewable based upon performance |
| Duty station: | Kyiv, Ukraine |

II. Duties

Under the overall supervision of the National Project Director, the International Chief Technical Adviser will:

- Work closely with the National PM in coordinating and facilitating inputs of government agencies, partner organizations, scientific and research institutions, subcontractors, and national and international experts in a timely and effective manner;
- Participate effectively in the donor coordination meetings on energy-efficiency in public buildings, held in Kiev every three months, to coordinate the work of this project more closely with the work of other donors
- Supervise the work of the National PM, the Task Leader on ESCO Market Development, the Task Leader on Energy Management, and the Project Assistant, and provide overall guidance and support to their activities
- Provides continued, significant, and ongoing support to the design, establishment and implementation of the Financial Support Mechanism (FSM) working closely with IFC which includes working with both IFC and with the local banks that the FSM chooses to partner with
- Work very closely with selected local banks to deliver training and capacity building activities related to ESCO and EPC with a goal of facilitating their lending to ESCOs
- Provide guidance and assistance to the PM and project staff to ensure that the project activities conform to the approved project document and ensure that effective adaptive management takes place;
- Assist the PM during the initial 2 months of the project, in the preparation of an “inception report” which will elaborate on the project Logical Framework Matrix and planned project activities, the 1st year Annual Work Plan and Budget, ToRs for key project staff, and an M&E plan;
- Assist the PMU in development of relevant ToRs and recruitment/mobilization of qualified national and international experts and organizations as needed to provide specific consultancy and engineering services;
- In close cooperation with the PMU and UNDP’s Focal Point on Energy and Environment, and in consultation with the project partner organizations and stakeholders, prepare Annual Project Work Plans to be agreed upon by the Project Board (PB);
- Provide “on-the-job” technical guidance and mentoring to the PMU in order to strengthen their capacity to effectively implement the technical aspects of the project;
- Support the PM in reporting to the PB on the progress of project implementation and achievement of project results in accordance with the project’s logical framework matrix;
- Support the PMU in project-related meetings, as required;
- Review reports of national and international consultants, project budget revisions, and administrative arrangements as required by UNDP/GEF procedures;
- Assist the PM in the development of a concrete Monitoring and Evaluation Plan at the outset of the project (within inception report);
- Support the PM in preparing project progress reports, information releases, as well as monitoring and review reports in accordance with UNDP/GEF monitoring and evaluation rules and procedures;
- Support the PM in the preparation and implementation of mid-term and final Independent Evaluation Missions (TOR’s, identification and recruitment of appropriate candidates, organization of missions, joint field missions and discussion with evaluators, etc.);
- Support UNDP CO staff on their annual monitoring visits to project sites.
- Reports to the Head of the Sustainable Development Cluster, UNDP Ukraine

| III. Qualifications and Experience | |
|---|--|
| Education: | <ul style="list-style-type: none"> • Postgraduate degree in energy/renewable energy development. |
| Experience: | <ul style="list-style-type: none"> • Minimum ten years of experience in implementing or providing policy advice related to energy efficiency projects, if possible, using the ESCO/EPC modality, in combination with knowledge of economic and financial analysis, institutional, regulatory and policy frameworks; • Good knowledge of and experience with GEF Climate Change issues, operational modalities and familiarity with UNDP-GEF procedures would be an advantage; • Familiarity with UNDP rules, regulations and administrative procedures would also be an advantage; • Prior knowledge and experience of the political, social and environmental factors and issues related to energy development and climate change mitigation in Eastern Europe, preferably in Ukraine; • Computer proficiency, especially related to professional office software packages; • If previous experience working with UNDP on an ESCO project in Ukraine then this project should have been rated as successful or satisfactory • Excellent drafting and communication skills. |
| Language Requirements: | <ul style="list-style-type: none"> • Estimated person days: 220 working days over a 12 months period (with possibility of renewal – depending on assessment of needs) |

Project Consultants

| TECHNICAL ASSISTANCE | |
|---|---|
| LOCAL CONSULTANTS | |
| Component 1 | |
| <i>Position/Title</i> | <i>Tasks to be performed</i> |
| Task Leader for Component 1 - Policy Consultant (s) | <p>S/he will undertake the following activities:</p> <ul style="list-style-type: none"> • Support the formulation of secondary regulations to support ESCO market development and more effective energy management in public buildings • Support MinRegion in implementing multi-year budgeting for public buildings. • Assist in developing guidelines for the selection of energy efficiency projects for development. <p>Estimated person days: 100 working days over a 12 months period (with possibility of renewal – depending on assessment of needs) (i.e – 12 months)</p> |

| | |
|--|--|
| Component 2 | |
| Task Leader for Component 2 -Consultant to support capacity development within FSM. | <p>S/he will undertake the following activities</p> <ul style="list-style-type: none"> • Work closely with the IFC team to establish the most effective operating modality for the FSM (i.e – within terms commercial bank or within State Agency for Energy Efficiency) and prepare all appropriate documentation. • Review the needs of investors/ESCOs for support under the FSM. • Work very closely with local banks to provide training and capacity building activities related to ESCO and EPC with a goal of facilitating their lending to ESCOs • Undertake any other tasks, as required, related to the establishment and implementation of the FSM including supporting the identification of projects to be funded by the FSM • Support international consulting firm in developing FSM capacity to service the needs of ESCOs. <p>Estimated person days: 60 working days over a 12 months period (with possibility of renewal – depending on assessment of needs.) (i.e – 12 months)</p> |
| Component 3 | |
| Task Leader for Component 3 - Consultant to support pilot projects in selected public buildings. | <p>S/he will undertake the following activities:</p> <ul style="list-style-type: none"> • Take a lead role in making sure that the audits to carried out by the project are carried out in a fast and efficient manner including drafting terms of reference and monitoring and supervising this work. • Support the international consultants in identifying technology transfer opportunities, including cooperation possibilities with neighbouring countries, and formulate appropriate delivery models with local developers/ESCOs. • Develop targets for energy efficiency in public buildings and seeking government support to get these targets adopted • Support the development of EMIS to make sure that all the pilot projects in selected public buildings use EMIS • Participate in the implementation of the capacity development programme. <p>Estimated person days: 100 working days over a 12 months period (with possibility of renewal – depending on assessment of needs) (i.e – 12 months) hired when the work starts on the demonstration projects</p> |
| Component 4 | |
| INTERNATIONAL CONSULTANTS | |
| Component 1 | |
| <i>Position/Title</i> | <i>Tasks to be performed</i> |

| | |
|---|--|
| <p>International Policy Consultant on EE in public buildings</p> | <p>S/he will undertake the following activities:</p> <ul style="list-style-type: none"> • Support the development of new regulations to • Draft document that clearly outlines the roles and responsibilities of MinRegion and other Government institutions. • Developing guidelines for the selection of energy efficiency projects for development. • Support and participate in conference and workshops in Ukraine related to EE in public buildings <p>Estimated person weeks: 60 working days over a 2 year period (30 days/year)</p> |
| <p>Component 2</p> | |
| <p>International Consultant to support capacity development within FSM.</p> | <p>S/he will undertake the following activities working closely with IFC:</p> <ul style="list-style-type: none"> • Formulate FSM procedures for supporting energy efficiency measures working closely with IFC • Draft and implement programme to develop FSM capacity to appraise requests for support in close collaboration with IFC • Work on developing and delivering training courses and one day awareness seminars to local banks on standardized banking products for lending for ESCO type activities • Track loans made by local banks using ESCO modality and provide data and input to the project manager on this information • Support the development and finalization of the terms of reference for the FSM • Provide inputs to the project website related to the FSM • Support FSM in reaching financial closure with investors (as required) • Prepare and/or support the preparation of requests for proposals for new funding ideas/project concepts for the FSM • Review proposals submitted to the FSM for possible funding • Provide recommendations to the FSM on which proposals to fund <p>Estimated person weeks: 150 working days (over 3 years – 50 days/year)</p> |
| <p>Component 3</p> | |
| <p>International Consultant on ESCO training related to energy efficiency in public buildings</p> | <p>S/he will undertake the following activities:</p> <ul style="list-style-type: none"> • Identifying technology transfer opportunities, including cooperation possibilities with neighbouring countries, and formulate appropriate delivery models with in consultation with local developers/ESCOs. • Liaise with developers/ESCOs to create an enabling environment that favours technology transfer and international best practice • Formulate a capacity development programme related to detailed training for Ukrainian ESCOs • Prepare a detailed Guide to ESCO Operations in Ukraine advising ESCOs how to effectively work in the public sector |

| | |
|--|--|
| | <ul style="list-style-type: none"> • Organize at least 1 ESCOs in public buildings conference/roundtable in Kiev which includes the extensive participation of the private sector • Organize at least 1 study tour to another country to share the experience with implementing ESCO in public buildings in other countries <p>Estimated person weeks: 140 working days (over 2 years – 70 days/year)</p> |
| Component 4 | |
| International Consultant on Energy Management Information Systems (EMIS) | <p>S/he will undertake the following activities:</p> <ul style="list-style-type: none"> • Prepare plan for nation-wide energy management information system (EMIS) and support the adoption and approval of this plan by Government of Ukraine • Support the implementation of the nation-wide EMIS working with other donors and partners , as required • Meet with city representatives to help ensure at least 20 cities are using EMIS by the end of the project and have in place energy managers to run the EMIS • Provide support for the creation of a nationwide data base on energy consumption in public buildings • Provide all inputs and information for detailed project website on energy efficiency in public buildings • Formulate plan to implement outreach/promotional activities targeting investors working closely with IFC • Prepare outreach/promotional material on EMIS <p>Estimated person weeks: 100 working days</p> |

ANNEX 3: LETTERS OF CO-FINANCING AND SUPPORT FROM THE GOVERNMENT

Provided separately. See separate attachment.

ANNEX 4: LIST OF SOME "SO-CALLED" ESCOs PRESENTLY OPERATING IN UKRAINE

| No | Name | Web site | Location | Phones | List of company's services |
|----|--|---|--|---|---|
| 1. | Private Joint Stock Company (PJSC) "UkrESCO" | http://www.ukresco.com/ | off. 22, 1, Ivan Honta str., Kyiv, Ukraine | +38 (044) 498-14-91(-92; -94) 498-14-93 E-mail: ukresco@ukresco.com | <ul style="list-style-type: none"> - Energy audit of companies including investment grade companies. - Solutions development to reduce energy consumption and energy costs. - Implementation of turnkey energy efficiency projects in expense of their own and / or borrowed funds. - Project management: <ul style="list-style-type: none"> - business plan development; - procurement; - fundraising; - engineering support; - legal support. |
| 2. | "ESCO UKRAINE" LLC | http://www.escoua.com/ | 4, Obrazovania (Education) str., Kyiv, Ukraine | +38 067 373-60-54 +38 067 870-48-68 +38 044 498 -00-89 E-mail: info@escoua.com | <ul style="list-style-type: none"> - Energy audits of residential and public buildings. - Examination of the state of enclosing structures. - Development of optimal design and technological solutions based on the results obtained. - Involve the specialists from design, construction and repair organizations to implement these solutions. |

| № | Name | Web site | Location | Phones | List of company's services |
|----|---|---|---|--|---|
| | | | | | <ul style="list-style-type: none"> - Provide engineering support for the solutions implementation. - Training, quality control. |
| 3. | "Tsentralnaya energoservisnaya kompania "ESCO-TSENTR" LLC (Central Energy Service Company "ESCO-Centre") | http://eskocentr.business-guide.com.ua/ | 1/69, Razdelnaya str., Kyiv, Ukraine | +38 (044) 520-09-12 +38 (044) 520-09-14 +38 (044) 520-09-13 | <ul style="list-style-type: none"> - Equipment delivery. - Engineering support and control. |
| 4. | ESCO "ECOLOGICHESKIE SISTEMY (ECOLOGICAL SYSTEMS)" LLC | http://www.ecosys.com.ua/index.html | 11, Mayakovskogo av., Zaporizhzhia, Ukraine | +38 (061) 224-68-12, +38 (061) 224-66-86 E-mail: office@ecosys.com.ua | <ul style="list-style-type: none"> - Elaboration of plans for sustainable energy development. - Energy audits of buildings. - Development of investment projects thermo updating for budget funded buildings. - Development of municipal energy plans and strategies to update power systems of cities and territories. - Development of energy saving and ecologically friendly heating schemes for cities and towns. - Development of energy management systems for municipal organizations and industrial energy management systems for enterprises. - Power supply systems update. - Design of heat pump stations. - Implementation of a monitoring system for actual savings of financial and energy resources. |
| 5. | Private Joint Stock Company (PJSC) "ESCO-Rivne" | www.esco-rivne.org | 3, Bukovinska str., Rivne, Ukraine | +38 (0362) 460-220, +38 (0362) 460-218 E-mail: | <ul style="list-style-type: none"> - Energy survey. - Development of proposals for energy efficiency. |

| № | Name | Web site | Location | Phones | List of company's services |
|----|---|-------------------------|--|--|--|
| | | | | esco-rivne@ukr.net | <ul style="list-style-type: none"> - Development of the entire procurement procedure (commercial part, supply contracts, technical requirements). - Procurement of all necessary equipment and services. - Control of a contractor's implementation of all installation and setup works. - Monitoring and verification of the contract implementation. - Client is guaranteed to obtain the energy efficiency systems after the works completion. |
| 6. | Dnipropetrovsk Municipal Energy Service Company | www.esco.dp.ua | of. 223, 75, Karla Marksa ave., Dnipropetrovsk, Ukraine | +38 (056) 228-58-43 E-mail: admin@elekt-ro.com | <ul style="list-style-type: none"> - Energy audit. - Full cycle of project management in the field of energy efficiency for industrial and municipal enterprises. - Fundraising for energy saving projects. - Carbon Management - funding projects aimed at reducing of greenhouse gas emissions, renewable energy and energy efficiency technologies. - Energy Management. |
| 7. | Public Enterprise "KYIVESCO" | http://kyivesko.com.ua/ | 3A, Khmel'nitskogo str., Kyiv, Ukraine 10, Polesska str., Kyiv, Ukraine | +38 (044) 234-54-10 +38 (044) 234-54-27 +38 (044) 567-81-84 +38 (044) 567-84-81 E-mail: kiba@piu.kiev.ua | <ul style="list-style-type: none"> - Energy audit. - Termovision inspection. - Designing. - Energy Monitoring. - Training. - Energy certification. - Business planning. |

| № | Name | Web site | Location | Phones | List of company's services |
|-----|--|-----------------------|--|---|---|
| 8. | "Energy Service Company "ARTKOM" LLC | www.artcom.zp.ua | 196, Kirova str., Melitopol, Zaporizhzhia region, Ukraine | +38(0619) 44-01-59, +38(0619) 44-01-58 +38(06192) 5-23-57, +38(0619) 41-32-27 E-mail: artcom_energoukr.net | <ul style="list-style-type: none"> - Technological sites inspection. - Designing, manufacture, installation and commissioning of energy control and accounting systems. - Systems guarantee and post-guarantee service. - Research and development in the areas of energy accounting, information technology, test and measurement equipment. - Assistance to commercial and technical accounting of electricity; business consulting in the field of energy accounting and resources saving based on a comprehensive survey of enterprises. |
| 9. | Energy Service Company "ENKOM GROUP" LLC | www.encom.kiev.ua | 51B, Bohdana Khmelnitskogo str., Kyiv, Ukraine | +38 (044) 390-69-21 +38 (044) 390-69-20 E-mail: group@encom.kiev.ua | <ul style="list-style-type: none"> - Projects for construction of solar and wind power stations for the clean energy production. - Projects of biogas collection from the landfill of municipal solid waste (MSW) to produce electricity and heat using a cogeneration unit. - Implementation projects of mini hydro power plants aimed at maximizing the potential of the Ukraine rivers. - Energy updating and repair of buildings. |
| 10. | "Energy Service Company "ENERGOCONSALT" LLC | www.energoconsalt.com | 52, Chornovola str., Vyshneve, Kyiv region, Ukraine | +38 (044) 331-46-30 | <ul style="list-style-type: none"> - Installation and repair of control and monitoring instrumentation and equipment, heat, electrical and auxiliary engineering equipment of SPS, TPP, industrial boilers. |

| № | Name | Web site | Location | Phones | List of company's services |
|-----|--|---|---|---|--|
| | | | | E-mail: esco@energoconsalt.com | <ul style="list-style-type: none"> - Designing works for all types of industrial construction, development of special sections of projects. - Comprehensive energy audits using author's methodology, development of energy efficiency projects involving energy-saving efforts. - Examination and evaluation of technical condition of buildings and structures. - Construction and reconstruction of objects, networks and facilities. |
| 11. | "ECOTHERMOENGINEERING" LLC | http://ecothermo.com.ua/ | of. 16, 6/8, Petrovskogo str., Kharkiv, Ukraine | +38 (057) 754 59 50 | <ul style="list-style-type: none"> - Energy audit. - Engineering systems designing. - Equipment delivery. - Turnkey implementation of engineering systems. - Attracting of investments to "green projects". - Development of "passive house" projects. - LED lighting. |
| 12. | Energy Service Company "ENERGOENGINEERING" | http://www.esco-ee.com.ua/ | of. 314, 4, Shirshova str., Dnipripetrovsk, Ukraine | +38 (067) 564-48-65 +38 (0562) 34-18-22 E-mail: ds.esco09@gmail.com e.shyshka@gmail.com | <ul style="list-style-type: none"> - Energy audit. - Population centers heating schemes - Energy calculations. - Consulting. |
| 13. | "ESCO "SYSTEMOTEKHNIKA" LLC | | 64, Novoselskogo str., Odessa, Ukraine | +380(482) 365135 +38 (0482) 365199 | |

| № | Name | Web site | Location | Phones | List of company's services |
|-----|--|------------------------------|---|---|---|
| 14. | Private energy service company "OPTIMENERGO" | www.optimenergo.com | of. 202, MISTO Business Center, 2-d floor, Klochkovska str., Kharkiv, 61022 Ukraine | +38 (057) 728-14-56 | - Energy audits |
| 15. | "ENERGOSERVICE LLC" | http://energoserwis.prom.ua/ | 4B, Protsyshyna str., Ladyzhyn town, Binnytsia region, Ukraine | +380 (4343) 6-29-89 +380 (4343) 6-92-70 +380 (67) 712-03-24 | - Designing works. - Construction of prefabricated and monolithic structures. - Installation of engineering structures. - Installation of communication, alarm, radio, television, video control systems and information networks. |
| 16. | "ALFA-ESCO" LLC | http://aesco.com.ua/ | of.34A, 9, Gnata Yury str., Kyiv, Ukraine | +38 (044) 209-09-34 +38 (067) 464-75-45 +38 (050) 695-29-89 E-mail: info@aesco.com.ua | - Energy audit of companies. - Energy audit of buildings. - Raising funds for the implementation of energy efficiency projects. |

ANNEX 5 (A): LIST OF POTENTIAL PILOT PROJECTS FOR IMPLEMENTATION OF ENERGY EFFICIENCY MEASURES

| № | Institution's name (floor area in parenthesis) | Address (region, district, city/village) | Preliminary energy efficiency measures | Total cost, USD | Annual energy savings (present usage in parenthesis) | CO₂ Reduction, tons/year |
|----------|---|---|--|------------------------|---|--|
| 1 | Engineering and Technology Institute "Bioengineering" (4,830 m ²) | Odessa city, st. Bolshaya Arnavutskaya 19 | <ul style="list-style-type: none"> - energy audit - introduction of a system for collecting and recording data - installation of individual heating unit - replacement of wood windows and doors - reconstruction of heating system (flushing of the heating system, thermostats setting, balancing internal heating system) - reconstruction of lighting system - other arrangements of energy efficiency (organizational arrangements and information events) | 164,552 | <p>95.3 MWh_{TH}/year of heat energy (present usage 321 MWh_{TH}/year)</p> <p>60 MWh/year of electric energy (present usage 320 MWh/year)</p> | 55.0 |

| № | Institution's name (floor area in parenthesis) | Address (region, district, city/village) | Preliminary energy efficiency measures | Total cost, USD | Annual energy savings (present usage in parenthesis) | CO ₂ Reduction, tons/year |
|---|--|--|--|-----------------|--|--------------------------------------|
| 2 | Kindergarten #91 "Zvezdochka" (678.10 m ²) | 11001, Olevsk city, Zhitomir region, str. Kiev, 24 | <ul style="list-style-type: none"> - energy audit - walls thermal insulation - reconstruction of heating system (flushing of the heating system, thermostats setting) - reconstruction of combined extract-and-input system (system automation, installation of recuperative heat exchanger) - reconstruction of lighting system | 70,000 | 66.29 MWh _{TH} /year of heat energy (present usage 221 MWh _{TH} /year) 0.8 MWh/year of electric energy (present usage 3 MWh/year) | 15.2 |
| 3 | Kindergarten "Sun" (2,500 m ²) | Odessa region., Kominternovskiy district., Gvardeyskoe village, str. Mira 11 | <ul style="list-style-type: none"> - energy audit - provision of gas supply and installation of boiler 250 kW (now they use heat from coal boiler-house) - thermal insulation (walls, roof) - replacement of wood windows and doors - upgrading of heating system (flushing of the heating system, | 130,000 | 112.8 MWh _{TH} /year of heat energy (present usage 778 MWh _{TH} /year) 6 MWh/year of electric energy (present usage 25 MWh/year) | 28.5 |

| № | Institution's name (floor area in parenthesis) | Address (region, district, city/village) | Preliminary energy efficiency measures | Total cost, USD | Annual energy savings (present usage in parenthesis) | CO ₂ Reduction, tons/year |
|---|--|--|--|-----------------|--|--------------------------------------|
| | | | thermostats setting, balancing internal heating system) - reconstruction of lighting system | | | |
| 4 | Gymnasium #39 (8,505 m ²) | Ukraine, Kiev city, ave. Lisovy 17 g | - energy audit - thermal insulation of pipelines and valves of the heating system - replacement of wood windows and doors - thermal insulation (walls, roof) - upgrading of heating system (flushing of the heating system, thermostats setting, balancing internal heating system) - organization and reconstruction of combined extract-and-input system (system automation, installation of recuperative heat exchanger) | 164,000 | 576.8 MWh _{TH} /year of heat energy (present usage 1,925 MWh _{TH} /year) 20 MWh/year of electric energy (present usage 77.3 MWh/year) | 139.9 |

| № | Institution's name (floor area in parenthesis) | Address (region, district, city/village) | Preliminary energy efficiency measures | Total cost, USD | Annual energy savings (present usage in parenthesis) | CO ₂ Reduction, tons/year |
|---|--|---|---|-----------------|--|--------------------------------------|
| | | | <ul style="list-style-type: none"> - reconstruction of lighting system - other arrangements of energy efficiency (organizational arrangements and information events) | | | |
| 5 | Club/Library (245 m ²) | Odessa region., Kominternovskiy reg., Gvardeyskoe village, str. Olympic 6 | <ul style="list-style-type: none"> - energy audit - provision of gas supply and installation of boiler-room (instead of electric heating) - introduction of a system for collecting and recording data - thermal insulation of pipelines and valves of the heating system - replacement of wood windows and doors - walls thermal insulation - arrangement of internal heating system - reconstruction of combined extract-and-input system - reconstruction | 53,000 | 24.5 MWh/year of electric energy (present usage 26.23 MWh/year) Note: Present heating system is electricity-based. | 13.8 |

| No | Institution's name (floor area in parenthesis) | Address (region, district, city/village) | Preliminary energy efficiency measures | Total cost, USD | Annual energy savings (present usage in parenthesis) | CO ₂ Reduction, tons/year |
|----|--|---|---|-----------------|---|--------------------------------------|
| | | | of lighting system | | | |
| 6 | Boarding school (9,102.9 m ²) | Donetsk region, Severodonetsk city, str. Donetskaya 1 | - energy audit - introduction of a system for collecting and recording data - replacement of wood windows - upgrading of heating system (flushing of the heating system, thermostats setting, balancing internal heating system) - organization of combined extract-and-input system - reconstruction of lighting system - thermal insulation (walls, roof) | 195,000 | 604.76 MWh _{TH} /year of heat energy (present usage 1,511 MWh _{TH} /year) 32.4 MWh/year of electric energy (present usage 129.82 MWh/year) | 153.1 |
| 7 | Kindergarten "Pelyshkla" (3,823 m ²) | Dnipropetrovsk region, Zelenodolsk city, Lenin, 6 | - energy audit has already been done (2012) - introduction of a system for collecting and recording data - upgrading of heating system (flushing of the heating system, | 92,300 | 143 MWh _{TH} /year of heat energy (present usage 476 MWh _{TH} /year) 12.1 MWh/year of electric energy (present | 38.7 |

| № | Institution's name (floor area in parenthesis) | Address (region, district, city/village) | Preliminary energy efficiency measures | Total cost, USD | Annual energy savings (present usage in parenthesis) | CO ₂ Reduction, tons/year |
|---|---|--|---|-----------------|---|--------------------------------------|
| | | | thermostats setting, balancing internal heating system) - organization of combined extract-and-input system - thermal insulation (walls, roof) - reconstruction of lighting system | | usage 40.285 MWh/year) | |
| 8 | Municipal Institution "Rovenky Agency for local economic development" (998 m ²) | Lugansk region, Rovenki city, str. Lenin 125 | - energy audit has already been done (2013) - thermal insulation (outside wall, roof space, floor) - replacement of wood windows - replacement of electrical system - reconstruction of lighting system | 100,000 | 33.727 MWh _{TH} /year of heat energy (present usage 109.3 MWh _{TH} /year) 2.0 MWh/year of electric energy (present usage 8.0 MWh/year) | 8.6 |
| 9 | Kindergarten #10 (1,938 m ²) | Poltava region, Myrgorod, str. Nezalezhnosti, 17 | - energy audit has already been done (2013) - replacement of wood windows and doors - thermal insulation of | 60,000 | 186 MWh _{TH} /year of heat energy (present usage 465.2 MWh _{TH} /year) 7.5 MWh/year of | 45.7 |

| № | Institution's name (floor area in parenthesis) | Address (region, district, city/village) | Preliminary energy efficiency measures | Total cost, USD | Annual energy savings (present usage in parenthesis) | CO ₂ Reduction, tons/year |
|----|---|--|---|-----------------|---|--------------------------------------|
| | | | pipelines and valves of the heating system - installation of heat shields between the walls and radiators - installation of individual heat supply station - balancing internal heating system - reconstruction of lighting system | | electric energy (present usage 37.26 MWh/year) | |
| 10 | Olesky District Centre for Primary Care (433 m ²) | Bilokorovychi village, str. 50 years of the USSR, 34 | - energy audit - replacement of wood windows and doors - thermal insulation (outside wall, roof space) - upgrading of heating system (flushing of the heating system, thermostats setting, balancing internal heating system) - reconstruction of lighting system | 46,500 | 51.5 MWh _{TH} /year of heat energy (present usage 155 MWh _{TH} /year) 0.4 MWh/year of electric energy (present usage 1.3 MWh/year) | 11.7 |

ANNEX 5 (B): LIST OF POTENTIAL CANDIDATES FOR ENERGY AUDITS ONLY

| No | Institution's name | Address (region, district, city/village) | Preliminary energy efficiency measures | Estimated cost, USD | Annual energy economy/Present usage | CO ₂ Reduction, tons/year |
|----|--|---|---|---------------------|--|--------------------------------------|
| 1 | Center for Scientific and Technical Creativity of students (852.6 m ²) | Donetsk region, Lysychansk city, str. Postisheva 34 | <ul style="list-style-type: none"> - energy audit - introduction of a system for collecting and recording data - replacement of wood windows and doors - upgrading of heating system (flushing of the heating system, thermostats setting, balancing internal heating system) - organization of combined extract-and-input system - thermal insulation (walls, roof) - reconstruction of lighting system | 100,000 | <p>43.15 MWh_{TH} /year of heat energy (present usage 123,300 kWh_{TH} /year)</p> <p>1.8 MWh/year of electric energy (present usage 6.83 MWh/year)</p> | 10.6 |
| 2 | Kindergarten #10 "Malyatko" (1,287.4 m ²) | Donetsk region, Lysychansk city, str. Mareseva 34 | <ul style="list-style-type: none"> - energy audit - introduction of a system for collecting and recording data - replacement of wood windows and doors - upgrading of heating system | 120,000 | <p>71.2 MWh_{TH} /year of heat energy (present usage 203.5 MWh_{TH} /year)</p> <p>6.9 MWh/year of electric energy (present usage 24.131 MWh/year)</p> | 19.8 |

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| No | Institution's name | Address (region, district, city/village) | Preliminary energy efficiency measures | Estimated cost, USD | Annual energy economy/Present usage | CO ₂ Reduction, tons/year |
|----|---------------------------------------|---|--|---------------------|---|--------------------------------------|
| | | | (flushing of the heating system, thermostats setting, balancing internal heating system) - organization of combined extract-and-input system - thermal insulation (walls, roof) - reconstruction of lighting system | | | |
| 3 | School #2 (3,905 m ²) | Volyn region, Novovolinsk city, str. Mayakovsky 5 | - energy audit - upgrading of heating system (thermostats setting, balancing internal heating system) - organization of combined extract-and-input system - installation of solar panels to support the outdoor lighting - reconstruction of lighting system | 92,300 | 139.56 MWh _{TH} /year of heat energy (present usage 440,700 kWh _{TH} /year) 10 MWh/year of electric energy (present usage 44.3 MWh/year) | 36.8 |
| 4 | Department for Protection of Cultural | Odessa city, str. street Katerininskaya 14 | - energy audit - reconstruction | 45,000 | 4.5 MWh _{TH} /year of heat energy (present usage 15.1 MWh _{TH} /year) | 2.1 |

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| No | Institution's name | Address (region, district, city/village) | Preliminary energy efficiency measures | Estimated cost, USD | Annual energy economy/Present usage | CO ₂ Reduction, tons/year |
|----|---|--|--|---------------------|--|--------------------------------------|
| | Heritage (116.4 m ²) | | of lighting system - installation of solar thermal heating system - thermal insulation (floor, roof) - installation of solar panels - reconstruction of lighting system | | 2.0 MWh/year of electric energy (present usage 6.4 MWh/year) | |
| 5 | Kindergarten #23 (466.4 m ²) | Ukraine, Lviv, str. Vernyhory 7 | - energy audit - provision of electric heat system (now they use heat from gas furnace heating) - thermostats setting - reconstruction of lighting system | 27,000 | 28.2 MWh _{TH} /year of heat energy (present usage 94,000 kWh _{TH} /year) 0.4 MWh/year of electric energy (present usage 2.168 MWh/year) | 6.5 |
| 6 | Secondary school «Garant» (2,563.7 m ²) | Donetsk region, Lysychansk city, str. Moscow 282 | - energy audit - introduction of a system for collecting and recording data - replacement of wood windows and doors - upgrading of heating system (flushing of the heating system, thermostats setting, | 184,8000 | 110,485 kWh _{TH} /year of heat energy (present usage 371 MWh _{TH} /year) 11.7 MWh/year of electric energy (present usage 43.1 MWh/year) | 31.2 |

| No | Institution's name | Address (region, district, city/village) | Preliminary energy efficiency measures | Estimated cost, USD | Annual energy economy/Present usage | CO ₂ Reduction, tons/year |
|----|-------------------------------------|--|---|---------------------|---|--------------------------------------|
| | | | balancing internal heating system) - organization of combined extract-and-input system - thermal insulation (walls, roof) - reconstruction of lighting system | | | |
| 7 | School #9 (3,555.4 m ²) | Donetsk region, Lysychansk city, str. Dokuchaeva 7 | - energy audit - introduction of a system for collecting and recording data - replacement of wood windows - upgrading of heating system (flushing of the heating system, thermostats setting, balancing internal heating system) - organization of combined extract-and-input system - thermal insulation (walls, roof) - reconstruction of lighting system | 190,000 | 155,000 kWh _{TH} /year of heat energy (present usage 514 MWh _{TH} /year) 2.2 MWh/year of electric energy (present usage 10.955 MWh/year) | 35.8 |

| No | Institution's name | Address (region, district, city/village) | Preliminary energy efficiency measures | Estimated cost, USD | Annual energy economy/Present usage | CO ₂ Reduction, tons/year |
|----|--|---|---|---------------------|--|--------------------------------------|
| 8 | Kindergarten #23 (1,120 m ²) | Ukraine, Lviv, str. Vernyhory 7 | <ul style="list-style-type: none"> - energy audit - provision of electric heat system (now they use heat from gas furnace heating) - thermostats setting - reconstruction of lighting system | 57,000 | <p>60 MWh_{TH}/year of heat energy (present usage 200 MWh_{TH}/year)</p> <p>2.1 MWh/year of electric energy (present usage 8.823 MWh/year)</p> | 14.6 |
| 9 | Kindergarten #1 (2,695.65 m ²) | Donetsk region, Lysychansk city, str. Odeska 8a | <ul style="list-style-type: none"> - energy audit - introduction of a system for collecting and recording data - replacement of wood windows - upgrading of heating system (flushing of the heating system, thermostats setting, balancing internal heating system) - organization of combined extract-and-input system - thermal insulation (walls, roof) - reconstruction of lighting system | 180,000 | <p>149.1 MWh_{TH}/year of heat energy (present usage 426.8 MWh_{TH}/year)</p> <p>7.2 MWh/year of electric energy (present usage 34.222 MWh/year)</p> | 37.3 |

| No | Institution's name | Address (region, district, city/village) | Preliminary energy efficiency measures | Estimated cost, USD | Annual energy economy/Present usage | CO ₂ Reduction, tons/year |
|----|------------------------------------|--|---|---------------------|---|--------------------------------------|
| 10 | School #12 (5,149 m ²) | Donetsk region, Lysychansk city, str. Leninskogo Komsomol 26 | <ul style="list-style-type: none"> - energy audit - introduction of a system for collecting and recording data - replacement of wood windows - upgrading of heating system (flushing of the heating system, thermostats setting, balancing internal heating system) - organization of combined extract-and-input system - thermal insulation (walls, roof) - reconstruction of lighting system | 195,000 | <p>219.8 MWh_{TH} /year of heat energy (present usage 732.7 MWh_{TH}/year)</p> <p>6.1 MWh/year of electric energy (present usage 27.954 MWh/year)</p> | 52.5 |

ANNEX 6 – SELECTION CRITERIA FOR SELECTION OF 10 SMALL AND MEDIUM SIZED CITIES

At the start of the project, shortly after the hiring of the Project Manager, the project will select 10 small and medium sized cities in Ukraine with whom to work with on ESCO related activities and energy management. The next step following selection will be the signing a MoU between UNDP and the selected cities which will define the roles and responsibilities of both the parties. The selection criteria for selecting the 10 small and medium sized cities in Ukraine with whom this project will work is defined as follows:

- Criteria 1:** The population of the city should be a minimum of 50,000 inhabitants and a maximum of 400, 000 inhabitants. It is estimated that there are approximately 90 cities in Ukraine that meet this criteria.
- Criteria 2:** Other donors are not currently active with ongoing and active donor funded projects related to energy efficiency in public buildings (in particular related to ESCO market development or energy management) in the selected city in question
- Criteria 3:** The City is willing to sign a MoU to work on issues related to ESCO market development and improved energy management in public buildings, with UNDP
- Criteria 4:** The City either has already signed, or will sign, the EU Covenant of Mayors and is committed to preparing (if it has not prepared already) a Sustainable Energy Action Plan (SEAP)
- Criteria 5:** The city is committed to improved energy management in public buildings , meaning that it is willing to appoint energy managers, set energy efficiency targets for public buildings, allocate budget for purchase of energy consumption metering systems, and to put in place a city wide energy consumption database and an energy management information system (EMIS)
- Criteria 6:** The city is committed to carrying out a programme of energy audits in selected public buildings , which includes GEF support for energy audits in 2 selected public buildings as well as allocating budget for energy audits in additional selected public buildings
- Criteria 7:** The city is committed to launching a municipal tender to select a company to undertake retrofit of public buildings by ESCO using the energy performance contracting (EPC) approach. To increase chances of success, it is envisaged that this tender may be carried out with the support of the IFC-UNDP financial support mechanism.
- Criteria 8:** The city is willing to share its experiences with ESCO and energy management with other cities in Ukraine in order to facilitate dissemination and replication of information

ANNEX 7 – DETAILED DONOR MATRIX OUTLINING THE ACTIVITIES OF OTHER DONORS

| Name of Donor/IFI | Project Title and Brief Description | Dollar Amount | How the UNDP GEF EE Public Buildings Project will coordinate with this initiative |
|-------------------|---|--|---|
| GEF | UNDP Transforming the Market for Efficient Lighting: The project's objective is to reduce overall fossil fuel consumption and associated GHG emissions by removing barriers to transform the Ukrainian market towards more energy efficient lighting technologies. Actions will be taken by the project to promote a gradual phase-out of inefficient lighting products in residential and public buildings. | Project Costs: \$25.100.000 GEF: \$6.600.000 Cofinancing total: \$18.500.000 | Following the introduction of the new law 177 on ESCO in May 2015, the UNDP GEF EE lighting project starts to work with the ESCO concept as it relates to street lighting. The project is exploring the possibility to develop EPC contracts for street lighting and to possibly support pilot demonstration EPC street lighting projects in Ukraine. There is scope for the EE lighting and EE Public Buildings projects to cooperate on ESCO market development activities. |
| | UNDP: Development and Commercialization of Bioenergy Technologies in the Municipal Sector in Ukraine (IS-Approved): The objective of the project is to promote biomass-based municipal heat and hot water services. | Project Costs: \$32.590.000 GEF: \$4.790.000 Cofinancing total: \$27.800.000 | The UNDP GEF Bioenergy project is in the process of working with the IFC to establish a joint UNDP IFC cooperation on energy which will involve combining UNDP support for technical assistance for training banks and developing standardized banking products. It is intended that this sustainable financing mechanism can and will be applied in a programmatic manner across projects meaning for both renewable energy and energy-efficiency activities. |
| | UNIDO: Improving Energy Efficiency and Promoting Renewable Energy in the Agro-Food and other Small and Medium Enterprises (SMEs) in Ukraine (2011-2016): It is aimed at developing a market environment for introducing energy efficiency and enhanced use of renewable energy technologies in the agro-food and other energy intensive manufacturing small and medium | Project Cost: \$17.890.000 Gef Budget: \$5.230.000 Co-financing: \$82.230.000 | Not applicable. The project deals with energy-efficiency in the Agro-Food and SME sectors of the economy. |

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| | enterprises (SMEs) in Ukraine | | |
| | UNIDO: Introduction of Energy Management System Standard in Ukrainian Industry (CEO End. 2013): The project aims at improving energy management in Ukrainian industry by promoting widespread implementation of energy management systems (EnMS) that comply with ISO 50001 international energy management system standard. Project activities have only recently commenced. | Project Cost: \$45.380.000 Gef Budget: \$5.630.000 Cofinancing: \$34.000.000 | Not applicable. The project deals with energy efficiency in the industrial sector. |
| World Bank | District Heating Energy Efficiency Project (2014-2020): The objective of the District Heating Energy Efficiency Project is to improve the energy efficiency and quality of service of selected Ukrainian district heating (DH) companies, improve their financial viability and decrease their CO2 emissions. | Project Cost: \$382.000.000 Committed amount: \$332.000.000 | Not applicable. The project deals with energy efficiency in the industrial sector. |
| | District Heating Regulatory Reform Support Program (Signed Aug. 2014): The Project will support: (i) development of incentive-based methodologies and auditing principles to improve the capacity of the National Commission for State Energy and Public Utilities Regulation for setting cost recovery tariffs; (ii) introduction of a sector-wide benchmarking exercise that will enable the Regulator to assess DH companies' performance over time and incentivize them to improve their efficiency; (iii) capacity | Project Cost: €1.600.000 SIDA: €1.600.000 | Not applicable. The project deals with energy efficiency in the industrial sector. |

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| | building of the Utilities Regulator; and (iv) miscellaneous regulator tools. | | |
| | Energy Efficiency Project (2011-2016): The Project is designed to contribute to improved energy efficiency by industrial and commercial companies, municipalities, municipal sector enterprises and energy service companies by facilitating sustainable financial intermediation for the financing of energy efficiency investments. Amongst other uses, mainly in the commercial sector, the loan will be used to (i) update outdated equipment and (ii) reduction of energy loss in buildings. | Project Cost: \$200.000.000 | The UNDP GEF EE Public Buildings project will liaise with the WB project to incorporate experiences with regards to energy efficiency and reduction of energy loss in buildings, as well as with regards to the implementation of financing opportunities for financing of energy efficiency investments. Consultations with the project team can help to significantly inform the establishment of the planned financial support mechanism under component 2 of the project. |
| EBRD | Legal Energy Efficient Infrastructure Project (start. Aug. 2013): The project is to aid financing energy service company (ESCO) energy efficiency investments in public buildings and street lighting in the <i>city of Dnipropetrovsk</i> . Currently, over 70 public buildings including schools and administrative buildings are expected to benefit from the upgrading of their heating systems, lightning, insulation, ventilation and windows | Project Cost: \$22.500.000 EBRD Loans: €20.000.000 E5P: €2.500.000 | The EBRD infrastructure project is a first step in the longer-term process of EBRD efforts to develop a private sector led and financed ESCO/EPC market in Ukraine. EBRD is using the ESCO approach to finance energy savings investments in the city of Dnipropetrovsk. However, the EBRD model being employed is a Quasi-ESCO model in that EBRD lending (to the municipality) is the pre-requisite for the EPC contract which is different from a pure ESCO approach where the ESCO company is financing, and guaranteeing energy savings. This project will coordinate its activities closely with the EBRD Legal Energy Efficiency Infrastructure project. This includes participation in all of the EBRD donor coordinated meetings on energy efficiency, held every three months in Kiev. |
| | District Heating Project in Ternupil (Target | Project Cost: € 16.100.000 | Not applicable. The project is not using an ESCO/EPC approach. |

| | | |
|---|---|---|
| <p>board date: Sept 2012): The project aims to finance the installation of individual heating substations, installation of a bio-fuel boiler, modernisation and rehabilitation of existing boilers and sections of networks, installation of controlling and monitoring equipment. The project aims at significantly improving the energy efficiency, reducing energy losses, gas and electricity consumption and improving the quality of heat and hot water supply services in the City of Ternopil.</p> | <p>EBRD: €10.000.000 E5P: €5.000.000</p> | |
| <p>District Heating Project in Lutzk (Target board date: Sept 2014): The project is to finance the installation of individual sub-stations, biofuel boiler(s?), network replacement with pre-insulated pipes, decommissioning of obsolete basement boiler houses, modernisation of boilers and control systems, and the installation of monitoring and dispatching system.</p> | <p>Project Cost: € 16.000.000</p> <p>EBRD: €7.000.000 CTF: €3.000.000 E5P: €4.000.000</p> | <p>Not applicable. The project is not using an ESCO/EPC approach.</p> |
| <p>District Heating Project in Cherniutsi (Target board date: Dec 2015): The Project aims to finance the installation of individual heating sub-stations, biofuel boilers, network replacement with pre-insulated pipes, modernisation of boilers and control systems, and the installation of</p> | <p>Project Cost: € 16.900.000</p> <p>EBRD: €7.000.000 CTF: €3.000.000 E5P: €4.000.000</p> | <p>Not applicable. The project is not using an ESCO/EPC approach.</p> |

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| | <p>monitoring and dispatching system. The project aims at significantly improving the energy efficiency, reducing energy losses, gas and electricity consumption and improving the quality of heat and hot water supply services in the City.</p> | <p>Local Contribution: €2.000.000</p> | |
| | <p>Ukrainian Residential EE Financing Facility (Targeted start 2015): The project is to support the launch and implementation of the Framework through investment incentives for Sub-borrowers, partial hedge of FX risks and credit loss cover for loans to Housing Associations. UREEFF is expected to generate transition impact by demonstrating benefits of household energy conservation and promoting the expansion of energy efficiency investments in the otherwise difficult residential sector.</p> | <p>Project Cost: € 75.000.000</p> <p>EBRD: up to €75.000.000</p> <p>CTF: €15.000.000</p> <p>E5P: \$25.000.000</p> | <p>Not applicable. The project is focusing on residential buildings which are almost all privately owned. The UNDP GEF EE public buildings project is focused on energy efficiency in public buildings, as opposed to privately owned residential buildings.</p> |
| IFC | <p>Europe and Central Asia Sustainable Energy Finance Program: is being implemented in the Balkans, Eastern Europe, Turkey, the Caucasus, and Central Asia. In Ukraine it works to “increase energy efficiency in industrial sectors and reduce GHG emissions via collaboration with the financial sector. The program aims to create a platform to support financial institutions in the development and marketing of EE lending products to SMEs, and to the corporate and residential sectors, to</p> | <p>IFC’s overall commitments to Ukraine in 2014 totaled about \$471 million, including mobilization</p> | <p>The UNDP-IFC Financial Support mechanism which will support component 2 of this project will be aligned to be fully consistent with the IFC Europe and Central Asia Sustainable Energy Finance programme. UNDP will focus on providing technical assistance for banks, including development of standardized banking products, and support for lending for ESCO related financing in order that the commercial market for banks lending to ESCOs can, over time, develop in Ukraine. The barrier is identified as ‘lack of adequate financing’ for ESCOs in Ukraine and the joint UNDP IFC cooperation on energy efficiency will aim to help overcome this barrier.</p> |

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| | build awareness and market demand for EE finance. | | The IFC currently provides lending for privately owned multi-family apartment buildings in Ukraine but has not been active in providing lending to ESCOs for investments in energy savings projects in public buildings, due to the barriers that have been described in this document. With the support of this project, it is envisaged that a financial support mechanism will be designed , launched, and implemented that will support the commercial financing by ESCOs of EPC contracts. |
| GIZ | Energy Efficiency in Municipalities Project (2013 – 2016): The project advised consortiums formed by municipalities in different areas on how to introduce appropriate energy management. One focal area of the project is the development of energy management systems. The consortia are in Dnipropetrovsk (4 municipalities); Chernivtsi (2 municipalities); Luhansk (4 municipalities); Poltava (4 municipalities); and Zhytomyr (3 municipalities). | Budget: €4.000.000 | The UNDP GEF EE public buildings project will coordinate with the GiZ project the work on energy management systems, in particular when it comes to developing and adopting one nation wide EMIS envisaged by component 1 of the UNDP GEF EE Public Buildings Project. The projects will assure full complementarity of approach and to avoid duplication, the UNDP GEF project will choose to work in cities that the GiZ project is not working in. |
| | Establishing Energy Agencies for Ukraine (2014-2017): GIZ is advising the Ukraine Government on creating a suitable national legal framework that will promote energy efficiency measures at the local level. Furthermore, GIZ is assisting two regions to set up and pilot energy agencies. These agencies are to provide ongoing support to municipalities on rolling out energy efficiency and | Budget: €3.000.000 | The UNDP GEF EE public buildings project will coordinate closely with this project with regards to selection of municipal partners who have demonstrated a strong commitment towards energy efficiency in public buildings. The project will aim to work with the energy agencies of Ukraine who are providing support to municipalities on a rolling out efficiency and energy savings level. |

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| | energy-saving activities at local level. | | |
| | <p>Green Economy Programme (2014-2017): The project aims to improving the overall business environment. Part of the Project is aimed at energy efficiency measures in the private sector. One component advises institutions such as chambers and associations - they are assisted in improving their services in the field of energy and resource efficiency, hence making them more attractive for companies</p> | <p>Budget: €5.000.000</p> | <p>The UNDP GEF EE public buildings project will work closely with this project by discussing with private sector beneficiaries of the Green Economy programme the opportunities presented by ESCO business model and by EPC, with the aim of encouraging them to engage in ESCO and EPC related activities and investments in Ukraine.</p> |
| | <p>Energy-efficient pilot project (2009 – 2016): A new building complex demonstrating an energy-efficient, resource-saving building concept using modern, environmentally friendly technologies has been planned, executed and put into operation. This concept is being rolled out on a broad basis throughout Ukraine's construction sector.</p> | <p>Budget: €4.500.000</p> | <p>The UNDP GEF EE public buildings project can share this pilot demo project as an example of best practice for new efficient buildings using modern technologies , to officials from the 10 participating small and medium cities.</p> |
| | <p>Pilot project for reduction of CO2 emissions in Ukrainian industry (2011 – 2014): An energy management system that reduces specific energy consumption is introduced and is increasing the competitiveness of enterprises. The introduction of such a system is to help steadily increase energy efficiency and reduce costs. Activities in three pilot companies confirm that climate change adaptation objectives and economic efficiency are not mutually exclusive.</p> | <p>No budget indicated</p> | <p>Not applicable. This project is focused on industrial sector while the UNDP GEF EE public buildings project focuses on public buildings.</p> |

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| USAID | <p>Municipal Energy Reform Project: The second phase commenced in October 2013 and focuses on the following 4 programmes: 1) to develop regulations for ESCO to promote energy sector public-private partnerships. Included are the implementation of mandatory metering, determination of tariffs, etc.; 2) to conduct energy audits of communal buildings to formulate Strategic Energy Action Plans (SEAP), with the participation of the Swiss Government; 3) capacity development of NGOs to fully participate in energy efficiency activities in the communal sector; and 4) reduce GHG emissions through the development of Low Emission Development Strategies that include technical support and training/teaching.</p> | \$13,500,000 | <p>Component 1 of the EE Public Buildings Project includes the development of a database of public buildings regarding energy consumption and an energy monitoring and information management system (EMIS) put in place for public buildings in the country. The project will liaise with USAID to explore options for adapting the Energy Management/Smart Metering Systems they each are introducing or have introduced for verifying energy and water services performance under their respective activities dealing with energy efficiency in non-government buildings in Ukraine. The goal of this work will be to aim at ensuring that there is one nationwide energy management information system (EMIS) adopted for all public buildings in Ukraine, one national database of energy consumption in public buildings and one system of monitoring and reporting.</p> <p>In addition, the project will consult with UNDP Croatia regarding exploring the possibility of integrating any additional features from its Energy Management and Information System into the one to be used nation-wide in Ukraine.</p> |
| NEFCO | <p>5 new soft loan agreements with Ukrainian municipalities (Dolyna, Boryspil, Lutsk, Chernihiv and Baranivka): The loan program, under the Nordic Environment Development Fund (NMF), is to promote Energy efficiency in the respective cities. The soft loans are to be utilised for energy-saving measures in public buildings such as schools, kindergartens, hospitals and sports facilities. Under the agreement, NEFCO can finance up to 90% of the</p> | <p>NMF has funds in excess of: €60,000,000</p> <p>Since its inception, it approved over 200 projects</p> | <p>Selection of the public buildings, which are to be upgraded with regards to EE measures under the projects financed by NEFCO soft loans will provide important insights and lessons learned for the UNDP GEF EE Public Buildings Project under component 3. The possibilities of working with NEFCO on some of the demonstration projects, whereby NEFCO is providing the financing, will also be explored.</p> |

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| | total investment costs, with an upper loan limit of Euros 400,000, at a 3% interest rate and with a repayment period not exceeding 5 years | | |
| | Soft loan agreement with the city of Kiev: to promote energy efficiency. Funds from NEFCO will be used to install new and upgrade old heating substations, improve insulation and lighting in publicly owned facilities | Project budget: €9.000.000 NEFCO: €5.000.000 | Not applicable. The UNDP GEF EE Public Buildings will be working in small and medium sized cities in Ukraine. Kiev is the largest city in Ukraine so it does not qualify under this definition. |
| SIDA | Ivano-Frankivsk District Heating project (EBRD) (2009 – 2014): The objective is to finance the priority capital expenditure programme of the Ivano-Frankivsk District Heating Company aimed at reducing energy losses, reduce gas and electricity consumption and improving the quality of the service of the heat and hot water supply system in certain areas of the city. | Project budget: €5.555.556 | Not applicable. The project is not using an ESCO/EPC approach. |
| | Demo Ukraine District Heating Investments – NEFCO (until Dec. 2015) The objective is to fund environmentally sustainable and energy efficient demonstration projects in the Ukraine district heating sector. | Project budget: €6.666.667 | Not applicable. The project is not using an ESCO/EPC approach. |
| | Eastern Europe Energy Efficiency and Environment Partnership Fund (E5P multifund) The objective is to increase energy efficiency and reduce emissions to the environment | Project budget: €16.111.111 | The E5P multi-partnership fund is a potential source of financing for energy-efficiency measures, including for ESCO investments using the EPC modality. Hence, at the point of time of holding the municipal tender, the project can and will consult with the E5P multi-partnership fund for energy efficiency and environment. |

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| EEF | <p>Intelligent Energy for the Welfare of Communities in Lviv (2013 – 2016): The project aims to encourage the efficient use of energy resources in the region by strengthening the capacity of local authorities and businesses in the development, evaluation and implementation of strategies and projects in the field of energy conservation and use of alternative and renewable energy sources. The project is supported by the Swedish Agency for International Development Cooperation (Sida).</p> | No budget indicated | The project will coordinate with the SIDA project to make sure there is no duplication in terms of the cities that the project aims to work with. The UNDP GEF EE Public Buildings project will choose to work in cities where other donors are not active in the fields of energy management and/or ESCO market development. |
| Swiss | <p>Residential Energy Efficiency Project Phase II (2015-2017): The project supports the creation of an effective legal and institutional framework for Ukrainian homeowners' associations to get access to finance for the purpose of energy efficiency modernization of the country's existing multi-family housing stock. It is implemented by the International Financial Corporation (IFC)</p> | <p>Total project costs: \$3.500.000</p> <p>Swiss contribution: \$3.500.000</p> | Not applicable. The project is focusing on residential buildings which are almost all privately owned. The UNDP GEF EE public buildings project is focused on energy efficiency in public buildings, as opposed to privately owned residential buildings. |
| | <p>The Swiss cooperation strategy for Ukraine for the period 2015-2018 aims to develop Sustainable energy management and urban development as one of its 4 foci of support. The goal is to help municipalities provide reliable, sustainable and cost-effective public services through enhanced energy</p> | <p>Total Budget for all projects: CHF 32.000.000</p> | The project will coordinate with the Swiss to make sure there is no duplication in terms of the cities that the project aims to work with. The UNDP GEF EE Public Buildings project will choose to work in cities where other donors are not active in the fields of energy management and/or ESCO market development. |

UNDP
Services

Environmental

Finance

**HOUSING AND COMMUNAL SERVICES OF UKRAINE
FOR THE PROVISION OF SUPPORT SERVICES**

Under project “Removing Barriers to increase investment in Energy Efficiency in Public Buildings in Ukraine through the ESCO Modality in Small and Medium Sized Cities”

1. Reference is made to consultations between officials of the Government of Ukraine (hereinafter referred to as "the Government") and officials of UNDP with respect to the provision of support services by the UNDP country office for nationally managed programmes and projects. UNDP and the Government hereby agree that the UNDP country office may provide such support services at the request of the Government through its institution designated in the relevant project document, as described below.
2. The UNDP country office may provide support services for assistance with reporting requirements and direct payment. In providing such support services, the UNDP country office shall ensure that the capacity of the Government-designated institution is strengthened to enable it to carry out such activities directly. The costs incurred by the UNDP country office in providing such support services shall be recovered from the administrative budget of the office.
3. The UNDP country office may provide, at the request of the designated institution, the following support services for the activities of the project:
 - (a) Identification and/or recruitment of project and programme personnel;
 - (b) Identification and facilitation of training activities;
 - (c) Procurement of goods and services;
 - (d) Financial support services
4. The procurement of goods and services and the recruitment of project and programme personnel by the UNDP country office shall be in accordance with the UNDP regulations, rules, policies and procedures. Support services described in paragraph 3 above shall be detailed in an annex to the project document, in the form provided in the Attachment hereto. If the requirements for support services by the country office change during the life of a project, the annex to the project document is revised with the mutual agreement of the UNDP resident representative and the designated institution.
5. The relevant provisions of the UNDP Standard Basic Assistance Agreement with the Government of Ukraine dated 1993 (the "SBAA"), including the provisions on liability and privileges and immunities, shall apply to the provision of such support services. The Government shall retain overall responsibility for the nationally managed project through its designated institution. The responsibility of the UNDP country office for the provision of the support services described herein shall be limited to the provision of such support services detailed in the annex to the project document.
6. Any claim or dispute arising under or in connection with the provision of support services by the UNDP country office in accordance with this letter shall be handled pursuant to the relevant provisions of the SBAA.

7. The manner and method of cost-recovery by the UNDP country office in providing the support services described in paragraph 3 above shall be specified in the annex to the project document.

8. The UNDP country office shall submit progress reports on the support services provided and shall report on the costs reimbursed in providing such services, as may be required.

9. Any modification of the present arrangements shall be effected by mutual written agreement of the parties hereto.

10. If you are in agreement with the provisions set forth above, please sign and return to this office two signed copies of this letter. Upon your signature, this letter shall constitute an agreement between your Government and UNDP on the terms and conditions for the provision of support services by the UNDP country office for nationally managed programmes and projects.

Your sincerely,

Signed on behalf of UNDP
Inita Paulovica

For the National Implementing Agency:
H.E. Mr. Hennadiy Zubko
Minister of Regional Development, Construction, Housing and Communal Services of Ukraine

ANNEX 9 - DESCRIPTION OF UNDP COUNTRY OFFICE SUPPORT SERVICES

1. Reference is made to consultations between the Ministry of Regional Development, Construction, Housing and Communal Services of Ukraine (the Ministry), the institution designated by the Government of Ukraine and officials of UNDP with respect to the provision of support services by the UNDP country office for the nationally managed project “**Removing Barriers to increase investment in Energy Efficiency in Public Buildings in Ukraine through the ESCO modality in Small and Medium Sized Cities**” (the Project)”.

2. In accordance with the provisions of the signed letter of agreement and the project document, the UNDP country office shall provide support services for the Project as described below.

3. Support services to be provided:

| Support services (insert description) | Schedule for the provision of the support services | Amount and method of reimbursement of UNDP (where appropriate) | Estimated Chargeable Amount |
|--|--|--|-----------------------------------|
| 1. Payments, disbursements and other financial transactions | 2015-2019 | Cost-recovery for ISS based on UNDP Universal Price List | \$ 26,627.40 |
| 2. Recruitment of staff, project personnel and consultants | 2015-2019 | Cost-recovery for ISS based on UNDP Universal Price List | \$ 16,360.40 |
| 3. Procurement of services and goods, including disposal | 2015-2019 | Cost-recovery for ISS based on UNDP Universal Price List | \$ 32,278.60 |
| 4. Organization of training activities, conferences and workshops, including fellowships | 2015-2019 | Cost-recovery for ISS based on UNDP Universal Price List | \$ 19,673.10 |
| 5. Travel authorization, visa requests, ticketing, and travel arrangements | 2015-2019 | Cost-recovery for ISS based on UNDP Universal Price List | \$ 12,137.80 |
| 6. Shipment, custom clearance, vehicle registration, and accreditation | 2015-2019 | Cost-recovery for ISS based on UNDP Universal Price List | \$ 422.70 |
| Total | | | \$107,500.00 |

The total amount for provided support services for the project of 'Removing Barriers to increase investment in Energy Efficiency in Public Buildings in Ukraine through the ESCO modality' will not exceed \$107,500.

4. Description of functions and responsibilities of the parties involved:

UNDP will provide support services to the Ministry as described in the paragraph 3 above in accordance with UNDP rules and procedures; it retains ultimate accountability for the effective implementation of the project;

The UNDP will provide support to the National Project Director (appointed by the Ministry) in order to maximize the programme's impact as well as the quality of its products. It will be responsible for administering resources in accordance with the specific objectives defined in the Project Document, and in keeping with the key principles of transparency, competitiveness, efficiency and economy. The financial management and accountability for the resources allocated, as well as other activities related to the execution of programme activities will be undertaken under the direct supervision of the UNDP Country Office.

The Ministry through its National Project Director (NPD) designated from its staff or through duly authorized person, will approve annual work plans, authorize direct payment requests and submit them to UNDP country office in a timely manner;

The Ministry through its NPD or other duly authorized person will monitor and assure that the project funds are spent in accordance with Annual Work Plan (AWP) by authorizing and signing direct payment requests and Combined Delivery Reports (CDRs).

SIGNATURE PAGE

Country: Ukraine

UNDAF Outcome (s)/Indicator (s): #2 – Reduced energy, resource and carbon intensity of economy through the application of energy efficient technologies, renewable and alternative sources of energy

CP Outcome(s): Policy frameworks and mechanisms adopted to ensure reversal of environmental degradation, climate change mitigation and adaptation, and prevention and response to natural and man-made disasters.

CPAP Output(s): Output 6: National and local capacities for climate change resilient policies and practices enhanced.

Executing Entity/Implementing Partner: Ministry of Regional Development, Construction, Housing and Communal Services (MinRegion).

Implementing Entity/Responsible Partner: United Nations Development Programme.

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| Total resources required: | US\$ 62,153,195 |
| Total allocated resources: | US\$ 62,153,195 |
| Regular UNDP (TRAC): | US\$ 900,000 |
| Other: | |
| GEF | US\$ 5,480,000 |
| Other Cash | US\$ 42,424,779 |
| In-kind | US\$ 13,348,416 |

Agreed by (Government):

NAME _____ SIGNATURE _____
Date/Month/Year

Agreed by (Executing Entity/Implementing Partner):

NAME _____ SIGNATURE _____
Date/Month/Year

Agreed by (UNDP):

NAME _____ SIGNATURE _____
Date/Month/Year