

**UNITED NATIONS DEVELOPMENT PROGRAM
GLOBAL ENVIRONMENT FACILITY**

PROPOSAL FOR PDF BLOCK B & C GRANTS

Country: Ukraine

Project Title: Removing Barriers to Greenhouse Gas Emissions Mitigation through Energy Efficiency in the District Heating System

Focal Area: Climate Change

Amount of PDF Funding Requested: US\$ 205,200

Government Co-funding: US\$ 100,000 (in kind)

Duration: 12 months

Requesting Agency: UNDP / The Ministry of Environmental Protection and Nuclear Safety

Executing Agency: ARENA Eco (Agency for Rational Energy Use and Ecology)

Cooperating Agency: UN OPS

Block B X **Block C**

Block A Grant Awarded: No

I. Summary Project Objectives and Description

The heating sector in Ukraine is facing serious difficulties. The heat and hot water supply does not meet the demand, and in some regions and city districts this has already led to a crisis situation. On the other hand, there is a remarkable potential to improve the energy efficiency of heating and hot water supply, thereby minimizing the need to increase the primary energy consumption and the greenhouse gas emissions associated with that. The space heating and hot water supply are responsible for approximately 15% of total primary energy use in Ukraine, and 18% of greenhouse gas emissions.

The objective of the full-scale project to be developed with the PDF resources requested here is to remove barriers to economically feasible energy efficiency measures in heating and hot water supply in the residential and public buildings, and to leverage financial resources to facilitate the actual implementation of the identified measures. While a detailed study on these barriers will be undertaken during the PDF phase, the main components of the project are expected to consist of: (i) public awareness building and dissemination of information on the benefits, technical possibilities and potential financing arrangements to improve the energy efficiency of heating and hot water supply; (ii) institutional capacity building / training to identify, evaluate and develop “bankable” project proposals (utilizing, among others, the experiences gained and lessons learned during the preparation of the three related World Bank loans in Kyiv and Sevastopol); (iii) institutional capacity building / training to manage and implement the projects; and (iv) as appropriate, development of incentives, new financing mechanisms, institutional arrangements and/or administrative and regulative framework to facilitate the implementation of the projects and the cost recovery of the investments.

Since the World Bank and EBRD are already preparing loans to provide financing for the improvement of the district heating system in Kyiv and Sevastopol, the proposed GEF project is expected to focus more on the other main cities in Ukraine. For a detailed discussion on the other ongoing activities in Ukraine and the complementarity of the proposed GEF project in that regard, please see Section 7.

II. Description of Proposed PDF Activities

To prepare a full project proposal (project brief) for the main project, the following activities are envisioned:

1. In close consultation with the city authorities, local energy companies, residents, and other relevant stakeholders, undertake a survey in all the main cities in Ukraine to review and collect information on the:
 - ongoing or finalized activities relevant to the proposed GEF project;
 - local situation, institutional framework, and financial stability of the heat and hot water supply and use in the residential and public buildings;
 - technical and economic potential to improve the energy efficiency of heating and hot water supply in each city;
 - incentives and available financial resources (or lack of them) to improve the energy efficiency of heating and hot water supply in each city;
 - all the main barriers to the development and financing of the projects improving energy efficiency of heating and hot water supply; and
 - technical assistance needs to overcome the barriers.
2. By building on the survey and the other, already finalized studies:
 - review the overall energy efficiency potential in the country with respect to heating and hot water supply in residential and public buildings;
 - identify specific energy efficiency measures and technologies which appear to be

- technically and economically most attractive ones in each city under consideration; and
 - estimate the contribution that these measures would have in reducing greenhouse gas emissions in Ukraine.
3. Develop a strategy and a set of measures to remove the identified barriers;
 4. Identify and mobilize co-funding for the project;
 5. Undertake an independent technical evaluation of the project identifying potential risks that can prevent meeting the short or long term objectives of the project, and suggesting changes that should be made to meet those objectives; and
 6. Finalize the project proposal for the main project (as stipulated under the Section 3: “PDF Outputs”), and based on the requirements of other organizations sharing the costs of the project.

Regarding the implementation of the different activities, they will be carried out in close consultation with all the relevant stakeholders including government ministries, academic institutions, local energy companies, city authorities, residents and other relevant stakeholders dealing with technical, economic, financial, social or environmental aspects of the project. The funds needed for the involvement of these groups are incorporated into the budgets of each specific activity of the project.

III. PDF Outputs

The output of the PDF will be a project brief for the main project demonstrating the ability to achieve the goals set for the project including:

- i. an assessment of the size of the market, the quantity of financial resources required, and the contribution that fulfilling the full scope of the project would make in mitigating greenhouse gases in Ukraine;
- ii. a plan for involvement of all the key stakeholders;
- iii. a description of all the key barriers, with a specific emphasis on financial barriers, to energy conservation in the heating of residential and public buildings, and a strategy and a proposed set of measures to remove those barriers;
- iv. a social and environmental assessment of the project;
- v. a detailed incremental cost analysis following the GEF guidelines;

- vi. a financing plan and agreements on co-funding of the project, and an initial analysis of the potential financial resources available for the actual investments on energy efficiency measures; and
- vii. a plan and a set of measures for monitoring and evaluating the programmatic benefits of the project.

IV. Eligibility

Ukraine ratified the United Nations Framework Convention on Climate Change (UNFCCC) on 29 October, 1996. As an economy in transition, and in accordance with its commitments to the UNFCCC, the Government of Ukraine has requested support from UNDP/GEF to overcome barriers to the measures reducing greenhouse gas emissions, such as improvement of energy efficiency and promotion of the use of renewable energy technologies. During further consultations with the Government, the removal of barriers to the improvement of energy efficiency of the residential heating and district heating networks was identified as a priority area for GEF financing.

After Russia, Ukraine is the largest emitter of greenhouse gases among the CIS countries. In a recent inventory for 1990, the total emissions of Ukraine were estimated to be 246 million tons of carbon equivalent, occupying the sixth place in the world. Emissions of CO₂ per inhabitant were 4.75 tons of carbon per year, which exceeds the levels of most European countries significantly, and is one of the highest in the world.

The mitigation analysis conducted under the US Country Study Program listed the improvement of energy efficiency as the most important measure to reduce the GHG emissions in Ukraine. Although economically feasible, most of these measures have not been realized due to various barriers to their implementation.

Operationally the project falls under the GEF Operational Program #5, "Removing Barriers to Energy Efficiency and Energy Conservation".

V. National Level Support

In early 1994, the Parliament passed a Law on Energy Conservation. Among other measures, it calls for the establishment of national and extra budgetary funds, based on special taxes on coal and on penalties for inefficient energy use by industrial enterprises, to support energy saving initiatives. The Government approved the regulations for the operation of the Fund in February, 1996. To date, however, the revenues to the Fund have been relatively insignificant.

The Government has also prepared a "National Energy Program of Ukraine up to 2010". For the district heating sector, the program calls for the reconstruction and rehabilitation of the existing district heating networks, continued development of centralized district heating systems and

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combined heat and power (CHP) plants, promotion of the use of waste heat and construction of new high efficiency heat only boilers (HOB), where appropriate. Total heat demand has been projected to increase from 166,000 Gcal/h in 1995 to about 203,000 Gcal/h by 2010.

Regarding the metering, the Government has adopted two resolutions (# 483 and # 947), in 1995 for the installation of equipment for metering and control of heat consumption in existing residential buildings during 1996-2000. The meters would allow the people to pay for their actual heat consumption, instead of the amount calculated based on "fixed" indicators which incorporate also the network losses. Typically, the actual heat consumption is 25-30 % less than the amount calculated based on indicators. The resolution also calls for the creation of specific funds to finance the installation of the meters and the control equipment.

The changes in the ownership structure such as privatization of the formerly state owned companies, privatization of the apartments, creation of condominiums and/or separate maintenance companies in the residential sector as well as introduction of rents to municipal and state owned buildings belong to long term tendencies which have a strong influence on the implementation of energy efficiency measures and on attracting financing for it. The impact of these aspects and the eventual barriers to their implementation (as they relate to energy conservation) will be further studied during the PDF phase.

The energy prices in Ukraine have approached rapidly the actual production costs. Although the prices for the residential sector are still lagging somewhat behind, it is estimated that they already cover approximately 80 % of the cost. With rapidly growing energy prices, however, the non-payment of the customers has become a problem. On the other hand, many tenants have shown interest in the installation of energy consumption meters which would allow them to pay for their actual consumption, and together with the improvement of energy efficiency reduce their overall energy bill.

Regarding the funding for this PDF phase, the Government of Ukraine will contribute US\$100,000 (in-kind) to cover part of the costs of project preparation. Co-funding for the main project is expected both from the Government and from bilateral and/or multilateral sources, which will be identified during the further preparation of the project.

mentioned above. No financial analysis, however, was done. Another project: "Establishment of a Training Center for Energy Management" has an objective to improve the energy efficiency in all sectors through the development of relevant training programs coupled with market oriented management techniques. The first Energy Management Training Center was established in Kyiv at the National Technical University of Ukraine.

In the framework of the Gore/Kuchma Agreement, the U.S. Agency for International Development and the Department of Energy have launched a joint US \$ 15 million program to "realize significant energy savings by the year 2000". In the Public Sector, USAID has co-operated, *inter alia*, with the World Bank financing the preparation of the Kyiv Public Buildings Energy Efficiency Project.

Under the auspices of the ESMAP Project "Increasing the Efficiency of Heating in Central and Eastern Europe", funded by the Government of the Netherlands, the city of Dnepropetrovsk in Ukraine was chosen for one of the case studies. The objective of the case study is to assess the comparative advantages of various types of water and space heating in residential and public buildings as well as in industry. The terms of reference for the case study is supplemented by a proposal for a demonstration project including two components: (i) improvement of the heat supply facilities in the selected parts of the network; and (ii) undertaking energy efficiency measures in the buildings.

The proposed GEF project is complementing all the activities mentioned above by identifying and removing barriers which still prohibit the realization of the identified energy efficiency measures, and by disseminating information and building capacity countrywide, so that the local utilities can follow Kyiv in preparing "bankable" energy efficiency projects. Also, none of the projects has really focused on the demand side energy efficiency in the residential buildings. Therefore, one of the objectives of the proposed GEF project is to evaluate the feasibility of the different measures to increase the demand side energy efficiency in the residential buildings and to remove barriers associated with that. Especially, in the use of hot water, the potential for energy savings should be quite significant (given the fact that the average water consumption by city tenants in Ukraine is about 330 litres per day, while the amount consumed in OECD countries is between 150-240 litres per day). In Ukraine, the hot water is typically responsible for over 50% of the total heat consumption in buildings.

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**TO: Mr. David Vousden
GEF Regional Coordinator
RBEC**

FAX: (1 212) 906 5102

*Subject: Project "Removing Barriers to Greenhouse Gas Emissions
Mitigation through Energy Efficiency in the district heating System"*

Dear Mr. Vousden,

We, Ministry of Environmental Protection and Nuclear Safety of Ukraine,
approve the project proposal "Removing Barriers to Greenhouse Gas Emissions
Mitigation through Energy Efficiency in the district heating System".

For and behalf of the Ministry of Environmental Protection and Nuclear
Safety of Ukraine

Vasyl V. Vasylchenko
Deputy Minister