Document of
The World Bank

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Report No: 58625-UA

PROJECT APPRAISAL DOCUMENT

ON A

PROPOSED LOAN

IN THE AMOUNT OF US$ 200 MILLION

TO THE

UKREXIMBANK

WITH THE GUARANTEE OF UKRAINE

FOR THE

ENERGY EFFICIENCY PROJECT

April 21, 2011

Sustainable Development Department
Ukraine, Belarus and Moldova Country Unit
Europe and Central Asia Region

CURRENCY EQUIVALENTS

(Exchange Rate Effective April 16, 2011)

Currency Unit	=	Ukrainian Hryvnia (UAH)
7.96 UAH	=	US$1
US$0.126	=	1 UAH

FISCAL YEAR

January 1 – December 31

ABBREVIATIONS AND ACRONYMS

BCM	Billion Cubic Meters
DH	District Heating
DPL	Development Policy Loan
EBRD	European Bank for Reconstruction and Development
EDP	Export Development Project
EEAP	Energy Efficiency Action Plan
ESCO	Energy Service Company
EU	European Union
FI	Financial Intermediary
GDP	Gross Domestic Product
GHG	Greenhouse Gas
GoU	Government of Ukraine
ICB	International Competitive Bidding
IFC	International Finance Corporation
IFI	International Financial Institution
IMF	International Monetary Fund
MEC	Ministry of Energy and Coal Industries
Naftogaz	National Joint Stock Company Naftogaz of Ukraine
NBFI	Non-Bank Financial Institution
NBU	National Bank of Ukraine
NEIA	National Environmental Investment Agency
NERC	National Electricity Regulatory Commission
NPL	Nonperforming Loan
OJSC	Open Joint Stock Company
PFI	Participating Financial Institution
PFRL	Programmatic Financial Rehabilitation Development Policy Loan
RE	Renewable Energy
SBA	Stand By Agreement
SIL	Specific Investment Loan
TA	Technical Assistance
TCM	Thousand Cubic Meters
TPP	Thermal Power Plant
UA	Ukraine
UNFCCC	United Nations Framework Convention on Climate Change

Vice President:	Philippe H. Le Houerou
Country Director:	Martin Raiser
Sector Manager:	Ranjit Lamech
Task Team Leader:	Gary Stuggins

UKRAINE
ENERGY EFFICIENCY

CONTENTS

UKRAINE

UA - ENERGY EFFICIENCY

PROJECT APPRAISAL DOCUMENT

EUROPE AND CENTRAL ASIA

ECSSD

Date: April 21, 2011	Team Leader: Gary Stuggins
Country Director: Martin Raiser	Sectors: District heating and energy efficiency services (100%)
Sector Manager/Director: Ranjit J. Lamech	Themes: Climate change (70%); Environment and natural resources management (20%); Financial and private sector development (10%)
Project ID: P096586	Environmental category: FI
Lending Instrument: Financial Intermediary Loan	Joint IFC: Joint Level:

Project Financing Data

[X] Loan [ ] Credit [ ] Grant [ ] Guarantee [ ] Other:

For Loans/Credits/Others:
Total Bank financing (US$m.): 200.00
Proposed terms: VSL

Financing Plan (US$m)

Source	Local	Foreign	Total
Borrower	0.00	0.00	0.00
International Bank for Reconstruction and Development	200.00	0.00	200.00
Total:	200.00	0.00	200.00

Borrower:
Ukreximbank
127 Gorkogo Street
Ukraine
Tel: (380-44) 247-8948 Fax: (380-44) 247-8082
skhudiyash@hq.eximb.com
www.eximb.com
Responsible Agency:
Ukreximbank
127 Gorkogo Street
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Tel: (380-44) 247-8948 Fax: (380-44) 247-8082
skhudiyash@hq.eximb.com

www.eximb.com

Estimated disbursements (Bank FY/US$m)									
FY	12	13	14	15	16				
Annual	10.00	50.00	60.00	60.00	20.00				
Cumulative	10.00	60.00	120.00	180.00	200.00				

Project implementation period: Start December 15, 2011 End: December 31, 2015
Expected effectiveness date: September 15, 2011
Expected closing date: March 31, 2016

Does the project depart from the CAS in content or other significant respects?	[ ]Yes [X] No
Does the project require any exceptions from Bank policies?	[ ]Yes [X] No
Have these been approved by Bank management?	[ ]Yes [X] No
Is approval for any policy exception sought from the Board?	[ ]Yes [X] No
Does the project include any critical risks rated "substantial" or "high"?	[X]Yes [ ] No
Does the project meet the Regional criteria for readiness for implementation?	[X]Yes [ ] No

Project development objective

The project development objective is 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.

Project description

The project will finance energy efficiency investment sub-projects that fall into six broad categories: (i) modernization of inefficient and obsolete equipment/facilities; (ii) installation of highly energy-efficient industrial equipment and processes for new production capacities whose current energy use considerably exceeds current best practices; (iii) utilization of waste gas and heat and excess pressure from industrial processes; (iv) improvement of systems which involves a suite of measures to increase energy efficiency; (v) energy loss reduction in municipal sector companies; and (vi) energy loss reduction in buildings.

Environmental Assessment policies (OP/BP 4.01) will apply to the Project, including sub-projects. The possibility that other World Bank safeguard policies might apply to sub-projects, along with other relevant environmental issues of sub-borrowers and their sub-projects will be addressed through the sub-loan environmental eligibility assessment. World Bank staff will continue to supervise adherence to Bank and Ukrainian requirements. Annex 10 provides further details. It is not anticipated that the sub-projects under the Project will trigger OP 4.12 (Involuntary Resettlement) and OP 7.50 (International Waterways).

Involuntary Resettlement: Sub-project investments supported by the project involve modifications or system improvements within existing facilities. Sub-projects which could necessitate land acquisition are not anticipated. In the unlikely event that a sub-project that requires land acquisition is proposed for financing, it must be documented that land acquisition was made on a willing seller/willing buyer basis and that the land purchased did not require the displacement of encroachers or informal land users. Sub-project investments which necessitate land acquisition leading to involuntary resettlement will not be financed under this project.

Similarly, sub-projects for which technical success is linked to other interventions or investments which do require involuntary resettlement will not be supported by the project.

Significant, non-standard conditions, **if any**, for:

Board presentation:
None

Loan/credit effectiveness:
None

Covenants applicable to project implementation:

The Financial Covenants:

- The Borrower shall comply with the applicable prudential regulations of the Guarantor;
- The Borrower shall maintain a financial management system in accordance with the provisions of Section 5.09 of the General Conditions;
- The Borrower shall prepare and furnish to the Bank after the end of each calendar quarter (within forty-five days), interim unaudited financial reports (IFRs) for the Project covering the quarter, in form and substance satisfactory to the Bank;
- The Borrower shall have its Project Financial Statements audited in accordance with the provisions of Section 5.09 (b) of the General Conditions. Each audit of the Financial Statements shall cover the period of one fiscal year of the Borrower, commencing with the year in which the first withdrawal is made, or the first complete year of implementation of the Project. The audited Financial Statements for each such period shall be furnished to the Bank not later than six months after the end of such period; and
- The Borrower shall have its financial statements (balance sheets, statements of income and expenses and related statements) for each fiscal year, or other period agreed to by the Bank, audited, in accordance with consistently applied auditing standards acceptable to the Bank, by independent auditors acceptable to the Bank.
- The Borrower may only withdraw the loan proceeds to finance eligible expenditures and in conformity with the withdrawal conditions as set forth in the Loan Agreement.

Other Conditions

- The Borrower shall submit for the Bank's approval: (a) the first two Sub-projects of the Borrower for Bank review; (b) the first two sub-loans from each participating bank; (c) all sub-loans in excess of $10 million; and (d) all Sub-projects which are certified as Category A Sub-projects in accordance with the applicable environmental laws and regulations of the Guarantor;
- The Borrower shall make Sub-loans to Sub-project Sponsors on the terms and conditions set forth in the Operations Manual, including, without limitation, the terms and conditions set forth in the Loan Agreement;
- The Participating Banks that participate in the project will be required to furnish their annual audits;

- The Borrower shall ensure that Sub-loans shall be made to sub-borrowers which will have a Debt-Service-Coverage-Ratio after receipt of the sub-loan of 1.3:1;
- Sub-loans may finance working capital up to an aggregate amount not to exceed the equivalent of 10% of the sub-loan, provided that such working capital is solely used for the purposes of Energy Efficiency Sub-Projects which extend existing energy production capacity or create new capacity;
- The Borrower shall ensure that each Sub-project shall comply with the environmental and safeguard review procedures specifically prepared for this project and reflected in the Environmental Assessment Framework Document contained as integral part of the Operations Manual. To that end, the Borrower shall require that each Sub-project Sponsor applying for a Sub-loan furnish evidence satisfactory to the Bank and the Borrower, showing that the Sub-project in respect of which the application has been prepared is in accordance with these procedures. Such evidence shall include *inter alia* an environmental impact assessment for all Category A subprojects and an environmental information sheet for all Category B subprojects in respect of which the application has been made and, if applicable, an environmental management plan and a land acquisition and resettlement action plan, all satisfactory to the Bank and the Borrower; and
- The Borrower shall ensure that PBs are compliant with the eligibility criteria as per the Operations Manual.
- The Borrower shall maintain the Project Implementation Unit until completion of the Project and shall ensure that the PIU functions at all times in a manner, and with staffing and budgetary resources, necessary and appropriate for Project implementation and satisfactory to the Bank.
- The Borrower shall ensure that no withdrawal shall be made from a loan account for indirect lending to a PB until a Subsidiary Loan Agreement has been entered into between the Borrower and respective PB on terms and conditions satisfactory to the Bank.

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I. STRATEGIC CONTEXT AND RATIONALE

A. Country and sector issues

1. **Until mid-2008 Ukraine showed strong economic growth and had an active banking sector, but signs of overheating became increasingly apparent.** Growth over 2001-2008 averaged 7.5 percent, among the highest in Europe. Greater amounts of inflows, mainly through bank borrowing abroad, flowed into the country and together with strong improvements in terms of trade (due to high steel prices), fueled domestic demand. With a pre-crisis fixed exchange rate and pro-cyclical fiscal policies, buoyant international liquidity translated into higher inflation and growing current account deficits.

2. **The global economic and financial crisis hit Ukraine particularly hard given its pre-existing macroeconomic imbalances, structural weaknesses, and policy shortcomings.** By the fourth quarter of 2008, capital inflows came to an abrupt stop, the terms of trade reversed as steel prices plummeted and export markets shut down. The crisis accentuated the vulnerabilities of the banking sector, leading to a systemic liquidity and solvency crisis, including the leakage of deposits. GDP contracted by 15 percent in 2009, with fixed investments falling by 46 percent. The crisis also highlighted Ukraine's structural weaknesses, including the lack of export diversification, its poor investment climate, and large structural fiscal pressures.

3. **As a result of the financial crisis, bank lending has come to a standstill, postponing necessary investment finance in the economy.** During the crisis, tightening liquidity and increasing credit risks resulted in ceasing of bank lending to the economy and households. Economic recession, growing unemployment, UAH depreciation pushed a 5.5-fold increase in nonperforming loans (NPLs) in October 1, 2008-January 1, 2009, and a 3.3-fold increase in 2009. The banking sector has stabilized in 2010 in line with the overall economic recovery, but lending activities remained limited. Banks' loan portfolio decreased by 5.7 percent in 2009 and continued to shrink in the first half of 2010, while deposits have resumed growth. Lending is slowly resuming in 2011; however, the economy continues to suffer from the absence of vital credit financing.

4. **Like many countries, energy security is a high priority for Ukraine**. In the recent past, Ukraine has increased its use of indigenous coal, replacing imported gas . Nearly half of Ukraine's electricity needs are met by nuclear power. Domestic use of renewable energy is small at about 7%, most of which is hydropower, and expected increases in renewable energy are modest. As a result, energy efficiency is the primary source for a non-polluting energy security option.

5. **Ukraine is among the most energy intensive economies in the world.** Ukraine's energy intensity[1] exceeds that of Germany by a factor of 3.7 (0.45 kg of oil equivalent in Ukraine vs. 0.12 kg in Germany) and more than double that of the EU-12 countries. Part of its

[1] Energy intensity is measured herein as kilogram of oil equivalent of energy use per constant PPP GDP. Energy use refers to use of primary energy before transformation to other end-use fuels. PPP GDP is gross domestic product converted to 2005 constant international dollars using purchasing power parity rates.

energy efficiency problem is structural: Ukraine was an important source of heavy equipment in the former Soviet Union. Nearly 20 years later, most of these assets are using the same technology. As a result, the Ukrainian industrial sector is labor and energy intensive, made viable by low cost energy and labor. Similarly, district heating was designed based on low-cost energy. The district heating systems are inefficient, but have been reliable: boilers with limited metering and temperature controls are common in the supply system while most customers have no metering or temperature controls. With no controls and costing based on the size of consumer apartments, there is no incentive to avoid wasting energy at the consumer end.

6. **The Government of Ukraine (GoU) has made it a strategic priority to reduce Ukraine's energy intensity.** In 1996, the GoU developed an Energy Efficiency Program, where it outlined its strategy of decreasing energy consumption in industrial, energy and housing sectors. However, the 1996 Energy Efficiency Program was not strictly enforced as it was not accompanied by an enforceable energy efficiency action plan. In its 2006 Energy Strategy looking out until 2030, the GoU set a target of improving Ukraine's energy intensity by 50% by 2030. In 2010, the National Agency of Ukraine for the Effective Use of Energy Resources (NAER), now the State Agency of Ukraine for Energy Efficiency and Energy Conservation[2], developed a Targeted Economic Energy Efficiency Program, which was approved by the Cabinet of Ministers. The Program sets a target of decreasing energy intensity of Ukraine's economy by 20% by year 2015. The State Agency is following this up with the preparation of a complementary National Energy Efficiency Action Plan (NEEAP). The NEEAP is designed to identify energy efficiency investments, barriers to implementation and agencies responsible for implementation.

7. **The industrial sector, particularly heavy industry, is expected to be one of the primary sources of energy savings**. Roughly 40% of all Ukrainian steel is produced using open hearth technology which has been replaced in nearly every country in the world except for Russia which is in the process of replacing these assets. Blast furnaces or electric arc furnace technology would reduce energy consumption per unit of output by more than four-fold. Other sectors such as the chemical, agricultural and food production sectors are equally estimated to have significant energy savings potential.

8. **The heating needs in Ukraine are also expected to be a considerable source of energy savings at the municipal level.** Building energy efficiency is estimated to be about 2-3 times worse than in Western Europe. The demand-side issues are exacerbated by supply-side energy losses, with pipeline losses nearly double that of Western European practices; and existing boilers are about 20% less efficient than new boilers. Issues that need to be addressed to correct these problems are complex, both from a social and political perspective. Heating prices are typically less than half of comparators elsewhere as price setting is politicized. As a result of low prices, district heating systems have not been modernized. The Government has taken the first steps at depoliticizing price setting for district heating: it transferred the responsibility for setting district heating prices to the National Electricity Regulatory Commission (NERC) in mid-2010 and is considering establishing an independent district

[2] Currently, the Agency is going through the process of reorganization.

heating regulator. District heating prices were increased by 30% in December 2010 helping establish the incentive for decreased use of energy in buildings through temperature controls, insulation and sealing building structures.

9. **About 30% of Naftogaz' (the national gas company of Ukraine) compressor plants are operating beyond their design life: this out-of-date technology is operating at roughly 25% efficiency, well below that of replacement compressors of 36-40%**. Naftogaz has approached the donor community to help finance the modernization of these assets which could decrease compressor gas consumption by upwards of 30%, decreasing gas demand by about 2 billion cubic meters (bcm) per year, about 7% of annual gas imports. This issue will be addressed under a feasibility study which is expected to start in early 2011, to support implementation from 2012-2016. An emergency project is being prepared. As a result, it is likely that gas prices will need to be adjusted upwards to enable Naftogaz to financially support what is expected to be a multi-billion Euro investment requirement.

10. **Coupling energy efficiency measures with increased use of domestic natural gas could make a major change in the structure of Ukraine's gas market**. Natural gas use in Ukraine has decreased from nearly 70 to below 60 bcm/year over the past four years in a response to increased gas import prices resulting in a switch to coal and energy efficiency investments. Further rationalization of domestic gas prices could result in an increase in domestic gas production from 20 to 30 bcm/year according to gas experts. Coupling increased domestic supply, possible new sources of gas like shale gas or LNG and further decreases in energy use, could result in gas-to-gas competition in Ukraine, decreasing the cost of supply considerably.

11. **A lack of funds for maintenance and investments negatively affected efficiency of power system facilities** which are deteriorating at an increasing pace. The decapitalization is particularly pronounced in thermal power companies (TPPs), which are facing a lack of working capital. Much of their equipment is operating well beyond its normal life-time and requires modernization or replacement; many of the plants operate at efficiencies of about 30%, well below the 55% expected efficiency of a state-of-the-art Combined Cycle Gas Turbine plant. The Government currently plans that much of the power plant modernization will be the responsibility of the private sector after the next steps in its privatization program take place.

Energy Efficiency Issues

12. **Lessons learned from successful EU-12 countries indicate energy efficiency investments in the industrial sector as the top priority, followed by the building stock.** However, many industries don't invest in energy efficiency**.** Ukraine's heavy industry sector has had many natural advantages from which to build on: availability of iron ore nearby; low labor costs; and low energy prices. However, these comparative advantages are changing rapidly: although labor costs remain low, so is productivity with many steel mills employing thousands of more people per ton of production than in other countries; energy costs have accelerated rapidly in the past four years, rising nearly four-fold; and the asset base is old and in need of replacement, requiring considerable new investments. The problem has been made

more complex in the past two years as the fiscal/economic crisis has made unemployment more acute as well as funding for new investments scarce. Lending of IFI loans through financial intermediaries (FIs) has also come with its own constraints, including: restricting focus to export industries; focusing on Small and Medium Enterprises only; and limiting resource flows to specific sectors.

13. **Energy efficiency improvements in District heating (DH) in Ukraine remains a difficult problem because of the low prices and the socio-political problems that revolve around heat supply to buildings**. In parallel, the Government is addressing the policy reform agenda, starting with the depoliticization of DH prices. USAID-funded consultant are working in 36 cities, a number of which are fast-tracked, to prepare district heating projects. The World Bank is conducting an ESMAP-funded study to conduct an in-depth analysis of the binding constraints to municipal creditworthiness for energy efficiency investments and to identify viable financial options, such as the promotion of Energy Service Company (ESCO) models. However, the credit-worthiness of potential borrowers remains a problem that is expected to be addressed as this project develops, using grant funds from the Clean Technology Fund (CTF) in parallel to existing technical assistance programs from the European Commission, USAID and the Swedish International Development Cooperation Agency (SIDA). It is expected that pilot projects in cities which have sufficient borrowing capacity, adequate tariffs and collateral arrangements will be identified for implementation under this project. Such projects could be scaled-up at a later date once the systemic policy and regulatory constraints to the creditworthiness of municipal borrowers have been removed. The initial target for building improvements should be new construction as the cost of making a new building energy efficient is modest – less than 5% of the capital cost – while many energy efficiency elements of reconstruction of existing buildings would require subsidies.

B. Rationale for Bank involvement

14. The Bank has supported Ukraine in its efforts to reform and restructure its energy sector through policy dialogue, technical assistance and financing of adjustment and investment projects since the early 1990s. As a result of continuous involvement, the Bank has developed deep country and sector knowledge that puts the Bank in a strong position to further support energy sector reforms and development. Ukraine requires coordinating and adapting financial support, policy advice and technical assistance to a rapidly changing economic and political environment which is complicated by volatile energy import challenges.

15. In 2007, the Cabinet of Ministers adopted the Action Plan for Energy Sector Reform and Development, which became the cornerstone for Ukraine's Energy Sector Reform and Development Program. The Program placed its focus on: (1) ensuring security of energy supply; (2) reducing the cost of energy supply; (3) modernizing assets and improving energy efficiency; (4) decreasing dependence on imported gas; and (5) harmonizing the energy sector of Ukraine with the EU market. The GoU requested the Bank's support for the Program's implementation, particularly through investment lending. As a response to the GoU's request, support to the energy sector in the 2008-2011 Country Partnership Strategy (CPS) was designed in alignment with the above five priorities. The proposed Project will deepen the

Bank's existing involvement in the sector and help the GoU address the first four of the above priorities.

16. The Bank has assigned a high priority to supporting energy efficiency projects in Ukraine. The decrease in energy consumption will contribute to addressing the fiscal deficit by lowering the cost for imported fuel. Increase in energy efficiency of its industries will not only contribute to increasing its competitiveness and resilience in an economic downturn by decreasing their operating expenses, but will lead to sustainable growth opportunities for the economy as a whole. Furthermore, energy efficiency options have been identified as the highest priority investment to enable the reduction of local, regional and global (Greenhouse gases) pollution. In addition, World Bank assistance is required to address the systemic political and regulatory constraints to creditworthiness of municipal borrowers to facilitate the sustainable financing of energy efficiency projects for District Heating companies and other municipal entities.

17. The Bank is also well-positioned to help support the reform program through linkages between its macroeconomic program supported by DPLs and microeconomic support provided by SILs and FILs. The energy sector's impacts are sufficiently large to have a notable effect on the fiscal deficit and are thus being addressed through a series of Development Policy Loans. The Bank is coordinating this effort with its partner agencies: with the IMF regarding the fiscal impacts; and with EBRD, IFC and bilateral donors regarding sectoral reforms. The Bank is also coordinating its activities with the European Community, particularly in areas in which the GoU has committed to move towards adopting EU practices. Projects like this proposed Energy Efficiency Project help provide the linkage between supporting financing in existing markets and extending the supply of finance to new markets such as energy efficiency projects for industrial companies and the municipal sector. During project implementation the Bank will work closely with Ukreximbank to help it move into new markets, facilitating this with support from parallel technical assistance and policy dialogue.

C. Higher level objectives to which the project contributes

18. The proposed Project aims to make a major positive contribution to the following development objectives of Ukraine: modernize assets, decrease energy intensity, improve energy security and decrease the impact of the energy sector on the environment: emission reduction will decrease local, regional and global air quality impacts and lower demands for cooling water for thermal power plants. Improving energy efficiency will help Ukraine to achieve its goal of decreasing energy intensity by 20% by 2015 and by 50% by 2030. It will also contribute to decreasing Ukraine's dependence on imported gas, hence mitigating energy supply security risks and decreasing the cost of energy supply.

19. The Project will also assist in deepening and broadening the supply of finance to energy efficiency projects in Ukraine. So far, energy efficiency projects have been funded mainly by IFIs and most of those projects were targeting smaller, up to US$10 million, efficiency improvements in industrial sector and for small and medium-size enterprises. The proposed Project will provide funding up to US$30 million in financing for larger energy efficiency sub-projects in the industrial sector as well as municipal energy efficiency projects. This will allow

financing of larger industrial energy efficiency investments, which still have the biggest energy savings and GHG emission reduction potential. Providing access to funds not only to industrial companies, but also to eligible companies in other sectors and at the municipal level, as well as to financial institutions that are willing to finance energy efficiency projects, will further deepen the supply of finance to the energy efficiency market by banks in Ukraine.

20. Finally, the Project is expected to help achieve savings of at least 1 million tons of CO_2 emissions annually. It is estimated that at least 1 million tons in GHG emission reduction will come from investments in industries through transformation of the sector. This will contribute to achieving the GoU's GHG emissions targets. The emissions savings also provide the basis for Ukraine to attract additional, innovative climate finance in the future.

II. PROJECT DESCRIPTION

A. Lending instrument

21. The proposed Bank Loan to Ukreximbank will be a Financial Intermediary Loan (FIL) with a 29.5 year maturity including 6 years grace, with a Variable Spread denominated in US Dollars (US$) with level repayment of the principal and a front-end fee of 0.25%. The IBRD funds will be utilized by Ukreximbank to directly finance eligible sub-projects in the industrial and municipal sector and provide subsidiary loans to other "participating banks" (PBs) for energy efficiency sub-projects, with a guarantee by the GoU. The loan will also finance the capitalized front-end fees. The FIL approach was chosen to support a sustainable approach to financing energy efficiency projects which are typically very profitable and therefore lend themselves to commercial finance practices.

22. The cost of capital for Ukreximbank under this project will be the Bank's lending rate plus the Government guarantee fee of 0.05% while the cost of capital for the Participating Banks from Ukreximbank will include an additional margin. The additional cost of capital to the PBs will cover the following costs to Ukreximbank: (i) the cost of training PBs in the preparation and credit analysis of energy efficiency projects; (ii) the administrative costs associated with monitoring and reporting for the World Bank loan; (iii) the costs associated with assisting the Bank and the Government with policy reforms in the Municipal sector; (iv) the additional costs associated with World Bank safeguards; and (v) the additional commercial risks associated with being the borrower of record for the entire loan.

23. **Loan amount:** The Government estimates that energy efficiency financing needs to be in the order of $4-5 billion per year. The demand for energy efficiency investment financing is high, as indicated in the pipeline of projects compiled by Ukreximbank (Annex 4). However, the appetite for investments as a whole is currently moderated by the impact of the financial/economic crisis. Hence, a loan of US$200 million equivalent is proposed to meet part of the financing needs. Loans from EBRD, IFC, EIB and potential future financial support from climate finance are expected to further reduce the sector-wide financing gap.

B. Project development objective and key indicators

24. The project development objective is 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.

25. The indicators are proposed as follows (see Annex 3 for details):

a. For energy efficiency projects: Extent of savings in energy consumption (toe) for end-users and municipalities;
b. For FI and participating banks (PBs): Increased lending for energy efficiency projects by Ukreximbank and PBs.

C. Project components

26. The proposed project is designed to finance energy efficiency investments by industrial and commercial enterprises and in the municipal sector, including related technical assistance. The loan will also finance the capitalized front-end fees. The details of the financial intermediary loan are outlined in Annex 4.

27. Ukreximbank has a successful track record of lending to industrial companies for energy efficiency projects under a parallel credit line provided by the EBRD. Lending to municipal energy efficiency projects is inherently more risky, as municipalities' creditworthiness is challenged by political interference in tariff setting, limited borrowing capacity and collateral limitations. Consequently, the proposed project aims to identify pilot projects for lending to creditworthy municipalities. The World Bank is working closely with Ukreximbank, the regulator NERC, the State Agency of Ukraine for Energy Efficiency and Energy Conservation and the Ministry of Regional Development, Construction and Municipal Economy to identify municipal energy efficiency pilot sub-projects that could be financed through the project. In parallel, Ukreximbank and the World Bank, in close coordination with parallel donor activities, will work on addressing the systemic challenges to municipalities' creditworthiness and borrowing capacity with the objective to scale up lending to the municipal sector for energy efficiency projects in follow-up financing, including CTF funding.

28. Commercial debt financing and equity co-financing will be drawn on to cofinance projects; additional grant co-funding may also become available through potential future climate finance and the Eastern European Energy Efficiency and Environment Partnership. The proposed financing supports the GoU's strategy in scaling up investments in energy efficiency with the intention to encourage the Borrower (Ukreximbank) to finance energy efficiency investment sub-projects with co-financing from the project of up to US$30 million per sub-project. In the industrial sector, the main target sector for this component will be energy-intensive industries, such as metals, chemicals, and building materials; the Project will also provide funding to eligible projects in other sectors. In the municipal sector, the project aims to identify energy efficiency pilot projects with municipalities, municipal service companies, including district heating companies, and ESCOs. These investments would help mitigate the

large and increased financing gap for energy efficiency financing stemming from increased energy prices in general, particularly natural gas price increases.

29. The current pipeline of projects provided by Ukreximbank indicates demand for potential energy efficiency investment over US$400 million. The types of energy efficiency investment sub-projects fall into six broad categories: (i) modernization of inefficient and obsolete equipment/facilities; (ii) installation of highly energy-efficient industrial equipment and processes for new production capacities whose current energy use considerably exceeds current best practices; (iii) utilization of waste gas and heat and excess pressure from industrial processes; (iv) improvement of industrial systems which involves a suite of measures to increase energy efficiency; (v) energy loss reduction in municipal sector enterprises (largely focusing on district heating); and (vi) energy loss reduction in buildings. While currently no municipal energy efficiency projects are included in the pipeline, Ukreximbank is open to finance these under the credit line if they are creditworthy and meet the same eligibility criteria as industrial energy efficiency projects. The sub-borrower may use the loan proceeds to finance Consulting Services for project preparation or implementation.

30. The Borrower will also on-lend to other eligible financial institutions – participating banks (PBs) – that are willing to invest in eligible energy efficiency projects in the industrial and municipal sector. This will improve the capacity of local financial institutions to identify and evaluate potential energy efficiency investments. The PBs will be selected according to financial eligibility criteria. The PBs will in turn make medium term or long-term investment loans to eligible companies and municipalities to improve their energy use. The PB program is designed to build on a similar process that was initiated under the earlier World Bank financed, Export Development Project II, drawing on processes successfully developed therein.

D. Lessons learned and reflected in the project design

31. **Broad energy efficiency financing lessons**: In the past two decades, the World Bank Group has engaged in various types of energy efficiency financing projects in different countries. The broad lessons learned, taken into account in the project design, include:

- *Design programs to be commercially-oriented, demand-driven, and flexible in order to help create sustained shifts in the market and adjust based on changing market conditions and implementation realities*. Project design options included direct lending to entities with a Government guarantee, lending through the Government or Government-owned agencies or through a financial intermediary. This project is designed to be implemented by a financial intermediary, Ukreximbank, to ensure that it meets all of the criteria outlined above. International experience (see below) shows that the use of financial intermediary as a delivery mechanism for energy efficiency investment yields moderate results.
- *Select strong Executing Agencies who know their markets well and have a good grasp of project financing issues*. Project implementation in Ukraine has been generally very weak, with disbursement rates among the lowest in the Bank client countries. Ukreximbank-implemented projects have been the most successful among the projects undertaken to date.

- *Achieve a balance between policy framework, institutional arrangements, training, and implementation effectiveness*. The primary driving force to provide incentives for energy efficiency is pricing, which is being addressed under the Bank's series of DPLs and IMF program. Institutional reform and governance of the policy agenda is being addressed by the State Agency of Ukraine for Energy Efficiency and Energy Conservation, for whom broad-based technical assistance is being supported by the EU. Improved creditworthiness of municipal borrowers is being addressed by a number of technical assistance activities financed, among others, by the European Commission, USAID and SIDA. Technical assistance funded by a grant from the CTF is also expected to support capacity building of the State Agency of Ukraine for Energy Efficiency and Energy Conservation as well as address issues with municipal borrowing for energy efficiency projects.
- *Focus programs to deliver real energy savings quickly (within 1-2 years) to build program credibility and learn from early implementation*. A pipeline of projects has been prepared and three projects reviewed in detail prior to appraisal, two of which meet the agreed criteria. These projects are expected to be implemented in the first year of project implementation.

32. Two recent IBRD lending projects, China Energy Efficiency Financing Project and Private Sector Renewable Energy and Energy Efficiency Project in Turkey have provided good lessons on the use of FIs:

33. **The China Energy Efficiency Financing Project** focuses exclusively on FI lending to industrial energy efficiency investment subprojects. Two banks each received US$100 million in IBRD loan that became effective in October 2008. So far, China EximBank has disbursed almost 50 percent of its IBRD funds while Huaxia Bank managed to disburse less than 2 percent. Both banks had robust pipeline of subproject when the project was appraised. Two factors explain the much higher deal flow of the China EximBank: its robust relationship with large industrial clients that tend to have good credit history and financial capacity; and the strong will of the management to develop their energy efficiency lending business. By comparison, Huaxia Bank was just starting to enter industrial lending business in general, and was not focused on development of new energy efficiency lending business until recently. Ukreximbank was selected as the implementing agency for this project as it is a strong and experienced FI with solid industrial clientele, has a strong team dedicated to developing energy efficiency financing projects and a proven track record in implementing over 20 energy efficiency projects under an EBRD-funded credit line for energy efficiency projects.

34. **The Renewable Energy (RE) Project in Turkey** (US$200 million) was initiated in 2004, as on-lending through Government of Turkey to two development banks: Industrial Development Bank of Turkey (TSKB) and the Development Bank of Turkey (TKB). The project also supported the legislative action and capacity building on RE and helped to build a sustainable business-line for these two banks. The project has financed 2,118 MW of RE investments and committed US$ 87 million of energy efficiency investments as of end-September 2010. These investments are expected to contribute to greenhouse gas emissions reduction of 1.9 million tons per year.. As a follow-up, Private Sector Renewable Energy and Energy Efficiency Project was initiated in 2009 with the same two banks as direct borrowers of

IBRD funds. TSKB and TKB found that through the implementation of the first projects, they had developed substantial appraisal capacity, steady client base and large demand for these funds – they are now considered to be leading institutions for financing RE and EE projects. Building technical capacity has been an important factor in the projects' success. Ukreximbank's technical capacity has been reviewed and found to be generally satisfactory. Where its technical capacity is weak, Ukreximbank has agreed to outsource these tasks to experts.

E. Alternatives considered and reasons for rejection

35. Within the energy sector, support for energy efficiency is accorded a higher priority than supply-side options because of the positive externalities on the environment. In addition, energy efficiency interventions will help rationalize supply-side options, limiting the need to mobilize marginal resources; of particular importance in Ukraine because of the positive impact it would have on fiscal deficit and the current account balance.

36. The proposed Project design was chosen because it effectively addresses the most critical needs and priorities of the GoU in addressing the coming energy supply-demand gap and rapidly scaling up industrial energy efficiency investments. As indicated in the lessons learned, expanding the use of commercially-oriented energy efficiency delivery mechanism is essential to help support sustainability of the energy efficiency program.

37. *Specific investment loans to industrial enterprises and public utilities* were considered and rejected for three reasons: (i) their impact and benefit will be limited only to the few beneficiaries and such direct Bank lending activity, while rather straightforward to prepare and implement, does not facilitate market-driven solutions; (ii) the GoU's preference to further develop financial intermediary energy efficiency investment lending; and (iii) the administrative costs associated with Bank lending is not suitable for a large number of relatively low cost projects.

38. *Establishment of an energy efficiency fund was also considered and rejected* since the experience so far with such funds has been mixed. They often require sizable grant financing, which is not available for the size of the proposed project. While some of these energy efficiency funds have been successful in stimulating local bank lending, many suffered from chronically low deal flow due to a variety of reasons. In some cases, the markets may not have been sufficiently developed with strong institutions capable of packaging and delivering high quality projects for financing. In other cases, the banking sectors of the concerned countries were still under development or in transition. For this project, Ukreximbank already has substantive experience in such practice and has a strong client base leading to steady project pipeline.

III. IMPLEMENTATION

A. Partnership arrangements (if applicable)

N/A

B. Institutional and implementation arrangements

39. **Ukreximbank:** The Project will be implemented as a Financial Intermediary Loan. Ukreximbank was chosen as the implementation agency and borrower based on the following: (i) strong financial standing and operational capacity; (ii) strong client base and its mandate as agent bank for the Government; (iii) consistent government support in its capitalization; (iv) experience and capacity in energy efficiency investments and World Bank projects through their on-going projects with EBRD and the Bank; and (v) providing a link with the Government's reform agenda.

40. Ukreximbank will provide long-term debt to two clients: (i) sub-project sponsors for eligible energy efficiency investments; and (ii) participating banks (PBs) that would lend for eligible energy efficiency investments as well. The on-lending of funds for sub-projects will be in accordance with the Operations Manual prepared by the Ukreximbank and agreed with the Bank. Ukreximbank will review sub-projects based on procedures established in the Operational Manual which covers aspects such as eligibility, safeguards compliance and monitoring requirements. Ukreximbank has well-equipped teams in-charge of marketing, project evaluation, appraisal, safeguards aspects and implementation, and these teams will continue to operate under the proposed Project.

41. The on-lending of funds to PBs will be done according to a model used by the Export Development Project (EDP) 2, currently under implementation by Ukreximbank. Ukreximbank will pre-qualify commercial banks for the Project based on eligibility criteria which are identical to the eligibility criteria of Ukreximbank, including full compliance with the National Bank of Ukraine (NBU) regulation. PBs must agree to use the same criteria for on-lending for energy efficiency sub-projects as agreed with Ukreximbank. The differential in the cost of capital between Ukreximbank and PBs for the same market is justified on the basis of the transaction costs assumed by Ukreximbank, including: (i) the administrative costs associated with World Bank processing; (ii) the role of Ukreximbank in guiding consultant studies to expand the markets to municipalities; (iii) training of PBs' staff to undertaken by Ukreximbank; and (iv) the credit risks borne by Ukreximbank as the borrower of record.

42. Eligibility Criteria/Conditions for IBRD line of credit

- Eligibility of Sub-loans: Must be targeted towards improvement of energy efficiency of operations or end-user consumption.
- Financial conditions of Sub-projects:
    1. Sub-borrowers must have a Debt Service Coverage Ratio of at least 1.3 based on a three year moving average; and
    2. Sub-projects must have a minimum 10% of real financial rate of return; for sub-project eligibility, benefits will be exclusively measured based on decrease in consumption of natural gas, coal, electricity and/or petroleum products. In the case of fuel switching, the net decrease in the relevant energy sources would be calculated.

43. Since only energy efficiency benefits would be used in estimating the benefit stream, and then if a minimum 10% of real financial rate of return is met, the sub-project would meet the definition of an "energy efficiency project". By excluding other benefits, a real rate of return will therefore be at least 10% ensuring financial viability and enabling a cushion to address risk mitigation protecting against market uncertainties.

- For sub-loans, the interest rate will be market-based and cover at least the costs of funds, risk-adjusted spread based on the risk classification of the sub-borrower and the sub-project, and an appropriate profit margin.
- Ukreximbank will lend in either foreign or local currency and will manage the foreign exchange risk in local currency lending.

44. Eligibility Criteria/Conditions for Participating Financial Institutions

- Eligibility Criteria for participating financial institutions (PBs): The Project will use the criteria outlined in EDP 2, currently under implementation, including compliance with all NBU regulation, a capital adequacy ratio of 10% and a liquidity ratio consistent with NBU regulations.

45. Reporting/Supervision Requirements

- Ukreximbank is required to monitor and report on the implementation and financial condition of both Sub-loan and Sub-borrower. They are also required to notify and take all required and available measures based on good faith in the interest of the Guarantor and the World Bank;
- The Borrower is required to ensure compliance with the Ukrainian legislation and standards, as well as World Bank Safeguard Policies and Procurement Policies based on documentation provided by the Sub-borrowers.

C. Monitoring and evaluation of outcomes/results

46. The Project will be monitored using the existing monitoring arrangements (described in Annex 6 and Annex 7). Ukreximbank has gained experience on monitoring implementation and the outcomes. Progress will be reviewed using the intermediate outcome indicators. As the Project advances, monitoring will shift to the outcome indicators.

D. Sustainability

47. Financial sustainability is a primary objective of project design. Energy efficiency investments are generally economically viable with short payback periods. However, financial viability is less certain and requires a good understanding of local conditions. Investments that have been satisfactorily implemented elsewhere have reduced costs by enough to enable full repayment of the loan proceeds immediately after project completion. Environmental sustainability is addressed as part of the eligibility criteria under the project selection process. Institutional sustainability will be ensured by: (i) Ukreximbank's capacity to assess, disburse and supervise credits while being complaint with safeguard policies, developed through EDP 1 and EDP 2 as well as EBRD's energy efficiency loan to small and medium enterprises (SMEs);

and (ii) institutional capacity and processes within the PBs to identify and promote energy efficiency investments.

48. The project is designed to ensure development and expansion of financing sources for energy efficiency investments by ensuring that interest rates are not subsidized to avoid discouraging entrants of new participants in the market.

49. In order to avoid market distortion and to ensure that the sub-borrowers will gain appropriate returns from investments made under this loan, Ukreximbank will follow their pricing policies in line with the market rates, for direct lending of IBRD funds in both foreign and local currency. As full service commercial bank, Ukreximbank already prices its loans at market levels. Ukreximbank will continue to implement the same approach in the ongoing projects as it has under existing Bank projects: the significant advantage they derive from the Bank loan is the long-term funding that will allow them to provide long-term financing without taking on significant maturity mismatch. Ukreximbank also has extensive capacity and experience in managing foreign exchange risk and is able to effectively manage this risk.

50. Another aspect that is important in ensuring sustainability will be the continued availability of adequate resources and skilled staff in Ukreximbank. The technical and operational risks associated with energy efficiency investments require that the financial institutions have a strong technical capacity to appropriately identify, appraise and monitor the projects, since this is still a new area for Ukrainian FIs. Ukreximbank has an established Energy Efficiency unit that has been evaluating energy efficiently projects under the ongoing EBRD loan. The unit has qualified staff to look at technical aspects of potential energy efficiency investments. For technical issues that are outside of their staff's capacity, Ukreximbank outsources these tasks to experts.

E. Critical risks and possible controversial aspects

51. There are significant country risks that can translate into macro and financial sector risks. Project specific risks are moderate.

(a) COUNTRY RISK

52. Ukraine's credit risk is high. Sovereign obligations in foreign currency are rated at B2 by Moody's and thus are considered speculative and are subject to high credit risk. Macroeconomic risk is rooted in the following: (i) inappropriate implementation of fiscal and monetary responses; (ii) worse than expected external economic environment and terms of trade deterioration; (iii) further depreciation of the exchange rate with knock-on effects for corporate and banks; and (iv) lower than expected roll-over of private sector external debt. The main mitigant to macroeconomic risk is the framework provided by the IMF program and World Bank DPL program.

53. Political risks have been high, due to a recent track record of instability. Political stability has, however, improved during 2010. While political risks to program implementation are substantial, this operation takes the view that such risks are best managed through

continued active engagement and the design of a policy operation, which can serve as a focal point for critical reform steps.

54. Ukraine has historically been one of the least performing World Bank borrowers with extremely low disbursement rates. This reflects a lack of ownership, capacity limitations to comply with applicable World Bank policies on procurement, safeguards etc. and lengthy bureaucratic procedures.

(b) IMPLEMENTATION READINESS

55. Overall implementation risk is assessed to be Moderate[3] (Table 5). A draft operations manual has been prepared and found satisfactory both by the World Bank and Ukreximbank.

56. The eligibility criteria for sub-projects have been discussed and agreed with Ukreximbank and follow best practice experience of other successful energy efficiency projects the World Bank has implemented in countries such as Turkey, China etc. Eligibility criteria for Ukreximbank and participating banks on liquidity, related party lending and compliance with other applicable prudential regulation have been coordinated with existing criteria under EDP 2.

57. In consultation with its existing borrowers and branch offices, Ukreximbank has identified a pipeline of energy efficiency projects worth over US$400 million. The Bank team has visited one of the potential projects and received the economic analysis for several other projects. Ukreximbank has considerable experience in the energy efficiency market segment as it has already financed over 20 projects under the EBRD energy efficiency credit line.

58. The team has adopted a key focus during project design on accelerating disbursement from the outset including: (i) identifying a World Bank counterpart (Ukreximbank) with a successful track record on disbursing World Bank projects; (ii) increased reliance on private sector for project preparation and implementation; (iii) marketing of the project early on in project preparation; (iv) establishment of an indicative project pipeline about double the size of the loan to accommodate drop-outs; (v) preparation of and joint review of at least three sub-projects prior to appraisal; and (vi) accommodating retroactive financing of up to 20% of the loan amount.

59. A review on compliance of the project design with the World Bank Operational Policy 8.30 on Financial Intermediary Lending was carried out and the project design was found satisfactory. The review accepted the difference in the cost of funds to Ukreximbank and to PBs against the background that Ukreximbank incurs additional costs which it needs to recover from PBs including: (i) the cost of training PBs in the preparation and credit analysis of energy efficiency projects; (ii) the administrative costs associated with monitoring and reporting for the World Bank loan; (iii) the costs associated with assisting the Bank and the Government with policy reforms in the Municipal sector; (iv) the additional costs associated with the World

[3] Rating of 4: High (H), Substantial (S), Moderate (M), Low (L)

Bank safeguards; and (v) the additional commercial risks associated with being the borrower of record for the entire loan.

Table 5: Risks and Mitigation

Risk factors	***Description of risk***	***Rating[a] of risk***	***Mitigation measures***	***Rating[a] of residual risk***
I. Sector Governance, Policies and Institutions				
Sector policies and institutions	-- High dependency on imports for energy supplies; -- Affordability issues of energy supply; -- Inability to pay for gas; -- Poor financial standing of municipalities; -- Inadequate energy pricing practices	S	-- Ukraine's energy policy is shifting to support energy efficiency; -- Improved targeting of safety nets through DPLs; -- Working with donors to train municipalities to improve fiscal responsibility; -- Fiscal policy dialogue including through DPL and Financial Sector Rehabilitation DPL; -- Support, with other donors, the GoU's efforts to reform district heating regulation to enable, among other things, sector's financial viability	S
Implementing agencies	-- Concerns about institutional capacity of the Ministry Energy and Coal Industries and the State Agency of Ukraine for Energy Efficiency and Energy Conservation; -- Inadequate capacity of local financial institutions, Ukreximbank as well as industrial and municipally-owned enterprises to implement energy efficiency projects	M	-- Local capacity to build, operate and implement sectoral projects, including energy efficiency, has been demonstrated; -- Technical assistance, including external expertise and other donors' programs (IFC,USAID), is under preparation	M
II. Operation-specific Risks				
Implementation capacity and sustainability	-- Ukreximbank lending the funds to non-viable industrial or municipal entities; -- Ukreximbank' capacity is too overstretched to work with different donors; -- Limited capacity of the State Agency of Ukraine for Energy Efficiency and Energy Conservation to process grant funding;	M	-- The skills of the domestic financial sector to assess and supervise energy efficiency projects through financial assessment of energy efficiency activities are emerging across the sector, and have been demonstrated by Ukreximbank; -- Ukreximbank has a track	M

Risk factors	*Description of risk*	*Rating[a] of risk*	*Mitigation measures*	*Rating[a] of residual risk*
	-- Limitations due to working with one FI		record of successfully implementing energy efficiency projects; -- Adequate supervision of Ukreximbank; -- The Project team will assist the State Agency of Ukraine for Energy Efficiency and Energy Conservation with technical issues to improve its capacity; -- The project will closely supervise the State Agency of Ukraine for Energy Efficiency and Energy Conservation; -- Open to the possibility of participation by other FIs	
Procurement	-- Inconsistent commercial practices among various sub-borrowers; -- Limited capacity of Ukreximbank to monitor potentially large number of open competitive bidding procedures simultaneously; -- No experience of Ukreximbank in lending to municipal sector; -- Limited procurement capacity in municipal sector	S	-- Clear definition of commercial practices in project Operations Manual; -- Capacity building within Ukreximbank including procurement procedures of the World Bank to be applied in the municipal sector; -- Capacity building within Ukreximbank by closely monitoring the first two ICB procedures under the Project; -- Close cooperation with USAID's Municipal Heating Reform project; -- Adequate supervision	M
III. Overall Risk (including Reputational Risks)				**M**
Memo items: IEG rating: % of projects rated unsatisfactory—MU,U, HU over last five FYs for Ukraine portfolio: 31% % of projects rated unsatisfactory – MU, U, HU over last five FYs for energy and mining sector: 18%				
[a] Rating of risks on a four-point scale – High, Substantial, Moderate, Low - according to the likelihood of occurrence and magnitude of potential adverse impact.				

F. Loan/credit conditions and covenants

60. **Financial Covenants**

- The Borrower shall comply with the applicable prudential regulations of the Guarantor;

- The Borrower shall maintain a financial management system in accordance with the provisions of Section 5.09 of the General Conditions;
- The Borrower shall prepare and furnish to the Bank after the end of each calendar quarter (within forty-five days), interim unaudited financial reports (IFRs) for the Project covering the quarter, in form and substance satisfactory to the Bank;
- The Borrower shall have its Project Financial Statements audited in accordance with the provisions of Section 5.09 (b) of the General Conditions. Each audit of the Financial Statements shall cover the period of one fiscal year of the Borrower, commencing with the year in which the first withdrawal is made, or the first complete year of implementation of the Project. The audited Financial Statements for each such period shall be furnished to the Bank not later than six months after the end of such period; and
- The Borrower shall have its financial statements (balance sheets, statements of income and expenses and related statements) for each fiscal year, or other period agreed to by the Bank, audited, in accordance with consistently applied auditing standards acceptable to the Bank, by independent auditors acceptable to the Bank.

61. **Other Conditions**

- The Borrower shall submit for the Bank's approval: (a) the first two Sub-projects of the Borrower for Bank review; (b) the first two sub-loans from each participating bank; (c) all sub-loans in excess of $10 million; and (d) all Sub-projects which are certified as Category A Sub-projects in accordance with the applicable environmental laws and regulations of the Guarantor;
- The Borrower shall make Sub-loans to Sub-project Sponsors on the terms and conditions set forth in the Operational Manual, including, without limitation, the terms and conditions set forth in the Loan Agreement;
- The Participating Banks that participate in the project will be required to furnish their annual audits;
- The Borrower shall ensure that Sub-loans shall be made to sub-borrowers which will have a Debt-Service-Coverage-Ratio after receipt of the sub-loan of 1.3:1;
- Sub-loans may finance working capital up to an aggregate amount not to exceed the equivalent of 10% of the sub-loan, provided that such working capital is solely used for the purposes of Energy Efficiency Sub-Projects which extend existing energy production capacity or create new capacity;
- The Borrower shall ensure that Sub-loans shall be made for sub-projects that generate a real financial rate of return of at least ten percent (10%);
- The Borrower shall carry out the project in accordance in environmental assessment framework and ensure that each Sub-project shall comply with the environmental and safeguard review procedures set forth in the Operational Manual. To that end, the Borrower shall require that each Sub-project Sponsor applying for a Sub-loan furnish evidence satisfactory to the Bank and the Borrower, showing that the Sub-project in respect of which the application has been prepared is in accordance with these procedures. Such evidence shall include *inter alia* an environmental impact assessment for all Category A subprojects and an environmental information sheet for all Category B subprojects in respect of which the application has been made and, if applicable, an

environmental management plan and a land acquisition and resettlement action plan, all satisfactory to the Bank and the Borrower;

- The Borrower shall maintain the Project Implementation Unit (PIU) until completion of the Project and shall ensure that the PIU functions at all times in a manner, and with staffing and budgetary resources, necessary and appropriate for Project implementation and satisfactory to the Bank;
- The Borrower shall ensure that PBs are compliant with the eligibility criteria as per the Operations Manual; and
- The Borrower shall ensure that no withdrawal shall be made from a loan account for indirect lending to a PB until a Subsidiary Loan Agreement has been entered into between the Borrower and respective PB on terms and conditions satisfactory to the Bank.

IV. APPRAISAL SUMMARY

A. Economic and financial analysis

62. A financial assessment of the intermediary bank has been carried out (Annex 9A). UkrExIm Bank (Ukreximbank), the financial intermediary for the proposed project, emerged from the crisis as a solid institution. Ukreximbank is a state-owned universal bank with a focus on corporate finance. Ukreximbank historically implemented conservative risk management policies which helped it weather the crisis relatively better compared to other Ukrainian banks. Nevertheless, in 2008 and 2009, asset quality deteriorated with significant increases in restructured and non-performing loans. Several capital increases between 2008-2010 for a total of UAH 13.3 billion resulted in a strong capital adequacy ratio of 44% as of end 2010 (as compared to the market average of 21%). This provides an adequate cushion for increased loan loss provisioning (51% as of end 2010 vs 44% as of end 2009) as well as potential future losses. As a result, Ukreximbank's credit ratings have improved in 2010-2011. For example, in January 2011, Moody's changed to stable from negative the outlook on Ukreximbank's D- bank financial strength rating (BFSR), and the outlook on the bank's Ba3 local-currency deposits rating. Moreover, in March 2010, Fitch Ratings improved the outlook for Ukreximbank to stable from negative, assigned in 2008.

63. The financial and economic analysis focused on a review of selected sub-projects included in the pipeline of potential sub-projects prepared by the Borrower (Annex 9B). The sample economic analyses of two pipeline projects shows that the proposed sub-projects in Ukreximbank's pipeline are achieving real internal rates of return above 10% calculated based on energy savings only and therefore meet the eligibility criteria of the credit line.

B. Technical

64. The technical measures adopted in the industrial energy efficiency investment subprojects employ mature commercial technologies with proven energy efficiency advantages and present little technical risks. The technical measures for the municipal energy efficiency investment subprojects are of a similar nature. The Operational Manual stipulates that specialists with the necessary technical expertise will be included in the subproject due

diligence teams to ensure a satisfactory review of the technical viability of proposed sub-projects. They will ensure that the subprojects are in compliance with relevant national standards, guidelines, and regulations and are fully satisfy the technical eligibility criteria.

C. Fiduciary

65. **Financial Management**: A financial management assessment was completed in October 2010 and determined that the Ukreximbank's project FM capacity is adequate and satisfied the Bank's FM requirements. Ukreximbank has gained valuable experience from the implementation of EDP 1 and 2 projects, and the financial management (FM) arrangements for this new project are built based on the existing arrangements of the EDP 2 loan. Specifically, Ukreximbank will manage the accounting for and reporting on the loan using its existing accounting system, and by relying on its existing internal control framework and procedures. The project Operational Manual, detailing all relevant FM procedures for Project sub-borrowers, has already been developed. Loan funds will be disbursed either through direct payments or flowing through the Designated Account (the Designated Account will be opened in Ukreximbank). Ukreximbank will prepare and submit project IFRs on a quarterly basis. The project and entity (Ukreximbank) financial audits will be carried out on an annual basis and will be performed by independent external auditors.

66. **Procurement:** The project is implemented by Ukreximbank who will ensure that procurement is executed in accordance with the Bank's procurement guidelines. Ukreximbank has previous experience as implementing agency under the EDP 1 and EDP 2. In both projects, Ukreximbank demonstrated solid knowledge and application of the Bank's procurement procedures. In EDP 2, Ukreximbank worked with participating banks and procurement was undertaken by the beneficiaries in accordance with commercial practices acceptable to the Bank.

67. Commercial practices in the private sector include competitive approaches based on bidding procedures with evaluation of price and quality. The current threshold for commercial practices in the Ukraine is set at US$10 million for the procurement of works and goods. All contracts above this threshold will be subject to open competitive bidding procedures acceptable to the Bank. Such procedures shall include but not be limited to international advertizing, clear and non-discriminatory bid evaluation criteria, sufficient time for bid preparation, public bid opening, fair and transparent bid evaluation, and a clear and effective complaints mechanism.

68. Consultants' services which during the implementation of the project may be requested to be financed out of the proceeds of the Loan will be procured in accordance with the Bank's guidelines for the selection of consultants.

69. While the procurement risk with regard to sub-borrowers in the private sector is low, there might be substantial risk in terms of on-lending to the municipal sector. Ukreximbank has limited experience in lending to the municipal sector and will have to work with sub-borrowers to establish the required capacity. In addition, the public procurement system of Ukraine does not meet the requirements of the use of country systems and therefore, procurement resulting

from on-lending to municipality-owned entities will need to be conducted in accordance with the procurement guidelines and procedures of the Bank.

70. Ukreximbank will monitor and document the procurement conducted by sub-borrowers who will be responsible for ensuring that the procurement rules for sub-loans are applied in accordance with the agreed procedures, thresholds, roles, and responsibilities as elaborated in the operations manual.

D. Social

71. The social impact of the proposed project is expected to be significant and positive. The sub-projects are expected to: sustain economic growth, which will increase employment generation and reduce poverty; and decrease the environmental impact of the energy sector, improving the quality of life and health. Studies have shown that energy efficiency interventions are win-win-win: they improve the competitiveness of industry, increasing job prospects; they decrease the fiscal burden; and they decrease environmental impacts. By decreasing energy needs, there will also be a decreased need to increase prices.

E. Environment –Category FI

72. In accordance with World Bank environmental assessment policies and procedures (OP/BP/GP 4.01), the project has been assigned "Category FI". Hence, an "Environmental Assessment Framework (EAF) Document" has been prepared, consistent with both the Government of Ukraine and World Bank Environmental Assessment procedures. This Environmental Assessment Framework Document will be included as a Section V in the Operations Manual for Energy Efficiency Project. In summary, Ukreximbank will be responsible for ensuring that sub-projects financed under the Project undergo environmental screening to ensure their conformity with Ukrainian environmental legislation and regulations and the World Bank's safeguard policies and procedures. Ukreximbank will undertake the environmental screening of the sub-loan applications to determine the appropriate environmental risk category for the sub-borrowers/sub-projects. The sub-borrowers will be responsible for carrying out any environmental analysis and for confirming that the proposed sub-projects comply with national environmental guidelines, and for obtaining the necessary clearance from the appropriate licensing authorities. Requirements in respect of ensuring compliance with environmental requirements of the Bank and Ukrainian regulations will also be written into the sub-loan agreements. The World Bank will perform ex-ante review and clearance of all sub-projects in environmental Category A projects, and the first two Category B projects. An ex-post review of a selection of about 20% of Category B projects will take place during project supervision. Should problems arise in the review of Category B projects, reviews will revert to an ex-ante review until the problems have been corrected.

73. In accordance with recommendations of the ECA Safeguards Secretariat, it was agreed that the most appropriate manner to apply the World Bank's disclosure policy would be to disclose the EAF on the website of Ukreximbank and when PB will join disclosure process on their websites. On August 26, 2010 the Ukrainian language EAF was disclosed on Ukreximbank's website **(www.eximb.com/ukr/corporate/loans/p_hearings/eaf/).**

74. A public consultation meeting was held on September 28, 2010, and notifications of the meeting were posted in the reputable Governmental newspaper "Uriadovyi Courier" (The Governmental Courier) on September 1, 2010, inviting the interested stakeholders to participate. The English language version of the EAF and the Minutes of the public consultation meeting were disclosed at the Infoshop on October 28, 2010. The short overview of EAF is presented in Annex 10 and full document is included as an annex to the operations manual.

75. Ukreximbank has qualified technical staff for assuring compliance with Ukrainian environmental assessment safeguards. However, they have all indicated that they wish additional training to develop their skills to implement any additional requirements of the EAF which are needed to satisfy the World Bank environmental policies. These additional responsibilities include: screening in accordance with World Bank criteria; providing Sub-borrowers with guidance in EA/environmental management plan (EMP), Environmental Info Sheet preparation, and supervision and reporting activities.

76. The World Bank project team will conduct safeguards training to Ukreximbank and the PBs technical staff, including the additional requirements of interest, during the project launch mission. The first two-day training is planned on May 12-13, 2011, in the World Bank's Kiev office. In addition, the project team's environmental specialist will provide to the dedicated safeguards staff of Ukreximbank and PBs a series of training sessions on implementation of the EAF during project preparation, loan effectiveness, and for their first few sub-project applications. The project team's environmental specialist will organize one day to two day workshops (depending on the number of participants) which would be a very efficient and cost-effective way of training, providing hands-on experience and building capacity. The potential environmental impacts to be associated with the anticipated sub-projects are expected to be limited. Therefore, these arrangements are considered acceptable.

77. Ukreximbank has already adequate capacity (including an Environmental Engineer and two staff members who attended in 2008 the World Bank's Safeguards training workshop in Georgia and Moldova) and are performing well in this capacity at EDP 2, following the environmental guidelines embedded in EDP 2. They will be working with environmental guidelines embedded in the Project's Operational Manual.

F. Safeguard policies

78. The Bank's Environmental Assessment policies (OP/BP 4.01) will apply to the Project, including sub-projects. The possibility that other World Bank safeguard policies might apply to sub-projects, along with other relevant environmental issues of sub-borrowers and their sub-projects will be addressed through the sub-loan environmental eligibility assessment. World Bank staff will continue to supervise adherence to Bank and Ukrainian requirements. Annex 10 provides further details. It is not anticipated that the sub-projects under the Project will trigger OP 4.12 (Involuntary Resettlement) and OP 7.50 (International Waterways).

79. Involuntary Resettlement: Sub-project investments supported by the project involve modifications or system improvements within existing facilities. Sub-projects which could necessitate land acquisition are not anticipated. In the unlikely event that a sub-project that requires land acquisition is proposed for financing, it must be documented that land acquisition was made on a willing seller – willing buyer basis and that the land purchased did not require the displacement of encroachers or informal land users. Sub-project investments which necessitate land acquisition leading to involuntary resettlement will not be financed under this project. Similarly, sub-projects for which technical success is linked to other interventions or investments which do require involuntary resettlement will not be supported by the project.

Safeguard Policies Triggered by the Project	Yes	No
Environmental Assessment (OP/BP 4.01)	[x]	[ ]
Natural Habitats (OP/BP 4.04)	[ ]	[x]
Pest Management (OP 4.09)	[ ]	[x]
Physical Cultural Resources (OP/BP 4.11)	[ ]	[x]
Involuntary Resettlement (OP/BP 4.12)	[ ]	[x]
Indigenous Peoples (OP/BP 4.10)	[ ]	[x]
Forests (OP/BP 4.36)	[ ]	[x]
Safety of Dams (OP/BP 4.37)	[ ]	[x]
Projects in Disputed Areas (OP/BP 7.60)*	[ ]	[x]
Projects on International Waterways (OP/BP 7.50)	[ ]	[x]

G. Policy exceptions and readiness

80. **The readiness of the Project for implementation:**

The completeness and readiness of the engineering design documents for the first year's activities	N/A
The completeness and readiness of the procurement documents for the first year's activities	Procurement procedures are detailed in the draft Operations Manual agreed with the Borrower. A robust sub-project pipeline has been prepared, two projects of which have been reviewed as meeting the proposed criteria.
The availability of a satisfactory Project Implementation Plan	A Draft Operations Manual has been prepared and agreed with the Borrower
Readiness for disbursement	Ukreximbank has the highest disbursement rate under existing World Bank projects. An initial project pipeline twice the size of the loan amount has been prepared. Retroactive financing of up to 20% is available.

* *By supporting the proposed project, the Bank does not intend to prejudice the final determination of the parties' claims on the disputed areas*

Annex 1: Country and Sector or Program Background

UKRAINE: ENERGY EFFICIENCY

1. Following the financial crisis, Ukraine's economy resumed growth in 2010 on the back of moderate improvements in external demand and the low base of the first half of 2009. Real GDP grew by 4.9 percent y/y in the first quarter of 2010, by 5.9 percent y/y in the second quarter and by 3.5 percent y/y in the third quarter. The current account deficit reemerged while consumer price inflation returned to single-digits. Since mid-2010, the current account has deteriorated, leading to a US$ 1.8 billion deficit in the first 10 months of 2010. The key factors behind this were the recovery of domestic demand for imports and the introduction of export quotas on grain. At the same time, external private debt roll-over rates improved to 102 percent in 2010, supporting net inflows on the capital account. Following a food-price driven pick-up in September, 2010, consumer price inflation decelerated to 9.2 percent y/y in November, 2010.

2. The IMF Board approved a new 2½ year Stand-By Arrangement (SBA) in the amount equivalent to SDR 10 billion (US$14.9 billion). This follows the former SBA of SDR 11 billion (US$ 16.6 billion) that went off-track in November, 2009, (after disbursing around US$ 10.5 billion). Under the new arrangement, policies include a fiscal adjustment program to contain the 2010 consolidated general government deficit to 5½ percent of GDP in 2010 and 3½ percent in 2011. Financial sector reforms are focused on helping to restore the health of the banking system, including by ensuring an adequate level of capitalization and strengthening the independence of the National Bank of Ukraine (NBU). Energy sector reforms are envisaged to strengthen the gas sector and improve Naftogaz's financial position, limiting its operating deficit to 1 percent of GDP in 2010 and balancing its finances in 2011. As a prior action, the Parliament amended the budget law cutting some expenditure categories, particularly from the stabilization fund and capital expenditures. In line with the prior actions, the NERC increased gas tariffs for households and communal utilities companies by 50% effective August 1, 2010, and district heating prices by 30% in December 2010.

Table A1.1: Key Macroeconomic Indicators

	2005	2006	2007	2008	2009	2010F	2011F	2012F
Nominal GDP, *UAH billion*	441.5	544.1	720.7	949.9	914.7	1081.9	1243.3	1417.5
Real GDP, *% change*	2.7	7.3	7.9	2.1	-15.1	4.3	4.0	4.5
Consumption, *% change*	15.7	12.4	13.6	9.0	-12.1	6.5	3.2	4.2
Fixed Investment, *% change*	3.9	21.2	23.9	1.6	-46.2	3.2	5.5	7.6
Export, *% change*	-12.2	-5.6	3.3	5.2	-25.6	6.5	5.5	5.1
Import, *% change*	6.4	6.8	21.5	17.1	-38.6	10.8	5.7	5.7
GDP deflator, *% change*	24.6	14.8	22.7	29.2	13.7	13.4	10.5	9.1
CPI, *% change eop*	10.3	11.6	16.6	22.3	12.3	9.8	10.7	8.9
Current Account Balance, *% GDP*	2.9	-1.5	-3.7	-7.2	-1.6	-2.2	-3.1	-3.4
Terms of Trade, *% change*	8.3	4.9	9.8	6.1	-6.8	1.4	0.0	0.5

	2005	2006	2007	2008	2009	2010F	2011F	2012F
Budget revenues, *% GDP*	41.8	43.7	42.3	43.9	40.7	43.2	41.6	40.7
Budget expenditures, *% GDP*	44.1	45.1	44.3	47.0	49.4	49.7	45.1	43.2
Fiscal balance (with Naftogaz, w/o bank recap), *% GDP*	-2.3	-1.3	-2.0	-3.1	-8.7	-6.5	-3.5	-2.5
External debt, *% GDP*	45.3	50.4	58.6	83.6	90.8	82.2	77.7	72.4
Public and Guaranteed Debt, *% GDP*	17.7	14.8	12.4	20.1	34.7	41.6	42.8	42.6

Source: Ukrainian Authorities, WB projections

The Financial Sector

Fundamentals of the financial sector operations in Ukraine

3. Ukraine's financial sector grew rapidly during 2002-2008, resulting in significant increase of financial sector assets as percent of GDP, improved accessibility of financial services and larger financial sector depth (deposits to GDP). Such a fast growth is explained by the low base, high unsatisfied credit demand from clients and consumption boom, improved macroeconomic environment and better access to international markets, firstly by a massive entry of international financial groups into Ukraine's banking sector in 2006-2008.

4. Ukraine has been hard hit by the global financial crisis that had severe effect on Ukraine's economy and the financial sector. Inaccessibility of deposits in one of the largest banks in early October 2008 and nearly 40% depreciation of the national currency – the Hryvnia (UAH) - triggered a 24% contraction of local currency deposits during October 2008 – March 2009. Tightening liquidity and increasing credit risks resulted in ceasing of bank lending to the economy and households. Economic recession, growing unemployment, UAH depreciation pushed a 5.5-fold increase in nonperforming loans (NPLs) in October 1, 2008-January 1, 2009, and a 3.3-fold increase in 2009. This lead to historic high losses of the banking sector in 2009 of UAH38 billion, significant capital erosion and insolvency of a number of banks. Tripling of the deposit insurance coverage limit in late 2008 didn't stop the massive flight of investors and panic of depositors. Due to the NBU call for capital increase based on the results of the stress-testing of the banking system, state recapitalization of several banks and other measures taken by the central bank, the volume of regulatory capital increased by 10.3% in 2009 despite historic losses.

5. Financial sector regulation is conducted by the NBU as the monetary authority, bank regulator and supervisor, State Securities and Capital markets Commission (SEC) which is responsible for investment funds, asset managers, depositories, custodians and market conduct, and the State Commission for Regulation of Financial Services Market (NBFI Regulator) which is regulating the rest of the financial sector.

Overview of the banking sector

6. The Ukrainian banking system experienced a major expansion during 2005-first half of 2008, demonstrating one of the highest growth rates in the region. Banking sector assets grew

on average 60 percent per annum in 2005-2008, reaching 84 percent of GDP in 2007 and nearly 98 percent of GDP in 2008 (Table A1.3). Retail lending skyrocketed in 2002, showing an average 115 growth per annum during 2002-2008, with nearly 173 percent jump in 2002 and 98 percent growth in 2007.

7. A stable exchange rate, abundant external and domestic liquidity and steady economic growth during 2000-2008 provided an impetus for the investment boom and rapid expansion of lending. Increasing real income, improved legal framework for mortgage and retail lending, combined with intensified competition among banks after massive entry of foreign banks to the Ukrainian market in 2006-2008 have improved access to finance for SMEs and retail clients, increased competitive tension and resulted in bubble-boom. A number of local banks have followed the risky strategy of expanding their assets at all costs in order to gain market share in the hope of being acquired by a foreign bank at a multiple of their book value. These distorted incentives contributed to excessive risk taking behavior on behalf of many bankers and to the overbanking of the system.

8. The global financial crisis which covered Ukraine in October 2008 has shaken the banking sector, leading to a major loss of depositors' confidence and massive run on banks, erosion of capital and subsequent insolvency of a number of institutions. Banking sector assets shrunk by 5 percent in 2009, primarily triggered by the 17.2 percent reduction of household credit portfolio, drop in securities value after the failure of the domestic securities market and growing NPLs. The number of operating banks in Ukraine has also decreased to 176 operating banks in March 2011 as compared by 184 banks as of end 2008. Another 18 banks are in the process of liquidation, including 13 banks which were put into liquidation by the NBU in 2009-2010. Reduction in a number of banks, despite the licensing of 4 new institutions in 2009, is the result of the NBU actions aimed at stabilization of the banking system and resolution of insolvent banks undertaken in collaboration with the Bank and IMF team, supported by the Bank's PFRL DPL series and IMF's Stand-By Loans.

Banking sector landscape

9. Banking sector remains non-transparent, inefficient and populated by a large amount of small "pocket" banks. This owes to relatively soft entry requirements (minimum share capital amounts to UAH 120 million, or Euro 10.4 million), poor disclosure of information on real owners, week enforcement of "fit & proper" and conflict of interest requirements, regulatory forbearance in ensuring uniform compliance of banks with the existing prudential requirements. This results in continued malpractices of the banking sector, including abusive related party lending and subsequent violations of lending limits on insiders and large exposures. The majority of failed banks have suffered from excessive and largely delinquent related party lending, poor liquidity, fraud and money laundering, political intervention.

Crisis impact on lending activities of banks

10. The crisis has brought negative effects for the deposit base and quality of loan portfolio of banks. Following the significant outflow of deposits during the period of October 2008-March 2009 and despite the introduction in October 2008 of the moratorium on withdrawal of deposits from banks' accounts, the confidence is returning to the banking sector, as evidenced by the growing deposit base, especially the increasing inflow of household deposits. This

positive trend is supported by the three factors, namely (i) absence of alternative vehicles for individual investors, as investments in real estate are becoming less attractive and more risky due to real estate market illiquidity and drop in prices, (ii) erosion of non-interest savings by double-digit inflation, (iii) high interest rates on deposits in 2009-early 2010, which on average meant 11-12 percent on dollar deposits and up to 25 percent on local currency denominated deposits. In the recent months however banks have launched costs reduction campaign, resulting in significant decrease of interest rates on deposits (average deposit rate for UAH deposits is 6.5% and for USD deposits – 5.4% as of end March 2011). A number of banks, suffering from excessive liquidity, are even reducing their deposit base in the absence of adequate investment opportunities.

11. Lending is slowly resuming in 2011, after loan portfolio on the books of banks decreased by 5.7 percent in 2009 and continued to shrink in the first hald of 2010. The outstanding portfolio of retail loans to households dropped by 17.2 percent in 2009 with a further drop of 16.8 percent in 2010 on the back of massive restructuring of mortgage loans and conversion of FX denominated loans into local currency. New lending to households ceased due to risk-averse attitude of banks on top of Parliament prohibition to issue FX denominated loans to households.

12. The portfolio of corporate loans in absolute terms remained unchanged in 2009. However, in real terms, if adjusted for inflation and local currency depreciation, the loan portfolio to corporate clients has significantly shrunk in 2009. New lending has been extended largely to the existing clients, either to meet the outstanding commitments under existing credit lines, or for debt restructuring purposes, i.e. to roll over of the maturity of a loan or restructuring of a principle and interest payment schedules. B**y** the end of 2010, corporate loans grew 7% with the currency denominated lending remaining the only active market segment – the volume of UAH loans to corporate clients is constantly growing on a monthly basis since January 2010 (8 % year-to-date). During 2010, local currency loans grew 12.8%.

13. The economy continues to suffer significantly from lack of fresh financing. A risk-averse attitude of private banks is explained by a number of factors, including high costs of debt foreclosure along with continued loss-making performance of many Ukrainian borrowers, fragile macroeconomic environment and uncertainty about future exchange rate and international markets demand for Ukrainian exports. This makes lending expensive and risky. The revenue losses of banks from absence of new lending are acerbated by the continued growth of non-performing loans, absence of effective mechanisms for quick foreclosure or sale of distressed assets. Abusive attitude and low payment discipline of some borrowers is further aggravated by the ineffective and corrupt court practices and high costs of assets repossession through the existing state execution services.

Banking sector liquidity and deposit base

14. Liquidity of the banking sector has improved since the the second half of 2009, and so far banks have been demonstrating excessive liquidity, owing primarily to non-lending by the banking sector and generating some cash flow on the outstanding loans. Interest rates in the interbank market hiked significantly in the second half of 2008-first half of 2009, remained relatively stable in the second half of 2009 and have reduced in 2010 and further in 2011 (13.1% for UAH loans and 10.4% for loans in foreign currency as of end March 2011).

Excessive liquidity allowed the NBU to perform absorption operations, which helped banks to gain profit in the absence of lending and support stability of the domestic currency by diverting excessive flow of Hrynvia for conversion transactions, as was the case at the end 2008. In addition, the NBU and banks' investments into state securities have also increased, therefore crowding out the financing to the real economy and releasing the pressure on banks' for investments into interest earning assets. The yield on government bonds varied 19 to 25 percent at end 2009-early 2010 and 6 to 12 percent in 2010 with the record low yield of the issue in March 2011 at the level of 11 percetn, therefore making such transactions for banks more attractive and risk free as compared to lending.

Government Program and Bank support

15. To address the root causes of the crisis, the GoU has committed to a two phase program — crisis response and medium term. The first phase aims at preserving the core banking sector through the period of crisis. The second aims at supporting consolidation and increasing the sector's resilience to future crisis by strengthening supervision and governance. The GoU's banking sector rehabilitation program focuses on five areas: (i) enhancing market confidence, (ii) establishing an effective liquidity management framework, (iii) performing a diagnostic test to determine the banks' financial condition, (iv) enforcing a private and public bank recapitalization scheme, and a resolution program based on least cost principles, and (v) strengthening the legal/regulatory and enforcement frameworks.

16. To support the program, the World Bank launched preparation of a series of two programmatic development policy loans, Programmatic Financial Rehabilitation Development Policy Loans (PFRLs), designed to support a multi-year program of assistance to Ukraine to address the effects of the financial sector crisis. The first PFRL (US$400 million) was disbursed in September 2009 aimed at preserving the core Ukrainian banking sector in the context of the crisis, while the second aims at restructuring the sector and enhancing the legal and regulatory framework to make it more resilient and position the sector for post crisis recovery. The second PFRL (US$350 million) is under preparation and is aimed at further stabilization and capitalization of the system, and the enhancement of quality and resilience of the banking sector by implementing a number of structural reforms (such as reform of banking supervision, reform of deposit guarantee system and transfer of bank resolution powers from BSD to DGF, increasing market transparency, quality of reporting and disclosure of information on ultimate controllers, introduction of consolidated supervision and enhanced consumer protection).

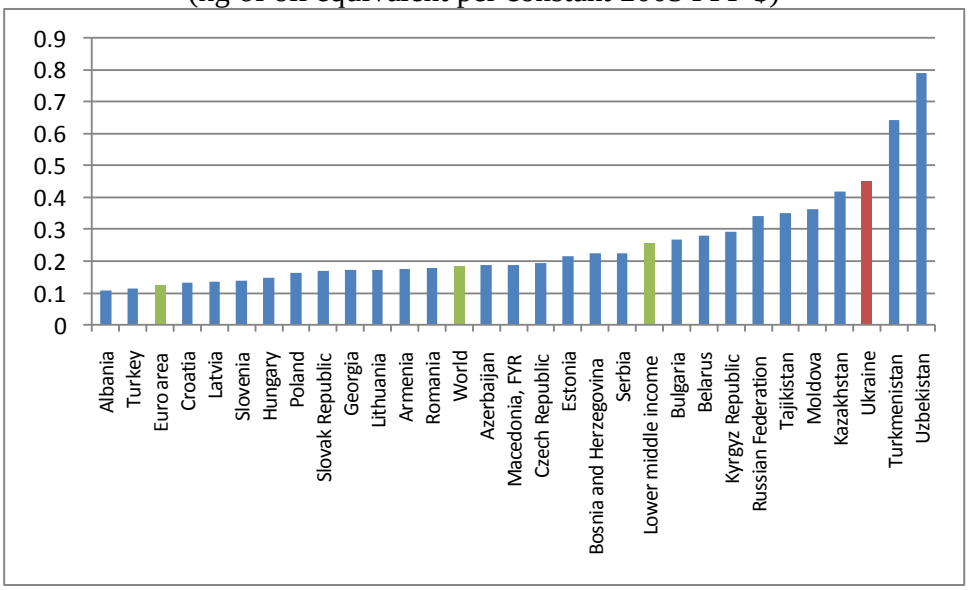
The Energy Sector

Introduction

17. The heavily subsidized energy supply has lead to Ukraine's high energy intensity, which is 3 times higher than the EU's. For example, Ukraine's energy use per unit of purchasing power parity adjusted GDP exceeds German figures by a factor of 3.7 (0.45 kg of oil equivalent in Ukraine vs. 0.12 kg in Germany) and more than double that of EU-12 countries (Figure A1.1). The only countries in ECA region with more energy intensive economies are Turkmenistan and Uzbekistan. While Ukraine's energy efficiency has improved

at a rate of about 6 percent per year from 1998-2007[4], from 0.8 kg of oil equivalent per unit of purchasing power parity adjusted GDP in 1998 to 0.45 kg in 2007, it remains at a level similar to that of Poland at the beginning of their reform program in the early 1990s.

Figure A1.1: Energy Intensity in ECA Countries, 2007
(kg of oil equivalent per constant 2005 PPP $)



Source: WDI

Energy Supply and Demand

18. Primary energy supply in Ukraine is dominated by fossil fuels (Table A1.2): natural gas (41%), coal (30%) and oil (8%). Nuclear and hydro sources of energy represent 17% and 1% respectively. The share of natural gas has been decreasing since 2004 while the share of coal in primary energy supply has been increasing. The share of nuclear sources has been consistently growing since 1990s; the relative importance of hydro energy has been fairly stable at about 1% (Figure A1. 2). Ukraine's other primary energy resources are modest.

19. Aggregate energy demand in the country was gradually falling in 1990-1998, stayed almost unchanged in 1998-2004 and increased slightly in 2005-2008. Aggregate energy production followed similar pattern, decreasing in 1990-1998, staying virtually constant in 1998-2004 and slightly increasing in 2003-2008[5]. Ukraine produces about 60% of its total primary energy supply.

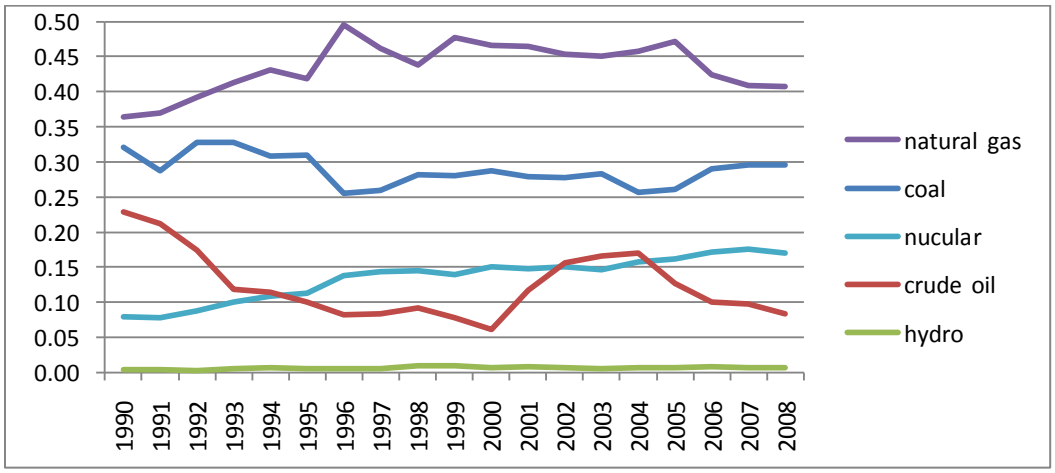
[4] There are no data available for 2008-2010
[5] The latest energy balance for Ukraine, prepared by IEA, is for 2008

Table A1.2. Ukraine: Primary Energy Supply (thousand tons of oil equivalent)

	2000	2001	2002	2003	2004	2005	2006	2007	2008
Coal	38,434	37,441	37,607	40,947	36,901	37,166	39,924	40,520	40,704
Crude Oil, NLG and Feedstocks	9,481	17,231	22,679	25,434	25,934	19,809	15,485	14,889	11,455
Oil Products	2,460	-3,816	-7,471	-8,867	-8,466	-5,426	-1,029	645	3,197
Hydro	970	1,034	828	794	1,011	1,063	1,108	872	979
Natural Gas	62,251	62,268	61,481	65,087	65,854	67,445	58,235	56,144	55,990
Nuclear	20,145	19,850	20,325	21,215	22,678	23,130	23,513	24,117	23,413
Peat	109	91	156	166	152	152	169	88	79
Wind	1	1	2	2	2	3	3	4	4
Total Primary Energy Supply	**133,782**	**134,099**	**135,601**	**144,616**	**143,870**	**142,886**	**137,332**	**137,342**	**136,143**
Total Energy Production	**76,425**	**76,313**	**76,745**	**79,458**	**80,200**	**80,969**	**83,008**	**81,600**	**81,289**
As a Share of Total Energy Supply	0.57	0.57	0.57	0.55	0.56	0.57	0.60	0.59	0.60

Source: IEA

Figure A1. 2: Primary Energy Supply in Ukraine by Source (shares)



20. Ukraine satisfies its coal demand with domestic production and imports about 70% of its needs in oil and 63% in natural gas (Table A1.3). In 2008, fuel imports constituted 27% of total imports that year. Besides significant fossil fuel imports for domestic needs, Ukraine is

also a major transit route for oil and gas to Central and Eastern Europe. Ukraine transports about 23% of EU oil imports and 46% of EU gas imports.

Table A1.3: Ukraine: Production (Prod) and Consumption (Cons) of Fossil Fuels, 2001-2009

	2002		2003		2004		2005		2006		2007		2008		2009	
	Prod	**Cons**	**Prod**	**Cons**	**Prod**	**Cons**	**Prod**	**Cons**	**Prod**	**Cons**	**Prod**	**Cons**	**Prod**	**Cons**	**Prod**	**Cons**
Coal (mln tons)	82.5		80.2		81.3		78.8		80.2		76.8		79.5		73.7	
Coal (mln toe)	42.8	38.3	41.7	39.0	42.2	39.1	41.0	37.5	41.7	39.8	39.9	39.7	41.3	40.3	38.3	35.0
Crude Oil (th b/d)	85.9	286	90.3	295	94.3	310	100.9	296	109.3	309	108.3	339	106.6	336	99.9	307
Natural Gas (bcm)	17.0	67.7	17.6	69.0	18.4	68.5	18.6	69.0	18.7	67.0	18.7	63.2	19.0	60.0	19.3	52.0

Source: BP, EIA, Energobusiness

21. Because of the recent economic and financial crisis and consequent GDP contraction as well as increased energy prices, the energy balance changed considerably in 2009: natural gas and coal consumption both fell by 13% compared to 2008

22. Energy demand in Ukraine is characterized by high energy intensity due to the high share of heavy industries (metallurgy, chemical and petrochemical industries) and the low efficiency of energy conversion technologies. Significant energy savings could be achieved through employing more efficient operating practices and using more modern technologies in energy intensive industries, all of which require strong price incentives and continued reform in the energy sector. Energy price reform to the industrial and commercial sectors has already taken place with prices increase in 2005-2010. Some cash rich industries have responded by investing in new technology that would considerably decrease energy use, while others are constrained by the availability of capital.

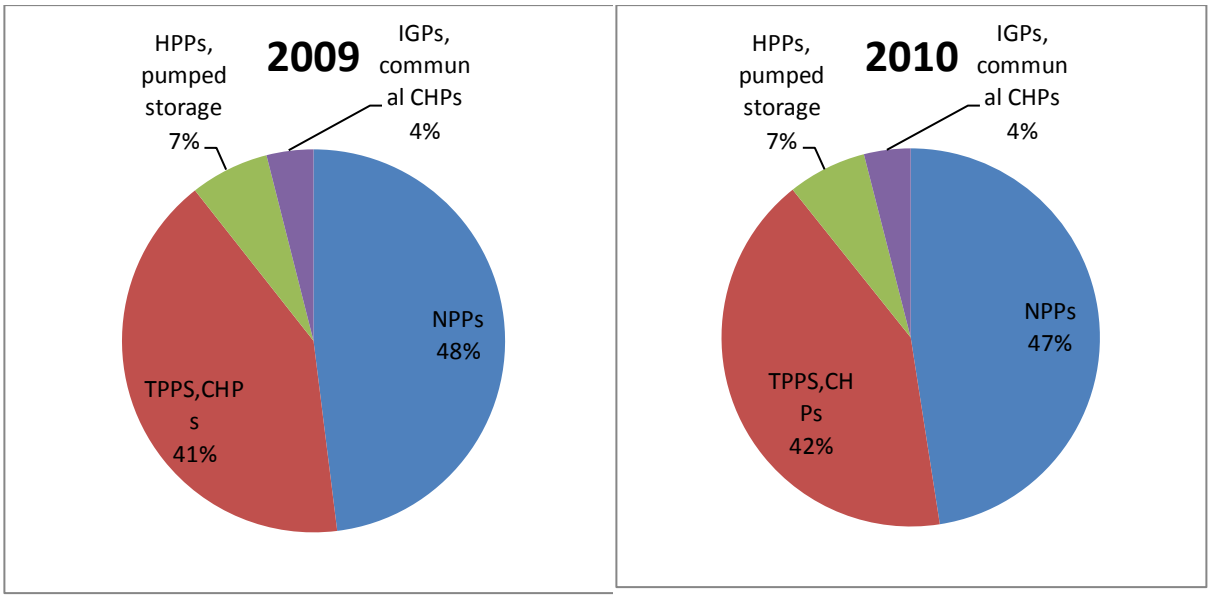
Power Sector

23. The power sector of Ukraine consisted of 14 large thermal power plants (TPPs), 8 large hydropower plants (HPPs) and 4 nuclear power plants (NPPs). As of 2005, total installed capacity was 52 GW of which: (i) 58% TPPs; (ii) 27% NPPs; (iii) 9% HPPs and pumped storage; and (iv) 7% isolated generating plants (IGPs), combined heat and power plants (CHPs) and other sources.

24. In 2009 the power plants of Ukraine generated 173 TWh, about 10% less than in 2008. The total production included: (i) 41% TPPs and CHPs – 71.1 TWh; (ii) 7% HPPs and pumped storage – 11.8 TWh; (iii) 48% NPPs – 82.9 TWh; and (iv) 4% IGPs and communal CHPs – 7.1 TWh.

25. In 2010, electricity generation increased by 8.7% compared to 2009 to 188 TWh; the distribution of power generation by source remained virtually unchanged, with slight decrease in NPPs share accompanied by a comparable increase in TPPs and CHPs share (Figure A1. 3).

Figure A1.3: Electricity Generation by Source, 2008 and 2009



Source: Ministry of Energy and Coal

26. In 2009, energy generation companies decreased their consumption of both natural gas and coal compared to 2008; however, consumption of natural gas has decreased more drastically: gas consumption of energy generation companies was 350.6 million cm in 2009 compared to 489.4 million cm in 2008 (28% decrease); consumption of coal decreased from 34.8 to 29.0 million tons (16.7%)[6]. In 2010, energy generation companies increase their consumption of natural gas to 2009: gas consumption increased by 319.2 million cm compared to 2009 (a 91% increase); coal consumption stayed almost unchanged[7].

27. The difficult legacy of the 1990s includes a lack of funds for maintenance and investments in power facilities which are deteriorating at an increasing pace. The decapitalization is particularly pronounced in thermal power companies[8] which are facing lack of working capital and in some cases (e.g. Dniproenergo - the largest state-owned thermal power company) are practically bankrupt. Without an urgent improvement in the management of state-owned thermal power companies and an improvement of their financial condition, Ukraine may face a crisis in meeting its increasing electricity demand despite a large margin in generating capacity. Much of the TPP equipment is operating well beyond its normal life-time and requires rehabilitation or replacement; the plants are extremely inefficient (about 30% efficiency). The problem is also complicated by the fact that coal-fired power plants have been used more to produce energy hence contributing to increase in GHG emissions.

[6] Ministry of Energy and Coal, http://mpe.kmu.gov.ua/fuel/control/uk/publish/article?art_id=166989&cat_id=35081

[7] Ministry of Energy and Coal, http://mpe.kmu.gov.ua/fuel/control/uk/publish/article?art_id=188753&cat_id=35081

[8] The thermal power generation industry consists of 5 generation companies, 4 of which are publicly owned, while one is private. TPPs include a total of 102 power units with a capacity ranging 150-800 MW.

Gas Sector

28. Gas sector is of considerable economic importance in Ukraine. Naftogaz Ukraiainy, a vertically integrated state-owned company and till 2006 the "single buyer" of all gas supplied in Ukraine and transported through the country, accounts for almost 10% of GDP, employing 1% of the country's workforce. As has been discussed above, Ukraine produces about 20 bcm of natural gas per year, while annual consumption of natural gas in 2010 was 58 bcm[9,10]. About 70% of the total natural gas consumed is imported. Ukraine has important gas transport system, which does not only supply Ukrainian needs but also plays a critical role in carrying gas to Central and Eastern Europe. Gas transit to Europe in the recent years has been 110-120 bcm per annum, thus becoming an important source of revenue.

29. Domestic natural gas resources are estimated to be 0.98 trillion cubic meters, which at current production rates of about 20 bcm/year, gives a reserves to production ratio of about 50 years[11]. Production from existing fields is expected to peak in the next several years; however, development of new fields could both increase domestic production, by as much as 10 bcm/year according to industry estimates, and extend the expected life of gas supply domestically. In addition, the possible development of shale gas could enable domestic production to be maintained as well.

30. Ukraine's natural gas transportation system includes almost 38,000 km of pipelines, 13 underground natural gas storage facilities, and a well-developed system of distribution stations. The system's annual input capacity totals 290 bcm while the output capacity stands at 175 bcm annually including 140 bcm into central and eastern European countries.

31. Despite the rise of energy prices, the domestic natural gas price does not cover its cost (see discussion on energy pricing below). Nazftogaz provides a cross-subsidy to the domestic consumers. The state partially compensating Naftogaz for the price difference between domestic and border gas price; however, the price difference subsidizing formula that calculates Naftogaz's compensation still does not account for the full cost of gas. In September 2009 resolution that set the formula, the GoU had assumed the price on imported gas at US$179.5 per thousand cubic meters (tcm), where as the price of imported gas for IV quarter of 2009 was US$208 per tcm.

32. The size of the implicit subsidies provided by Naftogaz to the economy are in the order of 6% of GDP; it does so at the cost of being unable to generate the funds needed for prudent reinvestment in the sector both to maintain existing assets and to expand operations with the objective of more effectively exploiting Ukraine's underlying hydrocarbon resource base and strategic location. Naftogaz is in financial strain: according to the Consolidated Financial Statements[12], in 2008 the losses of the company were US$251 million, up from US$8.2 million loss in 2007; in 2009 the losses increased drastically to US$2.8 billion. Naftogaz did not repay

[9] Ministry of Energy and Coal, http://mpe.kmu.gov.ua/fuel/control/uk/publish/article?art_id=188753&cat_id=35081

[10] Pre-crisis gas consumption in Ukraine was over 60 bcm per year.

[11] BP Statistical Review of World Energy, 2010 http://www.bp.com/productlanding.do?categoryId=6929&contentId=7044622

[12] Consolidated financial statements are available online for 2001-2009 only.

is US$500 million Eurobond when it matured in September, 2009; the bondholders received only a coupon payment and had to restructure the debt with Naftogaz.

33. In order to pay for gas bought by Naftogaz in October, 2009, GoU converted around US$480 million worth of SDRs allocated by the IMF, sold the currency to the NBU, and then, using the funds raised, bought some of the Naftogaz sovereign bonds that were added to the company's charter capital early in August, 2009. A similar scheme was used to pay for November and December gas as well. In December, 2009, the GoU increased Naftogaz's charter capital twice: on December 2, from UAH 5.565 billion (US$0.7 billion) to UAH 24.165 billion (US$3 billion); and on December 23, from UAH 24.165 billion to UAH 36.165 billion (US$4.5 billion) through issuing additional equity and exchanging it for internal governmental bonds. In September, 2010, Ukrainian Parliament approved another increase of Naftogaz's charter capital by UAH 7.4 billion (US$0.94 billion).

Coal

34. Total coal reserves of Ukraine are estimated at 117 billion tons, including proved reserves of 34 billion tons, of which 15 billion tons are anthracite and bituminous coal reserves and 19 billion tons are sub-bituminous and lignite coal reserves. At the current production rate of 74 million tons per year, the reserves to production ratio is about 460 years[13].

35. In 2005, coal industry of Ukraine operated 167 underground and 3 open-cast mines. Difficult geological mining conditions as well as reduced demand resulted in a reduction of coal production from 136 million tons in 1991 to 71 million tons in 1996. Since then Ukraine managed to first stabilize and then slightly increase coal production to about 75-80 million tons per year. Stabilization of coal production at this level was achieved due to structural reforms in the coal industry, technical retrofits that increased competitiveness of mines, and re-emerging demand due to economic growth, particularly in the steel industry. In 2009, Ukraine produced about 73 million tons of coal, including 25.7 million tons of coking coal. State-owned mines produced 38.4 million tons of coal, including 9.1 tons of coking coal and 29.3 tons of steam coal[14]. In the first 5 months of 2010[15], Ukraine produced about 31 million tons of coal (2.4% more than during the same period in 2009), including 11.1 million tons of coking coal (3.4% increase compared to similar period in 2009).

District Heating

36. In 2009[16], total heat produced in Ukraine was 97.9 million Gcal, of which 52 million Gcal was consumed by households. The average energy use in heat production was 179.41 kg of coal equivalent per Gcal.

37. The Heat Supply System in Ukraine is largely based on district heating, utilizing heat-only-boilers, with some larger Combined Heat and Power plants (CHP) supplying both

[13] BP Statistical Review of World Energy, 2010
http://www.bp.com/productlanding.do?categoryId=6929&contentId=7044622
[14] Ministry of Coal, http://www.mvp.gov.ua/mvp/control/uk/publish/article?art_id=80240&cat_id=52294
[15] The latest data available from the Ministry of Energy and Coal,
http://www.mvp.gov.ua/mvp/control/uk/publish/article?art_id=75159&cat_id=52294
[16] No data available for 2010 as of yet

industrial and residential systems. Currently there are about 250 CHPs under operation. As is the case of power plants, most of the CHPs are outdated, do not meet environmental standards and require urgent retrofitting and modernization. The fuel used in CHP units is as follows:

- 76-80% natural gas;
- 15-18% oil; and
- 5-6% coal.

38. In addition to CHPs, the heat supply system includes 32,725 boiler houses operating about 75,800 boilers of different specification. The vast majority of these boilers are small industrial or autonomous boilers. Fuel consumption of these boiler houses is:

- 67.5% natural gas;
- 2.5% oil;
- 30% coal.

39. Biomass is now emerging as a new source for heating plants, and the first projects are about to reach financial closure.

40. Over 20% of all boilers have been in use for over 20 years. Most of them use old technologies and are of low efficiency (70-80%). As a result, they use about 20% more fuel than in boilers used in Western Europe.

41. Most buildings, Government-owned as well as municipal and mixed ownership, are very inefficient, as much as five times less efficient as the norm in Western Europe. The buildings lack control systems to regulate heat and the building envelopes are poorly insulated. Heat losses from inefficient design are exacerbated by the long heating season. Expensive to heat, many buildings also provide an uncomfortable environment. If adequate action is not taken soon, a significant part of this housing may deteriorate beyond repair and create unacceptable housing conditions. This is a particular problem for vulnerable groups such as the elderly, sick or very young, all of which rely on public institutions to care for them. Unlike electricity, heating costs of the poor are appropriately higher than for the wealthy as they are not in a position to upgrade their building envelope.

Renewable Energy

42. Supply of renewable energy, other than large hydro, is relatively minor in Ukraine. A challenging problem for the development of renewable sources of energy and alternative types of fuel has been the inability to commit large budgetary allocations to support the renewables and alternative types of fuels, which, in turn, calls for the necessity to attract substantial investment resources. Recent changes to the legal framework have made it likely that the supply will now increase from its current low levels.

43. The main economic instrument of encouraging the development of renewable sources of energy and alternative types of fuel to date has been legislatively introduced preferences, including special “green” tariffs, tax exemptions and state subsidies.

44. The Law of Ukraine *On Electric Energy* provides for the National Electricity Regulatory Commission to set a special "green" tariff for electricity generated at electric power facilities using alternative sources of energy till January 1, 2030.

45. The size of this tariff is set at the level of the retail tariff for consumers of class II voltage[17] at January 2009 multiplied by a respective coefficient:

- 1.2 for wind-generated electricity produced by electric power facilities, the set capacity of which does not exceed 600 kW;
- 1.4 for wind-generated electricity produced by electric power facilities, the set capacity of which is more than 600 kW but does not exceed 2,000 kW;
- 2.1 for wind-generated electricity produced by electric power facilities, the set capacity of which exceeds 2,000 kW;
- 2.3 for electric power generated from biomass;
- 4.8 for solar-generated electricity produced by terrestrial electric power facilities;
- 4.6 for solar-generated electricity produced by electric power facilities installed on the roofs of houses, buildings and structures, the set capacity of which does not exceed 100 kW;
- 4.4 for solar-generated electricity produced by electric power facilities installed on the roofs of houses, buildings and structures, the set capacity of which does not exceed 100 kW, as well as for facilities installed on the roofs of houses, buildings and structures, regardless of their ultimate capacity;
- 0.8 for electric energy generated by small hydropower stations.

46. In April, 2011, the effective "green" tariff for electric energy generated from biomass was about 12 Eurocents/kWh, or 2.4 times higher than the tariff for thermal power stations.

47. The Tax Code of Ukraine also provides a number of benefits to stimulate development of the renewable sources of energy. Specifically:

- Tax on land plots for the installation of renewable electric power facilities is 25 percent of the set rate;
- Electric energy generated from renewable sources is exempted from a surcharge to the effective tariff for electric and thermal power;
- Profits of electricity-generating enterprises received from sales of electricity produced from renewable sources of energy will be tax-exempted till January 1, 2021 (the freed funds will be committed to increasing output, implementing the latest technologies as well as used for credit and interest payments);
- The following tax exemption will be in place till January 1, 2020:
  - bio fuel producers' profits received from the sale of bio fuel;
  - enterprises' profits received from the co-generation of electric and thermal power and/or output of thermal power with the use of biological types of fuel;
  - enterprises' profits gained from extraction and use of mine gas (methane).

[17] Below 35 kW

48. Under the laws of Ukraine *On the Single Customs Tariff* and *On Value-Added Tax*, economic entities importing goods, equipment, gear and constituent parts that promote energy savings, into Ukraine's customs territory will be exempted from paying customs duty and value-added tax, if analogous goods are not manufactured in Ukraine.

49. Moreover, within the implementition framework of Ukraine's State Targeted Economic Energy Efficiency Program for 2010-2015, funds from the 2011 state budget will be allocated to support energy efficiency projects related to the following:

- introduction of cogeneration technologies at municipal district heating enterprises;
- introduction of innovative technologies, e.g. heat pumps, at municipal enterprises and budget organizations;
- modernization of municipal facilities, including the conversion of boiler plants servicing the facilities of the social sphere to generators using renewable sources of energy and alternative types of fuel.

50. The State Budget of Ukraine for 2011 also provides for allocation of funds for the state support of energy saving measures through a mechanism of reducing the cost of borrowing.

Energy Pricing

51. Based on January 2010 import prices, gas prices charged to industries were about 25% above the cost of imported gas, while gas prices charged to district heating companies were about 25% below import prices, and households paid about one-third. This resulted in total subsidies in excess of 3% of GDP. In 2010, about 58 bcm of gas was consumed, of which 20.5 bcm came from local gas fields at an estimated cost of about US$57/tcm and 36.5 bcm was imported at an average cost of US$260/thousand cubic meters (tcm). Gas prices to households have been designed to cover the marginal cost of gas supply from local gas fields, but do not include a capital component to support investments in the gas network which could add roughly US$200/tcm to the cost of supply based on experience elsewhere: gas prices to households would need to be increased about four-fold, from current levels, to cover such costs. As the assets are nearing, or in some cases beyond, their design life, prices will need to be adjusted to finance these investments.

52. The under-pricing of gas distorts the domestic gas production market. It distorts the incentives associated with existing production and constrains investment in local production. It creates fiscal anomalies in the tax structure decreasing the potential tax revenues for the Government. Gas producer pricing and the tax structure needs to be amended to induce increased local gas supply at costs below that of imported gas. Estimates of the potential for increased local gas supply are about 10 bcm, nearly 30% of the current level of imports.

53. Average district heating prices in Ukraine are about 50% below that of Western Europe and many countries in Eastern Europe, resulting in a implied subsidy level of about 6% of GDP. This subsidy manifests itself in: (i) artificially low gas prices to district heating companies (as has been mentioned above, about one-third of the cost of imported gas and no contribution to the domestic gas network costs); (ii) large accounts payable to Naftogaz (roughly $1 billion); (iii) deteriorating district heating assets; and (iv) poor quality of heat

supply. Low district heating prices is a pervasive problem that negatively impacts much of the energy sector. As a result of low district heating prices, district heating companies are financially constrained and pay about 55% of their gas bill.

54. The GoU recognizes that the level of subsidies, resulting from under-pricing of gas, is unsustainable. As of August 1st, 2010, gas prices for industries were increased by 10% and by 50% for households and for heating utilities. In April 2011 NERC plans to continue increasing tariffs for population by 20% and district heating by 26% and increase one more time during August – October as it was agreed with IMF. Because of the price increase and decreased price for imported gas[18], subsidy to industries has been eliminated. However, gas price to households and district heating tariffs still need to be adjusted to economically-justifiable levels.

55. Historically, coal prices for energy production have been subsidized. The coal under-pricing represents a core problem of the industry with coal prices reflecting neither the cost of production nor the cost of alternative energy sources. While the coal prices have been growing since 2003, they are still below production costs for steam coal used for power production. In 2009, the average price of coal produced by the state-owned mines was UAH 442 (about US$55) per ton while the production cost averaged UAH 723 (about US$90) per ton[19]. The price of coking coal used in the steel industry reached cost recovery levels in 2005 and its production is deemed profitable.

56. As a result of steam coal under-pricing, the cost of electricity production from coal-fired power plants (about 40% of total electricity produced) is relatively cheap: 4.6 USc/kWh vs. 6 USc/kWh if enterprises had to pay full cost of coal. However, despite the subsidized coal price, electricity tariffs for industrial consumers cover full energy production cost: they pay about 8 US¢/kWh. Industrial consumers provide a cross-subsidy to households, who pay about 3 US¢/ kWh[20]. In 2011 Government of Ukraine initiated through NERC an increase in electricity tariffs for the population that consume over 150 kWh of electricity per month by 30% from February 1 2011 and further on increase tariffs for households by 15% from April 1 2011 for all categories.

Energy Efficiency Issues

57. High energy intensity, increasing the cost of energy supply, and low energy prices and low energy efficiency threaten energy security of Ukraine, slow its economic recovery as well as facilitate GHG emissions. The primary issues that help maintain high energy intensity and negatively affect energy efficiency are (1) the aging asset base (many of the power and district heating plants are operating beyond their design life; energy transporting system is old, poorly maintained and inefficient; the building stock is old, energy inefficient and also poorly maintained), (2) use of outdated inefficient technologies and (3) poor energy pricing policy. Improving the efficiency of the existing assets will require a set of actions that would support

[18] Gazprom gave Naftogaz a discount on April 21, 2010, by lowering export duty: the duty is zero if the contract price of gas falls below US$333.33 per tcm and, if the price rises above that, the duty is the difference between 30% of the contract price and US$100. The special duty applies to the first 30 bcm of gas supplied in 2010, and 40 bcm annually in the period 2011-2019. Volumes supplied in excess of that are subject to the standard 30%-duty.

[19] The unusually difficult geological conditions (thin, steeply inclined coal seams at great depth) in the central Donbas make the mining of coal costly and labor intensive.

[20] NERC, 2010

implementation of Ukraine's State Targeted Economic Energy Efficiency Program for 2010-2015 and include (1) replacing the oldest equipment with new, more efficient one; (2) upgrading the assets with reasonable continued operating life; (3) introduction of new, more energy efficient technologies; (4) introducing energy efficient upgrades into the residential sector as well as facilitate behavioral changes of the households; and (5) modify the energy policy, including pricing policy changes that will eliminate of cross subsidies for gas as well as introduce new district heating tariffs that will allow district heating companies not to just recover their heat production costs, but also maintain viable levels of investment.

Investment Needs

58. The 1990s saw an economic collapse that enabled new investments in the energy sector to remain low for the next two decades. Energy prices have thus remained low, knowing that the existing assets could meet demand for the next 10-20 years, thus avoiding the financing costs associated with new investments – a huge savings to the economy. The lower prices also provided some respite to customers a time when their ability to pay was impacted by the collapse in their income. However, nearly 20 years has passed and many of these assets are operating beyond their design life, requiring significant investment in asset replacement.

59. The Energy Strategy of Ukraine up to year 2030[21] estimates the total investment requirements on the supply side of the energy sector at more than UAH 1 trillion (US$200 billion) for 2005-2030. For example, Naftogaz' transmission asset replacement program is expected to require about US$1 billion per year over the medium-term to upgrade pipes, compressor stations, gas storage, instrumentation and controls; gas distribution asset replacement needs are unknown, but could be a similar level. District heating networks are near, or beyond, a state of collapse, as was the case of Alchevsk. A recent district heating study for Kharkiv identified financing needs in its district heating system of about US$2 billion. The Energy Strategy of Ukraine up to year 2030 envisions that the TPPs will continue to play the same role in the power system (load following and peaking duty contributing approximately 40% of the total power generation) and by 2030 they will generate 152.4- 211.4 GWh, which is 1.9 to 2.7 times the 2007 generation. In order for this to be accomplished, the existing power plants would need significant rehabilitation or they would need to be replaced by new plants. It is expected that approximately 40 TPP units would be rehabilitated, retrofitted or replaced in next 10 years for an investment of US$11.6 billion to US$14.5 billion depending on the level of environmental controls utilized.

60. District heating networks, boilers, CHP plants and TPPs rehabilitation also requires at least US$1.5 billion per year, which implies a substantially higher rate of investment than occurred in the last 15 years. The coal sector needs investment of about US$1.8 billion per year to address mine safety and to expand supply to meet growing needs. The power sector (including hydropower rehabilitation, power networks, nuclear and renewable sectors) investment requirements exceed US$2.6 billion per year to modernize the existing assets and to replace the aging capital stock. Financing such investments will be challenging, particularly in light of the financial/economic collapse of 2008/2009. Annual energy efficiency investment

[21] Cabinet of Ministers, 2006

needs estimated to be about US$1-5 billion per year will be competing for these financing needs.

Institutions

61. The Ministry of Energy and Coal Industries (MECI) is responsible for energy sector strategy and policy formulation. It participates in forecasting and scheduling of energy generation, as well as exercises state control and supervision over companies' compliance to reliability requirements in power generation, distribution and technical exploitation of the power stations and grid. MFE is also responsible for integrity and reliability of Ukrainian energy system.

62. The Ministry is supported by the main national regulatory institution for the energy sector - the National Electricity Regulatory Commission (NERC). NERC participates in forming a comprehensive state policy on development and functioning of Wholesale Electricity Market (WEM) as well as markets for oil, gas and oil products; it also oversees the state policy implementation. The Commission issues and monitors licenses for electricity generation, high-voltage transmission, low-voltage distribution, wholesale market operations, and tariff and non-tariff supply. NERC also sets electricity tariffs. Recently, the GoU moved regulatory responsibility for the district heating sector to NERC as well as announced its plan to create an independent district heating regulator.

63. Ministry of Regional Development, Construction and Municipal Economy has begun playing an increasing role in regulating district heating. In particular, the Ministry issues licenses for production, transport and supply of heat as well as sets tariff criteria and processes. Regulatory responsibility for the sector, with the exception of CHP co-generation, used to lay primarily with local governments. As it has already been mentioned, these are being moved to NERC.

64. The Government's policy on energy efficiency has been delegated to a specialized agency, the State Agency of Ukraine for Energy Efficiency and Energy Conservation[22]**.** The Agency is responsible for increasing the share of renewable energy in energy balance of Ukraine, improving legislative framework to promote energy efficiency, creating a system of national energy efficiency standards as well as implementing a system to monitor efficient use of fuel resources in the country. The Agency was established in 2005; in 2009 alone it developed 11 EE standards for different industries.

65. The Ministry of Environmental Protection (MEP) and the National Environmental Investment Agency (NEIA) of Ukraine are the lead authorities on climate change policy. NEIA was created in 2007 and is responsible for implementation of Kyoto protocol flexible mechanisms.

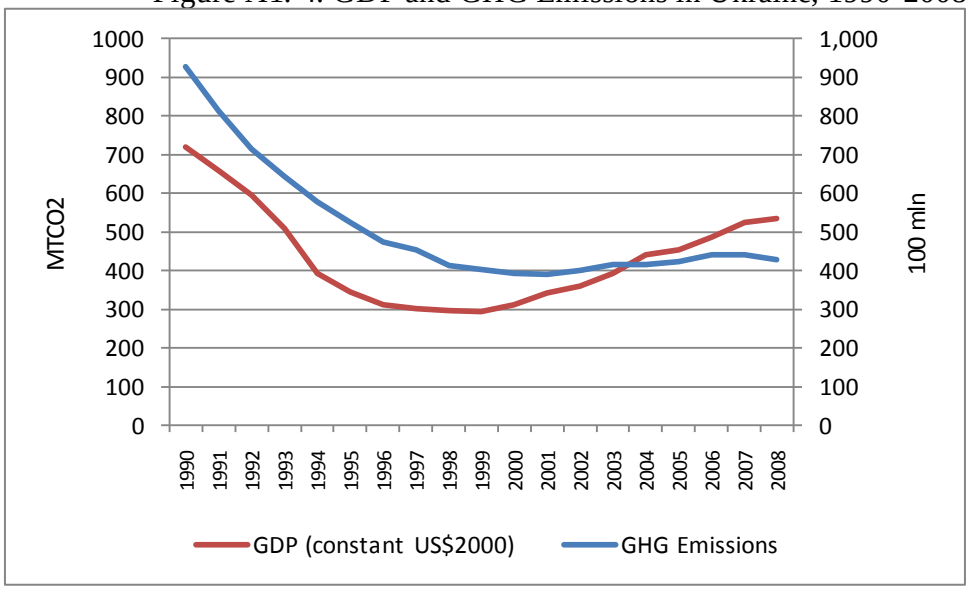
[22] Presidential Decree on Establishment of National Agency of Ukraine for the Effective Use of Energy Resources (NAER) #1900/2005 dated December 31, 2005. Currently, the Agency is going through the process of reorganization and has been renamed as the State Agency of Ukraine for Energy Efficiency and Energy Conservation.

GHG Emissions

66. Because of its high energy intensity and heavy dependence on fossil fuels, Ukraine is among the 25 largest total greenhouse gas (GHG) emitters world-wide in both absolute and per capita terms. Reflecting the steep economic decline due to the transition, emissions decreased between 1990 and 2000 at an average annual rate of 8% p.a. With the resumption of growth, GHG emissions increased between 2001 and 2008, but total emissions remained less than half the 1990 level (Figure A1. 4). The recent economic/financial crisis is expected to result in further reductions in GHG emissions in 2009, possibly extending into 2010 as well, with the bulk of the reductions coming from industries. However, GHG emissions are expected to grow again once the economy recovers, driven by a policy of replacing imported natural gas with domestic coal.

67. Ukraine signed the United Nations Framework Convention on Climate Change (UNFCCC) in June 1992, which was ratified by Parliament in October, 1996. Ukraine became a Party to the UNFCCC in August, 1997. The Kyoto Protocol, signed in 1997, was ratified by Ukrainian Parliament in February, 2004, and since then became an integral part of Ukrainian legislation. Under the Kyoto Protocol, Ukraine is committed to ensure that its annual greenhouse gas (GHG) emissions during the period 2008-2012 do not exceed the 1990 level of 928 million tons.

Figure A1. 4: GDP and GHG Emissions in Ukraine, 1990-2008



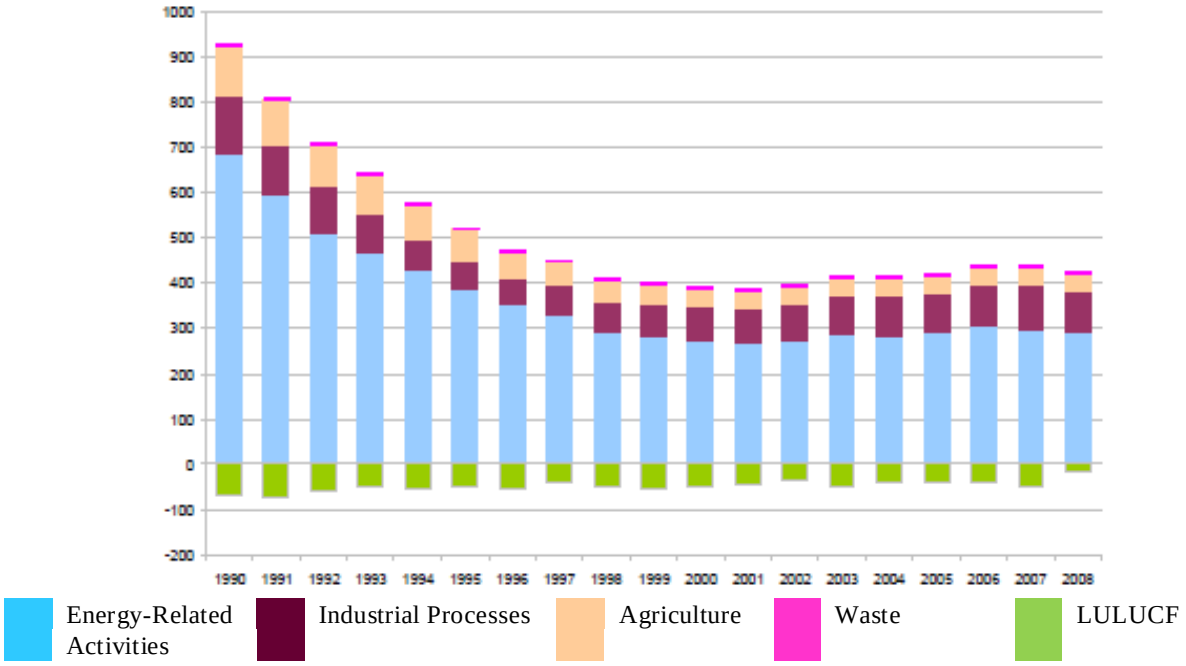
Source: WDI, National GHG Inventory Report 2010

68. Using FPCC[23] standard definitions for GHG emissions, the energy sector accounted for the bulk of the reductions in GHG emissions in absolute terms, followed by agriculture as a distant second (Figure A1. 5). Between 1990 and 2008 GHG emissions from energy-related activities (fuel combustion activities and fugitive emissions from fuels) fell by 393 million tons

[23] Federal Performance Contracting Coalition. As a part of the Business Council for Sustainable Energy, the Federal Performance Contracting Coalition focuses on advancing policies and programs for Federal Energy Savings Performance Contracting (ESPC). (www.bcse.org)

of CO_2 ($MTCO_2$) and from agriculture by 70 $MTCO_2$. Together, they account for about 93% of the GHG emissions decrease. The recent economic/financial crisis is expected to result in further reductions in GHG emissions in 2009, possibly extending into 2010 as well, with the bulk of the reductions coming from industries.

Figure A1. 5: GHG Emissions and Removals in Ukraine by Source and Sink in 1990-2008, $MTCO_2$ equivalent



Source: National GHG Inventory Report, 2010

69. In 2008, energy sector contributed 54 percent to total emissions from energy-related activities; the production of electricity and heat accounted for over 90% of energy sector emissions[24]. Of the total electricity produced, 42% came from fossil fuel power plants, 47% from nuclear and 7% from hydro[25]. Thermal power plants burnt 29,036 and 32,539tons of coal in 2009 and 20010 respectively[26].

70. Fugitive emissions, primarily caused by methane release from fossil fuel production, processing, transportation and storage, accounted for a relatively significant share of GHG emissions. Venting and flaring of methane are also included in this category. Solid fuels (coal) accounted for 55% of the fugitive emissions and oil and gas for the remaining 45%.

[24] National GHG Inventory Report, 2010
[25] Ministry of Energy and Coal of Ukraine, 2007
http://mpe.kmu.gov.ua/fuel/control/uk/publish/article?art_id=81973&cat_id=35086&search_param=%D0%90%D0%BD%D0%B0%D0%BB%D1%96%D1%82%D0%B8%D1%87%D0%BD%D0%B0+%D0%B4%D0%BE%D0%B2%D1%96%D0%B4%D0%BA%D0%B0&searchForum=1&searchDocarch=1&searchPublishing=1
[26] Ministry of Energy and Coal of Ukraine, 2011
http://mpe.kmu.gov.ua/fuel/control/uk/publish/article?art_id=188753&cat_id=35081

71. Industrial processes are responsible for 21% of GHG emissions in Ukraine. Iron and steel production, cement production, lime production as well as limestone and dolomite use are the most significant sources of CO_2. Iron and coke production causes the largest amount of methane emissions. N_2O is emitted mainly from adipic and nitric acid production, and perfluorocarbons – from aluminum production.

72. GHG emissions from the energy-related activities and industrial processes are expected to grow once the economy recovers. Total GHG emissions in 2012 and 2020 are forecasted to remain well below the 1990 levels. In addition to fulfilling its Kyoto commitments, the GoU plans to keep GHG emissions 20% and 50% below 1990 levels by 2020 and 2050, respectively. The latter target would require maintaining the GHG emissions in 2050 to roughly today's levels, implying a net zero growth in emissions between now and 2050 despite an expected strong economic growth. Achieving the Government's 2050 GHG emissions target and the associated net zero growth in emissions will, therefore, depend critically on substantially improving the efficiency with which energy is produced and consumed. The primary technologies that will be used to decrease GHG emissions include nuclear power, renewable energy, carbon capture and storage and energy efficiency interventions. Ukraine's renewable energy resource base is limited, nuclear power is expected to meet many impediments and carbon capture and storage is still in its early stages of piloting. Therefore, broadening and deepening of the reform agenda to support energy efficiency is Ukraine's primary near-term option for GHG reduction.

Annex 2: Major Related Projects Financed by the Bank and/or other Agencies
UKRAINE: ENERGY EFFICIENCY

Project	Sector Issue	Latest Supervision Ratings of Bank Project	
		Implementation Progress	Development Objective
World Bank			
Ukraine Urban Infrastructure Project	Increase energy efficiency in water supply, wastewater and solid waste systems	S	S
China Energy Efficiency Financing	Development of financial intermediary lending business for industrial energy efficiency investments	S	S
Turkey Private Sector Renewable Energy and Energy Efficiency	Development of financial intermediary lending for energy efficiency and renewable energy investments	S	S

S=Satisfactory

1. The design of the proposed project has benefited from lessons learned in the two on-going Bank financial intermediary projects in China and Turkey, respectively, as well as discussions with other donor agencies which are involved in supporting the energy efficiency agenda of the Government of Ukraine. During project preparation, the Bank organized four donor coordination meetings in addition to many separate discussions with concerned donor agencies. Future overall donor coordination is expected to be led by the State Agency of Ukraine for Energy Efficiency and Energy Conservation, while the project team will continue to work with concerned donor agencies at project level, especially in the development of municipal energy efficiency markets.

2. Currently all major donors and IFIs have had as a priority to develop a pipeline of energy efficiency projects in Ukraine (Table 4). Western governments have also provided considerable technical assistance and are planning on bringing in more funds. In total, donor programs directly reduced energy demand by the equivalent of hundreds of megawatts of power capacity.

Table A2.1: Selected Donors' EE Activities in Ukraine

Donor	Activities
EBRD	UkrEsco I (1997) and UkrEsco II (2005): a US$30 million project to establish the first energy service company (ESCO) in Ukraine. A US$20 million follow up loan to enable UkrEsco to continue its energy saving activities in Ukraine. Energy Efficiency for Ukraine (UKEEP) (2006): a €100 million credit facility to extend credit lines to participating banks for on-lending to private sector companies for industrial energy efficiency and renewable energy projects. EMSS Energy Efficiency and Modernization Programme (2010; approved, pending signing): a senior loan in the amount up to US$79 million to OJSC EnergoMashSpetsStal to finance the completion of its extensive investment program, including improving production processes.

Donor	Activities
UNDP	Climate Change Mitigation in Ukraine through Energy Efficiency in Municipal District Heating (2005): US$0.2 million to enable ESCO-Rivne to implement a city-wide programme for energy efficiency activities in municipal district heating and to expand its reach beyond the borders of the Rivne city. Energy Efficiency in Education Sector (2007): US$0.3 million; the project will, among other tasks, assist schoolchildren in acquiring skills in energy efficiency through practical/laboratory work; and demonstrate the effectiveness of implementing pilot energy efficiency measures at selected educational institutions.
European Union	The INOGATE program: targets improving Europe's energy security and supports sustainable energy development**,** including the development of energy efficiency, renewable energy and demand side management.
The European Investment Bank	Mykolaiv Vodokanal (2010): €15.54 million for rehabilitation and modernization of water supply and wastewater collection and treatment facilities in Mykolayiv Vodokanal (southern Ukraine)
USAID	Developing the Municipal Energy Efficiency Market in Ukraine: The project is to create a stronger and sustainable ESCO operation in Ukraine, based on the actual ESCO-Rivne organization. Efficient Water Supply for the City of Alchevsk: The project is to establish a model for a sustainable public-private alliance (PPA) to identify, evaluate, develop and implement municipal projects for reducing commercial and technical water losses in Ukrainian cities. Municipal District Heating Reform Project (2009): US$13.3 million to focus on strengthening the legal, regulatory, and institutional framework to improve heating services to customers; improving tariff regulation and methodology; educating the public and government officials on these matters; enhancing the capacity of municipalities to plan, manage, and fund the development of the heating systems; and improving energy efficiency in residential and municipal buildings.
GTZ	Energy Efficiency in Buildings (2007): The project supports primarily the Ukrainian Ministry of Regional Development and Construction and its subsidiary authorities. Initial steps are taken in selected municipalities to introduce energy management at the local level to be implemented in pilot projects.

Annex 3: Results Framework and Monitoring

UKRAINE: ENERGY EFFICIENCY

Results Framework

PDO	Project Outcome Indicators	Use of Project Outcome Information
The Project's development objectives is: to contribute to end-use energy efficiency by facilitating financial intermediaries to finance energy efficiency investments	a. Extent of savings in energy consumption (toe); b. Volume of energy efficiency sub-loans c. Number of PBs participating in the Project	The information will be used by the Government and the Bank to track the progress of the Project and measure its success. Also the information on the results of the energy efficiency sub-projects will be used by the Government to promote further energy efficiency projects and programs.
Intermediate Outcomes	**Intermediate Outcome Indicators**	**Use of Intermediate Outcome Monitoring**
Ukreximbank	a. Extent of savings in energy consumption (gas, electricity, coal, petroleum products); b. Amount of funds committed c. Amount of funds disbursed	Monitored indicators will be used to assess implementation performance.

Arrangements for results monitoring

		Target Values					Data Collection and Reporting		
Project Outcome Indicators	**Baseline**	**YR1**	**YR2**	**YR3**	**YR4**	**YR5**	**Frequency and Reports**	**Data Collection Instruments**	**Responsibility for Data Collection**
Extent of energy savings (toe) [27]	0	0	100,000	250,000	400,000	500,000	Semi Annually	Ukreximbank Reports	Ukreximbank
Volume of EE sub-loans	0	20,000	50,000	130,000	170,000	200,000			
# of participating PBs			1			2			
Intermediate Outcome Indicators									
Extent of energy savings [1]									
Coal (tons)	0	0							
Natural Gas (tcm)	0	0	500	1200	1900	2600			
Electricity (GWh)	0	0	100	200	300	400			
Ukreximbank Loan Commitments	0	25%	65%	85%	100%		Semi Annually	Ukreximbank Reports	Ukreximbank
Ukreximbank Loan Disbursements	0	10%	25%	65%	85%	100%			

[27] Under different scenarios, depending on the actual projects financed, energy savings as well as the emissions reduction would vary.

Annex 4: Detailed Project Description

UKRAINE: ENERGY EFFICIENCY

1. **Financing of Energy Efficiency Investment.** Estimates of Ukraine's energy efficiency investment need range from $4-5 billion per year over the next five years. The unusually large size is driven by the "perfect storm" of large energy price increases that took place over the past 4 years, the unusually old age of the assets and the opportunity to reduce GHG emissions at a relatively low cost. The mix of energy efficiency investment needs varies broadly, from steel mills that need upward of $1 billion to buildings where low cost upgrades to insulation, window and door replacements are needed. The proposed project is designed to fund a modest proportion of these needs at $199.5 million, targeting high return projects that will help rebalance energy needs and promote economic growth and job opportunities. The loan will also finance the capitalized front-end fees.

2. **This project is designed to encourage the banking sector to play an important, and sustainable, role in meeting the financing needs for energy efficiency** by the industrial and municipal sector. The project is expected to finance sub-loans up to US$30 million, including investments in energy-intensive industries, such as metals, chemicals, building materials and commercial enterprises. The current pipeline of sub-projects provided by the Borrower indicates potential energy efficiency investment over US$400 million. With a success rate of about 50%, the pipeline appears to be appropriate for the loan size. The types of energy efficiency investment sub-projects fall into six broad categories: (i) modernization of inefficient and obsolete equipment/facilities; (ii) installation of highly energy-efficient industrial equipment and processes for new production capacities whose current energy use considerably exceeds current best practices; (iii) utilization of waste gas and heat and excess pressure from industrial processes; (iv) improvement of industrial systems which involves a suite of measures to increase energy efficiency; (v) energy loss reduction in municipal sector enterprises (largely focusing on district heating); and (vi) energy loss reduction in buildings. The loan can finance related technical assistance. Subprojects in the current EE pipeline is provided in the table below:

Table A4.1 Pipeline of Potential Energy Efficiency Sub-Projects

#	Region	Type of business	Project Description	Project cost, USD million
SUBCATEGORY I - INDUSTRIAL ENERGY EFFICIENCY				410.1
1	Odessa Region	Cement production	Conversion of production method from outdated "wet" to energy efficient dry method. The new dry process will drastically reduce fuel consumption and further improve electricity efficiency from 1510 to 750 Kcal/kg-clinker and from 96 to about 90 kWh/ton cement, respectively. Emissions of CO2 to be reduced from 1188 to 846 kg CO2/ton cement.	54.0
2	Donetsk region	A chainlet from mining to generation and distribution of electric power.	The following measures are included in the proposed investment project at 4th unit of a power station: - modernisation of boiler and electric equipment, turbine (intermediate-, low- and high-pressure cylinders), generator, reconstruction of automated management system; modernisation of turbine condenser ball cleaning system, electric filter, desulfurization system, reconstruction of heat flow system. Benefits: increased power unit capacity (300 to 320 MW), increased reliability and optimized operations, compliance with national regulations on carbon and sulphur emissions, reduction of specific fuel consumption from current 359.1 to 342.5 g.c.e./kWh of generated electricity.	31.5
3	Zaporizhzhya Region	Metal products (wire mesh and nails)	New equipment for the entire production cycle of hardware (50% reduction in energy consumption of in hardware production); New gas-fired annealing kiln for the production of enamelware (10% reduction gas consumption by the kiln); Thermal insulation for its office buildings (2-4% estimated reduction of heat losses from the administrative building).	5.0
4	Zaporizhzhya Region	Poultry farm, agricultural producer	Introduction of a poultry litter utilisation facility to produce steam (15-20 tonnes per hour) and a 6 MW turbine for electricity generation. Benefits: electricity generation 48,000 MWh p.a., steam generation 120,000 tons p.a.	26.2

#	Region	Type of business	Project Description	Project cost, USD million
5	Lugansk region	Generation, transmission and supply of electricity produced via utilisation of exhaust gases of a major metallurgical production	Construction of combined cycle power plant with turbine generators with total capacity of 303 MW. The fuel in the thermal circuit will use the secondary gases of metallurgical production. The fuel mixture supplied to the gas turbine will consist of blast-furnace and coke oven gas with a total calorific value of 1050 kcal per 1 m3. The station would consume 0.55 mcm of gas per hour while operating at nominal capacity. Commissioning of the energy efficient facility will cover electricity needs of the metallurgy plant by 90-95%. As a by-effect, the investment would reduce harmful hydrocarbon emissions and heat losses thus improving the environmental situation at the steel mill.	91.0
6	Donetsk region	Production of pig iron, profiled iron and sheet products from steel	Purchase of energy efficient technological equipment	10.0
7	Donetsk region	Production of saw-timbers, plywood, millworks, construction-works and roofing	Purchase of modern woodworking equipment	1.0
8	Kiev region	Food production	Purchase of the cracker production line. Implementation of the proposed project will increase the enterprise production capacity from 1,630 tons of sweeties manufactured to 4,130 tons, and allow the potential borrower to save up to 83 m3 of natural gas and up to 8 kWh of electricity per 1 ton of the manufactured products thus energy efficiency is ensured by decrease in specific energy consumption. Benefits: reduction of natural gas consumption by 2.0 mcm p.a. and electricity by 197 MWh p.a.	7.0
9	Lugansk region	Chemical company. Produces a wide range of chemical products and construction materials.	Construction of two 12.9MW co-generation units at CJSC "AZOT North-Donetsk Association". Main energy carrier used would be natural gas. Combustion gases are supplied to utilization boiler prior to exhaust into the air. Benefits: enhanced security of acetic acid workshop energy supply via generation of electricity and production 20 ton per hour of technological steam. The energy efficiency measure is expected to bring substantial monetary benefit.	52.4
10	Kherson region	Iron ore mining and production of iron ore	Modernization of the compressed air systems and Improvement of processes, including control systems: intorduction of autonomous compressed air consumption system within the operations; Lhd-49 dredgers; implementation of heat energy regulation complexes; enrichment waste compression complexes; introduction of slow start system for the mills.	10.7
11	Donetsk region	Iron and steel production.	Application of liquid ceramic heat isolating materials for heat mass exchange at sulphur units of by-product coke plant Benefits: reduced steam consumption. Use of dry refractory mass for industrial ladle lining. Benefits: reduced consumption of natural gas for heating ladles and guniting Replacement of burners at drying stands and ladle heating Benefits: reduced natural gas consumption Replacement of revolving kilns burners at limekiln department Benefits: reduced natural gas consumption by 5% Ladle sliding shutter nozzles installation Benefits: reduced natural gas consumption in converter plant ladle preparation dept. Transportation of revolving kiln lime in vacuum transport Benefits: reduced fuel consumption by 6 kg fuel eq. per ton lime Replacement of condensers Benefits: reduced condensers specific capacity losses by 26.8 kWh/MVA automated energy resources metering system Benefits: reduced energy consumption by 3%	22.2
12	Donetsk region	Production of concast and rolled square billets, sections and structurals from steel	Introduction of automated energy resources metering system	0.2
13	Donetsk region	Metallurgical industry. Steel and cast iron production	Introduction of CAS for automated electricity (consumed and transited) metering and equipment for recuperation of the furnace waste heat	1.1
14	Donetsk region	Pipe welding	Introduction of compressor with evaporative cooler Replacement of the outdated compressor system (without automated equipment status control system, compressed air metering, with high compressed air temperatures at exhaust. Benefits: reduction of electricity consumption by 3.0 GWh p.a. Replacement of the 26 y.o. kiln with energy-saving induction kiln Benefits: reduction of fuel consumption by 425.7 ton fuel eq. p.a. (~USD0.12 million p.a.)	1.6
17	Crimea	Chemical company. Produces a titanium dioxide.	Modernization of the sulphuric acid production process. Benefits: Increase the efficiency of sulphuric acid production Decrease energy consumption significantly reduce emissions in to the environment	90.0
18	Donetsk region	Agriculture / Food processing	The main project comprises a biogas plant to produce biogas from the organic wastes of the company and produce electrical and thermal energy from this biogas with a cogeneration system. The electricity can either be sold under the green tariff scheme or be used by the company for own needs.	6.2
	Total			**410.1**

3. These investments, in addition to broadening the scope of commercial financing, is also expected to support lending to Government-owned entities to upgrade their buildings, municipally owned enterprises to decrease supply-side losses and for privately owned buildings. These markets have a higher credit risk and are thus expected to be small components of this loan. However, Ukreximbank plans to work closely with the State Agency of Ukraine for Energy Efficiency and Energy Conservation and the Ministry of Regional Development, Construction and Municipal Economy to identify candidate projects where credit-worthiness concerns could be addressed to help pilot entry into these markets. For this purpose, pilot municipalities will be identified which assemble the key criteria of creditworthiness**,** including: (i) tariff adjustments, to fully cover operating and capital costs; (ii) a credible project business plan; and (iii) the ability to provide the collateral required under NBU regulation. It is expected that the successful financing of pilot projects will help unblock access to finance for municipal energy efficiency projects and allow to subsequently scale up financing of these projects. In parallel, Ukreximbank and the World Bank will work in close cooperation with other donor activities to address the systemic political and regulatory constraints to creditworthiness of municipalities. If successful, future scaling-up through additional financing could be considered.

Annex 5: Project Costs

UKRAINE: ENERGY EFFICIENCY

Project Cost By Component and/or Activity	Financing by Funding Source	
	IBRD US $million	Ukreximbank US $million
Component I: Financing of EE Investments	**199.5**	
Total Project Costs	**199.5**	
Front-end Fee	0.5	
Total Financing Required	**200.00**	

Annex 6: Implementation Arrangements

UKRAINE: ENERGY EFFICIENCY

1. Ukreximbank is the borrower for the IBRD funds under the proposed Project. It will borrow from the Bank, and the Government of Ukraine will provide the loan guarantee to the Bank. Ukreximbank will have a Project Implementation Unit (PIU) within their organization as the implementing agency for the Project, responsible for assessing, monitoring and reporting on all activities under the project implementation. A financial assessment of Ukreximbank and its suitability for the proposed Project is described in Annex 9.1.

2. Ukreximbank has gathered sufficient knowledge and experience with managing FI operations through earlier World Bank projects and an EBRD line of credit for energy efficiency projects. They have adequate experience in financing energy efficiency projects to SMEs though the EBRD loan and Ukreximbank has also experience in on-lending operations to participating Banks through managing the EDP 2 wholesale credit line. As a result, they have suitable levels of staff with requisite qualifications and experience: these staff will continue to market the new facility, appraise and evaluate project proposals, and monitor implementation.

Sovereign Guarantee:

- Funds from IBRD are provided to Ukreximbank under a sovereign guarantee from the Government of Ukraine to the World Bank.
- Ukreximbank will pay a guarantee fee of 0.05% as per agreement with the Ministry of Finance of Ukraine (Guarantor) based on the Budget Code.

IBRD Line of Credit:

3. Summary - Funds from IBRD will be used to finance eligible energy efficiency investments, including related technical assistance, as loans. The Loan will also fund the capitalized front-end feeds. Eligibility of sub-projects and sub-borrowers are defined in Annex 6.3 as well as in the IBRD Loan Agreement and Operational Manual agreed with the Borrower. The credit application will be processed, approved and priced based on the internal credit policy and procedure of Ukreximbank. The credit policy and procedure has been reviewed and found to be satisfactory to the World Bank.

4. Ukreximbank will also wholesale the line of credit funds to commercial banks selected according to a set of pre-agreed eligibility criteria (see Annex 6.2.). The on-lending will be carried out by means of subsidiary loan agreements entered into with the selected commercial banks (Participating Banks – PBs). The PBs in turn will make sub-loans that satisfy eligibility criteria outlined in Annex 6.3 and the Operations Manual, agreed sub-loan terms and conditions and procurement and environmental guidelines. Ukreximbank will take the credit risk on the PBs and the PBs will take the credit risk on the sub-borrowers.

5. Workflow - The PIU within Ukreximbank will be responsible for preliminary determination of the eligibility of the sub-project for IBRD funds as per criteria outlined in Annex 6.3. and the Operational Manual. Thereafter, the credit appraisal process will commence

as per credit policy and procedure set by Ukreximbank and domestic banking regulation. Except for the exceptions detailed later, Ukreximbank will complete the lending using IBRD funding on their own risk. The PIU will report its activities to the Bank based on the requirements described in detail in the Operational Manual.

Figure A6.1: Workflow Chart for IBRD Line of Credit – Direct lending by Ukreximbank

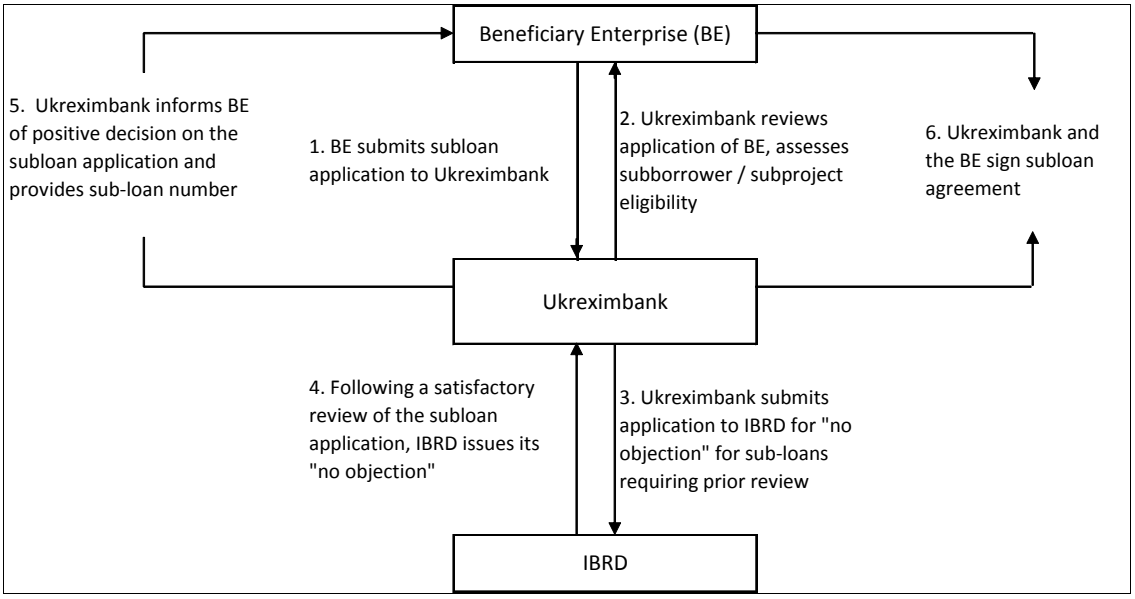
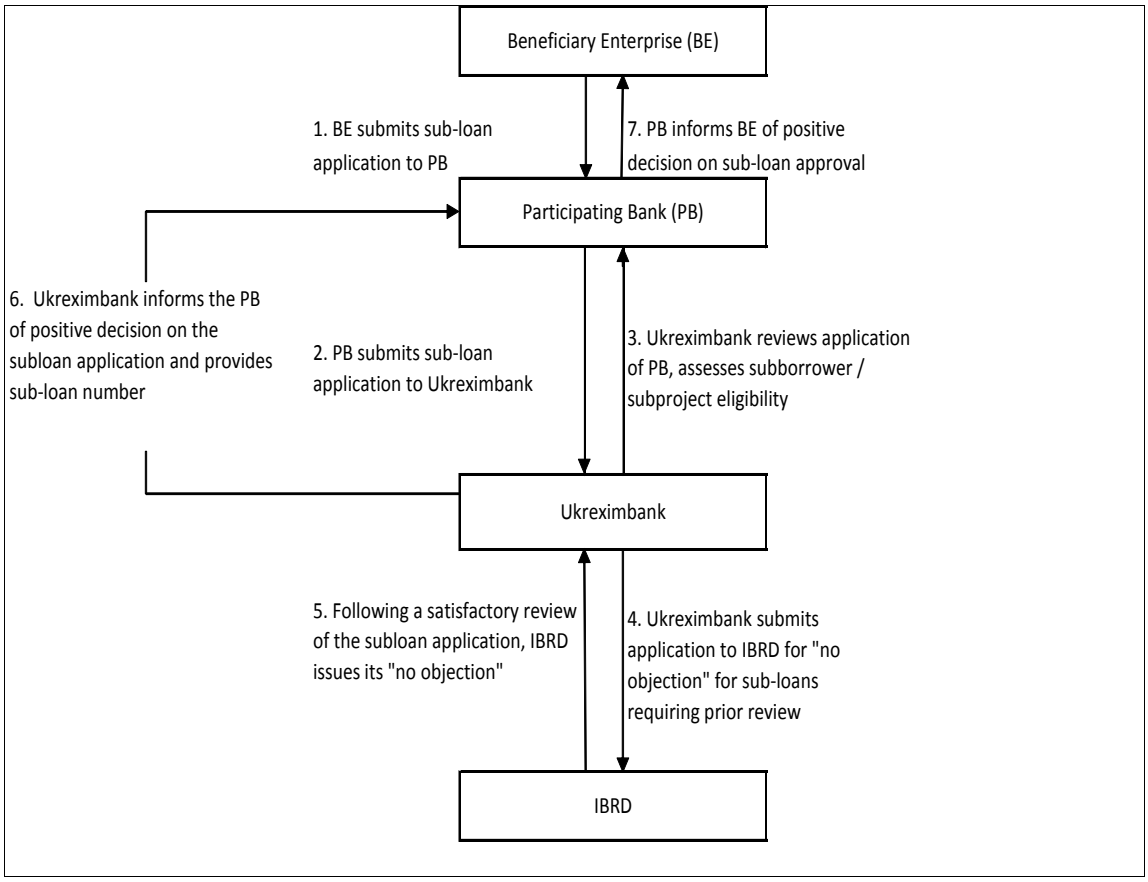


Figure A6.2: Workflow Chart for IBRD Line of Credit - Lending by PBs



6. Eligibility Criteria/Conditions for IBRD Line of Credit

- Sub-projects must be targeted towards improvement of energy efficiency of operations or end-user consumption;
- The Sub-borrowers must fulfill the below financial covenants:
  - Debt Service Coverage Ratio – Minimum 1.3:1 after receipt of the sub-loan based on three year moving average of investments throughout life of the sub-loan.
- The Sub-projects must fulfill the below financial covenants:
  - Financial Return – Minimum 10% of real financial rate of return; benefits will be measured based on decreases in consumption of natural gas, coal, electricity and/or petroleum products. In the case of fuel switching, the net decrease in the relevant energy sources would be calculated; and

7. Since only energy efficiency benefits would be used in estimating the benefit stream, if minimum 10% of real financial rate of return is met, the sub-project would also meet the definition of an "energy efficiency project".

- For sub-loans, the interest rate will be market-based and cover at least costs of funds, risk-adjusted spread based on the risk classification of the sub-borrower and the sub-project, and appropriate profit margin.

- Sub-loans will be provided in USD or in local currency. Ukreximbank will manage the foreign exchange risk.

8. Reporting/Monitoring Responsibility - The Borrower is required to monitor and report on the implementation and financial condition of both Sub-loan and Sub-borrower. The Borrower is also required to notify and take all required and available measures based on good faith in the interest of the Guarantor and the World Bank.

Safeguard Compliance:

9. Ukreximbank is required to ensure compliance with the Ukrainian legislation and standards, as well as World Bank Safeguard Policies and Procurement Policies based on documentation provided by the Sub-borrowers. Ukreximbank is required to maintain and archive all compliance documentation throughout the life of the World Bank loan.

Annex 6.1. Terms and Conditions for Ukreximbank
(between the World Bank and Ukreximbank)

For Ukreximbank, the following terms and conditions shall apply:

- Initial and ongoing compliance with applicable laws and regulations issued by the Ukrainian authorities as well as compliance with prudential eligibility criteria for Ukreximbank (see below) as certified by Ukreximbank management and independent external auditors on a semi-annual basis;

- For the duration of the project implementation period, Ukreximbank will submit annual audit reports of its financial statements and project financial statements, that are (i) prepared in accordance with International Standards of Auditing and International Financial Reporting Standards; and (ii) have an unqualified audit opinion, except as the World Bank shall otherwise agree; Ukreximbank will also submit its unaudited semi-annual financial statements for review;

- Ukreximbank will submit interim unaudited financial reports (IFRs) for the project covering the quarter, in form and substance satisfactory to the Bank and no later than 45 days after the end of each calendar quarter;

- Ukreximbank will on-lend the funds under the Energy Efficiency Project (EEP) line of credit to participating banks (PBs) selected according to the eligibility criteria agreed with the World Bank in the Operations Manual using subsidiary loan agreements. All subsidiary loan agreements are subject to prior review by the World Bank;

- For the duration of the project implementation period, Ukreximbank will maintain the Project Implementation Unit (PIU), staffed with qualified personnel, capable to satisfactorily implement all aspects of the EEP;

- Ukreximbank will monitor the performance of the project on a semi-annual basis using performance indicators agreed with the World Bank and will provide the World Bank with semi-annual project reports, giving the details of the progress made in project implementation;

- Ukreximbank will ensure compliance with World Bank procurement and safeguard rules as agreed in the Operations Manual;

- Ukreximbank will receive the funds from the World Bank with an average 17.99-year maturity, at 6-months LIBOR, plus a variable spread. Ukreximbank will pay the World Bank a front-end fee of 0.25% and a one-time guarantee fee of 0.05% of the loan amount to the Ukrainian government.

Table A.6.1. - Eligibility criteria for Ukreximbank

	Eligibility criteria for Ukreximbank	**NBU Regulatory Requirements**	**IFRS**
Capital and Capital Adequacy (CAR)			
1	Risk Weighted Capital Adequacy Ratio (CAR) should be not less than 10% calculated according to the IFRS (as defined by the Basle Committee on Banking Regulation and Supervisory Practices)	Min 10%	Min 10%
Related Party and Large Exposures			
2	Single insider lending exposure (where insider is defined in accordance with IFRS 24 "Related Party Disclosure") should not exceed 5% of bank's IFRS based regulatory capital (as defined by the Basle Committee on Banking Regulation and Supervisory Practices)	Max 5%	Max 5%
3	Aggregate Insider Lending should not exceed 30% of the bank's IFRS based regulatory capital (as defined by the Basle Committee on Banking Regulation and Supervisory Practices)	Max 30%	Max 30%
4	Single exposure (loans, accounts receivable, securities, guarantees and other types of contingent liabilities) per single borrower (including its subsidiaries and other related parties) should not exceed 25% of bank's IFRS based regulatory capital (as defined by the Basle Committee on Banking Regulation and Supervisory Practices)	Max 25%	Max 25%
5	Total large exposures should not exceed 8 times bank's IFRS based regulatory capital (as defined by the Basle Committee on Banking Regulation and Supervisory Practices)	8 times capital	8 times capital
6	Foreign Exchange Exposure. [Aggregated amount of foreign currency exposures as per all foreign currencies and bank metals less assets reducing bank's regulatory capital]	long - 20% and short - 10%	
7	Liquidity Ratios	Quick – min. 20% Current –min. 40% Short-term – min. 60%	
8	Full compliance with the loan loss provisioning requirements (for loans, securities, accounts receivable and other assets) according to the NBU prudential regulations and IFRS requirements	V	V
9	Full compliance with all other NBU regulatory requirements as confirmed by a letter issued by the NBU	V	n/a
10	Profitability Ratio. The bank should operate on a profitable basis prior and during the course of project implementation	V	n/a
11	Technical Capacity. Ukreximbank should either have internal capacity or retain external expertise that allows them to perform the technical appraisal of energy efficiency projects adequately.	V	n/a

Annex 6.2. Participating Banks (PBs) – Principal Terms and Conditions of the Subsidiary Loan Agreements

1. There were 176 banks in the Ukrainian banking system as of March 2011. These include private commercial banks, state-owned banks and foreign banks. Ukreximbank (Ukreximbank) carries out a semi-annual risk assessment of all the banks that Ukreximbank has an active banking relationship, including analyzing their financial information on all prudential regulation, including capital adequacy, profitability and liquidity ratios.

2. As commercial financing for energy efficiency projects is a new activity for Ukrainian banks, it is expected that the number of PBs for the energy efficiency credit line will be in the range of 5-6.

A. Eligibility Criteria

3. PBs will be selected according to the same eligibility criteria as Ukreximbank (see Table A.6.2.)

Table A. 6.2. Eligibility Criteria – Participating Banks (PBs)

	Participating Banks Eligibility Criteria	**NBU Regulatory Requirements**	**IFRS**
Capital and Capital Adequacy (CAR)			
1	Risk Weighted Capital Adequacy Ratio (CAR) should be not less than 10% calculated according to the IFRS (as defined by the Basle Committee on Banking Regulation and Supervisory Practices) and NBU Regulatory Requirements	Min 10%	Min 10%
Related Party and Large Exposures			
2	Single insider lending exposure (where insider is defined in accordance with IFRS 24 "Related Party Disclosure") should not exceed 5% of bank's IFRS based regulatory capital (as defined by the Basle Committee on Banking Regulation and Supervisory Practices)	Max 5%	Max 5%
3	Aggregate Insider Lending should not exceed 30% of the bank's IFRS based regulatory capital (as defined by the Basle Committee on Banking Regulation and Supervisory Practices)	Max 30%	Max 30%
4	Single exposure (loans, accounts receivable, securities, guarantees and other types of contingent liabilities) per single borrower (including its subsidiaries and other related parties) should not exceed 25% of bank's IFRS based regulatory capital (as defined by the Basle Committee on Banking Regulation and Supervisory Practices)	Max 25%	Max 25%
5	Total large exposures should not exceed 8 times bank's IFRS based regulatory capital (as defined by the Basle Committee on Banking Regulation and Supervisory Practices)	8 times capital	8 times capital

	Participating Banks Eligibility Criteria	NBU Regulatory Requirements	IFRS
6	**Foreign Exchange Exposure**. [Aggregated amount of foreign currency exposures as per all foreign currencies and bank metals less assets reducing bank's regulatory capital]	long - 20% and short - 10%	
7	**Liquidity Ratio**. [According to the NBU regulatory requirements]	[Quick - min 20% Current –min 40% Short-term – 60%]	
8	**Full compliance with the loan loss provisioning** requirements (for loans, securities, accounts receivable and other assets) according to the NBU prudential regulations and IFRS requirements	V	V
9	**Full compliance with all other NBU regulatory requirements** as confirmed by a letter issued by the NBU	V	n/a
10	**Profitability Ratio**. The bank should operate on a profitable basis prior and during the course of project implementation	V	n/a
11	**Technical Capacity**. The bank should either have internal capacity or retain external expertise that allows them to perform the technical appraisal of energy efficiency projects adequately.	V	n/a

4. In addition, PBs will need to fulfill the following eligibility criteria:

- The PB should be a domestically registered and licensed commercial bank and have been in operation for at least the three previous uninterrupted consecutive years;
- The PB has its annual unqualified audit of its financial statements according to IFRS available for at least 2 previous years;
- The PB has minimum assets during each of the last two fiscal years exceeding UAH 500 million equivalent on average;
- The PB has a minimum paid-in statutory capital of EUR 10,000,000;
- The PB has a corporate loan-to-total loans ratio during each of the last two fiscal years (for which data are available) exceeding a minimum of 20% on average;
- The PB has agreed to submit to the Borrower, during the duration of its Subsidiary Loan Agreement with the Borrower, an audit report which (i) covers two previous years of its operations, (ii) is prepared by an independent and internationally recognized audit firm in accordance with International Auditing Standards and International Financial Reporting Standards, and (iii) except as the Bank shall otherwise agree, contains an unqualified audit opinion;
- The PB will need to apply appropriate procedures for appraisal, supervision and monitoring of Energy Efficiency sub-projects, including the efficient evaluation and supervision of the energy savings calculation, procurement and environmental elements of Energy Efficiency sub-projects;
- The PB shall remain in general compliance with legal and regulatory requirements applicable to its operations, including but not limited to NBU-promulgated prudential regulations regarding capital adequacy, large exposures, related lending, and foreign currency exposure;

- The PB is operating pursuant to investment and lending policies and procedures acceptable to the Bank, the Borrower, and the Guarantor, and has undertaken to maintain such policies and procedures; and
- The PB has adequate organization, management staff and other resources necessary for its efficient operation.

5. The PBs selected for participation will have to meet the eligibility criteria mentioned above and in table A.6.2., be an acceptable credit risk to Ukreximbank and have expressed interest in the participation in the credit line. Ukreximbank will market the credit line to all commercial banks through its website and other marketing channels.

B. Terms

6. Each Subsidiary Loan shall be charged interest at a rate equal to the cost of funds to the Borrower, on the principal amount thereof withdrawn and outstanding, plus the administrative costs of the Borrower and a credit risk margin acceptable to the Bank, payable monthly; and each Subsidiary Loan shall be repaid in accordance with an amortization schedule calculated to have a maturity of not more than ten (10) years, including a grace period of not more than five (5) years or as otherwise agreed between the Borrower and the Bank.

7. The right of a PB to use the proceeds of its respective subsidiary loan shall be:

- suspended upon failure of such PB to perform any of its obligations under its Subsidiary Loan Agreement or to continue to be in compliance with all legal and regulatory requirements applicable to its operations; and
- terminated if such right shall have been suspended pursuant to the above paragraph for a continuous period of sixty (60) days.

8. The funds available to PBs will depend upon the availability of funds to Ukreximbank from the World Bank.

9. PBs will be responsible for ensuring that the sub-borrowers comply with the World Bank's procurement rules for the procurement of goods and works under UEEP sub-loans, and applicable Ukrainian environmental legislation/regulation.

C. Conditions

10. Only PBs which are in initial and continued compliance with the eligibility criteria stipulated in the Subsidiary Loan Agreement can participate in the UEEP as PBs.

11. Each respective PB shall undertake to:

- Carry out all activities under its Subsidiary Loan Agreement and conduct its operations and affairs in accordance with appropriate financial standards and practices, with qualified management and staff in adequate numbers and in conformity with the investment and lending policies and procedures referred to in the Operations Manual

and provide, promptly as needed, the funds, facilities, services and other resources required for the purpose;

- Make Sub-loans to Beneficiary Enterprises on the terms and conditions set forth in the Operations Manual;
- Ensure that, except as the Bank shall otherwise agree, the aggregate amount of all Sub-loans and Lease Financing made to any one Beneficiary Enterprise, shall not exceed the equivalent of USD 30,000,000;
- Exercise its rights in relation to each Sub-loan in such a manner as to protect its interests and the interests of Ukreximbank, the Ministry of Finance of Ukraine (the Guarantor) and the IBRD, comply with its obligations under its Subsidiary Loan Agreement and achieve the purposes of the Project;
- Not assign, amend, abrogate or waive any of its agreements providing for Sub-loans, or any provision thereof, without prior approval of Ukreximbank;
- Appraise Sub-Projects and supervise, monitor and report on the carrying out by the Beneficiary Enterprises of Sub-projects, in accordance with the Operations Manual and the Environmental Assessment Framework;
- Prepare and submit to Ukreximbank quarterly reports on Sub-loan disbursements and repayments and annual reports on the progress made in achieving the objectives outlined in the business plans submitted with the Sub-loan and application;
- Promptly inform the Bank and Ukreximbank of any condition which interferes or threatens to interfere with the progress of its activities under its respective Subsidiary Loan Agreement;
- Maintain records and accounts adequate to reflect, in accordance with sound accounting practices, its operations and financial condition;
- Furnish to Ukreximbank such information concerning said records and accounts as Ukreximbank shall from time to time reasonably request; and
- Assume the credit risk of each sub-loan.

12. The PBs will be responsible for monitoring the sub-borrowers' compliance with

- IBRD’s procurement rules for the procurement of goods, civil works under UEEP Sub-loans;
- IBRD's applicable environmental assessment requirements; all applicable domestic environmental legislation/regulations; and
- IBRD’s applicable social assessment requirements including but not limited to resettlement review procedures set forth in the Operational Manual.

13. To that end, Ukreximbank shall require each Beneficiary Enterprise applying for a sub loan to furnish evidence satisfactory to the Bank and Ukreximbank showing that the Sub-project in respect of which the application has been made has been prepared in accordance with such procedures, such evidence to include inter alia an environmental impact assessment for such Sub-project.

14. The PBs will ensure that for Sub-projects which require an environmental management plan the Beneficiary Enterprise shall carry out such an environmental management plan in a timely manner, requiring such plan to be in compliance with:

- Environmental standards satisfactory to the Bank;
- All applicable laws and regulations of the Government relating to health, safety and environmental protection; and
- Include adequate information on the carrying out of such environmental management plans in the progress reports.

Annex 6.3. Terms and Conditions for Sub-Borrowers, Sub-Projects and Sub-Loans (between Ukreximbank or PBs and Sub-borrowers)

The following terms and conditions apply:

For sub-borrowers:

- Sub-borrowers, after receipt of the sub-loan, should generate enough cash during the pay-back period of the sub-loan to maintain a minimum debt service coverage ratio of at least 1.3:1, based on three year moving average after the completion of the investment and throughout the life of the loan;
- Certification from the relevant authorities that the sub-borrower and sub-project meet environmental laws and standards in force in Ukraine. The World Bank policy on environmental assessment (as per the Operations Manual) will also be complied with.

For sub-projects:

- Sub-projects must be targeted towards improvement of energy efficiency of operations, municipalities or end-user consumption;
- Sub-projects are required to have minimum real financial internal rate of return (IRR) of 10% using energy savings only. Benefits are measured based on decreases in consumption of natural gas, coal, electricity and/or petroleum products. In the case of fuel switching, the net decrease in the relevant energy sources would be calculated.

For sub-loans:

- Sub-loans will be made for the financing of plant and equipment, goods, civil works and consultancy services for investment purposes;
- The use of proceeds from the sub-loan for the use of working capital is limited to a maximum of 10% of the loan amount and is restricted to inputs needed for expanding existing productive capacity or creating new types of productive capacity;
- Subsidiary loans are expected to have a maturity of up to 10 years and grace period of up to 5 years or as otherwise agreed between Ukreximbank and the Bank;
- Sub-loans will be evaluated in accordance with Ukreximbank's / the PB's normal project and credit evaluation guidelines and conditions as set forth in the Loan Agreement between IBRD and Ukreximbank and Operations Manual. In addition, Ukreximbank will ensure compliance of the Sub-loans submitted by the PBs with the sub-project eligibility criteria;
- Sub-loan pricing and maturity will be determined by Ukreximbank and the PB based on the needs of the particular sub-borrower and sub-

project being financed, with the proviso that the interest rate must at a minimum be equal to the costs of World Bank loan funds to Ukreximbank / the PB plus Ukreximbank's / the PB's relevant administrative cost, plus an appropriate credit risk margin;

- The sum of sub-loans to any individual sub-borrower (Beneficiary Enterprise) or group of connected sub-borrowers from Ukreximbank and the PB's will not exceed equivalent of USD $30 million;
- For sub-loans larger than US$ 10 million equivalent and for the first two sub-loans for Ukreximbank and each PB irrespective of size, prior review by the World Bank will be required;
- All sub-loans not subject to prior review can be subject to ex-post review by Ukreximbank (sub-loans of the PBs) or the World Bank (sub-loans of Ukreximbank and the PBs) in order to verify compliance with the subsidiary and sub-loan agreement terms;
- No expenditures for a Sub-project by a PB or a Beneficiary Enterprise shall be eligible for financing out of the proceeds of the UEEP if such expenditures shall have been made earlier than three hundred and sixty (360) days prior to the date on which Ukreximbank shall have received the sub-loan application package, with the proviso that expenditures incurred 1 year before the date of Loan signing up to an amount of 20% of the IBRD Loan amount will also be eligible for financing; and
- Sub-loans shall be made on terms whereby Ukreximbank / the PB shall obtain from the Beneficiary Enterprise through appropriate legal means (a Sub-Loan Agreement), rights adequate to protect its interests and those of Ukreximbank, the Guarantor, and the IBRD.

Annex 7: Financial Management and Disbursement Arrangements

UKRAINE: ENERGY EFFICIENCY

Country Issues

1. In 2007, the Bank completed a Public Expenditure and Financial Accountability (PEFA) assessment for Ukraine, which benchmarked the country's public financial system against internationally accepted indicators. The 2007 PEFA assessment (Report No. 39015-UA) concluded that Ukraine had in place core systems for macro-fiscal management, some elements of a framework to enable strategic allocation of resources, and selected tools for improving operational efficiency. Ukraine scored relatively well against international benchmarks on budget credibility, comprehensiveness and transparency, but weaknesses remained in areas such as public procurement, internal audit, controls over payroll and the management of state-owned enterprises (SOEs).

2. The 2009 Report on Observance of Standards and Codes (ROSC) noted that progress has been made in the areas of accounting and auditing. The legislative framework governing accounting and audit in Ukraine has been significantly updated; amendments to relevant legislative acts have been introduced and their implementation has been supported by some limited institutional and capacity strengthening measures. However, the laws governing financial reporting, and institutions regulating it, need to continue this development. The differences between the National Accounting Standards and IFRS will need to be further addressed, and capacity in the country to implement IFRS financial statements and ISA audits will need to be further developed.

Implementation arrangements

3. Ukreximbank will finance eligible sub-projects and provide subsidiary loans to participating financial intermediaries for energy efficiency sub-projects. The sub-borrowers will be approved based on pre-determined criteria outlined in the Project Operational Manual, including financial criteria, safeguards compliance and monitoring requirements. Their initial financial evaluation will be carried out by the Ukreximbank prior to final approval.

4. Ukreximbank has established a dedicated Project Implementation Unit (PIU) which will be responsible for assessing, monitoring and reporting on all activities under the project implementation. This PIU is currently responsible for implementation of the EDP 2 loan, and will assume overall responsibility for implementation of the Project, including all aspects of financial management.

5. The financial management functions will be carried out using institutional systems, i.e. by the existing structures and mechanisms of the Ukreximbank. Ukreximbank will manage the accounting for and reporting on the loan using its existing accounting system, and by relying on its existing internal control framework and procedures. The project Operational Manual, detailing all relevant FM procedures for Project sub-borrowers, has already been developed. Loan funds will be disbursed either through direct payments or flowing through the Designated Account. Ukreximbank will prepare and submit project IFRs on a quarterly basis. The project

and entity (Ukreximbank) financial audits will be carried out on an annual basis and will be performed by independent external auditors.

Risk Analysis

Financial Management Risk Analysis:

	FM Risk	***Risk Mitigating Measures***	***Residual Risk***
INHERENT RISKS			
Entity level. *Ukreximbank's capacity is too overstretched to work with different donors*	M	Ukreximbank has a track record of successfully implementing energy efficiency projects; Adequate supervision of Ukreximbank	M
Project level. *Ukreximbank lending funds to non-viable industrial or municipal entities*	S	Borrowers creditworthiness eligibility criteria will be used to ensure that credit worthy industrial and municipal entities participate in the project ; eligibility compliance with safeguards and monitoring requirements will be periodically reviewed	M
Overall Inherent Risk	S		M
CONTROL RISKS			
Accounting System– *project accounts may not be accurate*	M	An automated accounting system allows maintaining project accounts on a segregated set of accounts, risk of error will be minimized by strong internal controls, including segregation of duties	M
Internal Controls – *non – compliance with eligibility criteria and selection procedures for sub-projects and PFIs may lead to lending to non-eligible borrowers and potential delays in repayment of loans*	S	Monitoring of the compliance to procedures for selection of sub-projects and PFIs as well as review of other internal controls during periodic visits of the Bank; Loans with delay in repayment of principal or fees will be subject to 'in-depth' monitoring by the Bank	M
Financial Reporting - *incorrect reports may be used for management decision - making*	M	Ukreximbank has proven capacity in preparation of the quality IFRs; Reports will be generated from the automated accounting system	M
Auditing – *Auditors may not reveal all inadequacies in internal controls or misstatements in the financial statements*	M	Reputable auditors will be hired for project and entity audits. The auditors in their management letter will report on any inefficiency or ineffectiveness of internal control framework and procedures as well as on the compliance with eligibility criteria and selection of sub-projects	M
Disbursement arrangements – *inefficient disbursement management*	M	The designated account and transit account will be opened in Ukreximbank and all payments from them will undergo multiple verification and authorization procedures	M
OVERALL CONTROL RISK	**M**		**M**
OVERALL FM RISK	**M**		**M**

Details of Financial Management Arrangements

Staffing

6. The PIU has been earlier created within the Ukreximbank bank, and it includes staff who are fully and partially dedicated to implementation of the Project. The role of the PIU is implementation of the project including coordination and monitoring of sub-loans/on-lending and preparation of accounting and reporting documentation, including withdrawal applications and IFRs. The appointed staff is qualified and has gained operational experience from previous projects with the World Bank and EBRD, including EDP 1 and EDP 2.

Accounting System

7. The accounting and reporting systems of Ukreximbank are geared toward maintaining adequate accounting and reporting and producing reports as required by Ukrainian law and regulations as well as International Financial Reporting Standards. The Ukreximbank has manuals on accounting policies and practices which prescribe procedures for accounting and reporting. Compliance to these manuals is checked by the internal audit department during regular internal reviews.

Information System

8. Recording of all project transactions will be done using the Ukreximbank's existing accounting system, which has been modified to allow fully automated accounting and reporting during implementation of EDP2. This system comprises a mix of off-the-shelf and tailor-made accounting and reporting systems, and it has been designed to accommodate the needs of accounting and reporting of Ukreximbank, including management accounting and accounting for the project flow of funds. Project accounting records will be maintained on a segregated set of accounts and in sufficient detail, and on a set of accounts that is segregated from other activities and projects of Ukreximbank.

Internal Audit

9. Ukreximbank has internal audit and internal control departments, established in the head office and in twelve regional divisions. The audit reviews conducted by the department are based on annual plan of reviews approved before start of each year. The internal audit department reports to the Chairman of the Board after each review, to the Board annually, and to Supervisory Board on a quarterly basis. Transactions under the Project will be subject to internal audit as a part of regular Ukreximbank's credit portfolio audits.

Financial Reporting

10. Ukreximbank will prepare quarterly IFRs for all project components and send them to the Bank within 45 days of the end of each calendar quarter beginning with the quarter in which the first project disbursements occur. The IFRs format is based on the IFRs prepared for EDP 2, and will include the forms on (i) sources and use of funds (ii) use of funds by components (iii) designated and transit account statements (iv) details on sub-loans and details on sub-borrowers

Auditing

11. Annual audits and semi-annual reviews of the financial statements of Ukreximbank prepared in accordance International Financial Reporting Standards (IFRS) have been undertaken during the years of implementation of EDP2. The current auditors have issued clean audit reports on the Ukreximbank' financial statements for the years 2008 and 2009.

12. In addition to audits and reviews of the Ukreximbank financial statements, the auditors will also perform audit of the Project financial statements, based on the TORs that would be agreed with the Bank. Both audit reports will be submitted within six months from end of each financial year. The auditors will report in a separate management letters on any weaknesses in the Ukreximbank' internal control and risk management systems, including controls for implementation of the Project.

13. In accordance with the Bank's Policy on Access to Information" dated July 1 2010, both audited financial statements of Ukreximbank and of the Project will need to be disclosed. Such disclosure will be done by Ukreximbank in a manner acceptable to the Bank. Additionally, the Bank will also make these audited financial statements available to the public. As the project financial statements contain confidential data, an abridged version of the audited project financial statements will be published, as agreed with the Ukreximbank and approved by the Bank. Ukreximbank will still submit the full version of the audited project financial statements, which will not be published. Full set of the Ukreximbank audited financial statements will be published. Management letters will not need to be disclosed.

Disbursement Arrangements

Allocation of loan proceeds

Category	Amount of the Loan (expressed in USD)	Percentage of Expenditures to be financed
Energy Efficiency Sub-Projects	199,500,000	100%
Front-end fee	500,000	100%
Total Amount	200,000,000	100%

14. The project will be financed from the IBRD Loan proceeds, and no co-financing by Ukreximbank is envisaged. Bank funds would be disbursed using the Bank's traditional disbursement procedures, including advances to designated account opened with the Ukreximbank, and reimbursement procedure. Statements of Expenditures (SOEs) will be used for sub-loans valued at or below US$10,000,000. Supporting documentation for SOEs would be retained by the Borrower for at least one year after receipt by the World Bank of the audit report for the year in which the last disbursement was made.

15. A Designated Account will be opened and managed at Ukreximbank. The maximum allocation for the Designated Account related to the Loan will be USD 20,000,000. The frequency of reporting eligible expenditures paid from the Designated Accounts would be on a monthly basis, supported by necessary documentation as stated in the Disbursement Letter and along with the DA bank statement and a reconciliation of the DA balance.

Implementation Support

16. The minimum number of FM monitoring visits is to be once every year. During project implementation, the Bank will monitor the project financial management arrangements as follows: (i) review interim unaudited financial reports (IFRs) and annual audited financial statements; (ii) review of financial management, disbursement arrangements and control environment to ensure continuing compliance with Bank's FM requirements.

Annex 8: Procurement Arrangements

UKRAINE: ENERGY EFFICIENCY

A. General

1. Procurement for the proposed project will be carried out in accordance with the World Bank's "Guidelines: Procurement under IBRD Loans and IDA Credits" published May 2004 and revised in October 2006 and May 2010 (Procurement Guidelines); and "Guidelines: Selection and Employment of Consultants by World Bank Borrowers" published May 2004 and revised in October 2006 and May 2010 (Consultant Guidelines) and the provisions stipulated in the Loan Agreement. The various procurement actions under different expenditure categories are described in general below.

B. Assessment of the Agency's Capacity to Implement Procurement

2. The project will be implemented by Ukreximbank who will ensure that procurement is executed in accordance with the Bank's procurement guidelines. Ukreximbank, has previous experience as implementing agency under the Export Development Project 1 (EDP 1) and Export Development Project 2 (EDP 2). In both projects, Ukreximbank demonstrated satisfactory knowledge and application of the Bank's procurement procedures. In EDP2, Ukreximbank worked with financial intermediaries and procurement was undertaken by the beneficiaries in accordance with commercial practices acceptable to the Bank. Commercial practices in the private sector include competitive approaches based on bidding procedures with evaluation of price and quality.

3. Ukreximbank does not have any experience in lending to the municipal sector and will have to work with sub-borrowers to establish the required capacity. The Task Team will discuss with Ukreximbank about required actions to mitigate the procurement risk which might result from on-lending to municipality-owned entities. In addition, Ukreximbank will continue to take part in procurement training activities, such as the one organized by the Bank in November 2010.

4. The Task Team will be in close interaction with Ukreximbank during the implementation of the project and monitor staffing, document quality, review procedures and archiving of the procurement documents. Procurement training will be arranged to relevant staff in Ukreximbank upon request and as needed.

C. Procurement Risk Assessment

5. While the procurement risk with regard to sub-borrowers in the private sector is low, there might be a substantial risk in terms of on-lending to the municipal sector. Procurement conducted by municipality-owned sub-borrowers is subject to the Bank's established thresholds with regard to procurement methods and review mechanisms.

6. The overall procurement risk is rated **moderate**. The risks associated with procurement and the mitigation measures are summarized in the table below:

Table A8.1: Summary Risk Assessment

Description of risk	*Rating[a] of risk*	*Mitigation measures*	*Rating[a] of residual risk*
Inconsistent commercial practices among various sub-borrowers	Substantial	Clear definition of commercial practices in Project Operations Manual; capacity building within Ukreximbank to monitor sub-borrowers; adequate supervision	Moderate
Limited capacity of Ukreximbank to monitor potentially large number of open competition bidding procedures simultaneously	Substantial	Capacity building within Ukreximbank by prior reviewing and closely monitoring all open competitive bidding and ICB procedures under the Project	Moderate
No experience of Ukreximbank in lending to municipal sector	Substantial	Building capacity in Ukreximbank including procurement procedures of the World Bank to be applied in municipal sector	Moderate
Limited procurement capacity in municipal sector	High	Capacity building in participating municipalities, including technical assistance through USAID program	Substantial
Average	Substantial		Moderate

H: High; S: Substantial; M: Moderate and L: Low.

D. Procurement Implementation and Arrangements

7. The project is implemented by Ukreximbank who will ensure that the commercial practices being applied by sub-borrowers will be satisfactory to the Bank. Sub-borrowers will be responsible for ensuring that the procurement rules for sub-loans are applied in accordance with the agreed procedures, thresholds, roles, and responsibilities as elaborated in the operations manual.

8. Since there already are TA grants available (USAID) for municipal energy efficiency, the TA component of the project would be closely coordinated with activities of other donors and the project objectives. In the case of joint financing, the Bank's procurement guidelines will apply.

The following procurement procedures will be used by sub-borrowers in the private sector:

9. Procurement of Works: Works contracts under this project will be procured in accordance with the Procurement Guidelines indicated above. For contracts **US$10 million** and above, open competitive bidding procedures acceptable to the Bank will be applied. Such procedures shall include but not be limited to international advertizing, clear and non-discriminatory bid evaluation criteria, sufficient time for bid preparation, public bid opening, fair and transparent bid evaluation, and a clear and effective complaints mechanism. Contracts placed

by sub-borrowers on their subsidiary of affiliated companies will not be eligible for financing out of the Loan.

10. Procurement of Goods and Technical Services: Goods and Technical Services contracts under this project will be procured in accordance with the Procurement Guidelines indicated above. For contracts **US$10 million** and above, open competitive bidding procedures acceptable to the Bank will be applied. Such procedures shall include but not be limited to international advertizing, clear and non-discriminatory bid evaluation criteria, sufficient time for bid preparation, public bid opening, fair and transparent bid evaluation, and a clear and effective complaints mechanism. Contracts placed by sub-borrowers on their subsidiary of affiliated companies will not be eligible for financing out of the Loan. Commercial Practices: For civil works estimated to cost less than US$10 million and goods and technical services estimated to cost less than US$10 million per contract, established private sector commercial practices will be followed in accordance with Paragraph 3.12 of the Procurement Guidelines. Any contracts placed by sub-borrowers on their subsidiary of affiliated companies or establishing a conflict of interest situation will not be eligible for financing out of the proceeds of the Loan.

	Civil Works	**Goods & technical services**	**Prior Review**
Open competitive bidding Procedure	≥$ 10 million	≥$ 10 million	All contracts
Commercial practices	<$ 10 million	<$ 10 million	-

11. **The following procurement procedures will be used by municipality-owned sub-borrowers sector:**

	Civil Works	**Goods & technical services**	**Prior Review**
ICB	≥$ 5 million	≥$ 0.5 million	All contracts
NCB	<$ 5 million >$ 0.1 million	<$ 0.5 million >$ 0.1 million	First contract of each sub-loan
Shopping	≤$ 0.1 million	≤$ 0.1 million	First contract of the first three sub-loans

12. **NCB Procedures to be followed**

Eligibility - Bidding shall not be restricted to domestic firms. Foreign firms shall not be excluded from the national competitive bidding process irrespective of the contract value.

Procedures - "Open tender procedures" shall be followed in all cases. Invitations to bid shall be advertised in at least one (1) widely circulated national daily newspaper allowing a minimum of thirty (30) days for the preparation and submission of bids. Bids shall not be invited on the basis of percentage premium or discount over the estimated cost.

Pre-qualification - Prequalification, where used, shall be based on a "pass/fail" system. Minimum experience, technical, and financial requirements shall be explicitly stated in the pre-qualification documents.

Participation by Government-owned Enterprises - Government-owned enterprises in the Borrower's territory shall be eligible to participate in bidding only if they can establish that they are legally and financially autonomous, operate under commercial law, and are not a dependent agency of the Government. Government-owned enterprises will be subject to the same bid and performance security requirements as other bidders.

Bidding Documents - Procuring entities shall use the appropriate Bank's sample bidding documents, including pre-qualification documents, for the procurement of goods, works, or technical services (other than consultants' services), all acceptable to the Bank. Bidding documents shall be made available to all those companies that have paid the required fee.

Bid Opening and Bid Evaluation - Bids shall be opened in public, immediately after the deadline for submission of bids. Evaluation of bids shall be made in strict adherence to the monetarily quantifiable criteria declared in the bidding documents. No domestic preference shall be allowed in evaluating bids. Contracts shall be awarded to qualified bidders having submitted the lowest evaluated substantially responsive bid and no negotiations shall be carried out prior to contract award.

Rejection of Bids - No bid shall be rejected purely on the basis that the bid price is higher than the estimated budget for that procurement. All bids shall not be rejected and new bids solicited without the Bank's prior concurrence.

Securities - Bid security shall not exceed two percent (2%) of the estimated cost of the contract. Performance security shall not exceed ten percent (10%) of the contract price. No advance payments shall be made to contractors without a suitable advance payment security. The format of all such securities shall be included into the bidding documents and shall be acceptable to the Bank.

13. **The following procurement procedures will be used for the selection of consultant services:**

i. ***Quality and Cost Based Selection (QCBS)*** procedures, as described in Section II, paragraphs 2.1 to 2.31 o f the Consultant Guidelines will be used if necessary for assignment under all Components o f the Project;

ii. ***Selection Based on Consultants' Qualifications (CQ***), will be used for contracting firms for which the value of the assignment is estimated to cost less than US$200,000 equivalent per contract and where it is considered that a small team of specialists would be more beneficial than a single individual;

iii. ***Single Source Selection (SSS),*** Services for tasks in circumstances which meet the requirements of paragraph 3.10 of the Consultant Guidelines for Single Source Selection,

may, with the Bank's prior agreement, be procured in accordance with the provisions of paragraphs 3.9 through 3.13 of the Consultant Guidelines.

iv. ***Individual Consultants (IC).*** Selection of individual consultants will be carried out in accordance with Section V of the Consultant Guidelines. Individuals will be selected on the basis of their qualifications for the assignment by comparing at least three CVs;

v. ***Sole Source (SS).*** The method will be used for certain individuals with the Bank's prior approval in accordance with paras. 3.9 to 3.13 of the Consultants Guidelines.

Procurement Plan and General Procurement Notice

14. Because of the demand-driven nature of the project, it will not be easy to estimate the requirements of potential sub-borrowers and their procurements at the appraisal stage. Therefore, Ukreximbank will develop an initial tentative Procurement Plan (PP), which can only include those procurements which can be clearly identified at appraisal stage, e.g. consultancy for the planned independent procurement audits. It is expected that each sub-borrower will provide a list of procurements planned under the sub-loan and these would be compiled into a procurement report.

15. Similarly, it will not be possible to prepare and publish a detailed General Procurement Notice for the project since the contract sizes and methods cannot be planned in advance. To this end, a general GPN will be published in accordance with the Procurement Guidelines indicated above. In case any sub-project includes ICB, a Special Procurement Notice will be published in accordance with the Procurement Guidelines.

Frequency of Procurement Supervision

16. The Bank will review the procurement arrangements proposed/performed by the sub-borrowers and Ukreximbank every year, including contract packaging, applicable procedures, and the scheduling of the procurement processes, for its conformity with the commercial practices of the sub-borrowers and the World Bank Procurement and Consultant Guidelines, the proposed implementation program and disbursement schedule.

17. **Prior Review:** For all contracts awarded through open competitive bidding and ICB as well as for the first contract of each sub-loan to the municipal sector awarded under NCB and for the first contract of the first three sub-loans to the municipal sector awarded under Shopping, prior review of all Bidding Documents, Bid Evaluation Reports, and Recommendations of Contract Award will be conducted by the Bank. For contracts awarded under the Consultant Guidelines, prior review of all RFP's, Evaluation Reports, Recommendations of Contract Award, and draft Contract will be conducted for the first contract awarded under CQ and IC procedures and all contracts awarded under QCBS, SSS, and SS.

18. **Post Review:** The procurement documents for all other contracts under the Project shall be subject to the World Bank's post review in accordance with the procedures set forth in paragraph 5 of Appendix 1 to the World Bank Procurement Guidelines in addition to the procurement review conducted by Ukreximbank. Post review of the procurement documents will be undertaken during the World Bank supervision mission or as the Bank may request to review any

particular contracts at any time. In such cases, Ukreximbank shall provide the Bank for its review the relevant documentation. In accordance with the moderate procurement risk, 10% of the post-review contracts will be subject to post-review.

19. **Anti Corruption Measures:**

(a) Risks attributable to the procurement process in Energy Efficiency Components are:

- Inappropriateness of prices in the contracts relative to market prices;
- Inappropriate use of funds for intended eligible purposes;
- Unreasonableness of the profit margins of firms which have works or goods contracts with beneficiary enterprises;
- Low quality of the facility

(b) Mitigation Measures

- Ukreximbank will arrange for independent procurement audits to provide additional monitoring of the sub-loan utilization;
- The sub-loan agreements with Ukreximbank will refer to the Bank's "Guidelines on Preventing and Combating Fraud and Corruption in Projects Financed by IBRD Loans and IDA Credits and Grants, dated October 15, 2006" (Anti-Corruption Guidelines) as well as the Procurement and Consultant Guidelines;
- Ukreximbank will check the contracts from sub-borrowers so that the contracted firms are not in the Bank debarment or temporarily suspended firms list.

Annex 9: Economic and Financial Analysis

UKRAINE: ENERGY EFFICIENCY

A. Financial Intermediary Assessment: Overview

1. The Ukreximbank was established in 1992. 100% of the bank's shares are owned by the Cabinet Ministers of Ukraine. The Bank is authorized to act as the agent and administrator of loan agreements entered by the Ukrainian government with foreign financial institution, in addition to the main mandate of facilitating export-import transactions. The Ukreximbank is a full service financial institution; the bank funds itself through deposits from the public as well as through financial institutions and markets. It is also capable of conducting all financial transactions including remittance, foreign exchange transactions and lending operations.

Corporate Governance

2. Supervisory Council was set up as the oversight body on behalf of the government. The Council's role is to determine core business directions of the bank and to approve Management Board's reports on bank's activities etc.

Table A9.1: Institutions represented on the Supervisory Council

Position	Represented Institution	Appointed By
Head	First Deputy Minister of Finance	Cabinet of Ministers
Member	Head of Executive Office of the Prime Minister	Cabinet of Ministers
Member	First Deputy Minister of the Cabinet of Ministers	Cabinet of Ministers
Member	Deputy Minister of Finance	Cabinet of Ministers
Member	Head of State Treasury Service	Cabinet of Ministers
Member	First Deputy Chief of the Presidential Administration Staff	President
Member	Advisor to the President	President
Member	Deputy Chief of the Presidential Administration Staff	President
Member	Kyiv National Economic University	President
Member	Head of Security Service	President
Member	First Deputy Minister of Economy	Parliament
Member	JSC Oshchadbank	Parliament
Member	Naftotrade	Parliament
Member	JSC United Payment System of Ukraine	Parliament
Member	Economist	Parliament

3. The Management Board is made up of 10 members, all of whom are employees of Ukreximbank. The statute clearly states that the Supervisory Council "shall not interfere in the Bank's day-to-day business activities." On risk management issues, The Supervisory Council bears the ultimate authority and responsibility for determination and approval of targets in the area of risk and capital management.

Risk Management

4. The Bank has departments responsible for risk management and control. The Management Board of the Bank, Assets and Liabilities Committee (ALCO), Credit Committee, Retail Business Committee, Branch Credit Commissions, Treasury, and Risk Management Division are responsible for risk management within the Bank.

5. Board approval is required for all credit decisions that are; a) above UAH 300 million (roughly US$ 37 million), b) unsecured loans and other high risk transactions. All other credit decisions on corporate finance have been delegated to the Credit Committee. The credit decisions for individuals are taken by Retail Business Committee and SME credit decisions are taken by the Branch Credit Commission, both with lower threshold. The Bank has an established credit policy, which includes collateral requirement of 120% of loan value on discounted value basis. The collateral is categorized according to the quality of the asset from A (sovereign guarantee of Ukraine) to C (finished goods), and are valued as such.

6. Loans and collateral are periodically monitored, including site visits, based on the monitoring categories based on credit asset conditions. Performing loans are monitored under "normal" monitoring, which include review of financial status of borrower, collateral value and other compliance issues. Any delay in repayment of principal or fees will require the Bank to monitor the credit under "in-depth" monitoring, which involve additional reviews of borrower status and business plans. Any delay of payment over 7 days will trigger "abnormal" monitoring, which is a detailed assessment of borrower assets and accounts to be claimed under a workout plan.

7. The institutional set-up and governance structure of Ukreximbank provides adequate corporate oversight and risk management system to ensure autonomous and commercially oriented governance.

Reporting/ Credit Ratings

8. Their financial statements are prepared initially local accounting standards, but reconciled with IAS and audited by an independent auditor (Ernst and Young) for reporting under IFRS. Ukreximbank also has ratings assigned by Moody's Investor Services and Fitch Ratings. Fitch Ratings revised up their long-term foreign currency rating of the Bank (July 6, 2010) and moody's revised their outlook on their foreign currency rating from Negative to Positive (October 12, 2010), recognizing the recovery of the Ukrainian economy and Ukreximbank.

Table A9.2: Credit Ratings of Ukreximbank

Moody's Investors Service		
Long-term global foreign currency deposit rating	B3	Stable
Long-term global local currency deposit rating	Ba3	Negative
Short-term foreign currency deposit rating	NP	Stable
Short-term local currency deposit rating	NP	Stable
Bank Financial Strength Rating	D-	Negative
The foreign currency senior unsecured debt rating	B1	Stable

Fitch Ratings		
Long-term foreign currency Issuer Default Rating	B	Stable
Short-term foreign currency Issuer Default Rating	B	
Individual Rating	D	
Support Rating	4	
National Long Term Rating	AA- (ukr)	Stable
The foreign currency senior unsecured debt rating	B	

Funding Capacity

9. Ukreximbank regularly has funded itself through bond issuance and syndicated loan market, in addition to deposits. In addition, the institution is counterparty to many of the IFIs operating in Ukraine, including IBRD, EBRD and KfW. The bank is administering EDPs as the apex institution under the World Bank project, channeling funds to eligible financial institutions for facilitation of export credit. The bank is already implementing an energy efficiency/renewable energy program for SMEs with EBRD and KfW funding. Under these projects, the Bank has been compliant with safeguard policies.

10. Additionally, Ukreximbank has funded itself through the syndicated loan market on a regular basis. (see below Table A9.3 for details of transactions) The Bank is highly regarded in the European financial market as a solid borrower, and the credit ratings also back this up by holding the credit ratings despite the general downturn in global financial markets though downgraded due to downgrade on country level. Despite the downgrade by Moody's in 2009, Ukreximbank successfully completed funding on the international market through EBRD A/B loan of US$ 134.5 million, although the global financial crisis was happening. They also just completed a full and timely repayment of the Eurobond issues in 2005 to the amount of US$ 250 million in Sept 2009, which also contributed to maintaining its solid reputation.

Table A9.3: Funding Activities of Ukreximbank from Capital Market

Date	Market/Instrument	Amount	Maturity
Sep-04	Eurobonds	US$ 150 million	5 years
Feb-05	Eurobonds	US$ 100 million	4 years
Feb-05	Subordinated Loan	US$ 40 million	5 years
Sep-05	Loan participating notes	US$ 250 million	7 years
Feb-06	Syndicated Loan	US$ 95 million	10 years
Sep-06	Loan participating notes	US$ 500 million	5 years
Dec-07	Club Loan	US$ 90 million	1 year
Mar-08	Syndicated Loan (refinance)	US$ 345 million	1 year
Sept-09	Syndicated Loan (EBRD A/B)	US$ 134 million	2 years/1 year
April-10	Eurobonds	US$ 500 million	5 years

Profitability

11. The financial data from 2008 and 2009 indicate a deterioration of assets. Although they were able to maintain their margin, the return on equity and assets decreased significantly as a result of cost incurred for overdue debts and substantial capital injection by the Government. (see Table A9.4) Though asset quality and margins may improve as the economy recovers, the high provision rate (see section on Portfolio Quality) implemented due to Ukreximbank's conservative credit and portfolio management policy will most likely maintain their profitability lower than their peer private sector institutions. In 2010, substantial capitalization brought in new liquidity for Ukreximbank – which they have used for trading in currencies, securities and other financial instruments. As a result, they have substantially increased their net profits and cash holdings. However, the challenge will be to find viable clients and investments as they seem to continue to struggle with their portfolio quality; their loan balance decreased during the same period. Though financial data for June 2010 is still not available, close monitoring of their portfolio is required.

Table A9.4: Profitability Indicators of Ukreximbank

(%)	2009	2008	2007	2006
Ukreximbank				
Net Interest Margin	7.07	4.51	4.79	5.42
Return on Equity	0.33%	3.80%	26.16%	24.96%
Return on Assets	0.05%	0.32%	2.35%	2.34%
Banking Sector				
Net Interest Margin	-	5.3	5.0	5.3
Return on Equity	-	7.29%	10.52%	11.38%
Return on Assets	-	0.88%	1.22%	1.34%

Source: National Bank of Ukraine, Ukreximbank

Capital Adequacy

12. As a response to the global financial crisis, the Ukrainian government has injected capital into Ukreximbank. In 2008, government injected UAH 4.7 billion of capital into the Bank from its budget. Additionally, the bank was allowed to capitalize its profit for the year 2008,

amounting to UAH 590 million. In 2009 authorized share capital was increased by UAH 3.8 billion and close to UAH 1 billion to UAH 9.3 billion, allowing for capital injection to occur in the future. The Government has continued to significantly increasing the capitalization of Ukraine in 2010 (see Table A9.5). Share capital is now at UAH 17 billion at June 2010 from UAH 10.7 billion at end of 2009.

Table A9.5: Capitalization of Ukreximbank from 2008

Date	Amount
11/26/2008	UAH 1.0 Billion
12/17/2008	UAH 3.7 Billion
4/15/2009	UAH 0.6 Billion
5/6/2009	UAH 1.0 Billion
7/17/2009	UAH 1.0 Billion
1/20/2010	UAH 1.8 Billion
2/17/2010	UAH 4.6 Billion

13. Due to these capital injections, despite increase in provisioning and write-off costs that continued into 2010, Ukreximbank is well capitalized at capital adequacy ratio of 46.83% as of June 2010. Although the asset portfolio of the Bank will need to be closely monitored as June 2010 data become available, the high capital adequacy ratio will provide adequate capacity to absorb any loss that may occur.

Table A9.6: Capital Adequacy Ratio

(%)	June 2010	2009	2008	2007	2006
Ukreximbank					
Caiptal Adequacy Ratio	46.83%	33.71%	10.77%	11.42%	11.50%
BIS - Tier 1 capital ratio	28.49%	18.34%	7.89%	8.51%	8.63%
BIS capital ratio	35.12%	25.45%	10.98%	13.01%	15.94%

Source: National Bank of Ukraine, Ukreximbank

Portfolio Quality

14. The Ukreximbank has 30 branches and 100 operating outlets. Its main line of business is in corporate finance; more than 85% of interest income and 74% of assets are from the lending made to the corporate sector. More than 50% of their lending is over 1 year.

Table A9.7: Breakdown of Interest Earning Assets

Interest Earning Assets (UAH million)	Dec 2008	June 2009	Sept 2009
Corporate Loans	35 993	41 000	43 586
Individual Loans	2 048	1 930	1 686
Interbank Operations	6 795	8 808	8 641
Securities	1 836	2 973	1 995
Loan Book	*39 876*	*45 903*	*47 267*
Loan Book + Treasury Book	*46 671*	*54 711*	*55 908*

Source: Ukreximbank

Table A9.8: Maturity Table of Loans

Maturity	June 2009	Sept 2009
1- 7 days	410. 7	718. 6
8- 30 days	1 606. 7	589. 1
31 - 60 days	1 289. 5	2 364. 8
61 - 90 days	1 404. 4	996. 1
91 - 180 days	3 854. 1	3 766. 2
181 days – 1рік	7 411. 9	9 239. 5
1 - 3 years	10 428. 3	10 295. 4
over 3 years	16 899. 4	17 424. 3
Total loans & advances	**43 305. 2**	**45 394. 3**

Source: Ukreximbank

15. During 2008, a deterioration of asset quality was seen: past due loans increased to UAH 281.3 million from UAH 26 million, and renegotiated loans to UAH 4.6 billion from UAH 13.2 billion. As a result, provisioning expense increased by 560% during the period as compared to 67% increase in total assets from UAH 28.6 billion to UAH 47.6 billion. However, the capital cushion provided by the recapitalization and conservative provisioning have allowed the Bank to withstand the restructuring and write-offs.

16. In 2009, their portfolio deteriorated further and saw 266% increase in their past due loan assets. Since Ukreximbank policy requires 100% provisioning for past due assets, their provisioning increased as well. They have also been increasing their provisioning to other risk categories as well and now increased its provisioning to 22% of total net credit risk from 9% at end of 2008. The conservative policy is made possible by further capitalization by the government that continued until February 2010.

Table A9.9: Risk Categorization of Loan Assets (UAH million)

Credit Risk Category	Dec 2008	March 2009	June 2009	Sept 2009
Standard	25 978,2	12 878,8	15 236,5	13 004,9
Watch	17 927,9	29 163,0	28 402,7	31 706,5
Sub-standard	2 085,7	5 060,2	3 390,5	4 563,3
Doubtful Loans	289,8	769,7	575,4	553,8
Bad Loans	281,3	410,9	1 502,6	1 663,5
Total Gross Exposure	**46 562,9**	**48 282,5**	**49 107,8**	**51 776,2**
LLP, % to GE	3,29%	4,69%	5,85%	6,78%
NPL's, % to GE	0,91%	0,97%	1,14%	3,90%

.

Table A9.10: Loan Provisioning (UAH million)

Credit Risk Category	Dec 2008	March 2009	June 2009	Sept 2009
Standard	141.4	54.9	52.2	35.5
Watch	570.6	788.4	636.5	697.4
Sub-standard	398.4	561.2	407.9	580.7
Doubtful Loans	142.5	450.6	275.9	249.3
Bad Loans	281.3	410.5	1,502.6	1,947.6
Total Loan Loss Provisions	**1,534.2**	**2,265.7**	**2,875.2**	**3,510.5**

Table A9.11: % of Loan Provision for Net Credit Exposure per Risk Category

Credit Risk Category	Dec 2008	March 2009	June 2009	Sept 2009
Standard	1.7%	1.7%	1.4%	1.4%
Watch	8.8%	8.3%	8.2%	7.8%
Sub-standard	32.2%	28.8%	25.5%	29.5%
Doubtful Loans	57.9%	69.6%	58.9%	60.7%
Bad Loans	100.0%	99.9%	100.0%	100.0%
Total Net Credit Risk	**9.1%**	**14.3%**	**19.1%**	**22.2%**

Table A9.12: Summary of Ukreximbank Financial Statements (IFRS)(

(million UAH)	June 2010	2009	2008	2007	2006
BALANCE SHEET					
TOTAL ASSETS	*65,068*	*56,163*	*47,589*	*28,566*	*18,449*
Total Liabilities	48,218	45,851	43,650	26,076	16,713
Shareholders' Equity	16,851	10,312	3,939	2,490	1,737
TOTAL LIABILITIES AND EQUITY	*65,069*	*56,163*	*47,589*	*28,566*	*18,449*
INCOME STATEMENT					
INTEREST INCOME	*1,481*	*3,414*	*1,630*	*1,052*	*724*
Provisioning	1,395	2,921	1,294	196	99
Fee and Commission	163	320	281	303	222
NET NON-INTEREST INCOME	*(221)*	*(768)*	*(437)*	*(405)*	*(383)*
Tax	7	22	58	201	129
NET PROFIT	21	23	122	553	335
CASH FLOW STATEMENT					
Cash Flow from Operations	*2,163*	*388*	*796*	*(1,929)*	*(4,017)*
Cash Flow from Financing	*2,003*	*(8,136)*	*(400)*	*3,425*	*5,175*
Cash Flow from Investments	*2,125*	*5,747*	*676*	*(1,069)*	*(467)*
Forex Adjustment	(276)	544	1,776	89	36
Net Change in Cash	*6,015*	*(1,457)*	*2,849*	*516*	*727*
Cash Balance at Beginning	*4,852*	*6,309*	*3,460*	*2,944*	*2,217*
Cash Balance at End	*10,867*	*4,852*	*6,309*	*3,460*	*2,944*
Capital Adequacy Ratio (%)	***46.83%***	***33.71%***	**10.77%**	**11.42%**	**11.50%**
Current Liquidity Ratio (%)**	***NA***	***62.07%***	**82.96%**	**100%**	**NA**

*** Based on NBU regulation - minimum 40%*

B. Economic and financial analysis:

17. The Project aims to finance the eligible energy efficiency sub-projects in industry and municipal sector. Since it is an FI operation, actual projects to be financed are not known upfront. The financial and economic analysis presented below is focused on a review of selected sub-projects included in the pipeline of potential investments prepared by the Borrower.

18. A sample of two potential sub- projects was analyzed: (1) energy efficiency project at a cement plant (conversion of wet production method to energy efficient dry method); and (2) modernization of a steel-rolling plant (replacement of outdated production equipment with modern equipment, including new kilns, as well as building insulation). The current pipeline does not include any municipal energy efficiency projects.

19. The Table A9.13 below shows economic analysis of selected sub-projects:

Table A9.13: Economic Analysis of Selected Potential Sub-Projects

Project	**Cost (US$, mln)**		**EIRR, %**	**Savings (year, average)**	
	required	**requested sub-loan**			
Energy Efficiency Solutions at Cement Production	54	37.8	12.25	coal natural gas electricity	16,400 tons 19,280 tcm 14.68 GWh
Energy Efficiency Modernization Project at Steel-Rolling Plant	5	3.5	16.35	natural gas electricity	65.2 tcm 11.59 GWh

20. As it is seen from the table, real EIRRs of the selected potential sub-projects are above 10%. Below is the detailed description of the selected sub-projects.

Potential Sub-Project 1 – Energy Efficiency Solution at Cement Production: Conversion of Wet Production Method to Energy Efficient Dry Method

Description

21. In the period of recession on the market, the cement producer is considering the opportunity to convert its "wet" cement production method, which is very energy intensive and considered an obsolete technology by modern standards, to "dry" method using modern equipment. On average, case studies show a 50% decrease of energy consumption resulting from such a conversion. The following investments will change the whole production process:
- Dosing silo, cross belt analyzer;
- Raw mill, homogenizing silo;
- New kiln, pre-heater, pre-calciner and clinker cooler.

22. The investments are expected to:
- decrease energy consumption by more than 40% (natural gas, coal and electricity);

- substantially reduce GHG emissions.

23. The calculations provided are based on the client's data and assumptions and expertise in "wet-to-dry" investments at cement production. Resulting indicators would greatly depend on the production and sales volumes of the client and timing of the investment.

Economic Analysis

24. The *economic costs* include the total investment cost of US$54 million. The major *economic benefits* considered for the analysis include: (a) the resulting average annual energy savings including the reductions of coal consumption by 16,400 tons; natural gas consumption by 19,280 tcm; and electricity consumption by 14.7 GWh; as well as (b) the associated *environmental benefits* due to avoided GHG emissions from decreased consumption of coal, natural gas and electricity.

25. The detailed calculation of the EIRR for this subproject is shown in table A9.14. It shows that the real EIRR of the sub-project is 12.25%. The estimated total energy saving for this sub-project are 230,000 tons of coal, 270 bcm of gas and 206 GWh of electricity; the annual estimated CO_2 emission reduction is 83,662 tons.

Table A9.14 Cost Benefit Analysis for Energy Efficiency Solution at Cement Production

Company Name	Cement Plant
Invesment Project Name	Energy Efficiency Solutions at Cement Production
Brief Description	Conversion of Wet Production Method to Energy Efficient Dry Method

Assumptions

Investment amount, USD eq.		54,000,000		
inc. requested subloan amount, USD eq.		37,800,000		
Annual operations costs:				
Amount, USD eq.				
	from year		to year	
Project implementation period:	from year		to year	

Energy Efficiency

	Energy used	Units	Annual consumption		Savings	Price per unit	Price increase p.a.	Initial savings amount, USD	Period	
			Pre-project	After project					From year	To year
1	Coal	kg	41,000,000	24,600,000	16,400,000.0	0.08	3.75%	1,312,000	2	15
2	Natural gas	m3	48,200,000	28,920,000	19,280,000.0	0.30		5,784,000	2	15
3	Electricity	kWh	36,700,000	22,020,000	14,680,000.0	0.070	2.00%	1,027,600	2	15
					0.0			0		

Water

1	Water savings	m3			0.0			0		

Production growth factor *	Applicability	Value
	y/n	

* Production growth factor is used in case the EE investment project, as a side-effect, increases production volumes and hence scales up the EE effect.

Environmental Impact

GHG emissions reductions	Amount, tCO2e p.a.	Est. price	Amount, USD eq.	Tradable/not tradable		
Amount pre 2012			0	y/n		
Amount after 2012	83,662	12.5	1,045,780	y	up to year	15

Other environmental impact estimate (annual increase (-) / decrease (+) in costs), USD eq. annually

Incremental Savings Estimate - Monetary (USD eq.)

Year	Cost			Benefit								EIRR	FIRR exc. Carbon	FIRR inc. Carbon
				Energy Saving				Water Savings	Environmental		Subtotal			
	Investment	Operations cost	Subtotal	Coal	Natural gas	Electricity	0		Local	Carbon				
formula	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*4..10*	*4..8*	*4..8+10*
-1		0.0	0.0	0	0	0	0	0	0		0	0	0	0
0	21,600,000	0.0	21,600,000.0	0	0	0	0	0	0		0	-21,600,000	-21,600,000	-21,600,000
1	32,400,000	0.0	32,400,000.0	0	0	0	0	0	0		0	-32,400,000	-32,400,000	-32,400,000
2		0.0	0.0	1,412,245	5,784,000	1,069,115	0	0	0	1,045,780	9,311,140	9,311,140	8,265,360	9,311,140
3		0.0	0.0	1,465,204	5,784,000	1,090,497	0	0	0	1,045,780	9,385,482	9,385,482	8,339,702	9,385,482
4		0.0	0.0	1,520,149	5,784,000	1,112,307	0	0	0	1,045,780	9,462,237	9,462,237	8,416,457	9,462,237
5		0.0	0.0	1,577,155	5,784,000	1,134,553	0	0	0	1,045,780	9,541,489	9,541,489	8,495,708	9,541,489
6		0.0	0.0	1,636,298	5,784,000	1,157,245	0	0	0	1,045,780	9,623,323	9,623,323	8,577,543	9,623,323
7		0.0	0.0	1,697,659	5,784,000	1,180,389	0	0	0	1,045,780	9,707,829	9,707,829	8,662,049	9,707,829
8		0.0	0.0	1,761,322	5,784,000	1,203,997	0	0	0	1,045,780	9,795,099	9,795,099	8,749,319	9,795,099
9		0.0	0.0	1,827,371	5,784,000	1,228,077	0	0	0	1,045,780	9,885,229	9,885,229	8,839,448	9,885,229
10		0.0	0.0	1,895,898	5,784,000	1,252,639	0	0	0	1,045,780	9,978,317	9,978,317	8,932,536	9,978,317
11		0.0	0.0	1,966,994	5,784,000	1,277,691	0	0	0	1,045,780	10,074,465	10,074,465	9,028,685	10,074,465
12		0.0	0.0	2,040,756	5,784,000	1,303,245	0	0	0	1,045,780	10,173,782	10,173,782	9,128,001	10,173,782
13		0.0	0.0	2,117,284	5,784,000	1,329,310	0	0	0	1,045,780	10,276,375	10,276,375	9,230,595	10,276,375
14		0.0	0.0	2,196,683	5,784,000	1,355,896	0	0	0	1,045,780	10,382,359	10,382,359	9,336,579	10,382,359
15		0.0	0.0	2,279,058	5,784,000	1,383,014	0	0	0	1,045,780	10,491,853	10,491,853	9,446,073	10,491,853
16		0.0	0.0	0	0	0	0	0	0	0	0	0	0	0
17		0.0	0.0	0	0	0	0	0	0	0	0	0	0	0
18		0.0	0.0	0	0	0	0	0	0	0	0	0	0	0
19		0.0	0.0	0	0	0	0	0	0	0	0	0	0	0
20		0.0	0.0	0	0	0	0	0	0	0	0	0	0	0
NPV												11,650,515	6,448,678	12,815,567
Internal Rate of Return												14.36%	12.25%	14.36%
Discount factor		10%												

Potential Sub-Project 2 - Modernization of a Steel-Rolling Plant

Description

26. The project will replace current outdated production equipment with modern equipment, including new kilns, as well as building insulation. The company has an annual energy consumption of 652 tcm of natural gas and 23 GWh of electricity. The proposed investment project is developed to (1) decrease energy consumption; (2) decrease gas consumption; (3) minimize negative environmental impact of the plant operations; and (4) improve building insulation. Life cycle of the project is estimated 15 years, however will be confirmed according to the technical characteristics of the new installations. At this stage, GHG emissions reductions are deemed non-tradable due to relatively small amounts for a JI project.

Economic Analysis

27. The *economic costs* include the total investment cost of US$5 million. The major *economic benefits* considered for the analysis include: (a) the resulting energy savings including the average annual reductions of natural gas and electricity consumption by 65.2 tcm and 11.6 GWh respectively; as well as (b) the associated *environmental benefits* due to avoided GHG emissions from decreased natural gas and electricity consumption.

28. The detailed calculation of the EIRR for this subproject is shown in table A9.15. It shows that the real EIRR of the sub-project is 16.35%. The estimated total energy saving for this sub-project are 913 tcm of gas and 162 GWh of electricity; the estimated annual CO_2 emission reduction is 13,715 tons.

Table A9.15 Cost Benefit Analysis for Modernization of a Steel-Rolling Plant

Company Name	**Steel-Rolling Plant**
Invesment Project Name	Energy Efficiency Modernisation Project
Brief Description	Replacement of outdated production equipment with modern equipment, including new kilns, as well as building insulation.

Assumptions

Investment amount, USD eq.			5,000,000		
inc. requested subloan amount, USD eq.			3,500,000		
Annual operations costs:					
	Amount, USD eq.				
		from year		to year	
Project implementation period:		from year	0	to year	1

Energy Efficiency

	Energy used	Units	Annual consumption		Savings	Price per unit	Price increase	Initial savings amount, USD	Period	
			Pre-project	After project					From year	To year
1	Coal	tonnes			0.0			0		
2	Natural Gas	m3	652,000	586,800	65,200.0	0.300		19,560	2	15
3	Electricity	kWh	23,180,000	11,590,000	11,590,000.0	0.075	2.0%	869,250	2	15
4	Petroleum	m3			0.0			0		
Water										
1	Water savings	m3			0.0			0		

Production growth factor *	Applicability	Value
	y/n	

* Production growth factor is used in case the EE investment project, as a side-effect, increases production volumes and hence scales up the EE effect.

Environmental Impact

GHG emissions reductions	Amount, tCO2e p.a.	Est. price	Amount, USD eq. p.a.	Tradable/not tradable		
Amount pre 2012			0	n		
Amount after 2012	13,715	12.5	171,440	n	up to year	15

Other environmental impact estimate (annual increase (-) / decrease (+) in costs), USD eq. 0.0 annually

Incremental Savings Estimate - Monetary (USD eq.)

Year	Cost			Benefit								EIRR	FIRR exc. Carbon	FIRR inc. Carbon
				Energy Saving					Environmental					
	Investment	Operations cost	Subtotal	Coal	Natural Gas	Electricity	Petroleum	Water Savings	Local	Carbon	Subtotal			
formula	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*4..10*	*4..8*	*4..8+10*
-1		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0	0	0
0	2,500,000.0	0.0	2,500,000.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	-2,500,000	-2,500,000	-2,500,000
1	2,500,000.0	0.0	2,500,000.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	-2,500,000	-2,500,000	-2,500,000
2		0.0	0.0	0.0	19,560.0	904,367.7	0.0	0.0	0.0	171,440.4	1,095,368.1	1,095,368	923,928	1,095,368
3		0.0	0.0	0.0	19,560.0	922,455.1	0.0	0.0	0.0	171,440.4	1,113,455.4	1,113,455	942,015	1,113,455
4		0.0	0.0	0.0	19,560.0	940,904.2	0.0	0.0	0.0	171,440.4	1,131,904.5	1,131,905	960,464	1,131,905
5		0.0	0.0	0.0	19,560.0	959,722.2	0.0	0.0	0.0	171,440.4	1,150,722.6	1,150,723	979,282	1,150,723
6		0.0	0.0	0.0	19,560.0	978,916.7	0.0	0.0	0.0	171,440.4	1,169,917.1	1,169,917	998,477	1,169,917
7		0.0	0.0	0.0	19,560.0	998,495.0	0.0	0.0	0.0	171,440.4	1,189,495.4	1,189,495	1,018,055	1,189,495
8		0.0	0.0	0.0	19,560.0	1,018,464.9	0.0	0.0	0.0	171,440.4	1,209,465.3	1,209,465	1,038,025	1,209,465
9		0.0	0.0	0.0	19,560.0	1,038,834.2	0.0	0.0	0.0	171,440.4	1,229,834.6	1,229,835	1,058,394	1,229,835
10		0.0	0.0	0.0	19,560.0	1,059,610.9	0.0	0.0	0.0	171,440.4	1,250,611.3	1,250,611	1,079,171	1,250,611
11		0.0	0.0	0.0	19,560.0	1,080,803.1	0.0	0.0	0.0	171,440.4	1,271,803.5	1,271,803	1,100,363	1,271,803
12		0.0	0.0	0.0	19,560.0	1,102,419.2	0.0	0.0	0.0	171,440.4	1,293,419.6	1,293,420	1,121,979	1,293,420
13		0.0	0.0	0.0	19,560.0	1,124,467.6	0.0	0.0	0.0	171,440.4	1,315,467.9	1,315,468	1,144,028	1,315,468
14		0.0	0.0	0.0	19,560.0	1,146,956.9	0.0	0.0	0.0	171,440.4	1,337,957.3	1,337,957	1,166,517	1,337,957
15		0.0	0.0	0.0	19,560.0	1,169,896.1	0.0	0.0	0.0	171,440.4	1,360,896.4	1,360,896	1,189,456	1,360,896
16		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0
17		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0
18		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0
19		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0
20		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0
NPV												2,654,952	1,876,689	2,920,447
Internal Rate of Return												19.56%	16.35%	19.56%

Annex 10: Safeguard Policy Issues
UKRAINE: ENERGY EFFICIENCY

1. Environmental Assessment policies of the Bank will apply to the Project. Environmental issues of sub-borrowers and their sub-projects will be addressed through the sub-loan environmental eligibility assessment. Ukreximbank will be responsible for ensuring that sub-borrowers and sub-projects financed under the Project undergo environmental screening to ensure their conformance with Ukrainian environmental legislation and regulations and the World Bank's policies and procedures, as set forth in OP/BP 4.01 and other relevant World Bank safeguards. The credit officers and environmental experts already appointed by Ukreximbank to staff the PIU under EDP2 will perform this function. The PIU Operations Manual detailing, inter alia, the World Bank's requirements in respect of environmental assessment, will be prepared prior to loan negotiations.

2. All sub-loans to be financed under the Project should be subjected by Ukreximbank to an environmental review process incorporating the procedures described in section V of the project's Operations Manual. Ukreximbank should use these procedures in reviewing and appraising sub-borrowers/sub-projects, and to inform Beneficiary Enterprises of environmental requirements for sub-loan appraisal, so that sub-projects can be implemented in an environmentally sound manner.

3. The procedures essentially consist of Environmental Screening, Environmental Impact Assessment, Review and Approval Stage and Implementation stage with Environmental Management Plan in place where necessary. All sub-projects proposed for financing from Bank funds through Ukreximbank or PBs, would be screened and classified by loan officers of PBs and Environmental Expert in Ukreximbank into one of the three Categories (A, B, or C) described below. Given the focus of this project and scope of the sub-projects, it is expected that the majority of sub-projects would fall into Category B or C. Sub-project screening will be performed in two stages. The first stage involves the normal review, to be followed by the sub-borrower, by Ukrainian environmental authorities if required by Ukrainian law, to determine if Ecological Expertiza (EIA, including preparation of any mitigation and monitoring documentation similar to the Bank Environmental Management Plan or EMP by the sub-borrowers) is required. The second stage of screening will be performed by Ukreximbank or PB in order to assign a specific Bank Environmental Assessment category (A, B or C as described above) to the sub-project and confirmed by the Environmental Expert in Ukreximbank. Following screening will be collection of documentation, Public Consultations where required, Review and approval finalized with disclosure of information. During Project Screening, for category A and some category B project an Environmental Impact Assessment (EIA) in line with the environmental classification of the sub-borrower/sub-project will be recommended. The sub-borrowers will be responsible for carrying out any environmental analysis and for confirming that the proposed sub-projects comply with national environmental guidelines, and for obtaining the necessary clearance from the appropriate licensing authorities. Once the analysis is performed and recommendations incorporated into the sub-project, Ukreximbank will appraise the proposed sub-loan package which would include, where appropriate, an environmental management plan. The implementation of the mitigation plan will be monitored by

Ukreximbank. The overall review process will be monitored by the Project Implementation Unit (PIU).

4. All sub-borrowers/sub-projects will follow the environmental review process presented schematically below. The procedure will be as follows:

STEP 1: If required by Ukrainian law, the sub-project sponsor (sub-borrower) will submit all necessary documentation to Ukrainian environmental authorities for a determination if Ecological Expertiza is required. The resultant outcome of this first stage screening is either Ecological Expertiza is required (Category A) or Ecological Expertiza is not required (Category B or Category C sub-project).

STEP 2: The sub-borrower then submits official government documentation to the Ukreximbank indicating either: (a) Ecological Expertiza Required or (b) Ecological Expertiza Not Required. The PB will review this information and make a recommendation for which Category the sub-project should be considered and the reasons for this decision.

STEP 3: In case if Ukreximbank categorize project as A or B (first three projects) category then he/she submits all documents to WB Environmental Safeguards Expert for review and No Objection.

STEP 4: Disclosure. For all Category A sub-projects, two-stages of public consultations are normally required as a condition of approval for any Bank-supported project. For Category B sub-projects one consultation with local stakeholders should be carried out on the proposed EMP

STEP 5: Review and Approval

5. **Category A:** PB or Loan Officer at Ukreximbank will review the EMP making sure that all items identified in the Ecological Expertiza as well as any conditions, requirements, and qualifications required by Bank OP 4.01 are properly incorporated. It will then submit the EMP to the PIU at Ukreximbank with a recommendation for approval. The Environmental Expert assigned in PIU of Ukreximbank will review this material and then send the English Language versions of the: (a) EMP, (b) Executive Summary of the Environmental Impact Assessment, (c) copy of the official letter indicating a "Positive Decision" by the relevant authorities (Environmental Assessment is approved), and (d) documentation of any special requirements, conditions, or qualifications which accompanied the "Positive Decision" to the Bank for the final approval. If deemed necessary, the Bank may request an English language version of the entire EIA document. The Bank will review the material and provide the final approval.

No release of Bank funds are permitted by Ukreximbank or PB until official Bank approval (NO) is provided.

6. **Category B**: PB or Loan Officer at Ukreximbank will review and approve the EMP. The Environmental Expert in PIU of Ukreximbank will review and clear the first two EMPs received from each PB/loan officer of Ukreximbank and will selectively review EMPs thereafter on either a pre-decision (if they so alert assigned loan officer in advance at the screening stage) or post-decision basis. From time to time the PB/ loan officers may seek the guidance from the PIU of Ukreximbank in offering their approval.

7. **Category C**: Not applicable because no environmental assessment is required.

STEP 6: Disclosure. For Category A sub-projects, the sub-borrower will place a Ukrainian language copy of the EIA and EMP in a public location (municipal building, library etc.) near the sub-project site and provide a letter to Ukreximbank Loan officer/the PB documenting the location where the EA and EMP were placed and the date of the disclosure. In addition, the Environmental Expert in Ukreximbank will send to the Bank an English language version of the Executive Summary from the sub-borrower, which will be posted in the InfoShop and Ukreximbank website. The Environmental Expert in Ukreximbank may request that EMPs for Category B projects be also disclosed in a suitable and accessible location.

STEP 7: All sub-loan agreements for Category A and Category B subprojects must include a condition requiring the sub-borrower to implement the EMP. The Environmental Expert in Ukreximbank will exercise its responsibility to supervise implementation by Ukreximbank loan officers/the PBs.

STEP 8: Sub-projects monitors the implementation of the EIA and EMP mitigation plan and informs the Ukreximbank PIU.

8. Prior and Post-Review – IBRD/PIU. Environmental evaluations and review procedures will be subject to ad-hoc review by the PIU and IBRD safeguard expert as part of supervision missions. The World Bank will perform ex-ante review and clearance of all sub-projects falling in Category A and sample of Category B projects. The review of evaluations will ensure that: the work was of satisfactory quality, community participation took place when appropriate, the appropriate recommendations were made, all documentation was properly filed and recorded, and that the conditions of approval were met. During the Project implementation, IBRD missions will supervise the overall screening process and implementation of environmental recommendations for selected sub-borrowers/sub-projects. The IBRD supervision team will also review, ad-hoc, environmental documentation. Therefore, all this documentation should be kept on file with the Ukreximbank PIU as needed.

Annex 11: Project Preparation and Supervision

UKRAINE: ENERGY EFFICIENCY

	Planned	Actual
PCN review	10/01/2009	09/30/2009
Initial PID to PIC	10/13/2009	10/16/2009
Initial ISDS to PIC	10/13/2009	10/26/2009
Appraisal	12/07/2010	12/20/2010
Negotiations	04/04/2011	04/12/2011
Board/RVP approval	05/17/2011	
Planned date of effectiveness	08/17/2011	
Planned date of mid-term review	12/17/2013	
Planned closing date	08/17/2016	

Key institutions responsible for preparation of the project: Ukreximbank

Bank staff and consultants who worked on the project included:

Name	Title	Unit
Gary Stuggins	Lead Energy Economist, Task Team Leader	ECSS2
Yadviga Semikolenova	Energy Economist	ECSS2
Shinya Nishimura	Financial Analyst	ECSS2
Feng Liu	Senior Energy Specialist	SEGES
Dmytro Glazkov	Operations Officer	ECSS2
Irina Babich	Financial Management Specialist	ECSO3
Knut Leipold	Senior Procurement Specialist	ECSO2
Astrid Manroth	Senior Energy Specialist	ECSS2
Rajeev Kumar Swami	Senior Financial Management Specialist	ECSO3
Leiping Wang	Senior Energy Specialist	EASIN
Bogdan Constantin Constantinescu	Senior Financial Management Specialist	ECSO3
Iouri Loutsenko	Interpreter/Translator	ECCUA

Bank funds expended to date on project preparation:

1. Bank resources: US$ 503,780.34
2. Trust funds: --
3. Total: US$503,780.34

Estimated Approval and Supervision costs:

1. Remaining costs to approval: --
2. Estimated annual supervision cost: US$97,000.00

Annex 12: Statement of Loans and Credits

UKRAINE: ENERGY EFFICIENCY

Project ID	FY	Purpose	Original Amount in US$ Millions				Cancel.	Undisb.	Difference between expected and actual disbursements	
			IBRD	IDA	SF	GEF			Orig.	Frm. Rev'd
P100580	2009	ROADS & SAFETY IMPROVEMENT PROJECT	400.00	0.00	0.00	0.00	0.00	399.00	0.00	0.00
P096207	2008	POWER TRANSMISSION PROJECT	200.00	0.00	0.00	0.00	0.00	199.85	19.85	-0.00
P095337	2008	URBAN INFRASTRUCTURE	140.00	0.00	0.00	0.00	0.00	136.22	46.06	0.00
P090389	2008	PFMP	50.00	0.00	0.00	0.00	0.00	49.74	7.86	0.00
P095203	2007	EXPORT DEVT 2	154.50	0.00	0.00	0.00	0.00	79.82	64.92	0.00
P075231	2006	SOC ASST SYS MOD	99.40	0.00	0.00	0.00	0.00	83.18	83.18	66.62
P076553	2006	ACC TO FIN SERVS (APL 1)	150.00	0.00	0.00	0.00	129.36	3.20	125.56	3.20
P083702	2005	HYDROPOWER REHAB	106.00	0.00	0.00	0.00	0.00	79.08	47.61	0.00
P077738	2005	QUAL EDUC EQUAL ACCESS (APL #1)	86.59	0.00	0.00	0.00	0.00	73.73	73.73	63.84
P076338	2004	DEVSTAT	32.00	0.00	0.00	0.00	0.00	14.82	14.82	0.00
P057815	2003	ST TAX SERV MOD PROG (APL #1)	40.00	0.00	0.00	0.00	0.00	22.72	22.72	-1.30
P035777	2003	RURAL LAND TITLING & CADASTRE	195.13	0.00	0.00	0.00	93.60	77.47	104.94	26.00
		Total:	1,653.62	0.00	0.00	0.00	222.96	1,218.83	611.25	158.36

UKRAINE
STATEMENT OF IFC's
Held and Disbursed Portfolio
In Millions of US Dollars

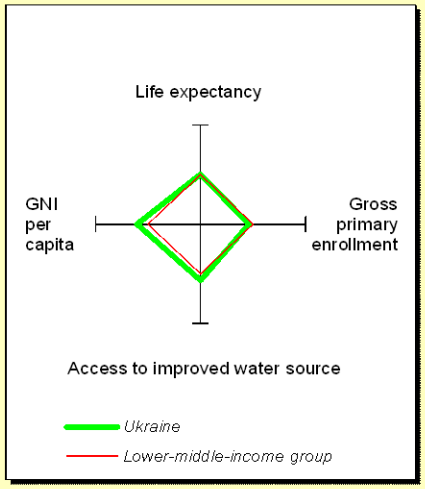
FY Approval	Company	Committed				Disbursed			
		IFC				IFC			
		Loan	Equity	Quasi	Partic.	Loan	Equity	Quasi	Partic.
2004	First Lease	1.14	0.00	0.00	0.00	1.14	0.00	0.00	0.00
2005	AES RivneEnergo	14.89	0.00	0.00	0.00	3.89	0.00	0.00	0.00
2005	AESKyivoblenergo	29.50	0.00	0.00	0.00	8.50	0.00	0.00	0.00
2006	Asnova	0.00	0.00	8.00	0.00	0.00	0.00	0.00	0.00
2005	AvalBank	11.25	0.00	70.00	0.00	11.25	0.00	70.00	0.00
2006	Biocon Group	3.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2006	CJSC Rise	10.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00
2006	CJSC Sofia Kiev	14.50	0.00	2.00	13.00	6.80	0.00	2.00	7.60
2006	Delta-Wilmar CIS	17.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2005	EVU II	0.00	7.50	0.00	0.00	0.00	0.22	0.00	0.00
2006	Galnaftogas	21.00	0.00	4.00	0.00	9.00	0.00	4.00	0.00
2003	HVB Bank Ukraine	2.04	0.00	0.00	0.00	2.04	0.00	0.00	0.00
2006	Industrial Un...	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

			Committed				Disbursed		
2006	Kviza	45.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	MHP S.A.	0.00	20.00	0.00	0.00	0.00	20.00	0.00	0.00
2004	Mironovsky	17.50	0.00	10.00	0.00	17.50	0.00	10.00	0.00
2005	Mironovsky	60.00	0.00	0.00	0.00	60.00	0.00	0.00	0.00
2004	Nova Liniya	0.00	0.00	4.65	0.00	0.00	0.00	4.65	0.00
2006	Nova Liniya	10.00	0.00	0.00	0.00	2.20	0.00	0.00	0.00
2000	ProCredit UKR	1.50	0.00	0.00	0.00	1.50	0.00	0.00	0.00
2004	ProCredit UKR	6.38	0.00	0.00	0.00	6.38	0.00	0.00	0.00
2004	RZB Ukraine	28.57	0.00	0.00	0.00	28.57	0.00	0.00	0.00
2004	Sandora	19.00	0.00	0.00	0.00	19.00	0.00	0.00	0.00
2006	Zeus	9.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total portfolio:	422.27	27.50	98.65	13.00	187.77	20.22	90.65	7.60

		Approvals Pending Commitment			
FY Approval	Company	Loan	Equity	Quasi	Partic.
2006	IMB	0.01	0.00	0.00	0.00
2006	ISD	0.00	0.00	0.00	0.25
2005	AES RivneEnergo	0.00	0.00	0.00	0.00
2006	Velyka Kyshenya	0.00	0.00	0.00	0.06
2005	AESKyivOblenegro	0.00	0.00	0.00	0.00
	Total pending commitment:	0.01	0.00	0.00	0.31

Annex 13: Country at a Glance
UKRAINE: ENERGY EFFICIENCY

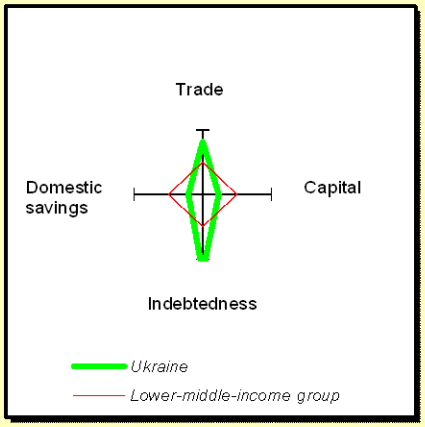
POVERTY and SOCIAL	Ukraine	Europe & Central Asia	Lower-middle-income
2009			
Population, mid-year *(millions)*	46.0	404	3,811
GNI per capita *(Atlas method, US$)*	2,800	6,793	2,316
GNI *(Atlas method, US$ billions)*	128.9	2,746	8,825
Average annual growth, 2003-09			
Population *(%)*	-0.6	0.2	1.2
Labor force *(%)*	0.1	0.8	1.5
Most recent estimate (latest year available, 2003-09)			
Poverty *(% of population below national poverty line)*	20	..	..
Urban population *(% of total population)*	68	64	41
Life expectancy at birth *(years)*	68	69	68
Infant mortality *(per 1,000 live births)*	13	19	43
Child malnutrition *(% of children under 5)*	..	..	25
Access to an improved water source *(% of population)*	98	96	87
Literacy *(% of population age 15+)*	100	98	80
Gross primary enrollment *(% of school-age population)*	98	99	107
Male	98	100	109
Female	99	99	105



KEY ECONOMIC RATIOS and LONG-TERM TRENDS

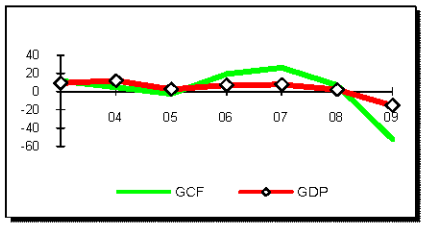
	1989	1999	2008	2009
GDP *(US$ billions)*	82.7	31.6	180.4	113.5
Gross capital formation/GDP	28.9	17.5	25.2	17.1
Exports of goods and services/GDP	32.1	53.7	41.7	46.3
Gross domestic savings/GDP	28.8	23.0	19.2	15.4
Gross national savings/GDP	..	22.5	20.6	17.2
Current account balance/GDP	..	5.3	-7.2	-1.6
Interest payments/GDP	..	2.1	2.0	3.5
Total debt/GDP	..	44.2	51.6	82.0
Total debt service/exports	..	16.0	21.7	25.4
Present value of debt/GDP	..	..	..	78.4
Present value of debt/exports	..	..	..	106.3

	1989-99	1999-09	2008	2009	2009-13
(average annual growth)					
GDP	-10.6	5.9	2.1	-15.1	3.7
GDP per capita	-10.2	6.7	2.7	-14.6	..
Exports of goods and services	-5.4	2.5	2.5	-25.6	5.9

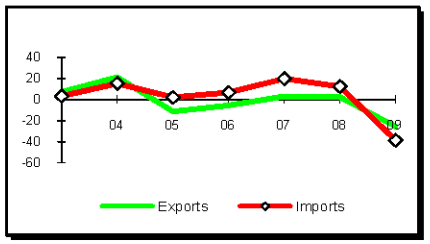


STRUCTURE of the ECONOMY

	1989	1999	2008	2009
(% of GDP)				
Agriculture	22.9	14.3	8.3	8.2
Industry	48.4	38.5	36.9	29.4
Manufacturing	39.3	32.7	23.3	18.2
Services	28.7	47.2	54.8	62.4
Household final consumption expenditure	53.8	57.2	63.9	65.5
General gov't final consumption expenditure	17.3	19.8	17.0	19.2
Imports of goods and services	32.1	48.2	47.8	48.0



	1989-99	1999-09	2008	2009
(average annual growth)				
Agriculture	-6.4	3.6	15.0	-0.3
Industry	-14.8	5.4	3.5	-24.0
Manufacturing	-13.4	8.5	4.0	-26.6
Services	-9.0	5.9	4.3	-11.7
Household final consumption expenditure	-8.0	12.2	5.3	5.9
General gov't final consumption expenditure	-4.2	2.6	7.9	-5.6
Gross capital formation	-21.2	6.1	7.1	-52.2
Imports of goods and services	-8.4	5.9	12.5	-38.6



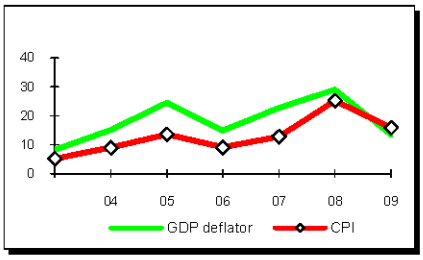
Note: 2009 data are preliminary estimates.

This table was produced from the Development Economics LDB database.

* The diamonds show four key indicators in the country (in bold) compared with its income-group average. If data are missing, the diamond will be incomplete.

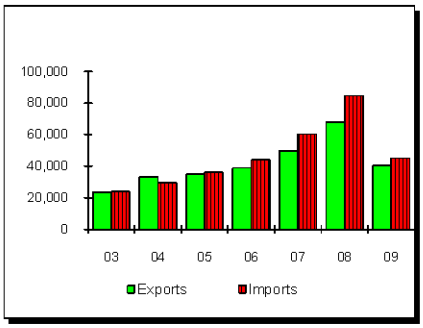
PRICES and GOVERNMENT FINANCE

	1989	1999	2008	2009
Domestic prices				
(% change)				
Consumer prices	..	22.7	25.2	15.9
Implicit GDP deflator	3.8	27.4	29.1	13.4
Government finance				
(% of GDP, includes current grants)				
Current revenue	..	31.5	43.5	41.8
Current budget balance	..	-4.2	2.2	-4.2
Overall surplus/deficit	..	-4.3	-3.1	-6.3



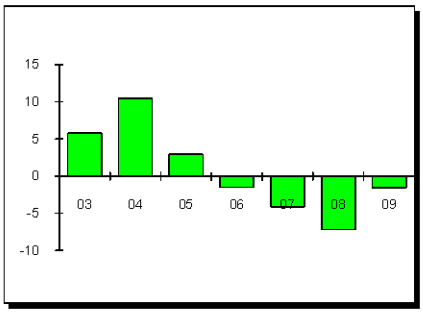
TRADE

	1989	1999	2008	2009
(US$ millions)				
Total exports (fob)	..	13,189	67,717	40,394
Ferrous and non-precious metals	..	4,874	27,633	12,817
Mineral products	..	1,418	10,831	9,515
Manufactures	..	1,981	12,524	8,031
Total imports (cif)	..	12,945	84,651	45,049
Food	..	902	6,457	4,936
Fuel and energy	..	5,441	22,936	14,798
Capital goods	..	2,255	26,648	9,072
Export price index *(2000=100)*	..	98	303	263
Import price index *(2000=100)*	..	98	238	221
Terms of trade *(2000=100)*	..	100	127	119



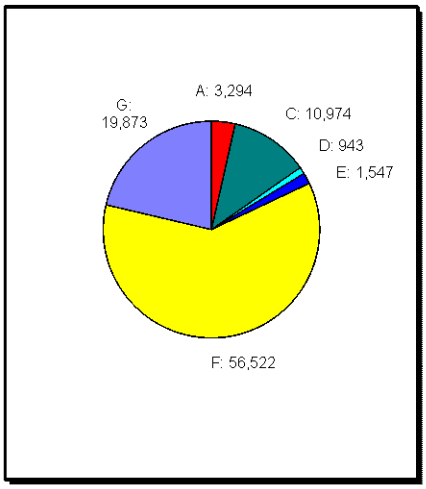
BALANCE of PAYMENTS

	1989	1999	2008	2009
(US$ millions)				
Exports of goods and services	..	17,058	85,612	54,253
Imports of goods and services	..	15,237	100,132	56,275
Resource balance	..	1,821	-14,520	-2,022
Net income	..	-869	-1,540	-2,440
Net current transfers	..	706	3,127	2,661
Current account balance	..	1,658	-12,933	-1,801
Financing items (net)	..	-1,375	14,013	-3,853
Changes in net reserves	..	-283	-1,080	5,654
Memo:				
Reserves including gold *(US$ millions)*	..	1,094	33,680	29,650
Conversion rate *(DEC, local/US$)*	1.85E-5	4.1	5.3	8.1



EXTERNAL DEBT and RESOURCE FLOWS

	1989	1999	2008	2009
(US$ millions)				
Total debt outstanding and disbursed	..	13,951	93,114	93,153
IBRD	..	1,954	3,022	3,294
IDA	..	0	0	0
Total debt service	..	2,801	17,922	21,288
IBRD	..	96	321	312
IDA	..	0	0	0
Composition of net resource flows				
Official grants	..	125	402	403
Official creditors	..	291	439	748
Private creditors	..	-423	17,301	-2,720
Foreign direct investment (net inflows)	..	496	10,913	4,816
Portfolio equity (net inflows)	..	129	388	105
World Bank program				
Commitments	..	0	990	800
Disbursements	..	422	889	509
Principal repayments	..	2	203	235
Net flows	..	420	687	275
Interest payments	..	94	118	78
Net transfers	..	326	569	197



Note: This table was produced from the Development Economics LDB database.


This map was produced by the Map Design Unit of The World Bank. The boundaries, colors, denominations and any other information shown on this map do not imply, on the part of The World Bank Group, any judgment on the legal status of any territory, or any endorsement or acceptance of such boundaries.
UKRAINE
SELECTED CITIES AND TOWNS
OBLAST CAPITALS
AUTONOMOUS REPUBLIC CAPITAL
MUNICIPALITIES (CITIES WITH SPECIAL STATUS)
NATIONAL CAPITAL
RIVERS
MAIN ROADS
RAILROADS
OBLAST BOUNDARIES
AUTONOMOUS REPUBLIC BOUNDARIES
INTERNATIONAL BOUNDARIES
MAY 2009
IBRD 33505R
BELARUS
RUSSIAN FEDERATION
POLAND
SLOVAK REPUBLIC
HUNGARY
ROMANIA
MOLDOVA
BULGARIA
Black Sea
Sea of Azov
CRIMEA
KYIV (KIEV)
Chernihiv
Sumy
Kharkiv
Poltava
Kremenchuk
Dnipropetrovs'k
Donets'k
Luhans'k
Sieverodonetsk
Kovel
Sarny
Luts'k
Rivne
Korosten
Zhytomyr
Ternopil'
Khmel'nyts'kyi
Vinnytsya
Uman'
Cherkasy
Kirovohrad
Kryvyi Rih
Zaporizhzhia
Nykopol
Mariupol
Melitopol
Berdiansk
Kherson
Mykolayiv
Odessa
Izmail
Vilkova
Kerch
Yevpatoriia
Teodosiia
Simferopol'
Sevastopol
Yalta
L'viv
Uzhhorod
Ivano-Frankivs'k
Chernivtsi
Hora Hoverla (2061 m)
Carpathian Mts
Dnieper Upland
Dnieper Lowland
Donets Basin
Kyiv Reservoir
Kremenchug Reservoir
Kakhov Reservoir
Mouths of the Danube
VOLYN
RIVNE
ZHYTOMYR
CHERNIHIV
SUMY
KYIV
POLTAVA
KHARKIV
LUHANSK
LVIV
TERNOPIL
KHMELNYTSKYI
VINNYTSYA
CHERKASY
KIROVOHRAD
DNIPROPETROVSK
DONETSK
ZAKARPAT
IVANO-FRANKIVSK
CHERNIVTSI
MYKOLAIV
ODESSA
ZAPORIZHZHIA
KHERSON
To Warsaw
To Minsk
To Zhlobin
To Bryansk
To Orel
To Voronezh
To Tarnow
To Satu Mare
To Tirgu Mures
To Birlad
To Tecuci
To Buzau
To Medgidia
To Armavir
To Sochi
0 50 100 150 Kilometers
0 50 100 150 Miles
25°E
30°E
35°E
50°N
45°N