



Global Environment Facility

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March 10, 2006

Dear Council Member,

UNDP, as the Implementing Agency for the project, ***Ukraine: Removing Barriers to Greenhouse Gas Emissions Mitigation through Energy Efficiency in the District Heating System, Phase 2***, has submitted the attached proposed project document for CEO endorsement prior to final approval of the project document in accordance with UNDP procedures.

The Secretariat has reviewed the project document. It is consistent with the proposal approved by the Council in June 2005, and the proposed project remains consistent with the Instrument and GEF policies and procedures. The attached explanation prepared by UNDP satisfactorily details how Council's comments and those of the STAP have been addressed. I am, therefore, endorsing the project document.

We have today posted the proposed project document on the GEF website at www.theGEF.org. If you do not have access to the Web, you may request the local field office of the World Bank or UNDP to download the document for you. Alternatively, you may request a copy of the document from the Secretariat. If you make such a request, please confirm for us your current mailing address.

Sincerely,

A handwritten signature in black ink, appearing to be "L. Good", written over a faint circular watermark or background.

cc: Alternates, Implementing Agencies, STAP



27 January 2006

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Dear Mr. Good,

Subject: **CC/OP5 – CC2, Ukraine: “Removing Barriers to Greenhouse Gas Emissions Mitigation through Energy Efficiency in the District Heating System, Phase 2” – PIMS No. 3056**

I am pleased to attach herewith the above-mentioned project document. We have received positive reviews from both the Council members of USA and Switzerland. We take note of the both these comments and are grateful for their positive review and note that they have not requested any changes. The brief was approved at the GEF Council Meeting in June 2005.

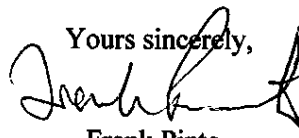
Co-financing/support letters and letters of interest were received from the following institutions. These letters are attached as a separate PDF file.

- Rivne City Council
- AVAL, Stock Post-Pension Bank
- PrivatBank
- UkrGasBank
- UkrESCO
- ESCO-Commertz Ltd.
- KfW
- JSC (Municipal Energy Service Company in the city of Rivne)
- Paraleli Ltd
- UkrMashExport Ltd
- TOPAZ-INVEST Ltd

As per paragraph 29 and 30 of the GEF Project Cycle, we are submitting this project document for circulation to the members of the GEF Council and, subsequently, for your final endorsement.

Thank you in advance for expediting the review and endorsement of this project.

Warm regards

Yours sincerely,

Frank Pinto
Executive Coordinator

Mr. Leonard Good
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Cc: Mr. Geordie Colville, GEF Regional Technical Advisor



UNDP Full Size Project Document

Government of Ukraine

United Nations Development Programme

Global Environment Facility

Removing Barriers to Greenhouse Gas Emissions Mitigation through Energy Efficiency in the District Heating System, Phase 2

PIMS 3056

Atlas Award ID: 00042146

Atlas Project ID: 00048250

Brief description

The proposed project addresses a key issue in the reduction of greenhouse gas emissions through large-scale improvements in energy efficiency in Ukraine's communal heat supply sector. These improvements will result from a four-part approach: 1) capacity building to create the basis for systematic energy efficiency activities at the local level; 2) an integrated approach of supply and demand-side improvements to achieve maximum fuel savings and emissions reduction; 3) attraction of external investment resources for an energy efficiency programme in a pilot city (Rivne); and, 4) project-specific replication measures in other parts of the country, including development of relevant procedures, guidelines, information materials and their dissemination, and public awareness-raising through the involvement of NGO's, in particular those concerned with environmental and energy efficiency problems. The project will involve establishing a privately-run energy service company (ESCO) as an innovative mechanism for financing energy efficiency activities in Ukraine at both municipal and regional levels, and, eventually, at the national level.

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Annex D: Endorsement and Commitment letters

Annex F: Criteria for continuation to Stage II

Annex G: ESCO Rivne Strategic Plan

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Acronyms

ALRA	Association of Local and Regional Authorities
EBRD	European Bank for Reconstruction and Development
EPC	Energy Performance Contract
ESCO	Energy Service Company
GEF	Global Environmental Facility
GHG	Greenhouse Gas
MEEI	Ministry of Economy and European Integration
MEP	Ministry of Environmental Protection
MFE	Ministry of Fuel and Energy
PIR	Project Implementation Review
RM	Rivne Municipality
ROA	Rivne Oblast Administration
SCMH	State Committee for Municipal Housing
tce	Tons of coal equivalent
ToR	Terms of Reference
UNDP	United Nations Development Programme
UNDP-CO	UNDP Country Office in Ukraine

1. Elaboration of the Narrative

1.1. Situation Analysis

1.1.1. Context and global significance

The full-size project was approved in January 2000, but, given the then financial constraints faced by GEF, was split into two phases: the soon to be completed Phase 1 dealing with the setting up of an ESCO in the City of Rivne which, in turn, implemented pilot energy efficiency activities targeting selected municipal district heating facilities. Phase 2, which is the subject of the present proposal, will build upon and consolidate the ESCO experience acquired to address municipal district heating activities at the Rivne City-wide and regional (Oblast) levels.

Ukraine continues to be one of the least energy efficient countries in the world and has the greatest emissions level per unit of GDP among CIS countries. An inventory estimated that total emissions from Ukraine in 2002 were 487 million tons of CO₂ equivalent (the corresponding figure for 2001 was 482 million tons). This results in a per capita emission of 10 tons of CO₂ equivalent per year. Heat supply in the buildings sector accounts for approximately 25% of all fuel consumed in Ukraine, and, therefore, there is a huge potential for energy efficiency improvement in this sector, which Ukraine wants to actively pursue.

Since 1991, the Government of Ukraine has devoted a great deal of attention to the development of the energy sector. The National Energy Programme of Ukraine until 2020, adopted in 1996, articulated the Government's energy policy and its priorities: energy conservation, use of domestic resources, development of renewable energy and targeted investments in strategic areas to reduce energy intensity. In the district heating sector, the programme calls for reconstruction and rehabilitation of existing district heating networks, continued development of district heating systems and combined heat and power plants, promotion of waste heat usage, and construction of new high-efficiency, heat-only boiler plants where appropriate.

In line with the Government's priorities, this project addresses a key issue in the reduction of greenhouse gas emissions through large-scale improvements in energy efficiency in Ukraine's communal heat supply sector. These improvements will result from a four-part approach: 1) capacity building to create the basis for systematic energy efficiency activities at the local level; 2) an integrated approach of supply and demand-side improvements to achieve maximum fuel savings and emissions reduction; 3) attraction of external investment resources for an energy efficiency programme in a pilot city; 4) project-specific replication measures including development of relevant procedures, guidelines, information materials and their dissemination, and public awareness-raising through the involvement of NGO's, in particular those concerned with environmental and energy efficiency problems.

1.1.2 Threats, root causes and barriers analysis

The global environmental objective of reducing overall fossil fuel consumption and associated GHG emissions is to be achieved through the removal of the following main existing barriers to energy efficiency improvement in the communal heat supply sector: 1) difficulties in arranging financing for efficiency projects; 2) institutional constraints; 3) lack of capacity and experience in preparing, implementing and managing energy efficiency projects; 4) high transaction costs for relatively small energy efficiency projects; 5) lack of information about existing opportunities for energy efficiency.

1) Difficulties in arranging financing for efficiency projects;

a. Activities designed to address barrier

- An ESCO as a vehicle for local/foreign investors will be established, its profitability demonstrated, and new investors attracted;

b. Phase I progress in addressing barrier

- ESCO-Rivne was incorporated as a closed joint-stock company on 12 November 2003. The company is fully owned by KommunEnergiia (the Oblast's DH Enterprise), MiskSvitlo (the Municipality's lighting company) and company employees.
- The company has investments of USD 1.5 million under 15 Energy Performance Contracts, and receives USD 25,000 in payments for energy efficiency every month in return. The company therefore expects to begin turning a profit on these investments around 5 years.

c. Phase II strategy to address outstanding barrier issues

- There are currently no private shareholders. To address this issue, ESCO-Rivne has modified its foundation documents, converting the closed joint-stock company into an open-stock one.
- ESCO-Rivne has contacted several potential investors, mailed them its Business Plan for 2005 and has had meetings with some of them to provide additional information/answer questions.
- All company information has been posted on the ESCO-Rivne web site (www.esco-rivne.com) for easy access by potential investors.
- Necessary legal and fiscal issues: options for repayment guarantees, currency exchange and transfer procedures, arbitration of disputes, etc.

2) Institutional constraints

a. Activities designed to address barrier

- Ability of municipalities to enter into EPC agreements.
- Cross-subsidies in heating tariffs (i.e. low tariffs), making it difficult for a business to make a profit by providing heating services.
- Housing allowance, including heat consumption, reduces the need and cost effectiveness of demand-side investments.

b. Phase I progress in addressing barrier

- So far Rivne Municipality and district heating company are the only clients of ESCO-Rivne. Together, they have identified administrative procedures for entering into an energy performance contract: (1) ESCO-Rivne makes an investment; (2) Rivne Municipality creates a budget line for energy efficiency; (3) ESCO-Rivne estimates the payments it expects to receive from the municipality in energy savings, and the municipality requests and allocates funds to this amount to their budget line; (4) ESCO-Rivne is paid based on actual measurements. (5) Payment from final consumers is collected from KommunEnergiia, and at present does not bear on the EPC contract with Rivne.
- Cross-subsidies have been removed from heat tariffs. Although this does not directly affect the current EPC contracts between Rivne Municipality and ESCO-Rivne, it is an important step in creating the right investment environment.
- Direct billing of consumers is now standard practice. Consumption meters have been installed and payment collection has increased.

c. Phase II strategy to address outstanding barrier issues

- Implement consumption billing.
- Complete design and implementation of billing software.
- Design of guarantee instruments to ensure payment by clients.

3) Lack of capacity and experience in preparing, implementing and managing energy efficiency projects.

a. Activities designed to address barrier

- Design and implementation of investment plan.
- Training programme for ESCO-Rivne staff in auditing, EPC design, financial planning and preparation of bankable projects.

b. Phase I progress in addressing barrier

- City-wide investment plan formulated.
- Bulk of capacity development programme completed.

c. Phase II strategy to address outstanding barrier issues

- Organize twinning arrangement with reputable ESCO in a foreign country to tap specific know-how and expertise in managing and operating businesses.
- Provide additional training in bankable project development.

4) High transaction costs for relatively small energy efficiency projects.

a. Activities designed to address barrier

- To implement an energy efficiency project, a municipality would have to undertake the steps of feasibility, design, installation, operation and maintenance as separate procurement steps. With EPC they need only undertake one procurement step. The ESCO, with lower overheads, greater experience and intrinsic interest in multiplying energy efficiency projects, is capable to undertake these tasks with higher efficiency and lower overheads.

b. Phase I progress in addressing barrier

- ESCO-Rivne is undertaking 15 EPC's where the municipality has been able to pass on the task of feasibility, design, installation, operation and maintenance of equipment to ESCO-Rivne.

c. Phase II strategy to address outstanding barrier issues

- Subsequent bundling of several EPC contracts into one contract, for example, for city-wide activities.

5) Lack of information about existing opportunities for energy efficiency.

a. Activities designed to address barrier

- Preparation of an investment programme.

b. Phase I progress in addressing barrier

- Targeted training, individual outreach to decision-makers and focused consultations.

c. Phase II strategy to address outstanding barrier issues

- Provide consultations to interested municipalities and district companies.
- Additional targeted outreach activities.

1.1.3. Institutional, sectoral and policy context

The Rivne Municipality, Rivne District Heating Company, and the Oblast Administration have all strongly supported the idea of establishing ESCO-Rivne to expand energy efficiency activities in the city of Rivne. The reasons for this are several: large budgetary expenditures on the energy bills of institutional buildings and on residential subsidies, high energy intensity of delivered heat, resulting in high heat tariffs, etc. It should be noted that compared to other Ukrainian cities, Rivne has made significant progress in reforming its municipal energy sector. Cross-subsidies in heat energy tariffs for different consumer categories have been eliminated, direct billing of all district heating system customers has been introduced, the payment collection rate has increased to the point where it is now one of the highest in Ukraine, and energy saving has been identified as a priority both by the municipality and by the district heating company. Local authorities are willing to go further in reforming the energy sector to facilitate ESCO-Rivne operations and increase the confidence of private investors. For example, they guarantee full cash payment of heat bills of budgetary institutions, make full payment of existing residential subsidies to the heat supplier, and fix the level of tariffs for the investment amortization period.

An ESCO presents an efficient way to provide for systematic energy efficiency activities. This is because an ESCO is oriented for operation with numerous clients of various types, possesses necessary expertise for project preparation and implementation, is quick and flexible in making decisions about project financing, and is intrinsically interested in multiplying energy efficiency activities through expansion of its customer base. An ESCO suggests win-win solutions for its clients by using EPC mechanisms. It also reduces transaction costs and can tackle a large number of similar and relatively small-scale projects that could not be financed separately using traditional approaches. Thus, the ESCO approach facilitates the access to external financial sources for the owners of smaller projects. EPCs offer ESCO clients attractive long-term financing otherwise currently almost unavailable in Ukraine. Moreover, experience with international joint ventures shows that foreign investors look at the strength of the local partner as a primary criterion for investment decisions.

The ESCO approach complements existing strategies of major investors/lenders. The EBRD has indicated that the project is in line with its current strategy, and recently re-iterated its interest in the project. Furthermore, ESCO-Rivne met with several other private investors (representing both energy companies and investment funds) who have also confirmed their interest in equity participation or provision of lines of credit.

In addition to reflecting national priorities in Ukraine, the proposed project also builds upon the existing goals and activities of UNDP, with environment constituting one of its four priority areas for global activity, both at the country level and in the region. This project will also serve as an innovative approach to district heating efficiency projects, an important part of UNDP-GEF portfolio. Finally, UNDP is assisting local governments in Ukraine in the formulation and implementation of Local Agenda 21 sustainable development strategies at the Oblast (regional) and municipal levels, and energy plans are included in these strategies.

1.1.4. Stakeholder analysis

The Rivne Phase 1 project has benefited from extensive stakeholder involvement (Ministry of Economy and European Integration, Ministry of Environmental Protection, State Committee for Municipal Housing, Rivne Oblast Administration, Rivne Municipality, Association of Local and Regional Authorities, etc.) during its implementation. For Phase 2, the project has the support of several other Municipalities (e.g. Ostrog, Kamenets Podolskiy and Kostopil) and Oblast Administration (Khmelnitsky) to create the necessary policy, institutional and business framework that will enable private sector

participation to implement energy efficiency activities in the municipal district heating sector through the ESCO modality. Discussions have also been held with potential private investors from Austria and Germany, and with overseas lenders who have expressed their interest to participate in the programme. At the national level, the project has the full support of the State Committee for Municipal Housing, the Ministry of Environmental Protection and benefits from the participation of the Association of Local and Regional Authorities, an NGO very active in the environment field.

1.1.5. Baseline analysis

This project is designed to remove barriers to municipal district heating, initially in the Rivne Oblast and eventually throughout Ukraine. In so doing, it will achieve the stated objectives of GEF Operational Program #5: Removing Barriers to Energy Efficiency and Energy Conservation and falls under GEF Strategic Priority 2 (SP 2): Increased access to local sources of financing. As it is unlikely that the project activities would be implemented in the absence of UNDP and GEF support, the project can largely be considered to be incremental.

A detailed assessment of incremental costs is discussed in [ANNEX A](#) of attached Executive Summary. According to the matrix contained in Annex A, the baseline costs of continuing business as usual, with no systematic activity to improve energy efficiency in the heat supply system and buildings in the residential and public sectors, amount to \$2,260,000. Based upon the information provided during the PDF B and revised during implementation of Phase 1, the costs of implementing city-wide energy efficiency measures in the municipal district heating sector in Rivne under Phase 2 are \$23,994,000 (Table 1 below). This makes the incremental costs equal to approximately \$ 21.7 million. Of this incremental amount, GEF is being requested to provide only 25%, i.e. \$ 5,523,400 (including \$ 1,840,000 for Phase 1 and \$ 189,400 for the PDF B).

Outcome	Total Budget (\$)	GEF Component (\$)	Co-financing Component (\$)
Outcome 1: To expand ESCO operations through implementation of Rivne City-wide/Oblast energy efficiency activities.	20,200,000	-	20,200,000
Outcome 2: To facilitate ESCO-Rivne operations through financing of activities having long payback periods.	3,144,000	3,144,000	-
Outcome 3: To reduce perceived investment risks in order to facilitate ESCO-Rivne's expansion of activities.	500,000	300,000	200,000
Outcome 4: Information on replication of project experience, best practices and lessons learned throughout Ukraine and in other CIS countries.	150,000	50,000	100,000
Total	23,994,000	3,494,000	20,500,000

Table 1: Phase 2 Outcomes with costing.

In terms of global benefits, implementation of Phase 2 of the project expects to avoid 2.8 million tons in CO₂ through the life cycle investments made during this phase. Coupled with the nearly 201,600 tonnes of CO₂ reduction to be accrued under investments made under Phase 1, the GEF grant would contribute to the reduction of 3 million tons of CO₂ during the project lifetime, providing a cost effectiveness of GEF funds of \$ 1.84/ton of CO₂ avoided. This figure drops to \$ 1.24/ton of CO₂ avoided if only Phase 2 figures are used. Moreover, project replication potential for the communal heat supply sector in other cities makes up about 64 million tons of CO₂ avoided.

1.2. Strategy

1.2.1. Project Rationale and Policy Conformity

The ESCO approach was identified during project development after considering a number of options. Extensive consultations with stakeholders during the PDF-B phase resulted in the conclusion that an energy efficiency programme in the city of Rivne (and in other cities like it) could not be financed by a direct loan granted to the city (a local government entity) by a foreign commercial bank. Not only would there be a long and cumbersome application procedure, but certain banks (such as the World Bank and EBRD) would require a sovereign guarantee, which would be extremely difficult to obtain from the Government of Ukraine. While an ESCO was seen to address several major issues, a public ESCO business would encounter the same types of delays as UkrEsco (a publicly-owned ESCO whose mandate is to identify and implement energy-saving investments in small and medium-size enterprises and public sector institutions) due to the need to secure a sovereign guarantee, so the project team focused on private sector alternatives. It found that EBRD was already working on a similar scheme to promote private sector-driven municipal ESCOs in Central and Eastern Europe.

One of the main lessons learned in Phase 1 relates to the fact that ESCO-Rivne, although being a private company, is presently owned by primarily public entities. This poses a danger in that these public entities may decide to close the ESCO at any time and claim its assets, unless ESCO ownership is moved to a majority of private shareholders. A second main lesson relates to how Government budgets get allocated, which do not allow public buildings to enter into long-term commitments. Lastly, as noted in the evaluation report, “The most important lesson learned at this point in time is that a project aiming at the implementation of a municipal ESCO must be managed and controlled at the local level”.

ESCO-Rivne, as outlined in its Business Plan for 2005 (Annex 2), provides all services related to the implementation of energy efficiency and saving measures, which a client cannot or is unable to undertake utilising its own funds. These include:

- Conducting energy audits;
- Preparation of proposals for energy saving projects;
- Developing and providing financing arrangements;
- Development of full procurement packages (contracts, technical specifications);
- Procurement of all equipment and services;
- Supervision of contractors’ works during construction and installation phase;
- Monitoring and verification of the contract performance during operation;
- Assuming all the risks during project implementation and operation;
- Guaranteeing of the energy savings to the client.

Similar to the case of Phase 1, Phase 2 of the project will continue to be implemented by the Rivne Oblast Administration with the technical and financial support of UNDP. As indicated in the Organigramme (see Section IV, Part II below), the present ESCO-Rivne shareholders are the Rivne Municipality (45.79%),

Oblast Administration (44.86%) and ESCO-Rivne employees who own the remaining balance of shares. To attract additional investors, ESCO-Rivne has been converted from a closed joint stock company into an open joint stock one. This will enable the participation of private investors as shareholders who are not present, as of now. As ESCO-Rivne stocks will be openly traded, an investor, local or foreign, can become a shareholder by purchasing stocks directly. In addition, it is foreseen that a foreign investor may wish to lend funds to ESCO-Rivne and expect a reasonable rate of return. In this case, the foreign investor will channel his funds through his (foreign) bank to a Ukrainian bank which, in turn, will make the loan funds available to ESCO-Rivne. However, in return, the foreign bank will likely want to ensure that the investor will recover his funds at maturity and, for this, it will likely require some form of guarantee: this can be provided by what is indicated in the above figure as a “communal property pledge”. What does this entail? It simply means that the Oblast/City pledges land as collateral to guarantee loan payback by ESCO-Rivne. This “property pledge” has been successfully utilised in Poland, for example, and the Polish experience in this regard will be very useful to ESCO-Rivne.

The intention of ESCO-Rivne is to ensure majority shareholding by private investors. It is a required step to guarantee that ESCO operations are free from local/national political considerations to pursue its commercial goals leading to improvement of energy services delivery in the city. This would provide sufficient confidence to attract debt financing from development and commercial banks. Participation of the Rivne municipality and district heating company as shareholders ensures the necessary market for ESCO operations in the city, and support of the regional government provides for opportunities for further expansion of ESCO activities in the region.

It should be emphasized that the ESCO modality is very innovative for Ukraine and the CIS countries in general. The major challenge has been to attract private investors who have previously been quite reluctant to enter the Ukrainian market. However, the improving financial situation in Rivne, the firm support of the municipality and Oblast, together with the commitments they have already made, has made it possible for ESCO-Rivne to move closer to this goal. Incentives for investors include attractive rates of return, guaranteed market penetration and expansion, lack of significant competition at the present time and risk mitigation measures undertaken by the project. In this respect, GEF involvement has been and continues to be particularly important in that it helps to reduce the risks for leveraging significant private financing for the project.

It is expected that by the completion of the proposed Phase 2, ESCO-Rivne will have developed a sound business footing that will enable it to operate on a sustainable basis as a self-financing commercial entity, thus ensuring achievement of the global environmental objectives set by the project.

1.2.2. Project Goal, Objective, Outcomes and Outputs/activities

The project objective is to reduce overall fossil fuel consumption and associated GHG emissions by removing barriers to supply and demand side energy efficiency improvements in district heating systems in the main cities of Ukraine. GEF participation will reduce major existing barriers in one pilot city and provide for the replication of defined approaches and measures in other main cities of Ukraine.

Project Phases

This project, consisting of Phases 1 and 2, involves two key components: (i) setting up an innovative financial mechanism (the ESCO approach) in a pilot city (Rivne) for implementing energy efficiency activities on a sustainable basis with the capability for self-replication in other Ukrainian cities; and (ii) related capacity building and barrier removal activities including installation and commissioning of energy efficiency measures, shifting to consumption-based billing system, and introduction of regulatory changes to motivate energy saving, including adjustments to the system of allocation of subsidies.

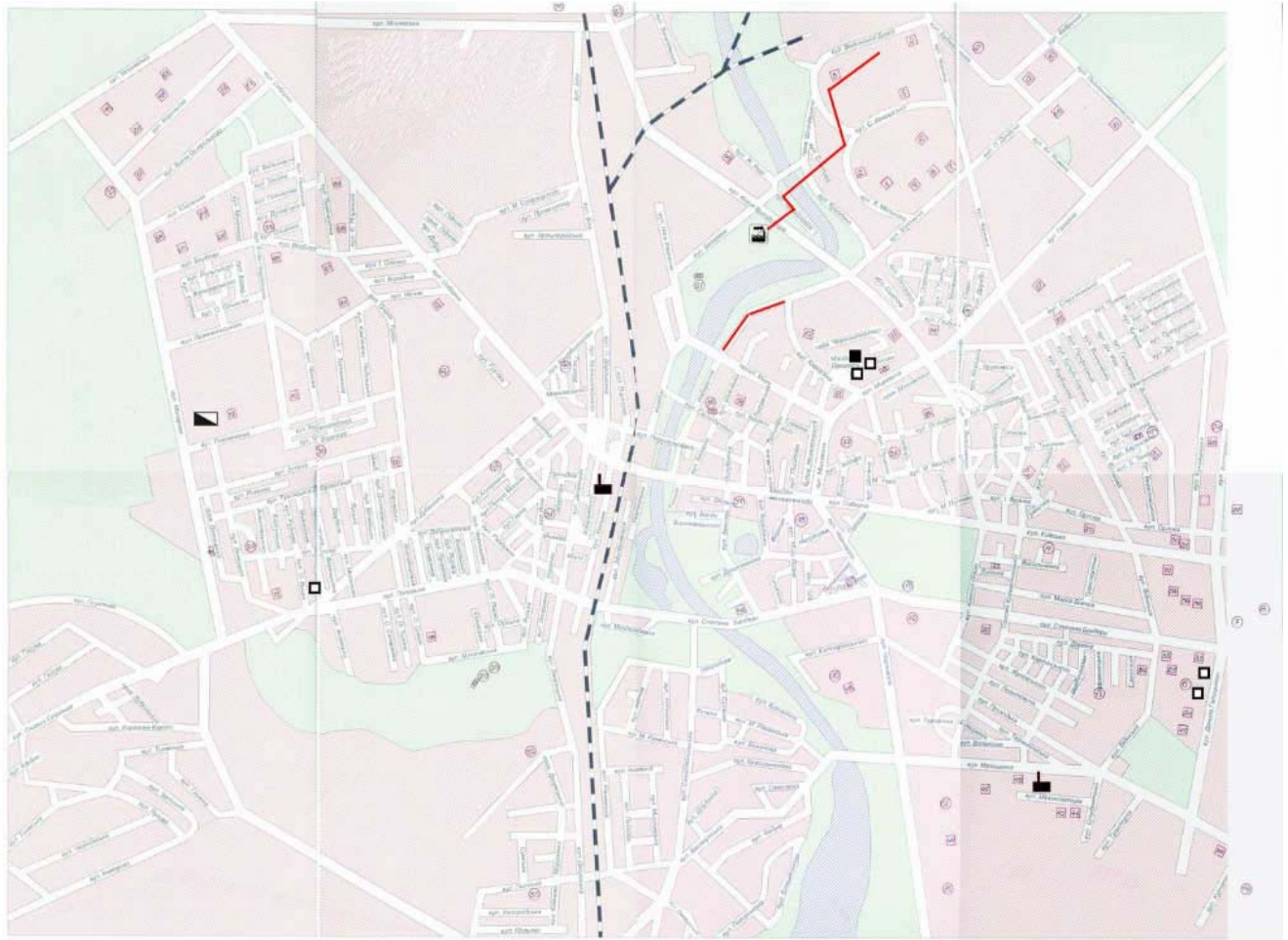
Phase 1 commenced implementation in 2002 and had 2 main objectives: (i) setting up of an ESCO in the City of Rivne as a joint stock company and fully operationalising it by completion of this phase and (ii) implementation of pilot/demonstration activities aimed at introducing energy efficiency measures at a boiler plant, in heat transportation systems and in public/residential buildings, through the design and fine-tuning of Energy Performance Contracts (EPC) and the introduction of consumption-based metering and billing. It is important that the ESCO be a private company and not a public one: a public ESCO, like UkrEsco and as indicated under “Rationale” above, will face the extremely lengthy and difficult task of securing Government guarantees should it were to borrow funds from EBRD, WB, etc.

ESCO-Rivne was legally registered as a private joint stock company on 12 November 2003, under Phase 1 of the present project, with an initial capitalization of \$ 50,000 contributed by the 2 shareholders, viz. MiskSvitlo (50.47%) and KomunEnergiya (49.53%). It has been, since then, implementing energy efficiency activities at the municipal level, as indicated in Table 1 below. All Phase 1 activities, consisting mainly of setting up an ESCO, implementation of pilot activities in Rivne (see Rivne City map below for location of main activities) and formulating a Rivne City-wide strategic plan for energy efficiency improvement, are now almost completed. Thus, the GEF contribution under Phase 1 has enabled ESCO-Rivne to address the legal and regulatory issues related to ESCO operation and facilitated the promotion of private sector initiatives in the area of municipal district heating in the pilot city of Rivne, utilizing the Energy Performance Contract (EPC) mechanism and consumption-based metering and billing. This is documented in the report of the independent evaluation finalized in December 2004

The overall conclusion of the independent evaluation is that Phase 1 project has made significant achievements in improving the overall capacity of ESCO-Rivne for implementing energy efficiency activities in the municipal district heating sector, in strengthening ESCO-Rivne’s technical, administrative and management capabilities and in increasing stakeholder awareness, commitment and participation in expansion of activities. The main findings of the independent evaluation are outlined in Sections 4.3.1, 4.3.2 and 4.3.3 of the evaluation report referred to above. They indicate that all the following benchmarks that needed to be achieved prior to embarking on Phase 2 have been met either “highly satisfactorily or satisfactorily” (ANNEX J) provides, in table form, a summary of these benchmarks):

- Enabling Environment conditions (software billing, accounting, EPC, legislation, regulation, etc.).
- Financial Institutional conditions (full-scale feasibility study for Phase 2, documents for equity/loans, investment promotion materials, investor interest, ESCO financial arrangements, etc.).
- Other Institutional conditions (Pilot municipal ESCO established, operational procedures finalised, terms of partnership with City of Rivne worked out, GHG emission reduced and verified, etc.).

RIVNE CITY MAP WITH LOCATION OF MAIN ACTIVITIES



Map Legend:

■ -Combined Heat and Power Plant ■ -Boiler Plant □□ -Individual Heating Point ▴ -Heat Counters — -Heating Main

Implementation of the pilot activities under the Phase 1 project provided ESCO-Rivne with the opportunity to demonstrate its solid technical approach and sound financial expertise to manage opportunities for energy efficiency in the municipal district heating sector. Subsequently, its contacts with both local and foreign partners to solicit their participation as potential investors/lenders were met with considerable interest. This has resulted in ESCO Rivne securing commitments and interests from investors/lenders to increase its capital base and its access to lines of credit. At the time of writing ESCO-Rivne has:

1. Capitalization of USD 50,000 MiskSvitlo and KomunEnergiya;
2. USD 1.5 million in capital from the GEF, which has now been transferred to ESCO-Rivne ownership, and on this it expects to be able extend its credit line to USD 1.5 million.

Also in connection with Phase 1, the project estimated USD 265,000 in co-financing. In actual fact they received USD 1,014,000 more than this.

3. Secured credit lines of USD 556,000 from local banks (marked as USD 1.5 million in Table 2 because of the increase in collateral of the company, listed under point 2 above);

4. plans to transfer KommunEnergia assets of 14 million within the next year, and which will be used as collateral in the future;
5. project revenues and client payments from energy savings estimated at 2 USD million over the next year from Rivne Municipality, with a further USD 1 million in in-kind resources dedicated from Oblast and City to support these contracts; and
6. been negotiating with ISC Infrastructure Halle, and other private investors (Independent Energy Company, UK) over investments into ESCO-Rivne, conclusion of which is expected in the very near future; and finally
7. initiated negotiations for USD 500,000 in credit lines from ING and Raiffeisen Bank.
8. initiated discussions with the Ministry of Finance, through the Rivne Municipality, to tap into the EUR 5 million allocation from KfW specifically ear-marked for an Energy Efficiency Programme within Ukraine's Energy Sector.

The Phase 2 finances are summarised in Table 2 below.

Name of Co-financier (source)	Classification	Type	Amount (x \$ 1,000)	Status
Rivne City	Government	Cash In kind	8,000 500*	USD 2 million in contracts for 2005 have been budgeted USD 6 million in equipment will be transferred in 2005 USD 0.5 million in ongoing in-kind contributions
Rivne Oblast	Government	Cash In kind	8,000 500*	USD 8 million in equipment will be transferred in 2005 USD 0.5 million in ongoing in-kind contributions
ESCO	Private sector	cash	1,500	Letter of support
Foreign banks	Other internat.	loan	500	Letter of support
Local banks	other	loan	1,500	Letter of support
TOTAL			20,500	

Table 2: Project co-financing

Municipal district heating activities at the Rivne City-wide and regional (Oblast) levels will be targeted under the proposed Phase 2 of the project. In this connection, ESCO-Rivne has formulated its strategic plan. A table of planned activities from this Strategic Plan is attached ([ANNEX G](#) of attached Executive Summary).

The ESCO modality presents an innovative and very promising mechanism to finance large-scale energy efficiency activities in Ukraine. In order to maximize the resources available for replicating the project, proportional returns on GEF funds during the pilot phase (Phase 1) of the project and the city-wide investment (Phase 2) will be placed back into the ESCO as equity for subsequent projects in the municipal sector in Ukraine undertaken by the ESCO-Rivne.

ESCO-Rivne has been successful in developing and implementing the Energy Performance Contract (EPC) mechanism in energy efficiency activities it has undertaken to date. An EPC is, in effect, an

outsourcing arrangement for energy efficiency, where an external contractor (e.g. ESCO-Rivne) takes total responsibility for achieving outcomes. With this mechanism, it is possible to obtain a guarantee that energy savings will be achieved. While there are a number of different types of EPCs, they all share the following common features:

- The EPC contractor enters into a long term (5-10 years) relationship with the client.
- Benchmark energy performance levels are defined and energy efficiency upgrades are identified and implemented by the EPC contractor.
- Risk of non-performance of energy efficiency upgrades is carried by EPC contractor.

Thus, EPCs are a means of achieving energy efficiency that allows the risks and responsibilities of implementation and maintenance of savings to be passed on to the EPC contractor. This is in contrast with traditional energy management techniques which produce recommendations for efficiency improvement which the client has to act on at his/her own risk.

The EPC modality utilized during the implementation of Phase 1 of the project is completely in line with the project brief, formulated in January 2000 as part of PDF-B activities. The brief indicates that the full scale programme implementation (Phase 2) will be “conducted by the ESCO using EPC mechanism on commercial and self-sustainable basis”. The brief further indicates in para. 59 (page 14) that “The GEF funding (\$4,000,000) under the investment program will finance the major part of pilot implementation phase, and also the implementation of longer-payback measures (like pipe replacement and measures in buildings, Ref. [ANNEX H](#) of attached Executive Summary), less economically attractive and more risky to the private investor”. The evaluation clearly brings this out by recommending that ESCO-Rivne focus on shorter payback investments to improve its financial viability. Hence, longer-payback measures such as replacement of heat distribution networks, boiler room reconstruction, installation of radiation screens, etc. ([ANNEX H](#) of attached Executive Summary) will not get sufficient attention unless “incentives” are provided for it to invest in these.

Implementation of Phase 1 has been instrumental in bringing to the surface an additional major barrier to ESCO-driven municipal district heating that was not identified when the project brief was drafted in 2000. This relates to the development of finance guarantee and risk mitigation instruments to reduce ESCO-Rivne investment risks in case of difficulties by clients to make payments as per their EPC contracts. These instruments would be designed to promote and facilitate investments by ESCO-Rivne. Hence, in addition to financing the “implementation of longer-payback measures, less economically attractive and more risky to the private investor”, Phase 2 of the project will also address the issue of setting up finance guarantee and risk mitigation instruments to facilitate ESCO-Rivne operations.

The project’s goal is to address a key issue in the reduction of greenhouse gas emissions through large-scale improvements in energy efficiency in Ukraine's communal heat supply sector. This is proposed to be achieved through the setting up of a municipal district heating ESCO in Rivne City, providing it with technical and capacity development support to become fully operational, to provide it with hands-on experience through the implementation of pilot projects and to assist it in preparing a strategic plan for implementing energy efficiency activities city-wide in Rivne. All these were undertaken during Phase 1.

Under Phase 2, ESCO Rivne will receive additional support to implement a city-wide programme for energy efficiency activities in municipal district heating, to expand its reach beyond the borders of the city, to implement activities which require longer payback periods for which financing may not be readily available, to design and implement finance guarantee and risk mitigation instruments, and to promote the adoption and implementation of project experience and lessons learned throughout Ukraine and in other CIS countries.

The Phase 2 project has four primary outcomes; these, together with the outputs and activities required to achieve them are described in the log frame (Section II, Part II.A). These outcomes and outputs are also summarised below.

Outcome 1: ESCO operations are expanded to cover Rivne City-wide/Oblast energy efficiency activities. The outputs necessary to achieve this outcome are:

- Signed EPC contracts for Rivne City-wide energy efficiency activities.
- Opportunities for implementing energy efficiency in Rivne/other Oblast regions identified.
- All works pertaining to City-wide/Oblast projects completed.

Outcome 2: ESCO-Rivne operations are facilitated through financing of activities having long payback periods. The outputs for achieving this outcome are:

- Signed EPC contracts for activities having long payback periods.
- All necessary equipment/services for undertaking works procured.
- All works pertaining to projects having long payback periods completed.

Outcome 3: ESCO-Rivne operations are promoted through the design of instruments to minimise investment risks.

ESCO-Rivne will assess insurance and guarantee products available on the market, that are expected to address its perceived or real risks against investment in case of difficulties by clients to honour their EPC contracts. The outputs for this outcome are:

- Comprehensive report on risk mitigation instruments compiled.
- Study to determine most appropriate instruments completed.
- Agreements with Banks/insurance companies negotiated and signed.

Outcome 4: Project experience/best practices and lessons learned are replicated throughout Ukraine and in other CIS countries.

The project will support the compilation and distribution of best practices and lessons learned and will provide opportunities for broad exposure to other Oblasts and countries in the region. This will be achieved through the following outputs:

- Materials on project experience/best practices and lessons learned prepared.
- Capacity development activities implemented for the management and technical personnel of other municipalities/heat supply companies.
- Project overall results, experiences and lessons learned disseminated at the national and regional levels.
- Consultation/dialogue for replicating project experiences in other cities/Oblasts and leveraging financing for that completed.

1.2.3. Project Indicators, Risks and Assumptions

Indicators

Key indicators of the project's success by the end of Phase 2 will include:

- CO₂ emissions are reduced by 2.8 million tons (3 million tons if Phase 1 is included).
- Cumulative energy consumption is reduced by 2 million t.c.e. at project sites.
- Energy performance contracts for Rivne city-wide programme signed and implemented.
- Contracts for consumption based metering and billing signed with Rivne City Apartment Owners Associations.
- ESCO-Rivne has expanded its activities in at least 2 other Oblasts.
- Lessons learned are documented and distributed to potential investors, stakeholders, other Oblast and municipal authorities, etc. through the publications and ESCO-Rivne web site.

Detailed year-by-year indicators are provided in Section II, Part II.B.

Assumptions

The assumptions are outlined in the Logical Framework Analysis in [ANNEX B](#) of attached Executive Summary.

Risks

The Phase 2 project presents several risks which are discussed below:

Technical risk, or the risk of actual emission reduction and energy savings being lower than expected. This is mitigated by the high level of ESCO-Rivne technical expertise as well as by independent technical review provided under Phase 1.

Implementation risk, or the risk that the project will not be fully implemented even though necessary resources will have been engaged. This may happen if implementation costs will prove to be higher than expected. This risk is mitigated by accurate cost estimates based on the latest quotations from suppliers and by a 10% contingency allowance added to cost estimates.

Credit risk, connected with the client's inability or unwillingness to meet its obligations on EPCs. To mitigate this risk, ESCO-Rivne will introduce sufficient securities (collateral agreements, bank guarantees, third-party insurance, etc.) into each EPC. As a risk mitigation factor, municipal/regional authorities will make necessary commitments, such as keeping tariffs unchanged during investment amortization period, ensuring full and timely payments on heat bills of budgetary institutions and subsidies for residential consumers, etc.

Price risk, or changes in prices for energy resources addressed by the project. This risk is mitigated by the fact that the dynamics of gas and heat prices over the next five years was estimated in a conservative way. Based on its experience, the ESCO will introduce fuel cost adjustment provisions into EPCs with its clients to eliminate this factor of uncertainty.

1.2.4. Expected global, national and local benefits

For the country as a whole, the project will help reduce the level of dependence on external gas supplies and decrease overall fossil fuel consumption and associated GHG emissions by removing barriers to supply and demand side energy efficiency improvements in district heating systems in the main cities of Ukraine. GEF participation will reduce major existing barriers in one pilot city and provide for the replication of defined approaches and measures in other main cities of Ukraine. Successful operation of the Rivne ESCO will facilitate setting up of similar ESCOs in other cities and attracting foreign private capital and experience to Ukraine.

Project implementation provides several domestic benefits. Most essential of them are: positive economic and financial returns from investments, higher level of heat supply service and reliability of district heating system operation, lower air pollution (in particular by NO_x), creation of incentives to energy savings in public and residential sector, reduction of budgetary expenditures on residential subsidies and institutional buildings' heat bills, improvement of the qualification of district heating company personnel and its management capacity. A successfully operating ESCO will be able to further expand its activity in the region as a whole and implement energy saving measures in the industry and infrastructure sectors, thus achieving additional economic and environmental benefits. Expansion of ESCO-Rivne's activities will contribute to the development of the local energy service market.

In addition to bringing about local, national and global benefits, the project is consistent with Ukraine's national development priorities.

1.2.5. Country Ownership: Country Eligibility and Country Drivenness

Country Eligibility

Ukraine signed the United Nations Framework Convention on Climate Change (UNFCCC) in June 1992, ratified it on 29 October 1996 and became a Party in August 1997. It also signed the Kyoto Protocol in March 1999 and the National Parliament ratified it on 4 February 2004. As a UNDP Programme Country, it is eligible for assistance from UNDP.

Country Drivenness

(i) National reports/communications to Conventions:

In the area of climate change, Ukraine's First National Communication to UNFCCC prepared in February 1998 identified energy efficiency as one of the important mitigation options for reducing greenhouse gas (GHG) emissions in the country. Ukraine is considered to be one of the large emitters of GHG in the world; its energy input per unit of GDP is 5-7 times higher than in Western Europe and its per capita emissions of 10 tons of CO₂ equivalent per year are among the highest in the world.

In addition, to address the issue of a national policy on climate change, as well as to reinforce the national climate change administrative structure and ensure the fulfilment of obligations under UNFCCC, the Government instituted, in April 1999, the Inter-Ministerial Commission on Climate Change headed by the Deputy Prime Minister. The Commission, which meets on a regular basis, is made up of representatives of the appropriate ministries and departments, the Cabinet of Ministers, Verkhovna Rada (Parliament), the Administration of the President of Ukraine, and the National Academy of Sciences.

(ii) National legislation:

Improvement in energy efficiency in municipal district heating on both supply and demand side is an important development objective presently being pursued by the Ukrainian government. Achieving this objective would contribute to lower dependence on imported fuel and reduction in GHG emissions, and have a significant social impact.

Ukraine's strategy in improving the efficiency of its economy in general and of the municipal district heating sector in particular is reflected in a number of legislative and regulatory documents, such as the "Law of Ukraine on Energy Conservation" (1994), National Energy Programme of Ukraine (1996), Comprehensive National Programme on Energy Conservation (1997, revised and supplemented in 2000), decrees of the President and the Cabinet of Ministers of Ukraine. In municipal heat supply, the target for state support was set for priority implementation of the most cost-effective energy efficiency measures to achieve about 4.5 million tons of coal equivalent (t.c.e.) of energy savings over the period 2000-2004, with estimated investment requirements of approx. \$300 million over the same period. Special attention would be devoted to improving efficiency of energy usage in the public sector, with the target of 25% energy consumption reduction in public sector institutions by 2004. Unfortunately, due to state budgetary constraints, these targets are still far from being achieved.

(iii) National or Sector developments plans:

The Government's overall objective for development of the energy sector up to 2020 is to reduce the growth in coal consumption and the environmental pollution that coal burning causes. The Government is promoting (i) the introduction of clean coal technologies throughout the entire process of coal production, handling, transportation, and consumption; (ii) where possible, substitution of natural gas, coal field methane, hydropower, and renewable energy for coal; and, (iii) energy efficiency both on the supply and demand side to decrease the growth rate in energy consumption (e.g. specific heat consumption for heating and hot water supply of Ukrainian buildings is 1.5-2.0 times higher than in Western countries with similar climatic conditions).

The main directions defined by the government of Ukraine for fulfilment of the tasks on improvement of energy efficiency include, among others: economic incentives to introduce energy efficiency technologies at enterprises, improving taxation and tariff policy, promoting wide-scale application of leasing operations, obtaining investment support from lending institutions, improvement of the efficiency of heat generation and delivery, mass-scale introduction of energy metering, improvement of subsidy allocation mechanism to create incentives to energy saving by subsidized households, awareness raising through mass media, etc. Also included is support to commercialisation of activities in the area of energy efficiency through the modality of energy performance.

(iv) Linkages:

In addition to reflecting national priorities in Ukraine, the proposed project also builds upon the existing goals and activities of UNDP, with environment constituting one of its four priority areas for global activity, both at the country level and in the region. Finally, UNDP is assisting local governments in Ukraine in the formulation and implementation of Local Agenda 21 sustainable development strategies at the Oblast (regional) and municipal levels, and energy plans are included in these strategies.

The UNDP Ukraine Cooperation Framework for Human Development 2001-2005, under the item "Environment Conservation and Management", indicates that "Pollution control, energy efficiency, waste management and integrated soil management initiatives that promote local and community-level environmentally sound practices will be implemented. In addition, the draft UNDP Country programme for 2006-2010 focuses on 3 thematic areas, viz. (1) Participatory Governance, Rule of Law and Civil Society; 2) Economic and Social Development for prosperity and Human Security and 3) Environment Management and Sustainable Development. Thematic area 3 states, among others "UNDP's support will be focused on addressing the following environmental concerns: mitigation of the climate change, conservation of globally significant biodiversity, land degradation and water management. In doing so, UNDP will promote energy efficiency, clean technologies and environmentally friendly transport.

1.2.6. Sustainability

From a technical point of view, the viability of energy efficiency in municipal buildings has been proven in several CIS countries, both under GEF and non-GEF support. By addressing the barriers that impede the expansion of energy efficiency in municipal district heating in Ukraine, the Phase 2 project will build upon the predecessor Phase 1 project to assist in first creating a momentum for Rivne city-wide implementation, then a sustainable niche for such activities in neighbouring oblasts and eventually throughout the country. This has been undertaken (Phase 1) through strengthening of the policy, institutional, legal, regulatory and operational capabilities of key national institutions to promote private sector participation for energy efficiency activities in the municipal sector and developing of an energy efficiency awareness programme, accompanied by information dissemination. These efforts should ensure the long-term sustainability of energy efficiency activities in the municipal district heating sector of Ukraine.

From a financial point of view, the efforts made by ESCO-Rivne to solicit the support of investors have met with some success in that it has been able to date to secure expressions of interest from 4 companies in Ukraine (EscoComertz, UkrEsco, UkrMashExport and Parallelito) and 2 companies in Halle, Germany to participate as shareholders. In addition, lines of guarantee amounting to \$ 566,000 have already been secured from such local banks as Avalbank, Privatbank and Ukrgazbank, and discussions are continuing with international banks like EBRD for additional lines of credit of a total of approx. \$ 500,000. In addition, the Phase 2 project will support the setting up of finance guarantee and risk mitigation instruments to protect its investment in case of defaults by clients. The project will evaluate insurance and guarantee products available on the market and recommend appropriate instruments to address ESCO-Rivne's perceived risks against investments.

Furthermore, the project will support the integration of local industries for the provision of equipment and services to the energy efficiency sector.

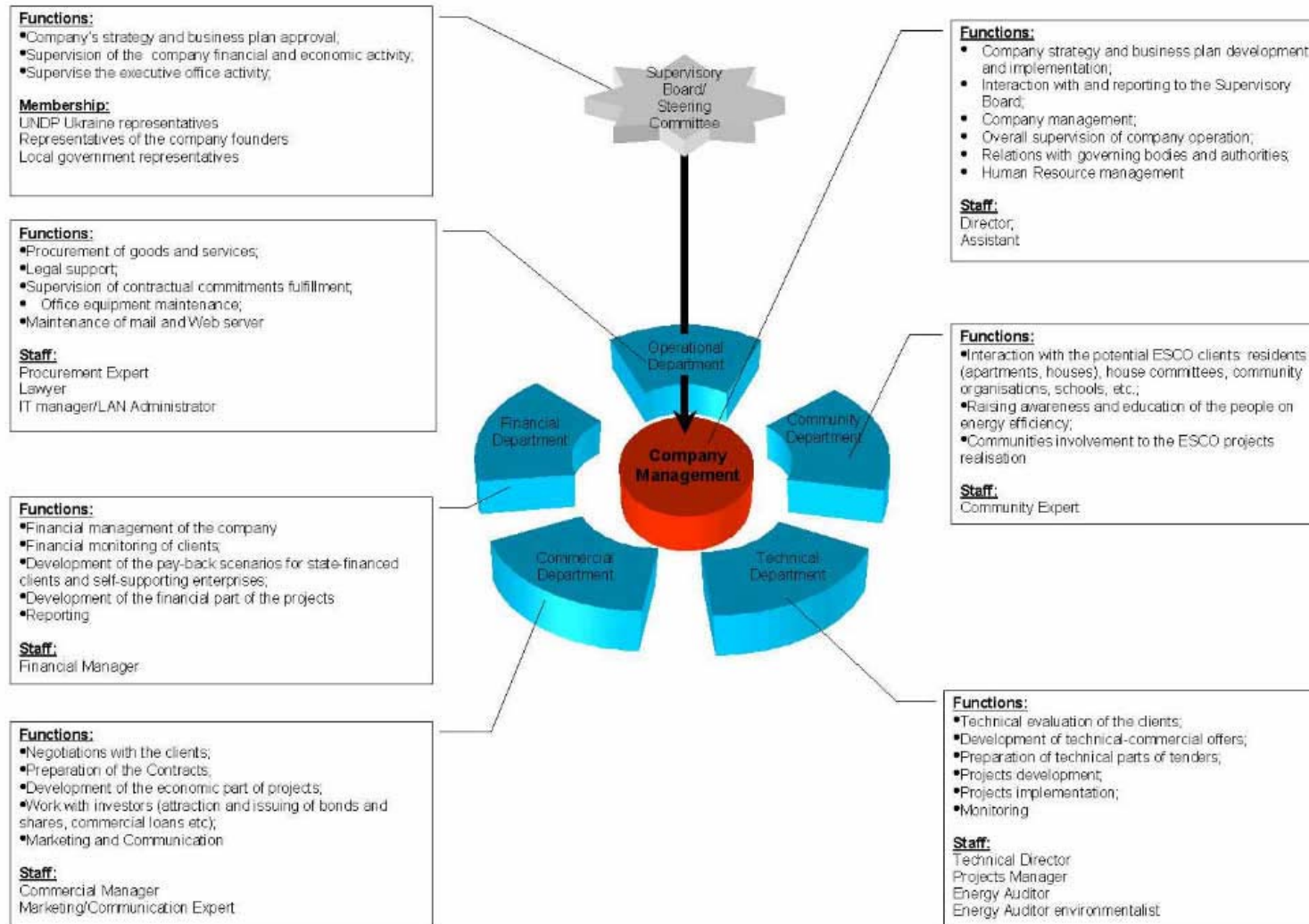
1.2.7. Replicability

This project is a follow-up to the successful Rivne Phase 1 project and benefits from the expressed interest from the Municipalities in Ostrog, Kamenets Podolskiy and Kostopil to implement similar activities for municipal district heating using the ESCO modality. In this connection, discussions with these municipalities have centred on ESCO-Rivne implementing activities to provide energy efficiency services to municipal buildings. At the present time, the Contract with Ostrog City Water Supply and Sewage Company in the amount of \$ 12,600 is completed and 3 other contracts have been signed respectively with the Water Supply (\$ 7,500) and Sewage Company (\$ 13,200) in the City of Mirgorod in Kamenets Podolskiy and the Heat Supply Company in the City of Kostopil for \$ 2,000. However, on-site works will commence at the end of the heating season in April 2005. Requests have also been received from heat supply companies in Chernovtsy, Dubrovitsa and Ivano-Frankivsk.

For the long term and this is beyond the scope of the present project, there is demonstrated interest from potential private investors to invest in the operations of ESCOs, not only in ESCO-Rivne. However, no concrete plans in this regard have been elaborated yet. Thus, the project's potential for replicability at other municipalities throughout Ukraine is very good. Technical assistance for barrier removal and policy/institutional strengthening to be provided under the project will facilitate such replicability since it will create both at central and regional levels, the required institutional, policy, and technical conditions to enable the mobilization of additional investor interest for the implementation of energy efficiency activities in the municipal district heating sector.

1.3. Management Arrangements

The project will follow the same management procedures pursued during Phase 1 and will be implemented by the Rivne Oblast Administration under the national execution (NEX) modality. For this purpose, the Oblast Administration will designate a National Project Director who will be responsible for the project's direction, planning strategies and efficient overall implementation. The National Project Director will continue to have overall responsibility over ESCO-Rivne which is headed by a Director who has the support of various Departments, as indicated in the diagram on the previous page.



ESCO-Rivne will be supported by a full-time Business Development Adviser, a Project Assistant and a Community Development Adviser responsible for sustainable municipal ESCO development (ToRs are attached). The ESCO-Rivne Director will be responsible for day-to day operations and will also act as a liaison/facilitator among the various local stakeholders and with lenders/investors. The ESCO Director will prepare an updated implementation schedule for the entire project and a detailed work plan for the first 12 months of implementation. Upon completion of the initial 12-month cycle, the Director will prepare implementation work plans for the subsequent 12 months until project completion.

ESCO-Rivne will need the strong support of a Business Development Adviser to assist with attracting new shareholders/investors and expanding municipal ESCO business to other Oblasts in Ukraine. In addition, community participation is vital to the success of the whole municipal ESCO business. It is, therefore, important that the targeted municipal residents be briefed on the complete process and their support secured. The Community Development Adviser will need to maintain very close contact with the local municipal communities to secure their concurrence and support to the activities proposed for implementation and to explain to them the benefits that they would derive from such activities.

In order to accord proper acknowledgement to GEF for providing funding, a GEF logo should appear on all relevant GEF project publications, including among others, project hardware and vehicles purchased with GEF funds. Any citation on publications regarding projects funded by GEF should also accord proper acknowledgment to GEF. The UNDP logo should be more prominent and separated from the GEF logo if possible, as UN visibility is important for security purposes.

1.4. Monitoring and Evaluation Plan and Budget

1.4.1. General

A Project Steering Committee, consisting of representatives of the Ministry of Economy and European Integration, Ministry of Environmental Protection, State Committee for Municipal Housing, Association of Local and Regional Authorities, targeted Oblast Administrations, Municipalities, shareholders and UNDP chaired by the Ministry of Economy and Environmental Protection, will provide overall guidance to project execution. The Ministry of Environmental Protection will also supervise and monitor the project as the GEF technical focal point. Private sector investors participating in ESCO investment may be invited to participate in the meetings of the Steering Committee on an ad-hoc basis.

The project will be monitored and evaluated according to standard UNDP/GEF rules for nationally executed projects. For each of the project components, a detailed monitoring plan will be prepared during project inception. And as part of project inception, the Project Logical Framework may be revised; specifically, the detailed indicators will be revisited and adapted as necessary, including measures to track the major external project risks. These indicators will draw upon all sources of information, including those of other donors active in the energy efficiency field in Ukraine. Appropriate and specific performance benchmarks will be established prior to project implementation to effectively monitor project progress and to make crucial management decisions. An annual reporting cycle will be established that will provide progress reports to be shared among all participants in the project. The proposed monitoring and evaluation activities will follow the guidelines contained in the UNDP/GEF Information Kit on Monitoring and Evaluation.

1.4.2. Monitoring and Evaluation

General

The Executing Agency (Rivne Oblast Administration) will be responsible for regularly monitoring progress in project implementation. Progress will be measured against targets set out in the Work Plan and Project Logical Framework, more specifically as per the attached year-by-year objectively verifiable impact indicators. ESCO-Rivne will be required to report relevant progress to the National Project Director and UNDP on a quarterly basis. UNDP CO is obliged to share short progress reports (QOR) with GEF on quarterly basis. Regular monitoring of the project will occur through this reporting mechanism as well as through site visits, as required. Disbursements of UNDP-GEF funds will be dependent upon the project's ability to establish a well designed reporting mechanism (e.g. a MIS-based or other system).

A project Inception Workshop will be organised, within 2 months of project start-up, with the participation of ESCO-Rivne, relevant government counterparts, co-financing partners, UNDP-Ukraine and representation from the UNDP-GEF Regional Coordinating Unit.

A fundamental objective of this Inception Workshop will be to assist ESCO-Rive and the project partners to understand and take ownership of the project's goals and objectives, as well as to finalize preparation of the project's first annual work plan on the basis of the logframe matrix. This will include reviewing the logframe (indicators, means of verification, assumptions), imparting additional details as needed, and, on the basis of this exercise, finalize the Annual Work Plan (AWP) with precise and measurable performance indicators, and in a manner consistent with the expected outcomes for the project.

The Inception Workshop will also provide an opportunity for all parties to understand their respective roles, functions, and responsibilities within the project's decision-making structures, including reporting and communication lines, and conflict resolution mechanisms. A report of the Inception Workshop will be prepared by the Project Adviser within 2 weeks of completion of this activity.

Annual Tripartite Review meetings (TPRs), with the participation of the Executing Agency, project team, stakeholders and UNDP, will be held to review progress, identify problems, and agree on solutions to maintain timely provision of inputs/achievement of results. The Project Steering Committee will review annual work plans as well as provide strategic advice on the most effective ways and means of implementation. Reporting to GEF will be accomplished through annual Project Implementation Reviews (PIRs).

In addition to normal Government monitoring, UNDP will have the monitoring and reporting obligation for the programme, in accordance with the GEF Monitoring and Evaluation (M&E) guidelines. In this connection, additional M&E missions will be undertaken by UNDP when this is judged to be required, as for example when there is a need for an intermediate assessment of progress or impact before a decision is made as to the continuation of any given activity. This will be done in collaboration with the Executing Agency as well as with the implementing partners/stakeholders.

Moreover, the project will be the subject of two independent evaluations: the first one will be half way through implementation, and the other at project completion. These independent evaluations will review progress in project implementation and make recommendations, where appropriate, to improve timeliness, relevance and impact of project inputs. They will also assist project stakeholders to draw lessons learned for use in improving the quality of future development interventions with similar activities and could be undertaken in collaboration with other development partners to the project. Such multi-stakeholder and partner evaluations could be a useful learning experience for all parties, where a 360-degree approach could be taken to evaluate all parties' inputs to the project.

The results of the final evaluation will be incorporated in the publication on lessons learned for dissemination both within and outside Ukraine. All reports will be posted on the project web site.

The Government will provide the UNDP Resident Representative In Ukraine with certified periodic financial statements, and with an annual audit of the financial statements relating to the status of UNDP (including GEF) funds according to the established procedures set out in the Programming and Finance manuals. The Audit will be conducted annually by the legally recognized auditor of the Government, or by a commercial auditor engaged by the Government.

1.4.3. Monitoring and Evaluation Budget

The costs for Monitoring, Evaluation and Dissemination activities will be paid for by the project budget, for which \$ 100,000 (see Chapter 3. Total Budget and Work Plan) have been allocated in appropriate budgetary account codes under Outcomes 4 of the total project work plan and budget. This budget allocation includes activities related to preparing quarterly progress reports, undertaking Project Implementation Reviews, Annual Project Reviews, Annual Audits of accounts, mid-term/final evaluations, and organising/participating in Steering Committee Meetings, as required.

The project will be audited annually by Audit firm selected by UNDP Ukraine. The costs for the audit will be paid for by the project budget.

INDICATIVE MONITORING, EVALUATION AND REPLICATION WORK PLAN AND CORRESPONDING BUDGET

Type of M&E activity	Responsible Parties	Budget US\$ <i>Excluding project team Staff time</i>	Time frame
Inception Workshop (IW)	<ul style="list-style-type: none"> ▪ Project Adviser ▪ ESCO-Rivne ▪ UNDP CO ▪ UNDP GEF 	5,000	Within first two months of project start up
Inception Report	<ul style="list-style-type: none"> ▪ Project Adviser ▪ UNDP CO 	None	Within 2 weeks following IW
Measurement of Means of Verification for Project Purpose Indicators	<ul style="list-style-type: none"> ▪ Project Adviser will oversee the hiring of consultants /institutions for specific studies 	To be finalized in Inception Phase and Workshop. Indicative cost: 5,000	Start, mid and end of project
Measurement of Means of Verification for Project Progress and Performance (measured on an annual basis)	<ul style="list-style-type: none"> ▪ Oversight by Project Adviser ▪ Measurements by ESCO-Rivne officers and Implementing Agency 	To be determined as part of the Annual Work Plan's preparation. Indicative cost: 5,000	Annually prior to APR/PIR and to the definition of annual work plans
APR and PIR	<ul style="list-style-type: none"> ▪ Project Team ▪ UNDP CO ▪ UNDP GEF 	None	Annually
TPR and TPR report	<ul style="list-style-type: none"> ▪ Government Counterparts ▪ UNDP CO ▪ Project team ▪ UNDP GEF Regional Coordinating Unit 	None	Every year, upon receipt of APR
Steering Committee Meetings	<ul style="list-style-type: none"> ▪ Project Adviser ▪ UNDP CO 	None	Following Project IW and subsequently at least once a year
Periodic status reports	<ul style="list-style-type: none"> ▪ Project Team 	None	To be determined by

Type of M&E activity	Responsible Parties	Budget US\$ <i>Excluding project team Staff time</i>	Time frame
			Project Team and UNDP CO
Technical reports	<ul style="list-style-type: none"> ▪ Project Team ▪ Hired consultants as needed 	15,000	To be determined by Project Team and UNDP CO
Mid-term External Evaluation	<ul style="list-style-type: none"> ▪ Project Team ▪ UNDP CO ▪ UNDP GEF Regional Coordinating Unit ▪ External Consultants (i.e. evaluation team) 	20,000	At the mid-point of project implementation.
Final External Evaluation	<ul style="list-style-type: none"> ▪ Project Team ▪ UNDP CO ▪ UNDP GEF Regional Coordinating Unit ▪ External Consultants (i.e. evaluation team) 	25,000	At the end of project implementation
Terminal Report	<ul style="list-style-type: none"> ▪ Project Team ▪ UNDP CO ▪ External Consultant 	None	At least one month before the end of the project
Lessons Learned/Replication Guidelines	<ul style="list-style-type: none"> ▪ Project Team ▪ UNDP GEF Regional Coordinating Unit (suggested formats for documenting best practices, etc) 	10,000 (lessons learned) 10,000 (replication guidelines)	Yearly At the end of project implementation
Audit	<ul style="list-style-type: none"> ▪ UNDP CO ▪ Project Team 	5,000 (average \$1250 per year)	Yearly
Visits to field sites (UNDP staff travel costs to be charged to IA fees)	<ul style="list-style-type: none"> ▪ UNDP Country Office ▪ UNDP GEF Regional Coordinating Unit (as appropriate) ▪ Government representatives 	None	As required
TOTAL INDICATIVE COST			
<i>Excluding project team staff time and UNDP staff and travel expenses</i>		US\$ 100,000	

1.5. Legal Context

This Project Document shall be the instrument referred to as such in Article I of the Standard Basic Assistance Agreement between the Government of Ukraine and the United Nations Development Programme, signed by the parties on June 18, 1993. The host country implementing agency shall, for the purpose of the Standard Basic Assistance Agreement, refer to the government co-operating agency described in that Agreement.

The UNDP Resident Representative in Ukraine is authorized to effect in writing the following types of revision to this Project Document, provided that he/she has verified the agreement thereto by the UNDP-GEF Unit and is assured that the other signatories to the Project Document have no objection to the proposed changes:

- a) Revision of, or addition to, any of the annexes to the Project Document;
- b) Revisions which do not involve significant changes in the immediate objectives, outputs or activities of the project, but are caused by the rearrangement of the inputs already agreed to or by cost increases due to inflation;
- c) Mandatory annual revisions which re-phase the delivery of agreed project inputs or increased expert or other costs due to inflation or take into account agency expenditure flexibility; and
- d) Inclusion of additional annexes and attachments only as set out here in this Project Document.

2. Strategic results framework and GEF increment

2.1. Incremental Cost Analysis

Please see the [ANNEX A](#) of attached Executive Summary

2.2. Logical Framework Analysis

A: Logical Framework and Objectively Verifiable Impact Indicators

See please the [ANNEX B](#) of attached Executive Summary

B: Year-by-Year Objectively Verifiable Impact Indicators

Project Strategy	Indicator Year 1	Indicator Year 2	Indicator Year 3	Indicator Year 4
Objective: To support ESCO-Rivne to implement a city-wide energy efficiency programme in municipal district heating and to expand its activities to cover other cities and Oblasts.			Open competitive bidding by Oblast Administration and Municipality for all energy related projects.	
Outcome 1: To expand ESCO operations through implementation of Rivne City-wide/Oblast energy efficiency activities.	Private investment of \$ 3 million secured. Majority non-Rivne Municipality/Oblast share-holding completed.	Private investment of an additional \$ 5 million secured.	Private investment of an additional \$ 10 million.	Private investment of an additional \$ 2 million secured.
Output 1.1: Signed EPC contracts for Rivne City-wide energy efficiency activities.	EPC contracts, preferably including maintenance and repair, for \$ 5 million signed.	EPC contracts, preferably including maintenance and repair, for an additional \$ 5 million signed.	EPC contracts, preferably including maintenance and repair, for an additional \$ 10 million signed.	
Output 1.2: Opportunities for implementing energy efficiency in Rivne/other Oblast regions identified.	Negotiations with Oblast authorities.	EPC contracts, preferably including maintenance and repair, for 3 million signed.	EPC contracts, preferably including maintenance and repair, for an additional 5 million signed.	EPC contracts, preferably including maintenance and repair, for an additional 7 million signed.
Output 1.3: All works pertaining to City-wide/Oblast projects completed.	End of Year: Year 1 works completed.	End of Year: Year 1 works completed. End of Year 1 company report and accounts prepared + accounts audited. Independent	End of Year: Year 2 works completed. End of Year 2 company report and accounts prepared + accounts audited.	End of Year: Year 3 works completed. End of Year 3 company report and accounts prepared + accounts audited.

Project Strategy	Indicator Year 1	Indicator Year 2	Indicator Year 3	Indicator Year 4
		evaluation of energy savings during Year 1 completed.	Independent evaluation of energy savings during Year 2 completed.	Independent evaluation of energy savings during Year 3 completed.
Outcome 2: To facilitate ESCO-Rivne operations through financing of activities having long payback periods (up to 5 years).				
Output 2.1: Signed EPC contracts for activities having long payback periods.	Signed contracts for \$ 500k.	Signed contracts for an additional \$ 1,000k.	Signed contracts for an additional \$ 1,250k.	Signed contracts for an additional \$ 250k.
Output 2.2: All necessary equipment/services for undertaking works procured.	Signed contracts for equipment and services for \$ 500k.	Signed contracts for equipment and services for an additional 1,000k.	Signed contracts for equipment and services for an additional 1,250k.	Signed contracts for equipment and services for an additional 250k.
Output 2.3: All works pertaining to projects having long payback periods completed.	Implementation of works.	Implementation of works. \$ 500k of actual investment made in Year 1. 15% rate of return achieved during Year 1. 1,100 tce saved during Year 1.	Implementation of works. \$ 1,500k of actual investment made in Years 1 and 2. 17% rate of return achieved during Years 1 and 2. 3,300 tce saved during Years 1 and 2.	Implementation of works. \$ 2,750k of actual investment made in Years 1, 2 and 3. 20% rate of return achieved during Years 1, 2 and 3. 6,050 tce saved during Years 1, 2 and 3.
Outcome 3: To reduce perceived investment risks in order to facilitate ESCO-Rivne's expansion of activities.	Risk mitigation instruments developed. Financial Plan formulated. Agreements with risk instruments			

Project Strategy	Indicator Year 1	Indicator Year 2	Indicator Year 3	Indicator Year 4
	providers in place.			
Output 3.1: Comprehensive report on risk mitigation instruments compiled.	Discussions on risk mitigation products provided by banks and insurance companies completed. Report completed.			
Output 3.2: Study to determine most appropriate instruments completed.	Discussions on most appropriate instruments with ESCO. Report available within first 6 months of project.			
Output 3.3: Agreements with Banks/insurance companies negotiated and signed.	Negotiations between ESCO-Rivne and bank/insurance companies. Agreements signed.			
Outcome 4: Replication of project experience/best practices and lessons learned throughout Ukraine and in other CIS countries.	Project experience compiled, analysed and disseminated. Analysis of business environment for ESCO operation + recommendations for open competition in the sector.	Necessary modifications made in Government budgeting procedures/rules to allow fair and equitable competition in the energy efficiency sector.		

Project Strategy	Indicator Year 1	Indicator Year 2	Indicator Year 3	Indicator Year 4
Output 4.1: Materials on project experience/best practices and lessons learned prepared.	Project experience posted on web site as it becomes available.	Project experience posted on web site as it becomes available.	Project experience posted on web site as it becomes available.	Project experience and best practices compiled 6 months before project end. Report published at least 2 months by project
Output 4.2: Capacity development activities implemented for the management and technical personnel of other municipalities/heat supply companies.		Staff of 3 municipalities and/or heat supply companies participate in capacity development.	Staff of 4 municipalities and/or heat supply companies participate in capacity development.	Staff of 5 municipalities and/or heat supply companies participate in capacity development.
Output 4.3: Project overall results, experiences and lessons learned disseminated at the national and regional levels.	Phase 1 project experience shared in 1 neighbouring country.	Project experience to date shared in 2-3 additional countries.	Project experience to date shared in 2-3 additional countries.	Draft final report disseminated to the stakeholders. Regional seminar organized to present and discuss the results/lessons learned. Public outreach activities through news media.
Output 4.4: Consultations/dialogue for replicating project experiences in other cities/Oblasts and leveraging financing for that completed.				Five expressions of interests to replicate project activities at the national and/or regional level received. Recommendations of final evaluation re. business development and/or legislative change to be put into practice in new

Project Strategy	Indicator Year 1	Indicator Year 2	Indicator Year 3	Indicator Year 4
				activities. Financing leveraged in the additional amount of \$ 20 million to expand and/or continue project activities.

3. Total Budget and Work Plan

TOTAL PROJECT WORKPLAN AND BUDGET									
Award ID: tbd									
Award Title: PIMS 3065 CC FP: Removing Barriers to Greenhouse Gas Emissions Mitigation through Energy Efficiency in the District Heating System, Phase 2									
Project ID:									
ProjectTitle: PIMS 3065 CC FP: Removing Barriers to Greenhouse Gas Emissions Mitigation through Energy Efficiency in the District Heating System, Phase 2									
Executing Agency: Rivne Oblast Administration (ROA) - NEX execution									
GEF Outcome/Atlas Activity	Responsible Party (Executing Agent)	Source of Funds	Atlas Budgetary Account Code	ERP/ATLAS Budget Description/Input	Amount (USD) Year 2006	Amount (USD) Year 2007	Amount (USD) Year 2008	Amount (USD) Year 2009	Total (USD)
OUTCOME 2: To facilitate ESCO-Rivne operations through financing of activities having long payback periods.	ROA	GEF	71200	International Consultants	50,000	50,000	50,000	50,000	200,000
			71300	Local Consultants	20,000	20,000	20,000	20,000	80,000
			71400	Contractual Services - Individuals	80,000	80,000	80,000	80,000	320,000
			71600	Travel	25,000	25,000	25,000	25,000	100,000
			72100	Contractual Services -Companies	300,000	250,000	210,000	124,000	884,000
			72300	Materials & Goods	500,000	500,000	300,000	200,000	1,500,000
			72400	Com.& Audio Visual Equipment	3,000	3,000	3,000	3,000	12,000
			72500	Supplies	4,000	4,000	4,000	4,000	16,000
			74200	Audio Visual &Printing Prod.	3,000	3,000	3,000	3,000	12,000
			74500	Miscellaneous Expences	5,000	5,000	5,000	5,000	20,000
		Sub-total							3,144,000
OUTCOME 3: To reduce perceived investment risks in order to facilitate ESCO-Rivne's expansion of activities.	ROA	GEF	71200	International Consultants	40,000	25,000	25,000	25,000	115,000
			71300	Local Consultants	10,000	10,000	10,000	2,000	32,000
			71400	Contractual Services - Individuals	30,000	30,000	30,000	13,000	103,000
			71600	Travel	20,000	10,000	10,000	10,000	50,000
		Gov	71300	Local Consultants	10,000	10,000	10,000	10,000	40,000
			71400	Contractual Services - Individuals	40,000	40,000	40,000	40,000	160,000
		Sub-total							500,000
OUTCOME 4: Monitoring/Replication of project	ROA	Gov	71300	Local Consultants	3,000	3,000	2,000	2,000	10,000
			71400	Contractual Services - Individuals	12,000	12,000	8,000	8,000	40,000
		GEF	71200	International Consultants		15,000	15,000		30,000

experience/best practices and lessons learned throughout Ukraine and in other CIS countries. Mid-Term/Final Evaluation		71600	Travel	5,000	5,000	5,000	5,000	20,000
	Sub-total							100,000
TOTAL				1,160,000	1,100,000	855,000	629,000	3,744,000

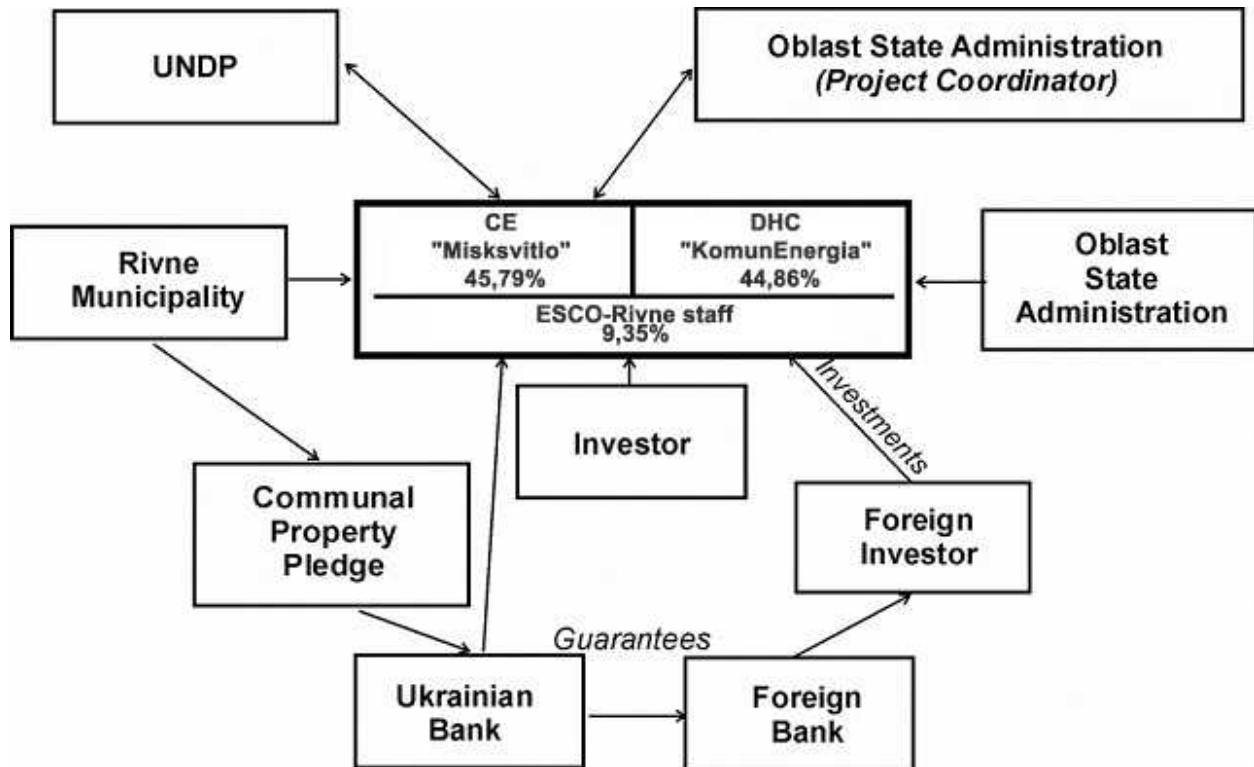
Summary of Funds					
GEF	1,095,000	1,035,000	795,000	569,000	3,494,000
GOVT national (Cash)	65,000	65,000	60,000	60,000	250,000
GOVT (In Kind)	250,000	250,000	250,000	250,000	1,000,000
Others (including local governments)	1,000,000	556,000	500,000	250,000	2,306,000
TOTAL	2410,000	1906,000	1605,000	1129,000	7,050,000

4. Additional Information

4.1. Other Agreements

Endorsement letter and letters of commitment are attached as [ANNEX D](#) of attached Executive Summary

4.2. Organigramme of Project



4.3. Terms of References for key project staff

TERMS OF REFERENCE

1. Project Adviser

Post Title: Project Adviser
Organization: ESCO-Rivne
Duty Station: Rivne, Ukraine
Duration: Full duration of project (estimated at 4 years)

Duties:

Under the general direction of the National Project Director and the supervision of the ESCO-Rivne Director, the Project Adviser will:

- Support ESCO-Rivne in developing plans to attract new shareholders/investors and to expand ESCO business to other Cities/Oblasts. As such, the Business Development Adviser will be expected to generate an average of \$ 5 million annually in new business.
- Assist ESCO-Rivne in negotiating new EPC contracts that minimise risks and expand its business opportunities, such as including maintenance and repair.
- Support ESCO-Rivne in its efforts vis-à-vis Municipalities/Oblast Administrations to ensure that a fair market place for ESCO activities is established.
- Assist ESCO-Rivne in formulating ToRs and identifying potential consultants/short-term experts to assist with project implementation (e.g. development of risk mitigation instruments) and supervise their assignments.
- Advise and support ESCO-Rivne in the preparation of the company annual reports, financial reports, implementation of annual audits and development of acceptable standards of business conduct that will facilitate participation by investors.
- Assist ESCO-Rivne in monitoring project performance as per set indicators and preparation of required reports, including the annual PIR.
- Support ESCO-Rivne in ensuring full compliance of project activities with all financial and technical rules, regulations and procedures relevant for the project implementation (both UNDP and national).
- Assist the ESCO-Rivne Director in selection of staff (both project staff and other relevant staff of participating organizations) for local and/or overseas training.
- Ensure liaison with the Project Steering Committee and UNDP office, and ensure that the decisions and recommendations of the Project Steering Committee, and the opinions of UNDP, are fully incorporated within the scope of the project implementation.
- Ensure full liaison with the GEF Operational Focal Point at the Ministry of Environmental Protection.

Qualifications and Experience:

- Masters degree in business management, economics, or engineering;
- Minimum of 10 years of professional experience in business development/investment banking, preferably related to district heating;
- Familiarity with structuring financial options for risk assessment and business growth;
- Experience with the design and implementation of energy efficiency programmes and projects, preferably in east/central Europe;
- Extensive experience of cooperation with Ukrainian and foreign governmental organizations and international financial institutions;

- Extensive experience with project management and a demonstrated ability to manage complex technical assistance projects;
- Good computer and interpersonal skills;
- English language skills (both oral and written), in addition to Ukrainian/Russian, essential.

2. Community Mobilisation Specialist

Post Title: Community Mobilisation/Communication Specialist
Organization: ESCO-Rivne
Duty Station: Rivne, Ukraine
Duration: Full duration of project (estimated at 4 years)

Duties:

Under the responsibility of the ESCO-Rivne Director, the Community Mobilisation/Communication Specialist will:

- Promote the ESCO concepts and community mobilisation methodologies at municipal, micro-region and community levels;
- Support the residents in forming community organisations (COs) aimed at solving their problems using their own resources, to the extent possible;
- Assist the COs to prepare realistic development plans and to implement them;
- Assist the COs to create and develop community self-help funds and to prepare cost estimates for community initiatives;
- Closely coordinate with local government and non-governmental organisations (NGOs) to successfully implement the initiatives;
- Develop and implement a comprehensive Public Relations (PR) concept for effective dissemination and replication of lessons learned;
- Maintain project media relations for reaching investors, partners and general public audiences through press conferences, project visits and interviews;
- Develop project promotion materials and ensure target distribution of information materials produced;
- Ensure preparation of regular and ad hoc project publications. Promote project through stories, pictures, articles and other PR activities;
- Provide publicity of project events, activities, etc.;
- Plan and organize media events such as press briefings/conferences and draft presentations, press-releases (bi-lingual), etc. to communicate ESCO-Rivne development messages to partners/investors (both national and international);
- Support local authorities at regional and municipal levels to prepare local development plans and programmes that promote good governance and strengthen development activities;
- Assist the regional and municipal administrations in facilitating dialogue and participatory planning and decision making;
- Prepare and implement detailed work plans for social and local resource mobilisation;
- Prepare communication strategy of ESCO-Rivne;
- Develop and implement annual/quarterly communication work-plans as a part of the project work plan;
- Review project activities to determine information support needs;
- Scan press and publications for articles of interest to project and circulate them to project staff;
- Participate in preparation of project reports on PR, media and communication activities;
- Liaise with communication staff of other projects/programmes;
- Participate in further developing and regularly updating/maintaining the ESCO-Rivne website (on the content side);
- Assist in training ESCO-Rivne staff in dealing with the media;

- Act as managerial focal point on the ESCO-Rivne information activities;
- Monitor activities of COs and regularly report to ESCO-Rivne; and
- Perform any other related tasks at the request of ESCO-Rivne management.

Qualifications and Experience:

- Graduate degree from a recognised university/institute in Social Sciences, Economics or related field;
- A minimum of 3 years of experience working with communities for development activities;
- Experience in working with government (regional and municipal levels), NGOs and the private sector;
- Familiarity with the social situation in Rivne’s communities;
- Good communication and networking skills;
- Excellent interpersonal and conceptual skills for promoting social mobilization concepts and methodologies;
- Experience in organising and conducting training courses and seminars;
- Excellent computer skills; and
- English language skills (written and oral) will be an asset.

3. Administrative Assistant

Post Title: Administrative Assistant
Organization: ESCO-Rivne
Duty Station: Rivne, Ukraine
Duration: Full duration of project (estimated at 4 years)

Duties:

Under the responsibility of the ESCO-Rivne Director, the Administrative Assistant will:

- Assist in maintaining close contacts with the government, executing agency, project partners, and other counterparts through direct contacts, collection and summarizing of information, proposals, incoming and outgoing correspondence, drafting letters, organizing meetings, etc.;
- Provide operational support to project activities;
- Supervise collection of data and other information on project activities; maintain, log, file and update records in prescribed format for subsequent use;
- Contribute to the preparation of status and progress reports by providing information, preparing tables and drafting selected sections. Prepare background material for use in discussions and briefing sessions;
- Assist in monitoring project activities by reviewing a variety of records, including correspondence, reports, project inputs, budgets and financial expenditures in accordance with UNDP requirements. Prepare and file correspondence and materials relevant to the above;
- Assist in preparation of terms of reference for subcontractors and consultants;
- Assist in the organization of and logistical preparation for workshops, seminars, presentations, visiting missions, field trips, etc.

Qualifications and Experience:

- Higher education in linguistics, environmental management or other field relevant to the project;
- Experience in interpreting/translating and secretarial/clerical work, preferably connected with environmental issues;
- Experience in coordinating the work of expert groups for the achievement of strategic goals;
- Knowledge of office hardware and software (word processing, spreadsheet, and presentation programmes);
- Good command of Ukrainian, Russian and English.

4.4. Stakeholder Involvement Plan

The project has been designed initially to undertake energy efficiency in the municipal district heating sector in the City of Rivne, but within the context of a potential larger national programme to accelerate the implementation of energy efficiency measures in municipalities across Ukraine. Stakeholder participation involving the public and private sectors as well as civil society has played an essential role in the implementation of Phase 1 of the project and will continue to play a significant role during the follow-up Phase 2.

At the conceptualization stage of the Phase 1 of the project, the now-defunct State Committee for Energy Conservation, with the support of UNDP, carried out extensive consultations with various stakeholders to solicit their views and support for energy efficiency in the municipal district heating sector. Such consultations were held with Central and Oblast Administrations, investors, project developers, industry associations, financial institutions, donors and others. These focussed on issues of policy, regulations, financing, tariffs, capacity development, technologies, community participation, etc. The experience and the expectations of the stakeholders were considered during project conceptualization and definition.

The preparation of Phase 1 and, subsequently, Phase 2 of the project brought together all key stakeholders during discussions on the thematic area of “Environment Conservation and Management” of the UNDP Ukraine Cooperation Framework for Human Development 2001-2005. In addition, the draft UNDP Country Programme for 2006-2010 envisages support to the Government to meet the objectives of global conventions and mobilise resources from diverse sources for addressing the following environmental concerns: mitigation of the climate change, conservation of globally significant biodiversity, land degradation and water management. In doing so, UNDP will promote energy efficiency, clean technologies and environmentally friendly transport.

The indicative roles of different stakeholders have been identified to minimize project implementation risks, and thereby ensuring its sustainability. Typical roles of different category of stakeholders are discussed below:

The Government Agencies (Ministry of Economy and European Integration, Ministry of Environmental Protection, State Committee for Municipal Housing, Rivne Oblast Administration, Rivne Municipality, Association of Local and Regional Authorities) are expected to facilitate project formulation and implementation. In this connection, they will actively liaise with various departments and institutions, including other Oblast Administrations, financial institutions, banks and project developers. While their capacities to effectively network with various partner institutions would be enhanced through the project, the Government Agencies by themselves, except for ROA, would not implement projects.

ESCO-Rivne will network with Municipalities in other Oblasts, district heating companies, industry associations and existing entrepreneurs to promote energy efficiency implementation measures in the municipal district heating sector, resulting in a rolling projects pipeline for investors and financial institutions.

Government Agencies and concerned departments will ensure an enabling environment for other municipal ESCOs to be set up, especially with regard to providing a conducive business environment for ESCO operation and making recommendations for the necessary modifications in Government budgeting procedures/rules to allow fair and equitable competition in the energy efficiency sector. They would participate in the capacity development programmes planned under the project.

Non-Governmental and Community based Organizations such as the local housing management committees would actively participate in the setting up and management of energy efficiency/demand side management at the consumer level.

Industry comprising of the manufacturers of equipment, technology suppliers and service providers would proactively participate in ensuring quality performance of the projects.

ROA will have direct responsibility for implementation of the project. ESCO-Rivne will be supported by a full-time Business Development Adviser, a Project Assistant and a Community Development Adviser responsible for sustainable municipal ESCO development who, in addition to performing their assigned project management functions, will maintain constant dialogue with the above stakeholders and solicit their assistance and support, as required, to undertake key roles in project implementation.

Table 3 gives an overall plan for stakeholders' involvement. A report detailing the extent and nature of involvement of stakeholder participation will be prepared and submitted periodically to the Project Steering Committee.

Table 3: Plan for Stakeholder Participation

Type of Stakeholder	Contributions to Key Outputs	Frequency (Periodic = once in six months)
Government Agencies	Short/mid/long term perspective plans for implementing energy efficiency in the municipal district heating sector. Active participation in the workshops and other meetings on policy deliberations – energy markets, environmental impact assessments, investment promotion, and other institutional issues.	Periodic
Regulator	Participation in Steering Committee meetings, environmental impact assessment and tariff determination.	Periodic
Financial Institutions and Banks	Innovative financing schemes for replication of and credit lines for operation of the ESCO modality in municipal district heating throughout Ukraine.	Continuous
Technical Institutions	Benchmarking and validation -Performance monitoring and evaluation. Resource for capacity development/information dissemination.	Continuous
Investors	Projects pipeline.	Continuous
NGOs/CBOs	Support to project/Ensure that municipal consumers benefit from project activities and outputs.	Continuous
Bilateral and other donors	Implementation /Replication.	Periodic

SIGNATURE PAGE

Country: Ukraine

UNDAF Outcome(s)/Indicator(s): “Assistance Area 4: Prosperity Against Poverty, reducing poverty through effectively targeted development and entrepreneurship”. CP Output 1.8: “Institutional capacities and capabilities of municipalities and civil society organizations strengthened through improved policies and practices related to environment and energy services”. Indicator 2: “Decrease in fuel/coal consumption + Indicator 3: “Reduction in harmful essences emissions”.

Expected Outcome(s)/Indicator (s): Output: “Sustainable development policies and practices make the difference”. Service line 3.3: Access to sustainable energy services. Indicator: “Decline in green(house) gas/carbon dioxide emission”.

(CP outcomes linked to the SRF/MYFF goal and service line)

Expected Output(s)/Indicator(s): Output: “Institutional capacities and capabilities of municipalities strengthened through improved policies and practices related to energy services and environment”. Indicator: “Number of municipalities engaged in energy-saving and sustainable practices; baseline: 3 cities as of 2005”.

(CP outcomes linked to the SRF/MYFF goal and service line)

Implementing partner:
(designated institution/Executing agency)

Rivne Oblast Administration

Other Partners:

Rivne Municipality

Programme Period: 2006-2010
 Programme Component: Energy and Environment for Sustainable Development
 Project Title: **Removing Barriers to Greenhouse Gas Emissions Mitigation through Energy Efficiency in the District Heating System, Phase 2**
 PIMS ID: 3056
 Atlas Award ID: 00042146
 Atlas Project ID: 00048250
 Project Duration: 4 years
 Management Arrangement: National Execution (NEX)

Total budget:	USD 7,050,000
Allocated resources:	
• GEF	USD 3,494,000
• Government	USD 2,000,000
• Government in kind	USD 1,000,000
• Other	USD 556,000

Name

Date

Agreed by
Ministry of Economy and European Integration of Ukraine
(Government):

Agreed by
Rivne Oblast Administration (Implementing Partner/Executing agency)

Agreed by (UNDP):

Annex 1: Executive Summary



**PROJECT EXECUTIVE SUMMARY
GEF COUNCIL SUBMISSION
FULL SIZED PROJECT**

AGENCY'S PROJECT ID: 3056
GEFSEC PROJECT ID: 2249
COUNTRY: Ukraine
PROJECT TITLE: Removing Barriers to Greenhouse Gas Emissions Mitigation through Energy Efficiency in the District Heating System, Phase 2
GEF AGENCY: UNDP
OTHER EXECUTING AGENCY(IES):
DURATION: 48 months
GEF FOCAL AREA: Climate Change
GEF OPERATIONAL PROGRAM: OP 5
GEF STRATEGIC PRIORITY: CC-2
ESTIMATED STARTING DATE: August 2005
ESTIMATED WP ENTRY DATE: June 2005
IA FEE: \$382,000

CONTRIBUTION TO KEY INDICATORS OF THE BUSINESS PLAN

- Avoided CO₂ emissions: 2.8 million tons (under Phase 2 activities)
- Cost effectiveness of GEF funds: \$ 1.24/ton of CO₂ avoided
- Cumulative CO₂ reduction potential (over 20 years): 64 million tons

RECORD OF ENDORSEMENT ON BEHALF OF THE GOVERNMENT:

V Kruk, First Deputy Minister, Ministry of Environmental Protection, GEF OFP Date: 14th march 2005

FINANCING PLAN (US\$)	
GEF PROJECT/COMPONENT	
Project (Phase II)	3,494,000
PDF B	189,400
Phase I	1,840,000
<i>Sub-Total GEF</i>	5,523,400
CO-FINANCING	
Phase I	1,320,000
PDF B	95,000
<i>Sub-Total Co-financing</i>	1,415,000
Phase II:	
UNDP	
Government	2,000,000
Government in kind	1,000,000
Bilateral Donors	
Others	556,000
<i>Sub-Total Co-financing (phase II):</i>	3,556,000
<i>Total Project Financing: (PDF B, phase I and II)</i>	10,494,400
Financing for Associated Activities, if any.	
Leveraged Resources, if any.	

This proposal has been prepared in accordance with GEF policies and procedures and meets the standards of the GEF Project Review Criteria for work programme inclusion.

Y. Glemarec

Yannick Glemarec
Deputy Executive Coordinator
Date: 21 April 2005

Mr. Geordie Colville, Portfolio Manager
Project Contact Person
Tel. and email: +421 2 59 337 408
geordie.colville@undp.org

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PROJECT RATIONALE, OBJECTIVE, OUTCOMES AND OUTPUTS/ACTIVITIES

Rationale

The full-size project was approved in January 2000, but, given the then financial constraints faced by GEF, was split into two phases: the recently-completed Phase 1 dealing with the setting up of an ESCO in the City of Rivne which, in turn, implemented pilot energy efficiency activities targeting selected municipal district heating facilities. Phase 2, which is the subject of the present proposal, will build upon and consolidate the ESCO experience acquired to address municipal district heating activities at the Rivne City-wide and regional (Oblast) levels.

Ukraine continues to be one of the least energy efficient countries in the world and has the greatest emissions level per unit of GDP among CIS countries. A recent inventory estimated that total emissions from Ukraine in 2002 were 487 million tons of CO₂ equivalent (the corresponding figure for 2001 was 482 million tons). This results in a per capita emission of 10 tons of CO₂ equivalent per year. Heat supply in the buildings sector accounts for approximately 25% of all fuel consumed in Ukraine, and, therefore, there is a huge potential for energy efficiency improvement in this sector, which Ukraine wants to actively pursue.

Since 1991, the Government of Ukraine has devoted a great deal of attention to the development of the energy sector. The National Energy Programme of Ukraine until 2020, adopted in 1996, articulated the Government's energy policy and its priorities: energy conservation, use of domestic resources, development of renewable energy and targeted investments in strategic areas to reduce energy intensity. In the district heating sector, the programme calls for reconstruction and rehabilitation of existing district heating networks, continued development of district heating systems and combined heat and power plants, promotion of waste heat usage, and construction of new high-efficiency, heat-only boiler plants where appropriate.

In line with the Government's priorities, this project addresses a key issue in the reduction of greenhouse gas emissions through large-scale improvements in energy efficiency in Ukraine's communal heat supply sector. These improvements will result from a four-part approach: 1) capacity building to create the basis for systematic energy efficiency activities at the local level; 2) an integrated approach of supply and demand-side improvements to achieve maximum fuel savings and emissions reduction; 3) attraction of external investment resources for an energy efficiency program in a pilot city; 4) project-specific replication measures including development of relevant procedures, guidelines, information materials

and their dissemination, and public awareness-raising through the involvement of NGO's, in particular those concerned with environmental and energy efficiency problems.

The Rivne municipality, Rivne District Heating Company, and the Oblast Administration have strongly supported the idea of establishing ESCO-Rivne to expand energy efficiency activities in the city of Rivne. The reasons for this are several: large budgetary expenditures on the energy bills of institutional buildings and on residential subsidies, high energy intensity of delivered heat, resulting in high heat tariffs, etc. It should be noted that compared to other Ukrainian cities, Rivne has made significant progress in reforming its municipal energy sector. Cross-subsidies in heat energy tariffs for different consumer categories have been eliminated, direct billing of all district heating system customers has been introduced, the payment collection rate has increased to the point where it is now one of the highest in Ukraine, and energy saving has been identified as a priority both by the municipality and by the district heating company. Local authorities are willing to go further in reforming the energy sector to facilitate ESCO-Rivne operations and increase the confidence of private investors. For example, they guarantee full cash payment of heat bills of budgetary institutions, make full payment of existing residential subsidies to the heat supplier, and fix the level of tariffs for the investment amortization period.

An ESCO presents an efficient way to provide for systematic energy efficiency activities. This is because an ESCO is oriented for operation with numerous clients of various types, possesses necessary expertise for project preparation and implementation, is quick and flexible in making decisions about project financing, and is intrinsically interested in multiplying energy efficiency activities through expansion of its customer base. An ESCO suggests win-win solutions for its clients by using EPC mechanisms. It also reduces transaction costs and can tackle a large number of similar and relatively small-scale projects that could not be financed separately using traditional approaches. Thus, the ESCO approach facilitates the access to external financial sources for the owners of smaller projects. EPCs offer ESCO clients attractive long-term financing otherwise currently almost unavailable in Ukraine. Moreover, experience with international joint ventures shows that foreign investors look at the strength of the local partner as a primary criterion for investment decisions.

The ESCO approach complements existing strategies of major investors/lenders. The EBRD has indicated that the project is in line with its current strategy, and recently re-iterated its interest in the project. Furthermore, ESCO-Rivne met with several other private investors (representing both energy companies and investment funds) who have also confirmed their interest in equity participation or provision of lines of credit. (Annex D – attached separately)

In addition to reflecting national priorities in Ukraine, the proposed project also builds upon the existing goals and activities of UNDP, with environment constituting one of its four priority areas for global activity, both at the country level and in the region. This project will also serve as an innovative approach to district heating efficiency projects, an important part of UNDP-GEF portfolio. Finally, UNDP is assisting local governments in Ukraine in the formulation and implementation of Local Agenda 21 sustainable development strategies at the Oblast (regional) and municipal levels, and energy plans are included in these strategies.

Project goal, objective, outcomes and outputs/activities

The project objective is to reduce overall fossil fuel consumption and associated GHG emissions by removing barriers to supply and demand side energy efficiency improvements in district heating systems in the main cities of Ukraine. GEF participation will reduce major existing barriers in one pilot city and provide for the replication of defined approaches and measures in other main cities of Ukraine.

The projected average annual reduction of GHG emissions in the pilot city is estimated at 131,000 tons of CO₂ equivalent (including CO₂ itself, CH₄ and N₂O), and almost 3 million tons of CO₂ equivalent over the life. As a contribution to this target, the emissions reduction under Phase 1 during the period June through December 2004 was 7,800 tons of CO₂ equivalent¹. These savings are derived from investments made during the heating season of 2004-2005, and over the lifecycle of these investments expect to accrue around 144,000 tons in CO₂ avoided emissions. Hence phase 2 expects to avoid 2.8 million tons in CO₂ emissions through the life cycle of investments made during this phase. Estimated total replication potential for communal heat supply sector in other cities makes up approx. 64 million tons of CO₂ equivalent. This figure indicates the potential for scale-up if other municipalities follow the model of Rivne, or ESCO-Rivne expands beyond Rivne municipality. The information dissemination component of the project is expected to contribute to this.

Barrier Analysis

The above global environmental objective is to be achieved through the removal of the following main existing barriers to energy efficiency improvement in the communal heat supply sector: 1) difficulties in arranging financing for efficiency projects; 2) institutional constraints; 3) lack of capacity and experience in preparing, implementing and managing energy efficiency projects; 4) high transaction costs for relatively small energy efficiency projects; 5) lack of information about existing opportunities for energy efficiency.

1) Difficulties in arranging financing for efficiency projects;

a. Activities designed to address barrier

- An ESCO as a vehicle for local/foreign investors will be established, its profitability demonstrated, and new investors attracted;

b. Phase I progress in addressing barrier

- ESCO-Rivne was incorporated as a closed joint-stock company on 12 November 2003. The company is fully owned by KommunEnergiya (the Oblast's DH Enterprise), MiskSvitlo (the Municipality's lighting company) and company employees.
- The company has investments of USD 1.5 million under 15 Energy Performance Contracts, and receives USD 25,000 in payments for energy efficiency every month in return. The company therefore expects to begin turning a profit on these investments around 5 years.

c. Phase II strategy to address outstanding barrier issues

- There are currently no private shareholders. To address this issue, ESCO-Rivne has modified its foundations documents, converting the closed joint-stock company into an open-stock one.

¹ This figure was arrived at through computation of the actual fuel (natural gas in this case) savings over this period and applying the CO₂ emission coefficient per m³ of natural gas used. The same formula was used to extrapolate the emission reduction for city-wide energy efficiency activities on the basis of fuel saved. These projections will be validated through regular monitoring during Phase 2 and beyond.

- ESCO-Rivne has contacted several potential investors, mailed them its Business Plan for 2005 and has had meeting with some of them to provide additional information/answer questions.
- All company information has been posted on ESCO-Rivne web site for easy access by potential investors.
- Necessary legal and fiscal issues: options for repayment guarantees, currency exchange and transfer procedures, arbitration of disputes, etc.

2) Institutional constraints

a. Activities designed to address barrier

- Ability of municipalities to enter into EPC agreements.
- Cross-subsidies in heating tariffs (i.e. low tariffs), making it difficult for a business to make a profit by providing heating services
- Housing allowance including heat consumption, reduces the need and cost effectiveness of demand-side investments

b. Phase I progress in addressing barrier

- So far Rivne Municipality and district heating company are the only clients of ESCO-Rivne. Together, they have identified administrative procedures for entering into an energy performance contract. (1) ESCO-Rivne makes an investment; (2) Rivne Municipality creates a budget line for energy efficiency; (3) ESCO-Rivne estimates the payments it expects to receive from the municipality in energy savings, and the municipality requests and allocates funds to this amount to their budget line; (3) ESCO-Rivne is paid based on actual measurements. (4) payment from final consumers is collected from KommunaEnergia, and at present does not bear on the EPC contract with Rivne.
- Cross-subsidies have been removed from heat tariffs. Although this does not directly effect the current EPC contracts between Rivne Municipality and ESCO-Rivne, it is an important step in creating the right investment environment.
- Direct billing of consumers is now standard practice. Consumption meters have been installed and payment collection has increased.

c. Phase II strategy to address outstanding barrier issues

- Implement consumption billing.
- Complete design and implementation of billing software.
- Design of guarantee instruments to ensure payment by clients.

3) Lack of capacity and experience in preparing, implementing and managing energy efficiency projects.

a. Activities designed to address barrier

- Design and implementation of investment plan
- Training programme for ESCO-Rivne staff in auditing, EPC design, financial planning and preparation of bankable projects.

b. Phase I progress in addressing barrier

- City-wide investment plan formulated.

- Bulk of capacity development programme completed.

c. Phase II strategy to address outstanding barrier issues

- Organise twinning arrangement with reputable ESCO in a foreign country.
- Provide additional training in bankable project development.

4) High transaction costs for relatively small energy efficiency projects.

a. Activities designed to address barrier

- To undertake an energy efficiency project a municipality would have to undertake the steps of feasibility, design, installation, operation and maintenance as separate procurement steps. With EPC they need only undertake one procurement. The ESCO, with lower overheads, greater experience in energy efficiency projects and intrinsic interest in multiplying energy efficiency projects, is capable to undertake these tasks with greater efficiency and lower overheads.

b. Phase I progress in addressing barrier

- ESCO-Rivne is undertaking 15 EPC's where the municipality has been able to pass on the task of feasibility, design, installation, operation and maintenance of equipment to ESCO-Rivne.

c. Phase II strategy to address outstanding barrier issues

- Subsequent bundling of several EPC contracts into one contract, for example, for city-wide activities.

5) Lack of information about existing opportunities for energy efficiency.

a. Activities designed to address barrier

- Preparation of an investment programme

b. Phase I progress in addressing barrier

- Targeted training, individual outreach to decision-makers and focused consultations.

c. Phase II strategy to address outstanding barrier issues

- Provide consultations to interested municipalities and district companies.
- Additional targeted outreach activities.

Project Phases

This project, consisting of Phases 1 and 2, involves two key components: (i) setting up an innovative financial mechanism (the ESCO approach) in a pilot city (Rivne) for implementing energy efficiency activities on a sustainable basis with the capability for self-replication in other Ukrainian cities; and (ii) related capacity building and barrier removal activities including installation and commissioning of energy efficiency measures, shifting to consumption-based billing system, and introduction of regulatory changes to motivate energy saving, including adjustments to the system of allocation of subsidies.

Phase 1 commenced implementation in 2002 and had 2 main objectives: (i) setting up of an ESCO in the City of Rivne as a joint stock company and fully operationalising it by completion of this phase and (ii) implementation of pilot/demonstration activities aimed at introducing energy efficiency measures at a

boiler plant, in heat transportation systems and in public/residential buildings, through the design and fine-tuning of Energy Performance Contracts (EPC) and the introduction of consumption-based metering and billing. It is important that the ESCO be a private company and not a public one: a public ESCO, like UkrEsco and as indicated under “Rationale” above, will face the extremely lengthy and difficult task of securing Government guarantees should it were to borrow funds from EBRD, WB, etc.

ESCO-Rivne was legally registered as a private joint stock company on 12 November 2003, under Phase 1 of the present project, with an initial capitalization of \$ 50,000 contributed by the 2 shareholders, viz. MiskSvitlo (50.47%) and KomunEnergia (49.53%). It has been, since then, implementing energy efficiency activities at the municipal level, as indicated in Table 1 below. All Phase 1 activities, consisting mainly of setting up an ESCO, implementation of pilot activities in Rivne and formulating a Rivne City-wide strategic plan for energy efficiency improvement, are now almost completed. Thus, the GEF contribution under Phase 1 has enabled ESCO-Rivne to address the legal and regulatory issues related to ESCO operation and facilitated the promotion of private sector initiatives in the area of municipal district heating in the pilot city of Rivne, utilizing the Energy Performance Contract (EPC) mechanism and consumption-based metering and billing. This is documented in the report of the independent evaluation finalized in December 2004. The evaluation is available as a separate document.

The overall conclusion of the independent evaluation is that Phase 1 project has made significant achievements in improving the overall capacity of ESCO-Rivne for implementing energy efficiency activities in the municipal district heating sector, in strengthening ESCO-Rivne’s technical, administrative and management capabilities and in increasing stakeholder awareness, commitment and participation in expansion of activities. The main findings of the independent evaluation are outlined in Sections 4.3.1, 4.3.2 and 4.3.3 of the evaluation report referred to above. They indicate that all the following benchmarks that needed to be achieved prior to embarking on Phase 2 have been met either “highly satisfactorily or satisfactorily” (ANNEX J) provides, in table form, a summary of these benchmarks):

- Enabling Environment conditions (software billing/accounting, EPC, legislation/regulation).
- Financial Institutional conditions (full-scale feasibility study for Phase 2, documents for equity/loans, investment promotion materials, investor interest, ESCO financial arrangements, etc.).
- Other Institutional conditions (Pilot municipal ESCO established, operational procedures finalised, terms of partnership with City of Rivne worked out, GHG emission reduced and verified, etc.).

Implementation of the pilot activities under the Phase 1 project provided ESCO-Rivne with the opportunity to demonstrate its solid technical approach and sound financial expertise to manage opportunities for energy efficiency in the municipal district heating sector. Subsequently, its contacts with both local and foreign partners to solicit their participation as potential investors/lenders were met with considerable interest. This has resulted in ESCO Rivne securing commitments and interests from investors/lenders to increase its capital base and its access to lines of credit. At the time of writing ESCO-Rivne has:

9. capitalization of USD 50,000 MiskSvitlo and KomunEnergia;
10. USD 1.5 million in capital from the GEF, which has now been transferred to ESCO-Rivne ownership, and on this it expects to be able extend its credit line to USD 1.5 million

Also in connection with phase I, the project estimated USD 265,000 in co-financing. In actual fact they received USD 1,014,000 more than this.

For phase II:

11. Credit lines of USD 556,000 from local banks (marked as USD 1.5 million in table 2 because of the increase in collateral of the company, listed under point 2 above);
12. plans to transfer KommunEnergi assets of 14 million within the next year, and which will be used as collateral in the future;
13. project revenues and client payments from energy savings estimated at 2 USD million are expected over the next year from Rivne Municipality, with a further USD 1 million in in-kind resources dedicated from Oblast and City to support these contracts; and
14. been negotiating with ISC Infrastructure Halle, and other private investors over the sale of shares in ESCO-Rivne, conclusion of which is expected in May 2005; and finally
15. ESCO Rivne have begun negotiation for USD 500,000 in credit lines from ING and Raiffeisen Bank

These phase II finances are summarised in Table 2.

Municipal district heating activities at the Rivne City-wide and regional (Oblast) levels will be targeted under the proposed Phase 2 of the project. In this connection, ESCO-Rivne has formulated its strategic plan. A table of planned activities from this Strategic Plan have been attached ([ANNEX G](#)).

The ESCO modality presents an innovative and very promising mechanism to finance large-scale energy efficiency activities in Ukraine. In order to maximize the resources available for replicating the project, proportional returns on GEF funds during the pilot phase (Phase 1) of the project and the city-wide investment (Phase 2) will be placed back into the ESCO as equity for subsequent projects in the municipal sector in Ukraine undertaken by the ESCO-Rivne.

ESCO-Rivne has been successful in developing and implementing the Energy Performance Contract (EPC) mechanism in energy efficiency activities it has undertaken to date. An EPC is, in effect, an outsourcing arrangement for energy efficiency, where an external contractor (e.g. ESCO-Rivne) takes total responsibility for achieving outcomes. With this mechanism, it is possible to obtain a guarantee that energy savings will be achieved. While there are a number of different types of EPCs, they all share the following common features:

- The EPC contractor enters into a long term (5-10 years) relationship with the client.
- Benchmark energy performance levels are defined and energy efficiency upgrades are identified and implemented by the EPC contractor.
- Risk of non-performance of energy efficiency upgrades is carried by EPC contractor.

Thus, EPCs are a means of achieving energy efficiency that allows the risks and responsibilities of implementation and maintenance of savings to be passed on to the EPC contractor. This is in contrast with traditional energy management techniques which produce recommendations for efficiency improvement which the client has to act on at his/her own risk.

The EPC modality utilized during the implementation of Phase 1 of the project is completely in line with the project brief, formulated in January 2000 as part of PDF-B activities. The brief indicates that the full scale programme implementation (Phase 2) will be “conducted by the ESCO using EPC mechanism on commercial and self-sustainable basis”. The brief further indicates in para 59 (page 14) that “The GEF funding (\$4,000,000) under the investment program will finance the major part of pilot implementation

phase, and also the implementation of longer-payback measures (like pipe replacement and measures in buildings, Ref. Annex 4 of brief), less economically attractive and more risky to the private investor”. The evaluation clearly brings this out by recommending that ESCO-Rivne focus on shorter payback investments to improve its financial viability. Hence, longer-payback measures such as replacement of heat distribution networks, boiler room reconstruction, installation of radiation screens, etc. ([ANNEX H](#)) will not get sufficient attention unless “incentives” are provided for it to invest in these.

Implementation of Phase 1 has been instrumental in bringing to the surface an additional major barrier to ESCO-driven municipal district heating that was not identified when the project brief was drafted in 2000. This relates to the development of finance guarantee and risk mitigation instruments to reduce ESCO-Rivne investment risks in case of difficulties by clients to make payments as per their EPC contracts. These instruments would be designed to promote and facilitate investments by ESCO-Rivne. Hence, in addition to financing the “implementation of longer-payback measures, less economically attractive and more risky to the private investor”, Phase 2 of the project will also address the issue of setting up finance guarantee and risk mitigation instruments to facilitate ESCO-Rivne operations.

The project’s goal is to address a key issue in the reduction of greenhouse gas emissions through large-scale improvements in energy efficiency in Ukraine's communal heat supply sector. This is proposed to be achieved through the setting up of a municipal district heating ESCO in Rivne City, providing it with technical and capacity development support to become fully operational, to provide it with hands-on experience through the implementation of pilot projects and to assist it in preparing a strategic plan for implementing energy efficiency activities city-wide in Rivne. All these were undertaken during Phase 1.

Under Phase 2, ESCO Rivne will receive additional support to implement a city-wide programme for energy efficiency activities in municipal district heating, to expand its reach beyond the borders of the city, to implement activities which require longer payback periods for which financing may not be readily available, to design and implement finance guarantee and risk mitigation instruments, and to promote the adoption and implementation of project experience and lessons learned throughout Ukraine and in other CIS countries.

The Phase 2 project has four primary outcomes; these, together with the outputs and activities required to achieve them. These are listed in the logframe ([ANNEX B](#)), while the outcomes and outputs are summarised below.

Outcome 1: ESCO operations are expanded to cover Rivne City-wide/Oblast energy efficiency activities. The outputs necessary to achieve this outcome are:

- Signed EPC contracts for Rivne City-wide energy efficiency activities.
- Opportunities for implementing energy efficiency in Rivne/other Oblast regions identified.
- All works pertaining to City-wide/Oblast projects completed.

Outcome 2: ESCO-Rivne operations are facilitated through financing of activities having long payback periods. The outputs for achieving this outcome are:

- Signed EPC contracts for activities having long payback periods.
- All necessary equipment/services for undertaking works procured.
- All works pertaining to projects having long payback periods completed.

Outcome 3: ESCO-Rivne operations are promoted through the design of instruments to minimise investment risks.

ESCO-Rivne will assess insurance and guarantee products available on the market, that are expected to address its perceived or real risks against investment in case of difficulties by clients to honour their EPC contracts. The outputs for this outcome are:

- Comprehensive report on risk mitigation instruments compiled.
- Study to determine most appropriate instruments completed.
- Agreements with Banks/insurance companies negotiated and signed.

Outcome 4: Project experience/best practices and lessons learned are replicated throughout Ukraine and in other CIS countries.

The project will support the compilation and distribution of best practices and lessons learned and will provide opportunities for broad exposure to other Oblasts and countries in the region. This will be achieved through the following outputs:

- Materials on project experience/best practices and lessons learned prepared.
- Capacity development activities implemented for the management and technical personnel of other municipalities/heat supply companies.
- Project overall results, experiences and lessons learned disseminated at the national and regional levels.
- Consultation/dialogue for replicating project experiences in other cities/Oblasts and leveraging financing for that completed.

Project strategy and approach

One of the main lessons learned in Phase 1 relates to the fact that ESCO-Rivne, although being a private company, is presently owned by primarily public entities. This poses a danger in that these public entities may decide to close the ESCO at any time and claim its assets, unless ESCO ownership is moved to a majority of private shareholders. A second main lesson relates to how Government budgets get allocated, which do not allow public buildings to enter into long-term commitments. Lastly, as noted in the evaluation report, “The most important lesson learned at this point in time is that a project aiming at the implementation of a municipal ESCO must be managed and controlled at the local level”.

ESCO-Rivne, as outlined in its Business Plan for 2005 (attached separately), provides all services related to the implementation of energy efficiency and saving measures, which a client cannot or is unable to undertake utilising its own funds. These include:

- Conducting energy audits;
- Preparation of proposals for energy saving projects;
- Developing and providing financing arrangements;
- Development of full procurement packages (contracts, technical specifications);
- Procurement of all equipment and services;
- Supervision of contractors’ works during construction and installation phase;
- Monitoring and verification of the contract performance during operation;
- Assuming all the risks during project implementation and operation;
- Guaranteeing of the energy savings to the client.

The ESCO-Rivne company structure is provided below.

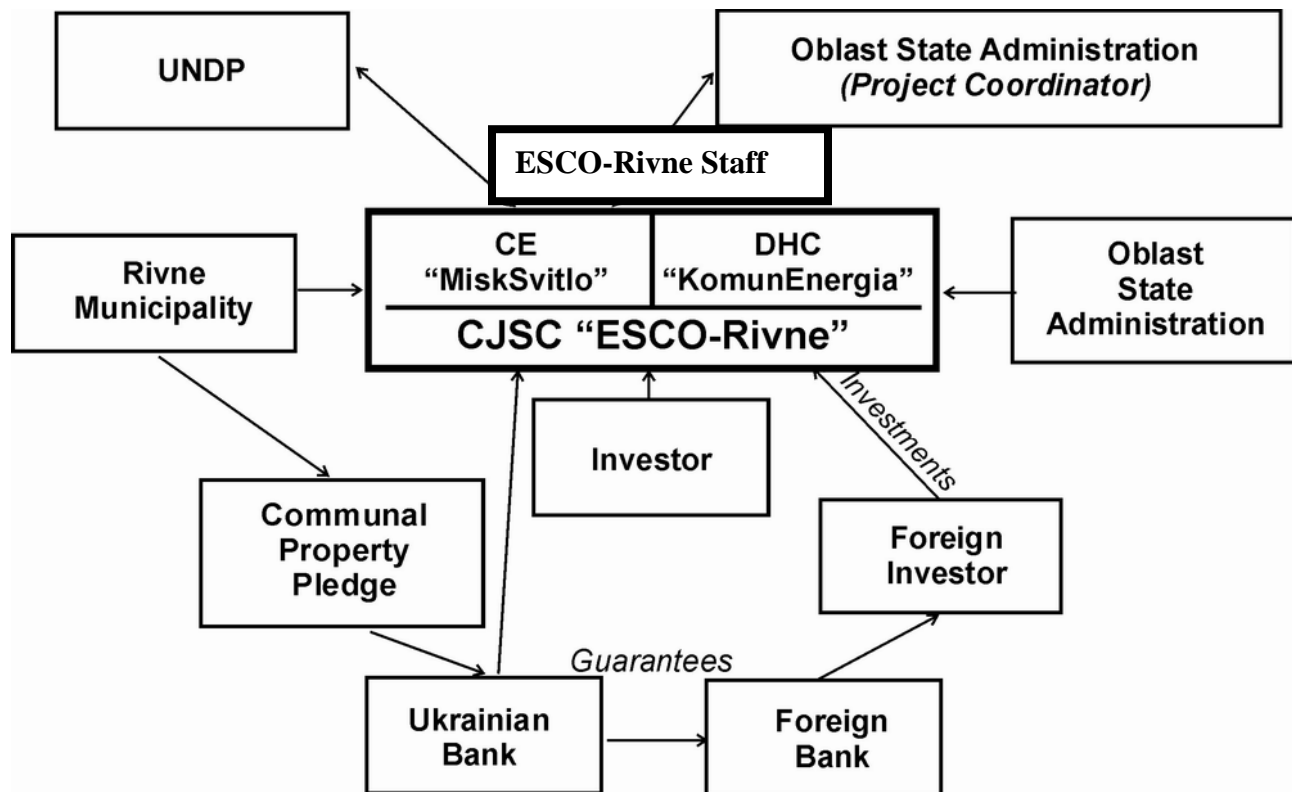


Figure 1: Scheme of operation with the investors

As per the above figure, Phase 2 of the project will continue to be implemented by the Rivne Oblast Administration with the technical and financial support of UNDP. The present ESCO-Rivne shareholders are the Rivne Municipality (45% shareholding), Oblast Administration (44% shareholding) and ESCO-Rivne employees who own the remaining balance of shares. It is important to note that ESCO-Rivne does not currently have any other investors other than the above shareholders. With regard to other investors, the above diagram indicates the plans of ESCO-Rivne. ESCO-Rivne is being converted from a closed joint stock company into an open joint stock one. This will enable the participation of private investors as shareholders who are not present, as of now. As ESCO-Rivne stocks will be openly traded, an investor, local or foreign, can become a shareholder by purchasing stocks directly. In addition, it is foreseen that a foreign investor may wish to lend funds to ESCO-Rivne and expect a reasonable rate of return. In this case, the foreign investor will channel his funds through his (foreign) bank to a Ukrainian bank which, in turn, will make the loan funds available to ESCO-Rivne. However, in return, the foreign bank will likely want to

ensure that the investor will recover his funds at maturity and, for this, it will likely require some form of guarantee: this can be provided by what is indicated in the above figure as a “communal property pledge”. What does this entail? It simply means that the Oblast/City pledges land as collateral to guarantee loan payback by ESCO-Rivne. This “property pledge” has been successfully utilised in Poland, for example, and the Polish experience in this regard will be very useful to ESCO-Rivne.

The intention of ESCO-Rivne is to ensure majority shareholding by private investors. It is a required step to guarantee that ESCO operations are free from local/national political considerations to pursue its commercial goals leading to improvement of energy services delivery in the city. This would provide sufficient confidence to attract debt financing from development and commercial banks. Participation of the Rivne municipality and district heating company as shareholders ensures the necessary market for ESCO operations in the city, and support of the regional government provides for opportunities for further expansion of ESCO activities in the region.

The list of contracts implemented under Phase 1 by ESCO Rivne is provided in Table 1 below. For each one of these, ESCO Rivne undertook a full technical and economic feasibility study which it used to discuss the terms of EPC contracts with the clients. Following signature of the contracts, ESCO Rivne either procured the required equipment and installed them or entered into turn-key agreements with sub-contractors. For the works implemented under Phase 1, ESCO Rivne receives on average \$ 25,000² per month (starting in June 2004) as per the terms of the EPC contracts. Payments are based on energy savings calculated from efficiency gains over a baseline agreed in the EPC from the delivery of heat and power. The monthly payments are fairly steady throughout the year, since through cogeneration of heat and power the unit can generate at full capacity all year round, by selling excess to the grid. If ESCO-Rivne fails to deliver energy savings, or delivers lower savings than expected, payments are reduced accordingly. Conversely if the client fails to pay for energy savings ESCO-Rivne has obtained and can take possession of collateral, including bank guarantees and real estate.

In implementing EPC contracts under Phase 1, ESCO Rivne has developed capabilities to fully understand the technical, economic, financial, legal and environmental issues related to this modality and proposes to continue with it during Phase 2 of the project.

Contract No	Contract name (Description of works)	Amount, US \$	Contractor	Status	Emissions Reduction (tons CO₂/yr avoided)
UKR/01/G3 1-2003/87	Installation of the district heating pipelines between boiler plant located at 71 Kn. Volodymyr St. and heat-network chamber (valve room) No. 39 in the city of Rivne	787,542.20	Energoresursinvest Corp, Lviv, Ukraine	Completed	255.74
UKR/01/G3 1-2003/88	Rehabilitation and renovation of the automation and control system for the boiler units installed in the boiler-house at 71	72,295.00	Spektr-TV, Rivne, Ukraine	Completed	1219.2

² Monthly payment of just over USD 7,000 have yet to begin, but as they do, monthly payments will be just over \$ 25,000.

Contract No	Contract name (Description of works)	Amount, US \$	Contractor	Status	Emissions Reduction (tons CO₂/yr avoided)
	Kn. Volodymyr St. in the city of Rivne				
UKR/01/G3 1-2003/89	Rehabilitation and renovation of the two boiler units installed in the boiler-house at 71 Kn. Volodymyr St. in the City of Rivne	79,245.60	Kotloenergopr oekt, Kharkiv, Ukraine	Completed	1219.2
UKR/01/G3 1-2003/90	Rehabilitation and renovation of the gas burners for boiler units installed in the boiler-house at 71 Kn. Volodymyr St. in the City of Rivne	33,933.60	Kotloenergopr oekt, Kharkiv, Ukraine	Completed	1219.2
UKR/01/G3 1-2003/91	Arranging of the variable speed drive system for forced draft units of B-25-15 boiler and supply-line pumps in the boiler-house at 71 Kn. Volodymyr St. in the City of Rivne	49,534.00	Spektr-TV, Rivne, Ukraine	Completed	821.6
UKR/01/G3 1-2003/101	Arrangement of individual heat substation in the residential building located at 5 Mitskevicha St., in the city of Rivne	16,338.00	International centre of energy-effective technologies, Kiev, Ukraine	Completed	727.8
UKR/01/G3 1-2003/102	Arrangement of individual heat substation in the residential building located at 7 Mitskevicha St., in the city of Rivne	16,338.00	International centre of energy-effective technologies, Kiev, Ukraine	Completed	727.8
UKR/01/G3 1-2003/104	Reconstruction of central heat substation located at 5 Mitskevicha St., in the city of Rivne	13,744.00	UTEM, Kiev, Ukraine	Completed	34.72
UKR/01/G3 1-2003/156	Installation of individual heating substation in the residential buildings 46 Dubenska St., 42 Kievskaja St., 77 Kievskaja St. in the City of Rivne	19,080.00	Santehrekonst rukcia, Kiev, Ukraine	Completed	34.72
2004/213	1) Performance of the design works related to reconstruction	251,898.72	EnergoEco Consulting,	UNDP inputs	1295.2

Contract No	Contract name (Description of works)	Amount, US \$	Contractor	Status	Emissions Reduction (tons CO₂/yr avoided)
	<p>of the Rivne Central Municipal Hospital boiler plant, located at 25-a Miryushenka St.(City of Rivne, Ukraine)</p> <p>2) Procurement of the equipment for the reconstruction of the Rivne Central Municipal Hospital boiler plant, located at 25-a Miryushenka St. (City of Rivne, Ukraine)</p>		Rivne, Ukraine	already provided.	
2004/348	<p>1) Performance of the design works related to construction of the heating network based on the preliminary isolated pipings starting form the crossroads of the Streets of Naberezhna-Kavkaz'ka (from the heating piping-main with diameter 426 mm, that is built from Power Plant at 71 Kn. Vladimira St. through overhead passing over the river Ustya, Rivne city) along the Naberezhna St. towards the existing heating camera, that is located near the house at 19 Mira Ave.)</p> <p>2)Procurement of the following equipment and materials: Steel pipings preliminary isolated with polyurethane foam with polyethylene covering, diameter 325/450 mm - 970 m; Steel pipings preliminary isolated with polyurethane foam with galvanized spiral-helix covering, diameter 325/450 mm - 270 m;</p>	149,785.00	Energoresursinvest Corp, Lviv, Ukraine	UNDP inputs already provided.	127.86
	Total	1,489,734.12			7768.4

Table 1: ESCO Rivne Phase 1 contracts.

As seen in Table 1, ESCO-Rivne investments under Phase 1 amounted to approx. \$ 1.5 million. On the basis of monthly receipts of \$ 25,000, as indicated above, a simple calculation shows that the \$ 1.5 million will have a payback period of around 5 years. This is an average payback period for all the above contracts taken together, thus indicating that some works have a shorter payback period while others have a longer one. As a rule of thumb, rehabilitation works have a shorter payback period (normally less than 2 years) while works requiring extensive reconstruction have longer payback periods; also, energy efficiency measures on the demand side have a shorter payback period. Table 1 also provides information on the energy savings accrued and the emissions avoided under Phase 1 during the period June through December 2004.

It should be emphasized that the ESCO modality is very innovative for Ukraine and the CIS countries in general. The major challenge has been to attract private investors who have previously been quite reluctant to enter the Ukrainian market. However, the improving financial situation in Rivne, the firm support of the municipality and Oblast, together with the commitments they have already made, has made it possible for ESCO-Rivne to move closer to this goal. Incentives for investors include attractive rates of return, guaranteed market penetration and expansion, lack of significant competition at the present time and risk mitigation measures undertaken by the project. In this respect, GEF involvement has been and continues to be particularly important in that it helps to reduce the risks for leveraging significant private financing for the project.

It is expected that by the completion of the proposed Phase 2, ESCO-Rivne will have developed a sound business footing that will enable it to operate on a sustainable basis as a self-financing commercial entity, thus ensuring achievement of the global environmental objectives set by the project.

KEY INDICATORS, ASSUMPTIONS AND RISKS

Indicators

Key indicators of the project's success by the end of Phase 2 will include:

- CO₂ emissions are reduced by 2.8 million tons.
- Cumulative energy consumption is reduced by 2 million t.c.e. at project sites.
- Energy performance contracts for Rivne city-wide programme signed and implemented.
- Contracts for consumption based metering and billing signed with Rivne City Apartment Owners Associations.
- ESCO-Rivne has expanded its activities in at least 2 other Oblasts.
- Lessons learned are documented and distributed to potential investors, stakeholders, other Oblast and municipal authorities, etc. through the publications and ESCO-Rivne web site.

Assumptions

The assumptions are outlined in the Logical Framework Analysis at the end of this document.

Risks

The Phase 2 project presents several risks which are discussed below:

Technical risk, or the risk of actual emission reduction and energy savings being lower than expected. This is mitigated by the high level of ESCO-Rivne technical expertise as well as by independent technical review provided under Phase 1.

Implementation risk, or the risk that the project will not be fully implemented even though necessary resources will have been engaged. This may happen if implementation costs will prove to be higher than expected. This risk is mitigated by accurate cost estimates based on the latest quotations from suppliers and by a 10% contingency allowance added to cost estimates.

Credit risk, connected with the client's inability or unwillingness to meet its obligations on EPCs. To mitigate this risk, ESCO-Rivne will introduce sufficient securities (collateral agreements, bank guarantees, third-party insurance, etc.) into each EPC. As a risk mitigation factor, municipal/regional authorities will make necessary commitments, such as keeping tariffs unchanged during investment amortization period, ensuring full and timely payments on heat bills of budgetary institutions and subsidies for residential consumers, etc.

Price risk, or changes in prices for energy resources addressed by the project. This risk is mitigated by the fact that the dynamics of gas and heat prices over the next five years was estimated in a conservative way. Based on its experience, the ESCO will introduce fuel cost adjustment provisions into EPCs with its clients to eliminate this factor of uncertainty.

COUNTRY OWNERSHIP

COUNTRY ELIGIBILITY

Ukraine signed the United Nations Framework Convention on Climate Change (UNFCCC) in June 1992, ratified it on 29 October 1996 and became a Party in August 1997. It also signed the Kyoto Protocol in March 1999 and the National Parliament ratified it on 4 February 2004. As a UNDP Programme Country, it is eligible for assistance from UNDP.

COUNTRY DRIVENNESS

(i) National reports/communications to Conventions:

In the area of climate change, Ukraine's First National Communication to UNFCCC prepared in February 1998 identified energy efficiency as one of the important mitigation options for reducing greenhouse gas (GHG) emissions in the country. Ukraine is considered to be one of the large emitters of GHG in the world; its energy input per unit of GDP is 5-7 times higher than in Western Europe and its per capita emissions of 10 tons of CO₂ equivalent per year are among the highest in the world.

In addition, to address the issue of a national policy on climate change, as well as to reinforce the national climate change administrative structure and ensure the fulfilment of obligations under UNFCCC, the Government instituted, in April 1999, the Inter-Ministerial Commission on Climate Change headed by the Deputy Prime Minister. The Commission, which meets on a regular basis, is made up of representatives of

the appropriate ministries and departments, the Cabinet of Ministers, Verkhovna Rada (Parliament), the Administration of the President of Ukraine, and the National Academy of Sciences.

(ii) National legislation:

Improvement in energy efficiency in municipal district heating on both supply and demand side is an important development objective presently being pursued by the Ukrainian government. Achieving this objective would contribute to lower dependence on imported fuel and reduction in GHG emissions, and have a significant social impact.

Ukraine's strategy in improving the efficiency of its economy in general and of the municipal district heating sector in particular is reflected in a number of legislative and regulatory documents, such as the "Law of Ukraine on Energy Conservation" (1994), National Energy Programme of Ukraine (1996), Comprehensive National Programme on Energy Conservation (1997, revised and supplemented in 2000), decrees of the President and the Cabinet of Ministers of Ukraine. In municipal heat supply, the target for state support was set for priority implementation of the most cost-effective energy efficiency measures to achieve about 4.5 million tons of coal equivalent (t.c.e.) of energy savings over the period 2000-2004, with estimated investment requirements of approx. \$300 million over the same period. Special attention would be devoted to improving efficiency of energy usage in the public sector, with the target of 25% energy consumption reduction in public sector institutions by 2004. Unfortunately, due to state budgetary constraints, these targets are still far from being achieved.

(iii) National or Sector developments plans:

The Government's overall objective for development of the energy sector up to 2020 is to reduce the growth in coal consumption and the environmental pollution that coal burning causes. The Government is promoting (i) the introduction of clean coal technologies throughout the entire process of coal production, handling, transportation, and consumption; (ii) where possible, substitution of natural gas, coal field methane, hydropower, and renewable energy for coal; and, (iii) energy efficiency both on the supply and demand side to decrease the growth rate in energy consumption (e.g. specific heat consumption for heating and hot water supply of Ukrainian buildings is 1.5-2.0 times higher than in Western countries with similar climatic conditions).

The main directions defined by the government of Ukraine for fulfilment of the tasks on improvement of energy efficiency include, among others: economic incentives to introduce energy efficiency technologies at enterprises, improving taxation and tariff policy, promoting wide-scale application of leasing operations, obtaining investment support from lending institutions, improvement of the efficiency of heat generation and delivery, mass-scale introduction of energy metering, improvement of subsidy allocation mechanism to create incentives to energy saving by subsidized households, awareness raising through mass media, etc. Also included is support to commercialisation of activities in the area of energy efficiency through the modality of energy performance

1.b.iv Recommendations of appropriate regional intergovernmental meetings or agreements:

At COP-7 held in Marrakech in November 2001, Ukraine officially announced that the country was interested in receiving assistance to create a national system to evaluate anthropogenic emissions as well as

in the transfer of modern technologies that would promote their reduction. In addition, several seminars were held in the country to discuss issues related to carbon emission reduction. For example, the seminar entitled “Kyoto Protocol implementation in Ukraine and at the international level” held in January 2002 endorsed the development of a National Strategy on Climate Change. This Strategy calls for, among others, the implementation of energy efficiency measures in all spheres of the national economy. Furthermore, the Government signed Memoranda of Understanding (MoU) with the Governments of Austria, Canada and USA (and is negotiating additional MoUs with other Governments) for programmes of cooperation on climate change issues.

PROGRAM AND POLICY CONFORMITY

Fit to GEF Operational Program and Strategic Priority

Ukraine signed the UNFCCC in June 1992, ratified it on October 29, 1996, and became a Party in August 1997. As a Party to the Convention, Ukraine has accepted a commitment to formulate, implement, publish and regularly update national and (where appropriate) regional programmes containing measures to mitigate climate change by addressing anthropogenic emissions by sources and removals by sinks of all greenhouse gases not covered by the Montreal Protocol. The Government of Ukraine also signed the Kyoto Protocol in March 1999 and, as indicated above, ratified it on 4 February 2004. The proposed activity is a part of the Government's strategy to fulfil its commitments to the UNFCCC while simultaneously addressing local problems related to the inefficient use of fossil fuel.

As an economy in transition, and in accordance with its commitments to the UNFCCC, the Government of Ukraine has requested support from UNDP/GEF to overcome barriers to the measures reducing GHG emissions, such as improvement of energy efficiency and promotion of the use of renewable energy technologies. Further consultations with the Government of Ukraine identified the removal of barriers to the improvement of demand and supply side energy efficiency in district heating systems as a priority area for GEF financing.

Operationally, the project falls under the GEF Operational Program # 5, "Removing Barriers to Energy Efficiency and Energy Conservation" and within strategic priority S2: Increased access to local sources of financing.

Sustainability (including financial sustainability)

From a technical point of view, the viability of energy efficiency in municipal buildings has been proven in several CIS countries, both under GEF and non-GEF support. By addressing the barriers that impede the expansion of energy efficiency in municipal district heating in Ukraine, the Phase 2 project will build upon the predecessor Phase 1 project to assist in first creating a momentum for Rivne city-wide implementation, then a sustainable niche for such activities in neighbouring oblasts and eventually throughout the country. This has been undertaken (Phase 1) through strengthening of the policy, institutional, legal, regulatory and operational capabilities of key national institutions to promote private sector participation for energy efficiency activities in the municipal sector and developing of an energy efficiency awareness programme, accompanied by information dissemination. These efforts should ensure the long-term sustainability of energy efficiency activities in the municipal district heating sector of Ukraine.

From a financial point of view, the efforts made by ESCO-Rivne to solicit the support of investors have met with some success in that it has been able to date to secure expressions of interest from EscoComertz

and UkrEsco to participate as shareholders. In addition, lines of guarantee amounting to \$ 566,000 have already been secured from such local banks as Avalbank, Pryvatbank and Ukgazbank, and discussions are continuing with international banks like EBRD for additional lines of credit of a total of approx. \$ 500,000. In addition, the Phase 2 project will support the setting up finance guarantee and risk mitigation instruments to protect its investment in case of defaults by clients. The project will evaluate insurance and guarantee products available on the market and recommend appropriate instruments to address ESCO-Rivne's perceived risks against investments.

Furthermore, the project will support the integration of local industries for the provision of equipment and services to the energy efficiency sector.

Replicability

This project is a follow-up to the successful Rivne Phase 1 project and benefits from the expressed interest from the Municipalities in Ostrog, Kamenets Podolskiy and Kostopil to implement similar activities for municipal district heating using the ESCO modality. In this connection, discussions with these municipalities have centred on ESCO-Rivne implementing activities to provide energy efficiency services to municipal buildings. At the present time, the Contract with Ostrog City Water Supply and Sewage Company in the amount of \$ 12,600 is completed and 3 other contracts have been signed respectively with the Water Supply (\$ 7,500) and Sewage Company (\$ 13,200) in the City of Mirgorod in Kamenets Podolskiy and the Heat Supply Company in the City of Kostopil for \$ 2,000. However, on-site works will commence at the end of the heating season in April 2005.

For the long term and this is beyond the scope of the present project, there is demonstrated interest from potential private investors to invest in the operations of ESCOs, not only in ESCO-Rivne. However, no concrete plans in this regard have been elaborated yet. Thus, the project's potential for replicability at other municipalities throughout Ukraine is very good. Technical assistance for barrier removal and policy/institutional strengthening to be provided under the project will facilitate such replicability since it will create both at central and regional levels, the required institutional, policy, and technical conditions to enable the mobilization of additional investor interest for the implementation of energy efficiency activities in the municipal district heating sector.

Stakeholder Involvement

The Rivne Phase 1 project has benefited from extensive stakeholder involvement (Ministry of Economy and European Integration, Ministry of Environment, State Committee for Municipal Housing, Rivne Oblast Administration, Rivne Municipality, Association of Local and Regional Authorities, etc.) during its implementation. For Phase 2, the project has the support of several other Municipalities (e.g. Ostrog, Kamenets Podolskiy and Kostopil) and Oblast Administration (Khmelnitsky) to create the necessary policy, institutional and business framework that will enable private sector participation to implement energy efficiency activities in the municipal district heating sector through the ESCO modality. Discussions have also been held with potential private investors from Austria and Germany, and with overseas lenders who have expressed their interest to participate in the programme. At the national level, the project is driven by the State Committee for Municipal Housing, the Ministry of Environment and the active participation of the Association of Local and Regional Authorities, an NGO very active in the environment field.

Monitoring and Evaluation

Monitoring and evaluation activities will include standard UNDP/GEF procedures (Annual Project Reports, Tripartite Review meetings, Project Implementation Reviews, Mid-term and Final evaluations, Terminal Report and Audit) and specific procedures that include preparation of technical, investment and annual reports by ESCO-Rivne. The technical reports will present actual figures for energy savings and emissions reduction achieved, determined using the International Performance Measurement and Verification Protocol developed by the U.S. Department of Energy for energy efficiency projects. Feedback collected from project stakeholders will be included into progress reports (submitted to the UNDP Country Office) together with indicators reflecting the overall performance of the project and each of its components. Overall responsibility for monitoring and evaluation tasks will be assumed by the national executing agency assisted by the national implementing agency.

Monitoring and evaluation is particularly important for GEF projects because, in accordance with its mission, the GEF designs and implements more innovative and cutting-edge projects than regular development projects. Monitoring, by continuous collection and analysis of relevant information, allows for the measurement of the progress of the project towards expected results. Monitoring and systematic reporting is mandatory for all GEF projects. The proposed monitoring and evaluation activities follow the guidelines contained in the UNDP/GEF Information Kit on Monitoring and Evaluation.

FINANCIAL MODALITY AND COST EFFECTIVENESS

FINANCIAL MODALITY

The total cost of the project (Phases 1 and 2) is US\$ 27,154,000 that includes \$5,523,400 provided by the GEF funds to cover incremental costs. Under Phase 1, the project has already financed the setting up of ESCO-Rivne and implementation of pilot activities in the amount of \$ 1,840,000 (excluding the PDF-B: \$ 189,400 from GEF and \$ 95,000 as co-financing).

The major part of the project cost (\$23,994,000) is accounted for by the municipal energy efficiency investment programme, consisting of equity participation and lines of credit as per Table 2b below:

Name of Co-financier (source)	Classification	Type	Amount (x \$ 1,000)	Status
Rivne City	Government	Cash In kind	8,000 500*	USD 2 million in contracts for 2005 have been budgeted USD 6 million in equipment will be transferred in 2005 USD 0.5 million in ongoing in-kind contributions

Name of Co-financier (source)	Classification	Type	Amount (x \$ 1,000)	Status
Rivne Oblast	Government	Cash In kind	8,000 500*	USD 8 million in equipment will be transferred in 2005 USD 0.5 million in ongoing in-kind contributions
ESCO	Private sector	cash	1,500	Letter of support
Foreign banks	Other internat.	loan	500	Letter of support
Local banks	other	loan	1,500	Letter of support
TOTAL			20,500	

Table 2a: Co-financing of the project.

Sources of Financing	Types of Financing (x \$ 1,000)				Total
	Grant	ESCO Equity	Debt Financing	Ongoing Local Co-financing	
UNDP GEF	3,494				3,494
Rivne City		8,000		500 *	8,500
Rivne Oblast		8,000		500 *	8,500
Private investor		1,500			1,500
Foreign banks			500		500
Local banks			1,500		1,500
IFI					
Total	3,494	17,500	2,000	1,000	23,994

Table 2b: Detailed description of estimated co-financing sources.

The planned equity partners and financiers of ESCO-Rivne are: Rivne City, Rivne Oblast, ESCO-company of the Halle City (Germany), ESCO KOMERTS, UkrESCO (Kyiv), Ukrgazbank, Pryvatbank, and Avalbank. Other potential partners are: Econoler (Canada) ESCO-company (Austria) and EBRD.

Table 2c below provides a listing of the Outcomes of Phase 2, together with the associated budget for each one of them --- a detailed list of activities necessary for achieving each outcome is provided in [ANNEX B1](#).

Outcome	Total Budget (\$)	GEF Component (\$)	Co-financing Component (\$)
Outcome 1: To expand ESCO operations through implementation	20,250,000	=	20,250,000

Outcome	Total Budget (\$)	GEF Component (\$)	Co-financing Component (\$)
of Rivne City-wide/Oblast energy efficiency activities.			
Outcome 2: To facilitate ESCO-Rivne operations through financing of activities having long payback periods.	3,144,000	3,144,000	-
Outcome 3: To reduce perceived investment risks in order to facilitate ESCO-Rivne's expansion of activities.	500,000	350,000	150,000
Outcome 4: Information on replication of project experience, best practices and lessons learned throughout Ukraine and in other CIS countries.	100,000	-	100,000
Total	23,994,000	3,494,000	20,500,000

Table 2c: Phase 2 Outcomes with costing

Details of on-going ESCO Rivne activities financed by Rivne City and Oblast (*) are provided in Table 3 below:

Local Co-financing Sources				
Name of Co-financier (source)	Classification	Type	Amount (x \$ 1,000)	Status
City	Humanitarian College	Boiler plant	95	Funds are already allocated in City budget
	Rivne central hospital	Boiler plant	85	Funds are already allocated in City budget
	Measures on heat supply and heating conditions improvement for educational establishment in		320	Funds are already allocated in City budget

Local Co-financing Sources				
Name of Co-financier (source)	Classification	Type	Amount (x \$ 1,000)	Status
	the city of Rivne			
Oblast	Smuga Village gas supply system	Building gas supply system	135	Funds are already allocated in Oblast budget
	Boiler Plants rehabilitation with replacement of burners and conversion from coal to gas	Boiler plant	365	Funds are already allocated in Oblast budget
Sub-Total Co-financing			1,000	

Table 3: Description of on-going, locally financed activities.

As per the approved project brief, the GEF funding (\$3,494,000) under Phase 2 will finance the implementation of longer-payback measures, less economically attractive and more risky to private investors. However, out of this amount, \$ 350,000 will be allocated to the development of finance guarantee and risk mitigation instruments to protect ESCO-Rivne investments from defaults by clients.

ANALYSIS OF ALTERNATIVES AND COST EFFECTIVENESS

The ESCO approach was identified during project development after considering a number of options. Extensive consultations with stakeholders during the PDF-B phase resulted in the conclusion that an energy efficiency programme in the city of Rivne (and in other cities like it) could not be financed by a direct loan granted to the city (a local government entity) by a foreign commercial bank. Not only would there be a long and cumbersome application procedure, but certain banks (such as the World Bank and EBRD) would require a sovereign guarantee, which would be extremely difficult to obtain from the Government of Ukraine. While an ESCO was seen to address several major issues, a public ESCO business would encounter the same types of delays as UkrEsco (a publicly-owned ESCO whose mandate is to identify and implement energy-saving investments in small and medium-size enterprises and public sector institutions) due to the need to secure a sovereign guarantee, so the project team focused on private sector alternatives. It found that EBRD was already working on a similar scheme to promote private sector-driven municipal ESCOs in Central and Eastern Europe.

The cost effectiveness of GEF funds up to project completion is computed to be \$ 1.24/ton of CO₂ avoided. However, taking into consideration the huge investment that will follow, the GHG emission reduction cost to the GEF will be significantly reduced.

INSTITUTIONAL COORDINATION AND SUPPORT

CORE COMMITMENTS AND LINKAGES

In addition to reflecting national priorities in Ukraine, the proposed project also builds upon the existing goals and activities of UNDP, with environment constituting one of its four priority areas for global activity, both at the country level and in the region. Finally, UNDP is assisting local governments in Ukraine in the formulation and implementation of Local Agenda 21 sustainable development strategies at the Oblast (regional) and municipal levels, and energy plans are included in these strategies.

The UNDP Ukraine Cooperation Framework for Human Development 2001-2005, under the item “Environment Conservation and Management”, indicates that “Pollution control, energy efficiency, waste management and integrated soil management initiatives that promote local and community-level environmentally sound practices will be implemented. In addition, the draft UNDP Country programme for 2006-2010 focuses on 3 thematic areas, viz. (1) Participatory Governance, Rule of Law and Civil Society; 2) Economic and Social Development for prosperity and Human Security and 3) Environment Management and Sustainable Development. Thematic area 3 states, among others “UNDP’s support will be focused on addressing the following environmental concerns: mitigation of the climate change, conservation of globally significant biodiversity, land degradation and water management. In doing so, UNDP will promote energy efficiency, clean technologies and environmentally friendly transport.

CONSULTATION, COORDINATION AND COLLABORATION BETWEEN IAS, AND IAS AND EXAS.

The World Bank in May 1998 made a \$ 200 million loan to Ukraine for a project entitled “Kiev District Heating Improvement Project” with the following objectives: (a) to replace and increase heat production capacity to better meet existing and expected future demand and to improve the reliability and service levels in the Kiev District Heating (DH) system; (b) to extend the life of, increase the efficiency of, and enhance conservation of the Kiev DH system, through rehabilitation and introduction of modern technologies and materials; and (c) to promote sound cost recovery policies and practices and the commercialization and institutional strengthening of project DH companies, to identify the most efficient corporate and institutional structure for provision of DH in Kiev and ways to facilitate the eventual privatization of the service, and to support project implementation. The scheduled completion date is December 2006. In addition, EBRD made a \$ 30 million sovereign loan to state-owned UkrEsco in April 1997 to identify and implement energy-saving investments in small and medium-sized enterprises (SMEs) and public sector institutions. A second EBRD loan of \$ 20 million to UkrEsco was made in May 2005 to continue similar activities. Lastly, EBRD made a loan of \$ 10 million in 2003 to Energy Alliance to finance procurement of co-generation equipment for industrial clients in Ukraine.

During the implementation of Phase 1, ESCO-Rivne met periodically with the World Bank Office in Kiev, Kiev City authorities and UkrEsco to discuss their experience in implementation, lessons learned and to solicit feedback on activities it proposed to undertake. ESCO-Rivne also met with representatives of EBRD for the same purpose whenever they visited Ukraine. These consultations have been very effective, these organisations are briefed on the follow-up Phase 2 and ESCO-Rivne plans to maintain this dialogue. In addition and as indicated earlier (page 16), UkrEsco has expressed interest to participate in ESCO-Rivne as a shareholder and discussions are being pursued towards sealing an agreement in the near future.

Project Implementation Arrangement

The project will be executed by the Ministry of Economy and European Integration with the support of the Rivne Oblast Administration. The latter will appoint a National Project Director who will assume overall

responsibility for project implementation. A Project Steering Committee consisting of representatives of key stakeholders such as the Ministry of Economy and European Integration, Ministry of Environment, Rivne Oblast and Municipal authorities, representatives of the private sector, apartment owners association, etc. will be established to provide advice and guidance to a Project Management Unit (PMU) that will support ESCO-Rivne. The PMU will be located in Rivne and will consist of a full time Project Manager (and any additional staff, as appropriate) to provide strategic advice to the ESCO-Rivne Director.

Decisions about its own investments and debt resources will be made by the ESCO-Rivne independently, whereas the use of GEF grant funding will be coordinated with the executing agency, UNDP, and local project stakeholders.

ANNEX A: INCREMENTAL COST ANALYSIS

Baseline:

In the absence of GEF support, energy efficiency in municipal district heating system and buildings will improve slowly, and many technically feasible and financially attractive opportunities will not be realized. The level of locally possible efficiency activities in the city of Rivne is determined by available financing resources envisioned in the “Municipal Comprehensive Energy Efficiency Program for the Period 1999-2010”. The program was adopted by the City Council and introduced by the city mayor's decree #2574-p of December 30, 1988 in pursuance of the Cabinet of Ministers' Decrees #148 of February 5, 1997 "On the Comprehensive National Program on Energy Conservation in Ukraine" and #731 of July 10, 1997 "On Comprehensive Measures for Implementation of the National Energy Program of Ukraine until 2010".

According to the municipal program, expenditures of the city budget and district heating company during proposed investment period (2005-2009) are about \$0.25 million annually or \$1 million over the stated investment period. This amount presents realistic baseline investment level achievable without GEF support.

In the municipal program it is planned to use these resources for a number of projects in the district heating system and the public sector. A major part of the funding should be used to modernize the heat supply system by shutting down some inefficient boiler plants and connecting their load to more efficient plants, replace a number of obsolete boilers by more efficient ones, partially replace heat transmission pipes by pre-insulated ones, and implement some other lower-cost measures. Plans concerning the heat consumption are limited to installing heat meters and controls for a part of consumers.

Estimated potential for cost-effective investments in supply and demand side energy efficiency is about \$ 23.9 million for phase II. So in the absence of the GEF support, limited financial resources would allow to realize only about 1% of the cost-effective potential.

Baseline activities under the outcome 4 replication measures, are practically absent.

GEF alternative intervention:

With GEF assistance, major financial and institutional barriers in the pilot city will be reduced by creating a sustainable ESCO as a business model and a demonstration of how resources from the private sector and international institutions can be leveraged.

Under the suggested phase II energy efficiency investment program (outcomes 1 to 3), all technically feasible and cost-effective opportunities will be realized both in the district heating system and connected buildings. In the district heating system, retrofitting/replacement of generating capacity will be performed. Where it is cost-effective, pipes in transmission/distribution network will be replaced by pre-insulated ones. Based on economic criteria, it is envisioned to eliminate part of group substations and replace them with modern individual substations in buildings. Modern heat supply management system will be introduced. In buildings it is planned to install heat meters and controls, apartment-level hot water meters, heat insulation of pipes and other measures. Billing software, together with meters that have already been installed, will provide incentives for households and budgetary organization to take appropriate steps to improve the energy efficiency of their buildings and to start saving heat and hot water.

Implementation of the phase II investment program will result in reducing about 2.8 million tons of GHG emissions in CO₂ equivalent over the project lifetime. As the investments are realized through commercially viable ESCO-mechanism, the project is sustainable and can be replicated in other Ukrainian cities.

The measures promoting project replication include preparing and making available supporting materials for setting up of ESCOs, providing necessary consultations, information dissemination, awareness raising etc. Project replication potential for communal heat supply sector in other cities makes up about 64 million tons of CO₂ equivalent.

Domestic benefits:

Project implementation provides several domestic benefits. Most essential of them are: positive economic and financial returns from investments, higher level of heat supply service and reliability of district heating system operation, lower air pollution (in particular by NO_x), creation of incentives to energy savings in public and residential sector, reduction of budgetary expenditures on residential subsidies and institutional buildings' heat bills, improvement of the qualification of district heating company personnel and its management capacity. Operating ESCO will be able to further expand its activity to the region as a whole and implement energy saving measures in industry and infrastructure sectors, thus achieving additional economic and environmental benefits. Expansion of ESCO-Rivne its activity will contribute to the development of local energy service market.

For the country as a whole, the project will help reduce the level of dependence on external gas supplies. Successful operation of the Rivne ESCO will facilitate setting up of similar ESCOs in other cities and attracting foreign private capital and experience to Ukraine. Replication of the project in other Ukrainian cities will bring additional domestic and global benefits, although these benefits cannot to be exactly quantified.

Notes on Calculating Incremental Costs:

Incremental costs were calculated for 4-year investment period (2005-2009) as a difference between the total phase II project cost (\$23.9 million) and local baseline expenditures over the same period (\$1 million). In this case the incremental costs are \$22.9 million not taking into account cost saving due to reduced gas, electricity and water consumption and avoided O&M and other costs. Comparison of these total incremental costs with the incremental global environmental benefits (CO₂ emissions reduction in the amount of 2.8 million tons) yields incremental specific reduction cost at the level of \$8.14 per tonne CO₂.

INCREMENTAL COST MATRIX

Outcome	Benefits/ Costs	Baseline	Alternative	Increment
<p>1. Expand ESCO Operations through implementation of Rivne City-wide/Oblast Energy Efficiency activities</p> <p>2. Facilitate ESCO-Rivne Operations through financing of activities having long payback periods.</p> <p>3. Reduce perceived investment risk in order to facilitate ESCO-Rivne's expansion of activities</p>	Global Environmental Benefits	Slow and limited reduction of GHG emissions (0.19 million tons of GHG reduced over 20 year project period).	Significant GHG emissions reduction (2.8 million tons of GHG reduced over 20 year project period). Leverage of financial resources for large-scale energy saving and emissions reduction activities.	Additional GHG emissions reduction (2.61 million tons of GHG reduced over 20 year project period). Leverage of financial resources for large-scale energy saving and emissions reduction activities.
	Domestic Benefits	Benefits correspond to a low level of energy-efficiency related investments being made.	Benefits correspond to investments facilitated through whole-city investment program. Creation of the pilot city ESCO with the prospect of expanding its activity to other energy efficiency projects in the region (including municipal infrastructure and industry)	Comprehensive retrofitting of municipal DH system. Improved heat comfort level. Consumption-based heat and hot water metering and billing in residential sector and public buildings. Creation of the pilot city ESCO with the prospect of expanding its activity to other energy efficiency projects in the region (including municipal infrastructure and industry)
	Costs	Municipality: \$500,000 Oblast \$500,000 <i>Total (over the 4 year program investment period): \$1,000,000</i>	Municipality: \$8,400,000 Oblast: \$8,500,000 ESCO: \$1,500,000 Foreign banks: \$500,000 Local banks: \$1,500,000 GEF Contribution: \$3,494,000 <i>Total: \$23,894,000</i>	Municipality: \$7,900,000 Oblast: \$8,000,000 ESCO: \$1,500,000 Foreign banks: \$500,000 Local banks: \$1,500,000 GEF Contribution: \$3,494,000 <i>Total: \$22,894,000</i>
4. information on replication of project experience, best practices and lessons learned throughout	Global Environmental Benefits	None	Reduction of GHG emission through replication of the ESCO-approach in other cities.	Reduction of GHG emission through replication of the ESCO-approach in other cities.

Ukraine and in other CIS countries	Domestic Benefits	Slow and spontaneous removing of the institutional and financial barriers without any supervision and sound organizational support.	Expansion of energy saving activities through information dissemination, training, specific cost-reduction measures, new financing mechanisms. Creation of ESCO infrastructure and energy service market development.	Promotion of ESCO activities and their commercial operations based on performance contracting mechanism and creation of energy saving infrastructure in Ukrainian regions.
	Costs	<i>Total: \$0</i>	Municipality: \$100,000 <i>Total: \$100,000</i>	Municipality: \$100,000 <i>Total: \$100,000</i>
Total	Global Environmental Benefits	Existing institutional and financial barriers make energy efficiency investments happen slowly. Limited reduction of GHG emissions (0.19 million tons of GHG reduced over 20 year project period).	Institutional and financial barriers to energy efficiency on municipal level are removed to essential degree. Significant reduction of GHG emissions (2.8 million tons of GHG reduced over 20 year project period).	Institutional and financial barriers to energy efficiency on municipal level are removed to essential degree. Significant additional decrease of GHG emissions (1.61 million tons of GHG reduced over 20 year project period).
	Domestic Benefits	Limited improvement of energy efficiency with low financial, economic and environmental benefits.	Substantial improvement of energy efficiency with considerable financial, economic and environmental benefits.	Significant additional improvement of energy efficiency with essential financial, economic and environmental benefits.
	Costs	Municipality: \$500,000 Oblast: \$500,000 <i>Total: \$1,000,000</i>	Municipality: \$8,500,000 Oblast: \$8,500,000 ESCO: \$1,500,000 Foreign banks: \$500,000 Local banks: \$1,500,000 GEF Contribution: \$3,494,000 <i>Total: \$23,994,000</i>	Municipality: \$8,000,000 Oblast: \$8,000,000 ESCO: \$1,500,000 Foreign banks: \$500,000 Local banks: \$1,500,000 GEF Contribution: \$3,494,000 <i>Total: \$22,994,000</i>

ANNEX B: PROJECT LOGICAL FRAMEWORK

Project Goal: To address the issue of reducing greenhouse gas emissions through large-scale improvements in energy efficiency in Ukraine's communal heat supply sector.

Project Strategy	Indicator	Baseline	Target	Sources of Verification	Assumptions
Objective: To support ESCO-Rivne to implement a city-wide energy efficiency programme in municipal district heating and to expand its activities to cover other cities and Oblasts.	Agreements with Rivne municipality, other municipalities and oblasts signed.	No major investments in energy efficiency taking place in the district heating sector.	Investment of at least \$ 20 million by end of project. Reduction of almost 2.8 million tons of CO ₂ equivalent over the project life cycle.	ESCO-Rivne annual reports, audited financial reports. Project's GHG monitoring and verification reports. Project final evaluation report.	Continued commitment of project partners, including Government agencies, investors and lenders.
Outcome 1: To expand ESCO operations through implementation of Rivne City-wide/Oblast energy efficiency activities.	EPCs for City-wide and Oblast activities signed.	No such investments taking place.	EPCs for least \$ 20 million by the end of project.	Signed EPCs and ESCO-Rivne annual reports.	Clients continue to be convinced of benefits derived to be derived from implementation of energy efficiency activities.
Output 1.1: Signed EPC contracts for Rivne City-wide energy efficiency activities.	Negotiations with City administration.	No such negotiations for investments taking place.	EPCs for at least \$ 5 million signed by first year of project.	Signed EPCs.	
Output 1.2: Opportunities for implementing energy efficiency in Rivne/other Oblast regions identified.	Negotiations with Oblast authorities.	No such negotiations for investments taking place.	EPCs for at least \$ 15 million signed by the end of project.	Signed EPCs.	
Output 1.3: All works pertaining to City-wide/Oblast projects completed.	Implementation of works.	No such activities being implemented.	Completion of works in the Rivne City and Oblast administration buildings as per strategic plan.	Project reports.	

Project Strategy	Indicator	Baseline	Target	Sources of Verification	Assumptions
Outcome 2: To facilitate ESCO-Rivne operations through financing of activities having long payback periods.	EPCs for activities having long payback periods signed.	Lack of funding to support activities having long payback periods.	EPCs for at least \$ 3 million for long payback activities signed by end of project.	Signed EPCs and ESCO-Rivne reports.	Clients willing to have works implemented.
Output 2.1: Signed EPC contracts for activities having long payback periods.	Negotiations with potential clients.	No such investments taking place.	Investment of at least \$ 3.0 million by project end.	Signed EPCs.	
Output 2.2: All necessary equipment/services for undertaking works procured.	Signed contracts for equipment and services.	No such investments taking place.	Procurement of equipment/services for at least \$ 3.0 million by project end.	Signed contracts.	
Output 2.3: All works pertaining to projects having long payback periods completed.	Implementation of works.	No such activities being implemented.	2 km of pipes replaced and 4 residential buildings targeted.	Project reports.	
Outcome 3: To reduce perceived investment risks in order to facilitate ESCO-Rivne's expansion of activities.	Finance guarantee and risk mitigation instruments developed.	No such instruments presently available to ESCO-Rivne.	Agreements in place.	Signed agreements.	Banks/insurance companies willing to provide such instruments.
Output 3.1: Comprehensive report on risk mitigation instruments compiled.	Discussions on risk mitigation products provided by banks and insurance companies.	Not presently available.	Completed within first year of project.	Project report.	
Output 3.2: Study to determine most appropriate instruments completed.	Discussions on most appropriate instruments with ESCO.	Not presently available.	Completed within first 6 months of project.	Project report.	

Project Strategy	Indicator	Baseline	Target	Sources of Verification	Assumptions
Output 3.3: Agreements with Banks/insurance companies negotiated and signed.	Negotiations between ESCO-Rivne and bank/insurance companies.	Not on-going.	Completed within first year of project.	Signed agreements.	Successful negotiations between banks/insurance companies and ESCO-Rivne.
Outcome 4: Replication of project experience/best practices and lessons learned throughout Ukraine and in other CIS countries.	Project experience compiled, analysed and disseminated.	Lack of sufficient information on appropriate ESCO model to pursue in municipal district heating.	Projects initiated in other cities and Oblasts.	Project final report.	Solid growth of ESCO-Rivne is sustained.
Output 4.1: Materials on project experience/best practices and lessons learned prepared.	Project experience and best practices compiled.	Lack of information on best practices and lessons learned.	Completed within 6 months of project end.	Project documentation.	
Output 4.2: Capacity development activities implemented for the management and technical personnel of other municipalities/heat supply companies.	Number of staff and the number of municipalities/heat supply companies that participated in capacity development.	No capacity development programme.	At least a dozen additional municipalities /heat supply companies trained by the end of project.	Project reports.	
Output 4.3: Project overall results, experiences and lessons learned disseminated at the national and regional levels.	Discussions on project results, experiences and lessons learnt prior to dissemination.	No experiences and lessons learnt disseminated.	Draft report disseminated to the stakeholders prior to the end of project. Regional seminar organized to present and discuss the results/lessons learned. Public outreach activities through news media completed by the end the project.	Project reports and publication/web site.	Supportive institutional, legal and regulatory framework.

Project Strategy	Indicator	Baseline	Target	Sources of Verification	Assumptions
Output 4.4: Consultations/dialogue for replicating project experiences in other cities/Oblasts and leveraging financing for that completed.	Number agreements / expressions of interest for project replication at national level. Amount of financing leveraged for actual investments.	No replication and effective follow up of the results of the project.	Five expressions of interests to replicate project activities at the national and/or regional level received by the end of project. Financing leveraged in the amount of \$ 20 million to expand and/or continue project activities by the end of project.	Final evaluation.	

ANNEX B1: DETAILED LIST OF ACTIVITIES

Outputs and Activities
<p>Output 1.1: Signed EPC contracts for Rivne City-wide energy efficiency activities.</p> <p>Activities:</p> <ul style="list-style-type: none"> • Negotiate and sign EPC contracts, preferably a single contract combining all the identified targets, with Rivne Municipality for implementing city-wide energy efficiency activities. • Prepare complete feasibility and design studies, inclusive of cost estimates, for all works to be undertaken, as per strategic plan. <p>Output 1.2: Opportunities for implementing energy efficiency in Rivne/other Oblast regions identified.</p> <p>Activities:</p> <ul style="list-style-type: none"> • Discussions with Rivne/other Oblast authorities to identify additional opportunities for energy efficiency within the region and beyond. • Prepare pre-feasibility studies for selected works. • Initiate preliminary discussions with authorities on works to be implemented and EPCs. <p>Output 1.3: All works pertaining to City-wide/Oblast projects completed.</p> <p>Activities:</p> <ul style="list-style-type: none"> • Prepare requests for proposals (RFPs) for procurement of equipment and their installation, either as individual contracts or for turn-key installations or a combination thereof. • Prepare technical and financial criteria against which proposals will be evaluated.

- Issue RFPs and, upon receipt of bids, evaluate them against already prepared criteria.
- Conduct negotiations with successful bidders and sign contract for equipment and/or services.
- Supervise/monitor installation of energy efficiency equipment or implementation of energy efficiency measures.
- Certify completion and acceptance of all works and make arrangements for payment to contractors/sub-contractors.

Output 2.1: Signed EPC contracts for activities having long payback periods.

Activities:

- Negotiate and sign EPC contracts, preferably a single contract combining all the identified targets, with Rivne Municipality for implementing city-wide energy efficiency activities having long payback periods, as per strategic plan.
- Prepare complete feasibility and design studies, inclusive of cost estimates, for all works to be undertaken.

Output 2.2: All necessary equipment/services for undertaking works procured.

Activities:

- Prepare requests for proposals (RFPs) for procurement of equipment and their installation, either as individual contracts or for turn-key installations or a combination thereof.
- Prepare technical and financial criteria against which proposals will be evaluated.
- Issue RFPs and, upon receipt of bids, evaluate them against already prepared criteria.
- Conduct negotiations with successful bidders and sign contract for equipment and/or services.

Output 2.3: All works pertaining to projects having long payback periods completed.

Activities:

- Supervise/monitor installation of energy efficiency equipment or implementation of energy efficiency measures.
- Certify completion and acceptance of all works having long payback periods and make arrangements for payment to contractors/sub-contractors.

Output 3.1: Comprehensive report on risk mitigation instruments compiled.

Activities:

- Formulate a document outlining the various types of risks (default/bankruptcy by clients, fire/flooding at clients' premises, business interruption due to labour disputes, etc.) that ESCO-Rivne should mitigate. This will include a tolerance level for each risk.
- Compile, through discussions with insurance companies, banks and other insurance providers, a comprehensive report on risk mitigation instruments available on the market, together with the associated costs.

Output 3.2: Study to determine most appropriate instruments completed.

Activities:

- Undertake a thorough review of the above comprehensive report to determine the most appropriate risk mitigation instruments for ESCO-Rivne.

- Solicit the assistance and support of ESCO-Rivne’s “foreign twin” in the process to make a final decision on the risk mitigation instruments.

Output 3.3: Agreements with Banks/insurance companies negotiated and signed.

Activities:

- Negotiate the terms and costs of the risk mitigation contracts with the selected banks/insurance companies.
- Sign the appropriate risk mitigation contracts with the insurance providers.

Output 4.1: Materials on project experience/best practices and lessons learned prepared.

Activities:

- Compile project experience and lessons learned from project reports, discussions with ESCO-Rivne/project steering committee and site visits to clients’ premises.
- Draft comprehensive report on project experience/best practices and lessons learned.
- Circulate draft report to project partners/twin partner for review and comments prior to finalisation.

Output 4.2: Capacity development activities implemented for the management and technical personnel of other municipalities/heat supply companies.

Activities:

- Formulate a capacity development programme for the management and technical personnel of other municipalities/heat supply companies.
- Prepare inter-active training materials for participants.
- Participate in the implementation of the capacity development programme.

Output 4.3: Project overall results, experiences and lessons learned disseminated at the national and regional levels.

Activities:

- Disseminate project overall results, experiences and lessons learned at the national and regional levels through direct mailing to potential stakeholders, including posting them on the project web site.
- Implement public outreach activities through the news media.
- Organise a national level seminar to present the lessons learned to stakeholders.

Output 4.4: Consultations/dialogue for replicating project experiences in other cities/Oblasts and leveraging financing for that completed.

Activities:

- Organise consultations with other cities/Oblasts to generate their interest in replication activities.

Initiate discussions with investors to leverage financing for replication.

ANNEX C: RESPONSE TO PROJECT REVIEWS

A) CONVENTION SECRETARIAT COMMENTS AND IA/EXA RESPONSE

N/A

B) STAP EXPERT REVIEW AND IA/EXA RESPONSE

ANNEX C.1. STAP REVIEW

Igor Bashmakov

Project Number: **UKR/98/G41**

Project Title: **Removing Barriers to Greenhouse Gas Emissions Mitigation through Energy Efficiency in the District Heating System. Phase 2**

1. General conclusion

This proposal is sound, reasonable, well-planned, and based on solid economic and technical experience and country knowledge. The proposed approach is a thoughtful implementation of a set of instruments that are and have been recommended by many environmental and economic sources. The reviewer strongly endorses this proposal with some small general and specific reservations and comments (presented below).

2. Rational for the project

The project objective is to continue reduce overall fossil fuel consumption and associated GHG emissions by removing barriers to supply and demand side energy efficiency improvements in district heating systems in the main cities of Ukraine.

The proposal lists five main existing barriers to energy efficiency improvement in the communal heat supply sector: 1) difficulties in arranging financing for efficiency projects; 2) institutional constraints; 3) lack of capacity and experience in preparing, implementing and managing energy efficiency projects; 4) high transaction costs for relatively small energy efficiency projects; 5) lack of information about existing opportunities for energy efficiency.

I think that the major barrier in mining large-scale energy efficiency improvements potential locked in Ukrainian district heat supply sector is lack of supplier motivation for heat supply costs reduction, short term vision of decision-making, lack of operational freedom for municipally owned heat supply companies, unclear set of indicators – service reliability, quality, efficiency, costs, - which DHS companies are to deliver to owners-municipalities, and as a result insufficient internal efficiency improvement funding and difficulties in accessing external financial sources. That is especially true when investments in district heating systems are considered partly as a result of the absence of visible examples of commercially viable mechanisms operating in the energy efficiency in this area.

The phase 2 of the project involves two key components:

- (i) setting up an innovative financial mechanism (the ESCO approach) in a pilot city (Rivne) for implementing energy efficiency activities on a sustainable basis with the capability for self-replication in other Ukrainian cities; and
- (ii) related capacity building and barrier removal activities including installation and commissioning of energy efficiency measures, shifting to consumption-based billing system, and introduction of regulatory changes to motivate energy saving, including adjustments to the system of allocation of subsidies.

The institutional component should be included in this list if both success and predictability are kept in mind.

3. GLOBAL ENVIRONMENTAL BENEFITS

Ukraine is one of the least energy efficient countries in the world and has the greatest among CIS countries emissions level per unit of GDP. Existence of large scale low costs potential to reduce GHG emissions by improving energy efficiency in Ukraine makes activities in realizing such a potential no longer carrying just benefits for Ukraine, but global benefits as well. As a result, problems in realizing this potential are of global nature. Global benefits are expressed in reduced GHG emission, as well as in numerical environmental, economic and social ancillary benefits.

Implementation of the phase II investment program will result in reducing about 2 million tons of CO₂.

4. How does the project fit within the context of the goals of the GEF?

The project effectively addresses the CC-2 (Increased access to local sources of financing for renewable energy and energy efficiency) and CCI (Transformation of markets for high volume products and processes) GEF strategic priorities.

5. DOMESTIC BENEFITS

Ukraine imports much of its energy on the background of the following facts:

- ⇒ Average efficiency for all heat sources is about 70-75%;
- ⇒ Heat supply networks: average heat losses are in the range 20-25%;
- ⇒ Low replacement rates lead to critically low level of heat networks physical reliability and high frequency of failures – 0.6-4 accidents/km/year;
- ⇒ High leakages ratio, lack and low quality of insulation, failure to provide required hydraulic regimes and temperature schedule.
- ⇒ Buildings are as a rule either overheated or under-heated and consume 20-50% extra heat and hot water as potentially needed.

Improving energy efficiency, especially in district heating systems, is a way to substantially reduce the import costs, costs of providing utility services both for cities administrations and residents. Therefore, it must be a top economic priority for local and regional governments, as well as for the Federal government. Rehabilitation of heat and water supply systems not only brings the costs down, but also helps improve heat comfort along with heat supply reliability.

Though many realize, that urgent action is required, they lack a comprehensive plan of action and mechanisms motivating actors to apply energy efficient techniques and practices in their day-to-day work. These policies lack institutional and technical details, technical and organizational specifications for given tasks, as well as economic evaluations of the program components, and financial mechanisms for the program implementation. As a result, actions to be taken to improve energy efficiency are delayed. Given project is directed to identification and removal of those barriers and to setting up ESCOs to mobilize local and foreign capital and expertise.

6. Global experience to date and current best practices

The ESCO business is at least two decades old well-established business in many Western countries. Substantial experience was gained in conducting energy efficiency improvements in district heating systems in Eastern Germany, Czech Republic, Baltic States, and Russia as part of multilateral and bilateral assistance as well as a part of own domestic activities. ESCO-Rinve also have some success at the initial stage of activities and with first implemented projects.

Overall efficiency of district heating systems in Ukraine stays far behind the one in Western Europe. But as experiences of Eastern Germany (Leipzig for example) or Lithuanian experience shows, it is possible to improve this efficiency by about 1% every year with moderate costs.

7. Risks and benefits of the approach adopted in the project

The technical solutions proposed in the project for improving energy efficiency in heat generation, transportation and consumption are reliable and well proven in many countries. There is good deal of experience in application of such technologies in Poland, Check Republic, Russia, and Baltic States where district heating systems were constructed by similar to Ukrainian designs.

Important issue to keep in mind is to include in the specifications of the project from the very beginning technical components necessary for technical monitoring of energy consumption and efficiency improvements originated by the project related activities. It would then serve as a basis for physical and financial savings evaluations according to the terms of performance contract.

The procedures to evaluate the energy consumption reductions and corresponding GHG emission reductions should be adjusted for whether conditions and for heat load evolution. Say, some clients switching from centrally heat to distributed heat generation would reduce heat demand, but not due to project implementation.

ESCO should advise municipal heating companies on whether it worthwhile to keep all clients connected to the centralized heat network, what are heat load densities by city zones and where heat should be supplied by local or individual sources. Such municipal energy planning alone can bring ahead different vision of heat supply system and reduce significantly both costs and energy consumption. It would also reduce the risk of losing heat clients with potential savings and risk of rehabilitation of district heating network in zoned where effect would be limited.

Major focus of this project is given to setting up an innovative financial mechanism in the pilot city for implementing energy efficiency activities on a sustainable basis with the capability for self-replication in other Ukrainian cities. The phase 2 stresses the necessity to mitigate financial risks by inventing new financial tools for ESCOs. Financial and institutional instruments for project implementation differ from project to project and from locality to locality. So a “menu” of instrument should be developed.

Phase 2 of the project is seeking more financial stability for ESCO. It is expected to attract private investors to district heating improvement projects. Positive side of the proposed mechanism is using ESCO as a project implementation unit with all institutional responsibilities. Corresponding regulation is to be adapted. One possible solution is to set up lease or concession arrangements with the municipality and ESCO to run municipal heat supply system. So ESCO can merge with existing district heat supply company, or replace it as a system operator. This sort of PPP would mitigate financial risks for ESCO in case the payment discipline in Rivne is sufficiently high. In this case all client payments may be used a collateral for potential projects. So I strongly recommend including in the scope of the project the investigation of such a possibility.

Other risks are properly specified and addressed in the proposal.

8. Linkages to other focal areas

Those linkages are well presented in the proposal.

9. Replicability of the project

There two key issued when replicability is discussed: Initial project success and a way success story is told. The scale for project replication is endless at Ukraine where there are thousands of ineffective DHS. To have project replicable a lot should be done at the institutional side. It is not easy, but possible to reach some agreements in one city to have project done. It is much harder to scale the success. So draft regulation at different levels – from the State to municipality is to be developed and tested as a pitol phase in Rivne to be then replicable. The whole technology of institutional work (including tariffs setting methodologies) is to be precisely described. The precision of this technology description with the identification of a room for flexibility left I a key for replication. Not just see and listen, but take those documents adjust them for your needs and act.

ANNEX C.2. RESPONSE TO STAP REVIEW

1) - Is technical monitoring included in all investment specifications?

Yes, the technical monitoring (energy savings actually reached after project implementation) as well as environmental (actual pollutions) is required by each Energy Performance Contract (EPC) concluded by ESCO-Rivne.

2) - Are ESCO's advising municipalities of heat load densities by city zone, and whether heat should be applied by district heating or more autonomous systems?

- Yes, ESCO-Rivne is being used by Rivne Mayor Office and Municipality for heat load measurements and forecasts. There are central heating system currently in operation in Rivne (as well as in all big cities in Ukraine). Where a client asks, ESCO-Rivne can assess the cost of switching from District heating to autonomous heating, and if feasible make the conversion on behalf of the client. This could be when Client is located far from heating supply network (example: City Hospital where new Boiler plant is to be installed)

3) – Has the project developed a menu of financial instruments?

Yes, during the Project did develop a set of different financial instruments to be used by ESCO-Rivne in EPC contracts. However for a time being ESCO-Rivne uses only two of them: revenue from initial UNDP/GEF investments and commercial loan from local bank(s)

4) - Has or will the ESCO merge with the district heating company?

Yes, currently the district heating company KommunEnergia (as stakeholder in ESCO-Rivne) is in the process of reorganization. It is also planned to transfer ownership (and reporting) of DH Company from State level to municipal one. The one of the options which is now under authorities' consideration is to appoint ESCO-Rivne to control DH Company on behalf of Municipality. In this case it is quite possible that in future ESCO-Rivne will be merged with the district heating company. However it is subject of future considerations.

5) - Will the project describe the layers of legislation and regulation and associated institutional arrangements reached during the project?

Yes, during Project implementation we have prepared and submitted to Rivne Authorities suggested changes to local regulation. We have widely disseminated these Drafts during workshops, separate meetings with Ukrainian municipalities and ESCO-Rivne WEB site.

C) GEF SECRETARIAT AND OTHER AGENCIES' COMMENTS AND IA/EXA RESPONSE

N/A

ANNEX D: ENDORSEMENT LETTER AND LETTERS OF INTEREST/SUPPORT

The letters are attached separately

ANNEX F: CRITERIA FOR CONTINUATION TO STAGE II: A CHECKLIST

Overarching condition: “A sustainable municipal ESCO is fully functional based on cost recovery from its services and investments from the government, local authorities, and the private sector.”

No	Criteria	Status as of end-January 2005
1	<i>Enabling Environment Conditions</i>	
1.1	Software for billing/accounting by consumption of energy developed and in use for all buildings in demonstration project	<ul style="list-style-type: none"> – Specifications for billing software are being developed prior to formulating tender documents. Information on Vladimir accounting and billing system has been sought from Russian authorities. – 4 buildings have now been fitted with metering systems. – Educational/sensitizing campaigns have been initiated.
1.2	Model energy performance contract (EPC) developed and mechanism tested through pilot measures	<ul style="list-style-type: none"> – 4 different types of EPCs have been developed and , to date, 16 EPCs have been signed.
1.3	Legislation/regulation allowing the transfer of funds saved through energy efficiency into the municipal ESCO; i.e., cost recovery scheme developed and implemented	<ul style="list-style-type: none"> – Legislation has been amended allowing saved funds to be transferred to the ESCO.
1.4	Funds allocated by the municipality for energy subsidies adjusted	<ul style="list-style-type: none"> – Completed. The evaluation report indicates that “Funds allocated by the municipal authority for energy subsidies have been adjusted”.
1.5	Requests from at least 2 other municipalities for services (in the form of an official Letter of Interest)	<ul style="list-style-type: none"> – 3 contracts are now in place for the municipalities of Ostig, Kostopil and Mirgorod.
2	<i>Financial Institutional Conditions</i>	
2.1	Full-scale feasibility study for Stage II investment project completed, including an analysis of the current business environment in Rivne	<ul style="list-style-type: none"> – Priority directions have identified potential investment of over \$ 25 million in Rivne for the next 5 years.
2.2	Documents for equity/loan approval processes drafted	<ul style="list-style-type: none"> – The ESCO has USD 50,000 in shareholding from partners – The ESCO has a credit line of USD 565,000. The evaluator estimates they need a credit line of USD 2 million.
2.3	Investment materials promoting ESCO developed and distributed to potential investors in the relevant language(s)	<ul style="list-style-type: none"> – Materials have been sent. Follow-up ongoing, the latest one being with the Sumitomo Corporation.
2.4	Commitments by local stakeholders sufficient to attract external investors formulated	<ul style="list-style-type: none"> – Local stakeholder have taken USD 50,000 in shares, and are expected to place USD 14 million in equipment under control of ESCO by end of the

No	Criteria	Status as of end-January 2005
		year. – The ESCO shareholders have agreed to amend the foundation documents converting the closed joint stock company into an open stock company. Re-registration will be completed in February 2005.
2.5	Investors/financiers for ESCO selected	– Several expressions of interest have been received and are being followed up. See Annex D (attached separately)
2.6	ESCO financial agreements signed	
2.7	Successful transfer of the savings from the UNDP funds into the municipal ESCO	– Transfer of funds is being done on a regular basis. – Transfer of equipment to ESCO will be completed by end-February 2005.
3	<i>Other Institutional Conditions</i>	
3.1	Pilot municipal company established	– Municipal company established in Nov 2003
3.2	Operational procedures of the ESCO finalized	– Completed in December 2004.
3.3	Terms of Partnership with the City of Rivne drafted, signed, and shown to be adhered to during the pilot project	– Partnership signed June 2004, and so far all parties have complied w/ agreements
3.4	Supply-side and demand-side measures installed during the demonstration and verified	– Supply side: In addition to the 2 boilers, rehabilitation of power plant systems: instrumentation and control, frequency modulation, etc. – Distribution system: heat supply manifold has been replaced with one made of pre-insulated pipes; – Demand side: 3 individual distribution points + 1 central distribution point (residential appt. buildings) + 1 distribution point at city hospital.
3.5	Cost performance of energy efficiency measures demonstrated	– Average payback period is 5.9 years, so it is too early to show projects savings have out performed costs
3.6	Energy savings and emission reductions verified independently	– Monitoring by ESCO is done on a quarterly basis. – Energy savings June-Dec. 2004: 7130 tce. – Emission Reduction June-Dec. 2004: 9,992 tons.
3.7	ESCO staff trained in conducting energy audits and capable of conducting audits without external support	– Formulation of training programme completed. On-the-job training being implemented. Additional training under “twinning” arrangement being developed.

ANNEX G: ESCO-RIVNE STRATEGIC PLAN

Ref No	Project name	What work will be undertaken	Cost of Works US\$ M	Payback period, years	Note
1	District Heating System, including:		15,2		
1.1	Boiler plants	- Renovation and rehabilitation of two existing boilers; - Boiler retrofitting, - new I&C System, - Arranging of the variable speed drives; - Overall automation and dispatch system	9,2		182 boilers with the different capacity from 0.07 to 30.0 gig calories / hour are installed in the boiler-houses
1.1.1	Implementation of heat and electric power on the basis of the boiler plant at Makarova St., 42	Boiler Plant renovation with installation of co-generation units (turbine-generation sets)	Total investments US\$ M 9.2; including: Equipment – US\$ M 4.975;	5 Economic Effect – US\$ M 3.67 annually	Load: Total - 63,01 MW Including: Heating - 34,44 MW; Hot water - 28,57 MW
1.2	Manifold and control (distributive) heat networks		3,4		
1.2.1	Pipelining and replacement of heat network in the Demo Project zone		1,3	7,5	
1.2.2	Replacement of emergency condition heat networks		1	7,5	
1.2.3	Pipelining of heat network from the boiler plant along the Makarova St., 42		1,1	7,5	
1.3	Central Heat Point – CHP		1		
1.3.1	CHP at Kavkaz'ka St., 6	Reconstruction	0,11	4	Rehabilitation with installation of modern plate heat exchangers
1.3.2	CHP at Mitskevicha St., 34	Reconstruction	0,11	4	Switching the boiler-plant into the heating point with independent scheme
1.3.3	CHP at Kikvidze St., 24	Reconstruction	0,11	4	Rehabilitation with installation of modern plate heat exchangers
1.3.4	CHP at Ostafova St., 39	Reconstruction	0,11	4	Rehabilitation with installation of modern plate heat exchangers
1.3.5	CHP at Gagarina St., 3	Reconstruction	0,11	4	Rehabilitation with installation of modern plate heat exchangers

1.3.6	CHP at Strutyn'ska St., 11	Reconstruction	0,11	4	Rehabilitation with installation of modern plate heat exchangers
1.3.7	CHP at Dundycha St., 3	Reconstruction	0,11	4	Rehabilitation with installation of modern plate heat exchangers
1.3.8	CHP at Pukhova St., 17	Reconstruction	0,11	4	Rehabilitation with installation of modern plate heat exchangers
1.3.9	CHP Lyonokombinativska St., 3	Reconstruction	0,11	4	Rehabilitation with installation of modern plate heat exchangers
1.4	Individual Heat Point - IHP		0,6		
1.4.1	Building on Kavkaz'ka St., 3	Arrangement	0,086	6,3	Installation of the IHP
1.4.2	Building on Kavkazska St., 5	Arrangement	0,086	6,3	Installation of the IHP
1.4.3	Apartment house on Directorii St., 6	Arrangement	0,086	6,3	Installation of the IHP
1.4.4	Building on Knyazya Volodymyra St., 37	Arrangement	0,086	6,3	Installation of the IHP
1.4.5	Building on Mitskevitcha St., 11	Arrangement	0,086	6,3	Installation of the IHP
1.4.6	Building on Mitskevitcha St., 9	Arrangement	0,086	6,3	Installation of the IHP
1.4.7	Building on Mitskevitcha St., 9A	Arrangement	0,086	6,3	Installation of the IHP
2	Rehabilitation in outdated apartment and administrative houses		3,9		
2.1	Commercial accounting of heat energy for heating, heating adjustment according to schedule and temperature of external air	Arrangement of modern commercial accounting units of heat energy	2,65	7	
2.2	Renovation (reconstruction) of heat insulation on the pipelines in un-heated buildings		0,28	5	
2.3	Arrangement of radiator screens		0,78	5,5	
	Arrangement of heat insulation on the lifting pipes of hot water supply		0,19	6	
3	Lightning system		0,21		
3.1	Replacement of metering devices of electric energy on multirate arrangement		0,21	1,5	
4	Water supply and water drainage systems		5,0		
4.1	Arrangement of electric power multirate meters on water supply points		0,01	0,8	

4.2	Substation 35/10 construction completion on the Novomylsk water well (supply point) for switching to the Class I energy consumption		<i>Required Capital Investments – 10 000.00 US \$</i>	<i>Common Pay-Back Period – 0,8 of a year</i>	
4.3	Replacement of pumping equipment on boreholes		0,11	0,9	
4.4	Reconstruction of local purifying constructions to increase its capacity up to 30 million.m ³ /year		<i>Required Capital Investments – 4 521 000.00 US \$;</i>	<i>Common Pay-Back Period – 2.4 years</i>	
4.5	Rehabilitation of the water transport schemes in the buildings on Danyla Galytskogo St., with water swap-in pumps installation in each building (4 pumping units)		<i>Required Capital Investments – 20 000.00 US \$;</i>	<i>Common Pay-Back Period – 1.1 of a year</i>	
4.5	Installation of pumping units with the frequency converter on the water transport pumping station “Noviy Dvir” and water transport station # 1.		<i>Required Capital Investments – 9 000.00 US \$;</i>	<i>Common Pay-Back Period – 0.9 years</i>	
4.6	Rehabilitation of the municipal water-purifying system in Mirgorod		<i>Required Capital Investments – 14 000.00 US \$;</i>	<i>Common Pay-Back Period – 1.2 years</i>	
4.7	Replacement of the pumping units on the water transport station # 1 in Mirgorod		<i>Required Capital Investments – 10 000.00 US \$;</i>	<i>Common Pay-Back Period – 1.5 years</i>	
4.8	Rehabilitation of municipal water-purifying system in Chernomorske (Crimea)		<i>Required Capital Investments – 75 000.00 US \$;</i>	<i>Common Pay-Back Period – 0.9 years</i>	
5	Measures on heat supply quality improvement for educational institutions in the city of Rivne		2,5		
5.1	Construction of boiler-plant for humanitarian gymnasium and kindergarten No 42 in the city of Rivne		0,3	7,5	
5.2	Construction of boiler-plant for secondary school No 27 and kindergarten No 42 in the city of Rivne		0,3	6,5	
5.3	Complex measures on warmth-keeping at educational institutions in the city of Rivne and energy savings/efficiency awareness campaign	Replacement of the window frames in the educational institutions of Rivne with the modern plastic frames. The old frames are in the emergency situation. Warmth-keeping of the last floors.	1,9	7,5	

		Energy savings/efficiency awareness campaign. (Optional courses)			
	Total		25,81		

ANNEX H:

The list of less economically attractive energy saving projects

№	PROJECT NAME	SUM TOTAL OF INVESTMENTS, MILLION OF USD	PAY-BACK PERIOD, YEARS
1.	Manifold and control heat networks	3,4	
1.1	Pipelining and heat network replacement in the project zone	1,3	7,5
1.2.	Replacement of damage heat networks	1	7,5
1.3	Pipelining and heat network from the boiler-room at Makarova St., 42	1,1	7,5
2	Rehabilitation in outdated apartment and administrative houses	3,71	
2.1	Commercial accounting of heat energy for heating, heating adjustment according to schedule and temperature of external air	2,65	7
2.2	Renovation (reconstruction) of heat insulation on the pipelines in un-heated quarters	0,28	5
2.3	Arrangement of radiator screens	0,78	5,5
3	Lightning system	0,21	
3.1	Replacement of accounting units of electrical energy on multirate arrangement of economical bulbs for street lighting	0,21	1,5
4.	Reconstruction of local purifying constructions with the power 30 mln.m./year	4,521	2,4
5.	Measures of improvement of heat supply and common comfortable level for pupils' staying in educational institutions in the city of Rivne	1,9	7,5
6.	The boiler-room building for high school in the city of Rivne	0,3	7,5
	Total	14,04	

Note: CJSC “ESCO-Rivne” considers appropriate to allocate technical assistance funds for all projects listed with the purpose to increase the company attractiveness for outside investors.

ANNEX I: PROJECT BRIEF

Attached as a separate file.

ANNEX J: EVALUATION REPORT

Attached as a separate file.

Annex 2: ESCO Rivne Business Plan for 2005

Attached as a separate file.

Annex 3: Response to comments from Council Members

The below attached Council comments, received for this project, are self-explanatory. No response was required to the comments.

WORK PROGRAM: COMMENTS FROM COUNCIL MEMBERS (REFERENCE TO GEF/C.25/6)

Ukraine: Removing Barriers to Greenhouse Gas Emissions Mitigation through Energy Efficiency in the District Heating System, Phase 2 [UNDP]

COMMENTS FROM SWITZERLAND

General Comments

181. The discussed proposal is Phase 2 of a project which was approved in full size in January 2000 but was split into two phases due to financial constraints. In Phase 1, which covered the establishment of a municipal energy service company (ESCO) in the city of Rivne, an evaluation showed demonstration of energy efficiency measures and part of project replication and dissemination activities have been completed successfully. The ESCO-Rivne is established and operational as a private joint stock company. The objective of the proposed Phase 2 of the project is to reduce overall fossil fuel consumption and associated GHG emissions by removing barriers to supply and demand side energy efficiency improvements in district heating systems in the main cities of Ukraine. GEF participation will reduce major existing barriers in one pilot city (Rivne) and provide for the replication of defined approaches and measures in other main cities of Ukraine.

182. Phase 2 should have four main outcomes:

- (a) ESCO operations are expanded to cover Rivne City-wide/Oblast energy efficiency activities;
- (b) ESCO-Rivne operations are facilitated through financing of activities having long payback periods;
- (c) ESCO-Rivne operations are promoted through the design of instruments to minimise investment risks; and
- (d) Project experience/best practices and lessons learned are replicated throughout Ukraine and in other CIS countries.

183. Phase 2 of the project can build on the experiences of Phase 1. A major change in institutional setup has already been implemented under Phase 1 by establishing ownership at the local level and not at the national level as earlier foreseen. Phase 2 is seeking more financial stability for the ESCO. ESCOs have proven to be very efficient instruments for implementing energy efficiency measures on the supply and demand side in Ukraine and in other neighbouring countries with a similar economic situation. The envisaged approach is consistent with GEF's strategic priorities *CC-2 Increased Access*

to Local Sources of Financing Renewable Energy and Energy Efficiency under the program #5 *Removing barriers to Energy Efficiency and Energy Conservation*. The project has a high potential for replication and some interested parties have already contacted the project according to the evaluation report on Phase 1. The project is expected to reduce CO₂-emissions by 2.8 million metric tons (Phase 2 only) with a cumulative CO₂-emission reduction over 20 years of 64 million metric tons.

Main Concerns

184. There are no major concerns.

Conclusions and Recommendations

185. We recommend the project for endorsement. GEF support to the project is strongly recommended as the project addresses urgent needs by focusing on energy efficiency. In addition, Phase 2 can build on successful implementation of Phase 1 which has already completed some of the most challenging activities of the overall project, has established the ESCO operationally and provided first (positive) implementation experience.

COMMENTS FROM USA

186. Assessment: Support. The project is the second phase of a larger project. The evaluation of phase one recommends continuing the project and highlights remaining barriers to be addressed in phase two. The log frame has a number of strong indicators.

**UNITED NATIONS DEVELOPMENT PROGRAMME
PROJECT OF THE GOVERNMENT OF UKRAINE**

Evaluation Stage I of Phase I

(Final Report)

Summary of UNDP and
Co-financing Inputs for
Implementation Stage I
(in US\$) as per attached
budgets

UNDP:
1G – Global Environment
Trust Fund

Project Number: UKR/01/G31/A/1G/99
Project Title: Climate Change Mitigation in Ukraine
Through Energy Efficiency in Municipal
District Heating (Pilot Project in Rivne) Stage 1
Starting Date: May 2002
End Date: December 2004
Duration: 32 months
Project Site: Rivne, Ukraine
Executing Agent: NEX – Rivne Oblast State Administration
Implementing Agent: UNDP – United Nations Development Programme
ACC/UNDP Sector/Subsector: Energy Planning and Conservation- Promoting
Environment and Natural Resources Sustainability
DCAS S Sector/Subsector: Energy Conservation – Promotion of Sustainable
Energy and Atmospheric Quality
Primary Type Intervention: Capacity Building – Capital Assistance
Sec. Type of Intervention: Capacity Building – Technology Adaptation
Primary Target Beneficiaries: Target place (environmental habitat)–Natural features–
Atmosphere;
local government/municipal services

LPAC approval date: 25/10/2001

Brief Description:

The proposed project addresses a key issue in the reduction of greenhouse gas emissions through large-scale improvements in energy efficiency in Ukraine's communal heat supply sector. These improvements will result from a four-part approach: (1) capacity building to create the basis for systematic energy efficiency activities at the local level; (2) an integrated approach of supply and demand-side improvements to achieve maximum fuel savings and emissions reduction; (3) attraction of external investment resources for an energy efficiency program in a pilot city; and, (4) project-specific replication measures including development of relevant procedures, guidelines, information materials and their dissemination, and public awareness-raising through the involvement of NGO's, in particular those concerned with environmental and energy efficiency problems.

The project consists of two main components: (1) establishment of the municipal energy service company (ESCO) and (2) demonstration of the energy saving program. The potential municipality selected, in consultation with the government and executing agent, is Rivne. Implementation of the energy saving program will be done in two phases; (1) implementation of the demonstration program through funding available in this project and (2) implementation of the city-wide energy saving program in Rivne and its replication to other cities through investments allocated in addition. The full project is divided into the two stages. Stage 1 includes establishment of the municipal energy service company (ESCO), demonstration implementation of energy efficiency measures, and part of project replication and dissemination activities. Stage 2 starts upon successful completion of the Stage 1 and includes implementation of city-wide energy efficiency investment program and larger replication activities. Reference to Stage II has been included in this Project Document to provide information on the context of the larger project; however, the financial commitments included in this Project Document are limited to Stage I activities only.

Since commencement of project activities in May 2002 Tranche 1 of the project has been erroneously referred to as Stage 1; likewise for the proposed follow-up project which has been referred to as Stage 2. For reasons of consistency with the project document, reference to Stages 1 and 2 have been maintained in the evaluation report; however, it is understood that the present project should be correctly referred to as Tranche 1 and the follow-up component will be Tranche 2.

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1 Executive Summary

1.1 Brief Description of Project

The evaluation mission¹, requested by UNDP-Ukraine and GEF took place in Kiev and Rivne from November 1 to 11, 2004. The first and the last day were spent in Kiev. During the rest of the time, the evaluator worked with ESCO-Rivne and all the stakeholders in the Rivne area.

The project planned by GEF-UNDP at the beginning of year 2000 included two main components: (i) establishment of a municipal ESCO and, (ii) demonstration of the energy saving program. The project was broken down in two Phases: 1) implementation of EE demonstration program and 2) implementation of a city-wide saving program in Rivne and its replication in other cities.

1.2 Context and Purpose of the Evaluation

At this moment in time, because of a delay in the initial project planning, only Stage 1 of Phase 1 has been completed. Stage 2, which is intended to extend the EE and saving program on a full-scale basis in Rivne, should be launched by the end of 2004 as per the results and recommendations outlined in the current evaluation of Stage 1 of Phase 1 (please refer to Note 2 at the bottom of page 7 for an explanation of “stage” and “phase”).

The evaluator’s (evaluation team) mandate was to assess the project in terms of: 1)Project Formulation, 2) Project Implementation and, 3) Results attained up till now.

1.3 Rating, Comments, Recommendations and Lessons Learned

The evaluation team, consisting of an international and two local consultants, ranked the levels of achievement as per the rules based on the following categories: (HS)Highly Satisfactory, (S)Satisfactory, (MS)Marginally Satisfactory, (U)Unsatisfactory. The notation NA has been added to indicate when the ranking was not applicable because the project is still only at Stage 1 and the component can only be fairly evaluated at the end of Phase 1.

Performance Indicators or Activity	Rating	Comments
Project Formulation	HS	<ul style="list-style-type: none"> ▪ Sound project formulation ▪ Relevant shareholder selection with a good balance between the Demand Side and Supply Side ▪ Technically, the project can be replicated in other Oblasts of Ukraine
Conceptualization/Design	HS	
Country-Ownership	HS	
Stakeholder Participation	HS	
Replication Approach	S	
Internal Resource Mobilization	S	
Project Implementation	S	<ul style="list-style-type: none"> ▪ Adequate set of contractual documents ▪ Energy-consumption-based billing not yet possible in practice. The ESCO will however implement a brand new software to guide the public utility co. in this regards. ▪ Too soon to actually assess the actual cost-performance and risk. Only estimated figures are available at this point in time ▪ Potential EE Projects extended to other municipalities. Contacts have already been established and letters of interest

¹ The evaluation mission was conducted by L.P. Lavoie, EE Consultant and ESCO Manager with Econoler International of Canada.

		<p>received.</p> <ul style="list-style-type: none"> ▪ Projects are expected on the Demand Side with the Rivne Public Lighting Co. Some others are also expected with the municipality of Ostrih. ▪ Weakness in the project selection process in regards to the Payback Period, currently too lengthy at about 5 years but will be shortened when EE measures will target the Demand Side. ▪
EPC mechanism and other ESCO procedures	HS	
Consumption-based billing	NA	
Cost performance of efficiency measures implementation risks	S	
Implementation capabilities of energy saving initiatives	MS	
Planning of full-scale implementation	S	
Results	HS	<ul style="list-style-type: none"> ▪ Satisfactory results taking into consideration that the ESCO was only established one year ago. ▪ The paperwork has been properly prepared: (EPC), procedures, training plan, Action Plan, Project Progress Report; the staff is qualified staff and the UNDP's support is useful. ▪ Manifestation of Interest made by 4 other municipalities. ▪ Decree and Regulatory frameworks have resulted in stable energy-related budgeting. ▪ 13 EE projects are planned but their implementation is not yet started or underway. ▪ Advertising material and special folders have been prepared. ▪ Promotion material was sent to bankers. ▪ Letters of Interest were received from new investors. ▪ ESCO was established and financial agreements were signed and shares have been paid by both shareholders. ▪ UNDP payment has been effected (Stage 1-Phase 1). ▪ ESCO obtained a first credit line (200 k\$) ▪ Weakness related to banker follow-ups ▪ GHG emission reduction verified for projects conducted with DHC in Rivne but not clearly estimated for other projects included in the project portfolio ▪ Lack of cost-performance ratio in terms of Payback on projects completed or planned since the projects selected are mostly on the Supply Side.
Enabling Environment Conditions	HS	
Financial Institutional Conditions	HS	
Other Institutional Conditions: ESCO-Rivne_Established (HS) Operational Procedures of the ESCO Finalized (HS)	S	

Terms of Partnership with the City of Rivne (HS) Supply-Side and Demand-Side Measures (MS) Cost performance (U) GHG Emission Reduction (MS) Technical Capacity Building (HS)		
Recommendations		
National Municipal EE Market Evaluation	In order to ensure the feasibility of replication in other Oblasts, the project should conduct, by the end of Phase 1, a market needs assessment targeting all or almost all Oblasts in Ukraine. The market study should include a list of projects (DS and SS), the estimated investment and the GHG emission reductions expected for each municipality visited.	
Develop a More Pro-Active Relationship with the Commercial Banks in Ukraine	When one is in a hurry to settle things is not the right time to discuss loans and credit lines with banks. The ESCO should establish, at this moment in time, a sound relationship with 2 or 3 banks and get preliminary agreements on credit lines.	
Improve the Project Selection Mechanism	By shifting the project portfolio from the Supply Side to the Demand Side, the payback period should be shorter, projects should be less cost-intensive with lower technical and financial risks.	
Establish a twinning mechanism with another ESCO that has been established for a long time.	ESCO-Rivne could gain from the experience of another ESCO with a long track record in the field of ESCO implementation and sound knowledge of the specific Ukrainian context. A specialist from abroad could provide useful advice (distance advice) and conduct one or preferably two missions a year to participate in the selection of EE project investments and assist ESCO-Rivne in the replication of the ESCO in other Oblasts.	
Attract the ESCO Staff Members' Interest	This is a commonly used way of securing an optimal involvement on the part of major staff members and of ensuring an ESCO's sustainability.	
Continue with the project	The evaluator feels sufficiently confident about the overall project performance to recommend that the project be pursued even if some minor adjustments are required.	

1.4 Project Success Factors

Local Project Management: The decision to manage the project at the local level was come to after the project was launched. Because of the nature of such a project, which requires the involvement of the local community and local authorities, the initial project design was suffering from a lack that was corrected many months after the project started up. This corrective action, in terms of approach, is one of the project's major success factors.

Resource Mobilization: The ESCO is a service company and, to succeed, it must mobilize capable resources on the technical side and financial side as well. The small team working within ESCO-Rivne has the required capability to manage technical and financial issues. Over and above the ESCO staff members (about 10), UNDP provides the ESCO with three additional consultant-staff members. This team is effectively coping with the technical and management issues and is able to effectively proceed with the information dissemination process and the reporting in English and Ukrainian.

Shareholder Involvement: ESCO-Rivne was established as a tool or a vehicle to help the municipal authority and the local community to improve social and environmental conditions. The shareholders selection was adequately established to ensure a good balance between the energy Demand Side and the energy Supply Side. By almost equally involving the District Heating Company (Supply Side: KomunEnergiya - 49,1%) and the Public Lighting Company (Misksvitlo – 50.1%), ESCO-Rivne is able to address a wider range of EE measures. In many

other countries where ESCOs have succeeded, the same or almost the same pattern had been followed.

Municipal and Oblast Involvement: The Rivne Municipal Authority is the ESCO's major shareholder since the Public Lighting Company, which holds 50.1% of the shares, is owned by the municipality. The evaluator conducted two meetings with the Mayor and the Deputy Mayor and it was confirmed that the project can rely on their sound administrative support and financial support as well.

Local Market Needs and Transaction Costs: Energy efficiency, energy management and energy saving are activities that are just starting in the Rivne Oblast. The needs for EE improvements on the Demand Side and Supply Side as well are huge and, because the ESCO is the only entity working in that particular field, it has created somewhat of a monopolistic situation. There is no need for RFP procedures to implement EE measures and, consequently, transaction costs are quite low and the whole implementation process is very efficient.

1.5 Weaknesses Observed

Relations with Commercial Banks and Lack of Money: The ESCO does not have enough money to feed the EE project portfolio. It took actions to establish a commercial relationship with many commercial banks in Rivne. Currently, the ESCO has an agreement for a credit line of about \$200 000. This is not enough to face the EE measures implementation needs. Over the last months, the ESCO sent letters to all (or almost all) the commercial banks to attract their interest. Two of them have replied indicating that they are open to conducting discussions on this issue. Because the interest rate is currently very high in Ukraine (20%) and significant fees are charged by the banks to open a credit line, the ESCO should adopt a strategy aiming at gradually establishing two or three credit lines with different banks.

Project Portfolio and Project Cost Performance: The project portfolio (November 2004) does not include a large number of projects. Currently, the projects are mostly targeted towards the Supply Side. The investment breakdown structure indicates 95% of new investments on the Supply Side and only 5% on the Demand Side. It is a well known fact that projects on the Supply Side are more cost-intensive than projects on the DS. The payback period is consequently too long, currently about 5 years in general. To improve the cost performance of the project portfolio, ESCO-Rivne should include, in the near future, many more projects targeted towards the Demand Side with a shorter payback period.

Market Needs Assessment Outside of the Rivne Oblast: There is no systematic market needs assessment process established in the Rivne Oblast. Some market development activities have been conducted but, so far, only four municipalities have sent a letter of interest in regards to implementing projects with ESCO-Rivne.

1.6 Lesson Learned

The most important lesson learned is that a project aiming at the implementation of a municipal ESCO must be managed and controlled at the local level. Even if this "proxy" approach was not clearly stated in the initial Project Document, the adjustment made one year ago (2003) changing the Executing Agency from the State Committee for Energy Conservation to the Rivne Oblast State Administration has been the most significant improvement to the project's framework.

2 Introduction

2.1 Purpose of the Evaluation

The evaluation was initiated by the UNDP Ukraine Country Office. It was undertaken to assess the results of the following UNDP/GEF project: **Climate Change Mitigation in Ukraine Through Energy Efficiency in Municipal District Heating (Pilot Project in Rivne)**. The Evaluation consultant was expected to explicitly assess what has been achieved at the end² of Phase 1-Stage 1 as targeted in Appendix 9 of the Project Document with the purpose of confirming the applicability and appropriateness of oncoming Stage 2 of Phase 1.

For many reasons already documented by the Project Monitor³, the project started late. Despite the fact that the agreement between GOU and UNDP was signed in July 2002, the ESCO-Rivne was only established in November 2003. This means that rather than evaluating all the activities included in Phase 1, the Evaluator has evaluated the activities that have already been achieved and/or those that are in progress (Stage 1).

2.2 Key Issues Addressed

Without limiting his mandate to what is described in the TOR, the Evaluator has paid close attention to the "deliverables" that are supposed to be completed at the end of Stage 1. These "deliverables" are included in Appendix 9 of the Project Document. For almost all of these sub-activities, the evaluation team has ranked the level of achievement as per the rules based on the following categories: Highly Satisfactory, Satisfactory, Marginally Satisfactory, Unsatisfactory and NA when the ranking was not applicable

At this point in time, the project is budget provisioned for all of Phase 1 but, since the project was delayed as mentioned before, UNDP could either decide to put a halt to all activities, to proceed without any adjustments or to request a number of minor or major adjustments.

The key issues to which the evaluation team has paid closer attention to pertain to:

- Development of favourable environment conditions
- Setting up of Financial Institutional Conditions and Procedures
- Implementation of other components related to the ESCO concept and EE measures demonstration as well as capacity building.

The success or failure resulting from these components are a major UNDP concern.

In section 4 related to Findings and Conclusion, the evaluator has provided UNDP with comments and findings related to the main project components and, in some cases, makes recommendations on the needed improvements. Section 5 includes some of these recommendations.

² The Evaluator noted some confusion in the use of the terms Phase and Stage. In some documents, Stage is used rather than Phase and in others, the opposite occurs. To make sure we all share the same understanding, the following basic wording is used in the Evaluation: The whole project is split in two Phases and each phase is broken down in different Stages. At this moment in time the project is at the end of Stage 1 of Phase 1.

³ An international Consultant hired by UNDP who periodically overviews the process and implementation of the entire project in order to propose timely actions to correct the deficiencies detected, if any.

2.3 Evaluation Methodology

As per the UNDP's usual rules, no time was provisioned in the Evaluator's mandate for him to become familiar with the project documents prior to his arrival. The evaluation team therefore focused its efforts on reading the most important documents (Project Document and Annual Project Progress Report), meeting with ESCO management and staff members, field visits, conducting meetings with shareholders and some current and potential clients, meeting a commercial bank and a potential investor from abroad and spending the needed time to prepare and present the draft report in Rivne and in Kiev. Because of this heavy workload, the report had to be written up over the weekend, which was unexpected and unfortunate.

As required in all evaluations, the team used the Information Triangulation Methodology to perform the evaluation. Inasmuch as possible, all data and information gathered was validated from three different sources. For example, if, during a meeting, the ESCO manager mentioned an action or a financial figure, the evaluation team requested a reference document to confirm the information. The evaluator also performed cross-checking in the field to make sure that the equipment had been installed or the mentioned action actually took place. One must understand that such a method can only be applied as a spot check, otherwise all the time provisioned for evaluation purposes would be dedicated to validating information and data.

UNDP required the evaluation team to stay in Rivne as long as possible to conduct the evaluation and to prepare the report. This approach has proven to be very relevant in terms of enhancing interactions and establishing the needed trustworthy relationship between the evaluation team and ESCO staff members.

The list of documents reviewed for the purpose of this evaluation is included in Appendix 3.

The list of persons/organizations met is presented in Appendix 2.

3 The Project(s) and the Development Context

See the front page of the Report and Section 2.2

4 Findings and Conclusions

4.1 Project Formulation

4.1.1 Conceptualization/Design: HS

(HS)Highly Satisfactory, (S)Satisfactory, (MS)Marginally Satisfactory, (U)Unsatisfactory and (NA) when the ranking was not applicable
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Over the last 10 or 12 years, the efforts to develop a large-scale market for EE improvement were largely hampered by credit limitations for innovative investments and by the resulting weak business environment in Ukraine. As a result, Ukraine is still identified as having a very poor performance in regards to GHG emission reductions and a very poor energy consumption performance in its industrial sector, institutional facilities and district heating systems on the Supply Side and on the Demand Side as well.

Per se, the Climate Change Mitigation Project in Ukraine Through EE in Municipal District Heating (Pilot Project in Rivne Phase 1) is a step forward in the right direction. The World Bank has recently granted the GOU with a loan to improve the district heating system (Distribution syst. and Pipelines) in the Kiev area. Because of the huge amount of money so invested (more than \$200 million), these funds will have a great impact on GHG emission reduction but the UNDP's project will have an additional impact because of the changes that will be occurring on a mid-term basis through the modification of the mind set of energy end-users and energy suppliers as well. By linking the investment in EE to cost-effectiveness, the Supply Side decision-makers and the final energy end-users should understand that no energy development can be sustainable if it is not cost-effective economically and socially as well.

Components: The project includes two main components: (1) establishment of the municipal energy service company (ESCO) and, (2) demonstration of the energy saving program. The implementation of the energy saving program is carried out in two phases; (1) implementation of the demonstration program through funding available in this project (the current Phase) and, (2) implementation of the city-wide energy saving program in Rivne and its replication to other cities through investments allocated in addition. In that sense the project is well designed because, by splitting the project in two phases including some milestones, it allows UNDP and ESCO shareholders to assess the actual results prior to proceeding further. This approach is securing investors and, in the meantime, constitutes a permanent challenge for ESCO managers.

Municipal Stakeholders Involvement (HS): The potential municipality selected, in consultation with the government and executing agent, is Rivne. The evaluation team met the Mayor of Rivne and other municipal decision-makers to confirm their understanding of the conceptual framework and their awareness about EE and its likely impacts on their municipality.

A Success Story in Many Countries: The implementation of Energy Service Companies has been relevant in many other countries over the last 20 years. As per our experience, industrial facility managers and energy Supply Side managers are usually much more concerned by the whole process and cost-effectiveness and maintenance issues than by special improvements related to GHG reduction or EE measures implementation. It takes time to increase their awareness in order to make

sure they are able to make the link between energy efficiency and the general cost-effectiveness of their facilities.

Key Performance Indicators: Because of the phases and milestones described in the Project Document, qualitative and indicative performance indicators are relevant to conducting an evaluation of Phase 1. The evaluator would like to mention that the Key Performance Indicators Table is not fully usable at this moment in time since the project was seriously delayed and, rather than evaluating the whole of Phase 1, the team only assessed Stage 1 of Phase 1. The evaluation was mostly based on Appendix 9 of the revised Project Document. This Appendix includes a list of "deliverables" that must be achieved or that are in the process of being achieved to decide if the project should continue, be improved or stopped right now.

ESCO Concept Understanding(HS): Finally, the project's conceptual framework is clearly understood by the ESCO managers and all staff members met by the evaluation team. The municipal decision-makers met by the evaluation team clearly understand the advantage of ESCO involvement in fields of application other than district heating. Drinking water treatment, grey water filtering and public lighting systems are already included in the municipal requests portfolios.

For all these reasons, the evaluation team gives a HS rating to the Conceptual and Design Project Framework.

The evaluator would like to mention, however, that a set of "deliverables" should be developed to facilitate the next project evaluation when Phase 1-Stage 2 will have been completed. Since the project was designed more than four years ago and, even if the Project Document mentions a number of milestones related to Stage 2, in our opinion, this should be reviewed to take into consideration the changes occurring in the Ukrainian context. Municipal decision-makers (mayors and technical directors) are far more aware of all these EE issues than they were 4 years ago. District heating company managers are currently concerned about the performance of EE boilers and distribution systems. The information dissemination process that will be conducted on the basis of Stage 1 (Pilot EE Measures) should accelerate the ESCO penetration rate over the next two or three years.

4.1.2 Country-Ownership: HS

Nation-Wide Integration of Project Outcomes (Rating NA): The evaluation team conducted a meeting with the Ministry of Economy and European Integration in Kiev. On the basis of this brief meeting, it is rather difficult to confirm if the central outcomes (or potential outcomes) of the project have been incorporated into the national sector-based and development plans. Since the mission spent all (or almost all) of the time in the field (Rivne), this issue has not been explored further.

Stakeholders and Governmental Authorities Involvement (HS): At the Oblast level, representatives (e.g. government officials and municipal decision-makers) are actively involved in project identification, planning and/or implementation. The evaluators met an energy end-users association (apartment building tenants association is not an energy end-users association per se). They had many positive comments on the DH project implementation. The services are better at the moment, especially because they now have access to domestic hot water on a full-time basis.

Financial Commitment (HS): The recipient government has maintained its financial commitment to the project. In January 2004, two months after the official registration of ESCO-Rivne, the shareholders invested the committed capital.

Adjustment to Regulatory Framework (HS): The government has approved a brand new regulatory framework in line with the project's objectives allowing municipalities and other "budgeted" organizations to obtain from the Oblast or the central government the same budget provisions for their energy even if energy consumption has significantly reduced. The decree states that this stable budget is allocated over a period of three years. If needed, the recipient can request for a longer period of time.

4.1.3 Stakeholder Participation (HS)

Shareholders (HS): The evaluator conducted meetings with the two shareholders (KomunEnergiya - 49,1% and the Rivne Municipal Authority that owns Misksvitlo – 50.1%). There is no doubt about the valuable participation of these shareholders. The shareholders invested the committed capital two months after the ESCO was officially registered.

Information dissemination related to the understanding of the ESCO concept and approach was effectively conducted by the project. All decision-makers (Supply-Side and Demand-Side) met by the mission were adequately aware of the problems they are facing and how an ESCO and its innovative financial mechanisms are helpful in the process aimed at increasing EE and making public services more cost-effective as well.

Resource Mobilization and External Financial Community (MS): The ESCO-Rivne prepared a brochure and produced a folder that was sent to the most important commercial banks established in Rivne. The folder included all the information needed to make sure that the bank's commercial officers were able to understand the ESCO technical and financial approach. Even if this documentation (brochure and folder) was well designed, the evaluator would like to point out that there seems to be a lack in the follow up of the information dissemination process. The evaluator would also like to mention that ESCO-Rivne has already received two letters from local banks inviting the ESCO to discuss the credit line issue.

Innovative Financial Mechanism Understanding: The evaluator met a commercial bank (Credit Bank of Ukraine) and the director was not fully familiar with the folder that had been sent to him some weeks prior our visit. The evaluator also participated in a meeting with an external potential investor (Infrastructure Consul Halle of Germany) who saw business opportunities despite the fact that he was not at all familiar with the ESCO concept.

Credit Lines: The evaluation team is aware that this type of activity is difficult to launch and that ESCO managers do not feel comfortable dealing with such an issue. ESCO-Rivne needs a commercial credit line to implement the EE measures. The current line of credit approved by a local commercial bank is not sufficient (about 200 k\$) to feed the ESCO's financial mechanism. The ESCO has an asset and the shareholders should be able to back a much more significant credit line. The evaluator understands however that any agreement related to a credit line must be carefully phased with the investment needs in order to avoid the administrative fees charged by the bank to open a credit line.

New Shareholder: If another external shareholder indicates the desire (Infrastructure Consul Halle of Germany) to be an important shareholder, what is the acceptable dilution? The negotiations to obtain another credit line from a commercial bank and discussions with an external potential shareholder do not follow the same approach. In our opinion, the first step would be to establish a good commercial relationship (credit line) with a commercial bank. If ESCO-Rivne succeeds in getting the required credit line, perhaps there is no need for a new shareholder. On the other hand, if ESCO-Rivne is not able to pass through step one (credit line approval), it will be

required to involve a new shareholder with the financial capability of backing the credit line.

4.1.4 Replication Approach (S)

Theoretically, the experience of establishing an ESCO in Rivne aiming at improving public services (district heating, public lighting, institutional buildings) is replicable in many major cities in Ukraine. To replicate such a project, both the technical aspects and the financial issues must be considered.

Pragmatically speaking and at this moment in time, it is too soon to confirm anything on this issue even if the EE measures to be implemented will probably be quite similar from one municipality to the other. On the Supply Side, the measures should aim at improving boilers, burners, electric motor drives, control systems and pipelines. On the Demand Side, the EE measures should target, among other things, sewage treatment, administrative or institutional buildings, heat substations in apartment buildings and public lighting,

Financial issues: The decision-makers must wait until the pilot projects are broadly implemented to foresee a potential replication of the same or a similar innovative financial mechanism in Ukraine. The cost-recovery test has been theoretically passed since the clients have agreed to sign the EPC but, in practice, we must keep in mind that the first repayment (monthly reimbursement) as required in the EPC occurred very recently (mainly in October 2004 with some other less important repayments in May). The issue related to the required investment is not currently known. Is it 10 or 100 million dollars?

Comprehensive Market Study: ESCO-Rivne should get a better grasp of the market needs outside of the Rivne Municipality. The mission visited a small town (Ostrih) at about 40 km from Rivne and the Mayor said that he is willing to sign an agreement (EPC) with ESCO-Rivne.

Taking into account the reservations mentioned in Section 4.1.2, ESCO-Rivne should perhaps conduct a countrywide market study in 2005 to estimate the market needs and the corresponding investment requirements.

By focusing its activities in the municipal sector, including institutional buildings, ESCO-Rivne should be able on a mid-term basis to extend its market penetration throughout all of Ukraine. Technically speaking, the evaluator has no reservations about this but the financial issues must be clarified prior to extending the market penetration. The first step is to conduct a sound market study in the municipal sector and, on the basis of the results of this comprehensive study, to obtain the needed credit line from local banks in different Oblasts.

Knowledge Transfer and Expansion of Demonstration (S): The evaluator recommends conducting a market study (Municipal Market Needs Assessment) and, in the course of this study, this issue must be evaluated in terms of capacity building at individual and municipal/organizational levels. The evaluation team has however no reservations on the continuation of the Pilot Demonstration in Stage 2 of Phase 1 in the Rivne Oblast.

Reservation: The approach and techniques needed to become involved in the industrial sector require a good deal of technical knowledge related to many specific industrial processes. In our opinion, it is too soon to extend the concept in other fields of application.

4.1.5 Other Aspects Related to Internal Resource Mobilization (S)

In general, the conceptual framework is appropriate in the Ukraine context. EE market development in the area of public services is at its very beginning. Even if it takes time to change the mind set, the project made the right decision to involve the public utility companies as major shareholders. This is the policy adopted twenty years ago by several other countries, including Canada, to ensure the success of the ESCO concept.

Even if the initial project framework did not mention this, the evaluation team recommends that the ESCO Board of Directors open the capital (shareholders) to the ESCO staff members. At this moment in time, this could contribute to an extraordinary step forward in internal resource mobilization.

4.2 Project Implementation

The Project Document signed in July 2002 included two Phases (or Stages): 1) Demonstration of the Energy Saving Initiative and, 2) Phased Implementation of Municipal Energy Efficiency Program on a Full-Scale Basis. As mentioned in Section 2.1, the project was delayed and Phase 1 is not yet completed.

The Key Performance Indicators (KPI) mentioned in the Project Document⁴ pertains to the whole project and it would not be fair, at this moment in time, to evaluate the actual project performance by using all these KPIs.

In our opinion, it will be more appropriate to use the full set of KPIs to evaluate the project only after Phase 1 is completed.

Several measures were included as part of the Demonstration Scheme (Phase 1). The following Table summarizes these measures and provides an evaluation of the level of achievement.

Measures	Level of Achievement	Comment or Rating
Testing and refining the EPC mechanism and other ESCO procedures	Four different types of EPC have been developed in order to manage different EE projects or activities: Agreement on Energy Saving Services Agreement on Energy Management Agreement on Energy Effective Contracts Agreement on Community Credit	HS This material is fully usable to satisfy almost all current and future needs.
Introduction of consumption-based billing in all demonstration buildings to provide incentives for end-users to regulate their heat consumption	Up to now, only three individual building heating sub-stations have been equipped with an energy metering system and a heat exchanger. These projects required an investment of less	Rating not applicable because what has been accomplished so far was effectively done but this is not enough to introduce consumption-based billing to energy end-users.

⁴ Ref : Project Document UKR/01/G31/A/!G/99, July 2^{sd} – 2004 : Climate Change Mitigation in Ukraine Through EE in Municipal District Heating (Pilot Project in Rivne) Stage 1.

	than 20k\$.	KomunEnergia uses the metering data to establish statistics and an energy consumption index.
Streamlining the technical aspects of current Supply and Demand Side efficiency improvements, verify cost performance of efficiency measures and thus reduce implementation risks for the city-wide program	<p>On the Supply Side only one project has been carried out. The boiler (2) retrofit project was completed in 2004.</p> <p>On the Demand Side, except for the installation of metering systems (3 sites) and heat exchangers to provide hot water to apartment tenants, no specific EE measures have been implemented.</p>	<p>S</p> <p>Through boiler retrofitting and the installation of metering equipment at the end-user level, ESCO-Rivne should be able to better assess the technical and financial risks of the full-scale project implementation.</p> <p>Currently KoumunEnergia has already installed on its own (out of this project) metering systems in about 30% of the individual apartment buildings. KE expects to install an automatic data gathering system to determine reliable statistics and establish the heating load profile that will be very helpful to better schedule the use of the boilers (Supply Side).</p>
Verification of the management and implementation capabilities through the application of energy saving initiatives	Up to now 16 EPCs have been signed with 6 clients. See Table of actual projects status in Section 4.3	<p>MS</p> <p>Three projects are fully completed and others are at various stages of implementation. Taking into consideration that ESCO-Rivne needs about 1 000 K\$ to implement these projects, one must understand the bottleneck ESCO-Rivne is facing since the current credit line that is already available is for about 200k\$.</p>
Identification of important issues that should be included in the planning of full-scale implementation	<p>An exhaustive list of criteria for continuation of the project to Stage 2 (of Phase 1) is reviewed in Section 4.3.</p> <p>By implementing many more projects on the Demand Side, the technical risks and investment should decrease and the reimbursement payback period as well.</p>	<p>S</p> <p>Generally, ESCO-Rivne has been taking the needed actions to comply with the list of criteria described in Section 4.3.</p> <p><i>The SATISFACTORY rating by the evaluation team means the project should proceed to Stage 2.</i></p>

Highly Satisfactory, Satisfactory, Marginally Satisfactory, Unsatisfactory and NA when the ranking was not applicable

4.3 Results

At this point in time, UNDP was wondering to what extent the project had reached its objectives and wanted to get an independent evaluation pertaining to the work carried out by

ESCO-Rivne prior to providing the project with the needed approval to proceed with Stage 2 of Phase 1 (ref. Project Formulation Evaluation).

ESCO-Rivne prepared, at the very beginning of the project implementation, an Action Plan including a long list of activities to be conducted in Phase 1-Stage 1. The evaluator reviewed all these sub-activities with the ESCO staff members.

The following Table includes the project portfolio. The evaluator has referred to this Table in evaluating the results.

Table of Projects Portfolio – Nov 9 - 2004

#	Date and number of the contract	Name of the contract	Total cost In UAH and \$	Disbursement In UAH	Simple payback period In years	Discounted payback period In years	Status of the contract
1	8.12.03/ # DG-000001	Building contract, city Brovary, building works on the combined heat-and-power plant	65 000	65 000			Completed
2	14.01.04/ # DG-2	CDHC "KomunEnergiya", works on setting of a boiler at 71a Kn. Volodymyra street	51 376	7 583, 79			Work in progress
3	16.01.04/ # DG-2/6a	Vognetrynyk, works on setting of a boiler at 71a Kn. Volodymyra street	47 236	47 236			Completed
4	08.04.04/ # DG-3/12	Department of Education, school # 26, DHC "KomunEnergiya", arrangement of control unit	18 154, 17	18 154, 17	0, 8 years	1 year	Work in progress
5	12.05.04/ # DG-14/TC	SC "Teplotrasservice", Raising the effectiveness of heating energy production (monitoring)	48 000	48 000			Completed
6	UKR/01/G3 1-2003/87	Installation of district heating pipelines between boiler plant located at 71 Kn. Volodymyr St. and heat-network chamber (valve room) no. 39 in the city of Rivne, contractor Energoresursrivne, st Corp, Lviv, Ukraine	589 775, 63 \$	Ratified rent agreement	5	6, 25	Not yet Started
7	UKR/01/G3 1-2003/87	Installation of district heating pipelines between boiler plant located at 71 Kn. Volodymyr St. and heat-network chamber (valve room) no. 39 in the city of Rivne, rent-sale agreement	1048 162, 8 hrivnas	575 000 (advance payment)			Not yet started
8	UKR/01/G3 1-2003/88	Rehabilitation and renovation of the automation and control system for the boiler units installed in the boiler house at 71 Kn. Volodymyr St. in the city of Rivne, contractor Energoresursrivne, st Corp, Lviv, Ukraine	72 295, 00 \$	Ratified rent agreement	5	6, 25	Not yet started

9	UKR/01/G3 1-2003/91	Reconstruction of two boiler units, installed in the boiler-house at 71 Kn. Volodymyr St. in the city of Rivne, Contractor Kofloenergoproekt, Kharkiv, Ukraine	79 245, 60 \$	Ratified rent agreement	5	6, 25	Not yet started
10	UKR/01/G3 1-2003/89	Rehabilitation and renovation of the gas burners for boiler units installed in the boiler-house at 71 Kn. Volodymyr St. in the city of Rivne, Contractor Kofloenergoproekt, Kharkiv, Ukraine	33 933, 60 \$	Ratified rent agreement	5	6, 25	Not yet started
11	UKR/01/G3 1-2003/90	Arrangement of the variable speed drive system for forced draft units and net pumps in the boiler-house at 71 Kn. Volodymyr St. in the city of Rivne, Contractor Spekt-IV, Rivne, Ukraine	49 534, 00 \$	Ratified rent agreement	5	6, 25	Not yet started
12	UKR/01/G3 1-2003/103	Reconstruction of central heat substation located at 5 Mitskevitcha St., in the city of Rivne, contractor UTEM, Kiev, Ukraine	13 744, 00 \$	Ratified rent agreement	5	6, 25	Not yet started
13	UKR/01/G3 1-2003/104	Arrangement of individual heat substation in the residential building located at 5 Mitskevitcha St., in the city of Rivne, contractor International Center of Energy Effective Technologies, Kiev, Ukraine	16 338, 00 \$	Ratified rent agreement	5	6, 25	Not yet started
14	UKR/01/G3 1-2003/101	Arrangement of individual heat substation in the residential building located at 7 Mitskevitcha St., in the city of Rivne, contractor International Center of Energy Effective Technologies, Kiev, Ukraine	16 338, 00 \$	Ratified rent agreement	5	6, 25	Not yet started
15	UKR/01/G3 1-2003/156	Installation of individual heating substation in the residential buildings 46 Dubenska St., 42 Kievskaya St., 77 Kievskaya St. in the city of Rivne, Contractor Santehrekonstrukcia, Kiev, Ukraine	19 080, 00 \$	Ratified rent agreement	5	6, 25	Not yet started
16	21.09.04/ without number	Reconstruction of the aeration system of the aero oxidant installed on the WPS "Ostrohvodokanal", contractor Ostroh	65 000	1 305	0, 7 year	0, 9 year	Work in progress

4.3.1 Enabling Environment Conditions (HS)

Software for Billing/Accounting(S): The ESCO conducted a survey to evaluate the available software required to bill energy based on energy consumption. It was finally decided to ask a number of software developers to make proposals. The first version should be made available in February 2005. The energy end-users' mind set must change prior to introducing billing based on energy consumption. The ESCO must pay greater attention to using a billing system to bill the Supply Side at this point in time. The evaluator is satisfied with the process but cannot provide any evaluation of the product.

Energy Performance Contract (HS): Model energy performance contracts (EPC) have already been developed and mechanisms have been tested through pilot measures. Four different types of EPCs have been developed in order to manage different EE projects or activities (i) Agreement on Energy Saving Services, (ii) Agreement on Energy Management, (iii) Agreement on Energy Effective Contracts, (iv) Agreement on Community Credit. The evaluator is HS with these model EPCs.

Legislation/Regulation Adjustment and Stable Energy Budget Provision (HS): Funds allocated by the municipal authority for energy subsidies have been adjusted. The government has approved a brand new regulatory framework in line with the project's objectives allowing municipalities and other "budgeted" organizations to obtain from the Oblast or central government the same budget provision (subsidies) for their energy even if energy consumption is significantly reduced. The decree states that this stable budget is allocated over a period of three years. If needed, the recipient can request for a longer period of time.

Replication of Demonstration Project in Other Municipalities in Rivne Oblast (HS): The evaluation team was informed that two municipalities requested to do business with ESCO-Rivne. The evaluators met with only one municipality (Ostrih). A meeting was scheduled with the second one but the evaluators did not have enough time to conduct this site visit. The evaluators took a look at four letters of interest prepared by municipalities.

4.3.2 Financial Institutional Conditions (S)

Full-Scale Feasibility Study for Stage 2 (MS): ESCO-Rivne signed 16 EPCs, 3 of them are completed and the rest are at different stages of implementation; 3 of these are already started and 10 are pending a final investment decision. The current non-completed projects portfolio total approximately \$970 559. The projects not yet started represent 94% of the total of non-completed projects. Since the project was delayed, it would seem reasonable to include the not-yet-started projects in the Stage 2 portfolio. With a total of less than 1 million dollars, the Stage 2 portfolio is far from its objective of about 3.5 million dollars.

Documents for Equity/Loans (MS): ESCO-Rivne obtained a line of credit for about 200k\$. This is not sufficient to conduct Demonstration Phase 1. As the evaluator mentioned previously, a folder including all needed information about the ESCO concept and its innovative technical and financial approach was sent to the major banks in September 2004. In order to follow up on the requests addressed to these banks, ESCO-Rivne must conduct a systematic visit to all these institutions in order to provide information about the financial mechanisms. Up to now, this has not been done. Because the ESCO only recently started its operation, the portfolio must focus on projects with short payback periods. Less than one year is ideal but projects with longer payback periods, let's say two years, should be acceptable as well. This

means that the needed credit line should be somewhere between 1 and 2 million dollars. If the ESCO wants to comply with the investment planning of Phase 1, Stage 2 (spread over two years), this means that the credit line must be provisioned with about 2 million dollars. The actual situation in regards to equity/loans is quite far from this objective. For this reason, the evaluator has given a rating of MS to this activity.

Investment Promotion Materials ESCO(HS): The promotion materials the evaluator saw seem adequate to attract the bankers. As mentioned above, direct contact is a must. Experience has proven that people in general and especially bankers don't seem to have the time to read. The ESCO is currently preparing a number of case studies related to projects actually implemented. This is a good approach to attract bankers who are more interested in the results rather than the "wish".

Except for the reservations mentioned on a lack in the follow up process, the rating for the promotional materials is HS.

Investor Appeal(S): It is perhaps too soon to evaluate how attractive the ESCO concept is for investors. During the evaluation process, the evaluator met twice with the German investor who seems willing and able to invest in ESCO-Rivne. The ESCO staff members have indicated the desire to be part of the shareholders. This avenue should be seriously considered by the Board of Directors; even if it would not necessarily provide ESCO with a large investment, it would be a very effective means to demonstrate the staff's willingness to be involved in the success of the company – especially to bankers.

Recruitment of Investors/Financiers (S): Recently (September-October 2004) about 100 letters were sent to potential partners/investors. It is too soon to evaluate the impact of this action. The evaluator has rated this activity as S because the basic work has been undertaken.

ESCO Financial Agreements (HS): The ESCO is now officially registered (Nov. 2003). The shareholders agreement was signed in April 2003 upon the request of the Rivne Municipal Authority to establish ESCO-Rivne. The partners have invested the committed money: DHC-KumounEnergia (49.9%) and MskSvitto (50.1%) which corresponds to about \$25 000 per shareholder. A total of 100 shares are in circulation.

Transfer Of Funds from UNDP to ESCO-Rivne (HS): The successful transfer of the savings from the UNDP funds to the municipal ESCO was completed in October 2004.

4.3.3 Other Institutional Conditions (S)

Pilot Municipal Company Established: HS

The Municipal Authority of Rivne established ESCO-Rivne in November 2003. Two shareholders are the company's owners: DHC-KumounEnergia (49.9%) and MskSvitto (50.1%):

Operational Procedures of the ESCO Finalized: HS

ESCO-Rivne requested technical support from TPF Consulting Group of Belgium to develop a set of standard ESCO procedures.

Terms of Partnership with the City of Rivne HS: A MOU was signed in June 2004 confirming the municipal authority's involvement with ESCO-Rivne on a long-term basis and its commitment to an investment of about 500 000 (100k\$) in the next year (2005) for municipal EE projects.

Supply-Side and Demand-Side Measures (MS) These measures were put in place during Stage 1. The major investment pertains to EE measures on the Supply Side rather than on the Demand Side. 4 projects on a total of 16 or 25% of the projects included in the projects portfolio are targeted towards the Demand Side and all the others are targeted towards the Supply Side. The corresponding investment represents 5% for DS and 95% for SS projects. The evaluator is not surprised by these figures since ESCO-Rivne was established by the municipal authority and the actual concerns are generated by DHC. In the near future and as soon as possible, ESCO-Rivne should develop projects with its other shareholders (Rivne Public Lighting Company) and, at that moment, the portfolio of projects targeting the DS should be much more significant than the current situation.

Cost performance (U): The cost performance of energy efficiency measures demonstrated since the average payback period for all projects conducted or signed on a cost-recovery basis (11) included in the project portfolio is about 5.29 years. Projects related to DS have an average payback period of 5 years and projects related to SS have a payback period of 5.72 years. It is, in both cases, far too long a payback period.

GHG Emission Reduction (MS): Energy savings and emission reductions were verified independently by an external evaluator. Unfortunately, the evaluator was not able, due to time limitation, to establish the GHG emission reduction for all projects included in the project portfolio. This situation should be corrected immediately by the ESCO because of the very nature of the project: Climate Change Mitigation.

Technical Capacity Building (HS): ESCO hired TPF Consulting Group (Belgium) to design the Training Plan that should be implemented up to the end of Phase 1. This plan includes: (i) training related to energy audits, (ii) EE management capacity building, (iii) training on the use of EPC and cost recovery issues and calculations and, (iv) training for the accounting department. Actually, at this time, only one staff member has any training related to component (i), but efforts are being made to improve this situation. ESCO-Rivne now has the required official licence to conduct EE audits in Ukraine.

5 Recommendations

National Municipal EE Market Evaluation

ESCO-Rivne should conduct, by the end of Phase 1, a comprehensive market study to assess the municipal needs of major municipalities outside Kiev. This study should provide information on potential projects on the Supply Side and the Demand Side as well. The projects must be broken down in terms of payback periods. The study should also provide a preliminary estimate of (i) investment costs, (ii) payback periods, (iii) GHG emission reductions. In the opinion of the evaluator, such a study could be attractive for many European or North-American bilateral development agencies. For example, the Canadian International Development Agency has a specific program targeting climate change in former Soviet Union countries.

Develop a More Pro-Active Relationship with the Commercial Banks in Ukraine

To successfully complete Phase 1, ESCO-Rivne needs to establish a sound relationship with two or three commercial banks. The credit line required to fulfill the investment needs is somewhere between 1 and 2 million dollars. It is sometimes very difficult to convince bankers to provide a credit line and it is much more difficult for an ESCO that wants to implement an innovative financial mechanism. Because the interest rate is currently very high in Ukraine (20%) and significant fees are charged by the banks to open a credit line, the ESCO should adopt a strategy aiming at gradually establishing two or three credit lines with different banks.

Improve the Project Selection Mechanism

The project portfolio (November 2004) does not include a large number of projects. Currently, the projects are mostly targeted towards the Supply Side. The investment breakdown structure indicates 95% of new investments on the Supply Side and only 5% on the Demand Side. It is a well known fact that projects on the Supply Side are more cost-intensive than projects on the DS. The payback period is consequently too long, an average of 5 years for the current project portfolio, which is not very interesting at this moment in time with an interest rate of 20% . To improve the cost performance of the project portfolio, ESCO-Rivne should include, in the near future, many more projects targeted towards the Demand Side with a shorter payback period.

Establish a Twinning Mechanism with ANOTHER ESCO that has been Established for a Long Time.

ESCO-Rivne could gain from the experience of another ESCO with a long track record in the field of ESCO implementation and a sound knowledge of the specific Ukrainian context. A specialist from abroad could provide useful advice (distance advice) and conduct one or preferably two missions a year to participate in the selection of investments and projects.

Attract the ESCO Staff Members' Interest

All staff members met by the evaluator seemed very stimulated by the challenge of implementing ESCO-Rivne. To succeed with such a business requires time and effort. The best way to maintain the pace and the "passion" is to provide the staff members with a tangible interest. The ESCO Board of Directors should consider this opportunity by offering perhaps 10% of the shares to some staff members. This recommendation should be implemented at the end of Phase 1, not before. In so doing, all staff members will be much more stimulated to carry out this phase successfully.

Continue with Project Implementation

The evaluator is sufficiently confident about the overall project performance to recommend that the project be pursued even if some minor adjustments are required.

6 Lessons Learned

The most important lesson learned at this point in time is that a project aiming at the implementation of a municipal ESCO must be managed and controlled at the local level. Even if this "proxy" approach was not clearly stated in the initial Project Document, the adjustment made one year ago (2003) changing the Executing Agency from the State Committee for Energy Conservation to the Rivne Oblast State Administration has been the most significant improvement to the project's framework.

7 Evaluation Report Appendices

7.1 Appendix 1 : Evaluation TORs

CONSULTANT'S TERMS OF REFERENCE PROJECT EVALUATION

Climate Change Mitigation in Ukraine
Through Energy Efficiency in Municipal
District Heating (Pilot Project in Rivne) Stage 1

I. INTRODUCTION

a) UNDP/GEF Monitoring and Evaluation (M&E) policy

The Monitoring and Evaluation (M&E) policy at the project level in UNDP/GEF has four objectives: i) to monitor and evaluate results and impacts; ii) to provide a basis for decision making on necessary amendments and improvements; iii) to promote accountability for resource use; and iii) to document, provide feedback on, and disseminate lessons learned. A mix of tools is used to ensure effective project M&E. These might be applied continuously throughout the lifetime of the project – e.g. periodic monitoring of indicators -, or as specific time-bound exercises such as mid-term reviews, audit reports and final evaluations.

In accordance with UNDP/GEF M&E policies and procedures, all regular and medium-sized projects supported by the GEF should undergo a final evaluation upon completion of implementation. A final evaluation of a GEF-funded project (or previous phase) is required before a concept proposal for additional funding (or subsequent phases of the same project) can be considered for inclusion in a GEF work program. However, a final evaluation is not an appraisal of the follow-up phase.

Final evaluations are intended to assess the relevance, performance and success of the project. It looks at early signs of potential impact and sustainability of results, including the contribution to capacity development and the achievement of global environmental goals. It will also identify/document lessons learned and make recommendations that might improve design and implementation of other UNDP/GEF projects.

b) The project objectives and its context within the program country

Ukraine is one of the least energy efficient countries in the world and has the greatest emissions level per unit of GDP among CIS countries. A recent inventory estimated that total emissions from Ukraine in 1990 were 246 million tons of carbon equivalent, placing it sixth in the world. Per capita emissions of CO₂ were 4.75 tons of carbon per year. This figure significantly exceeds the levels in most European countries and is also one of the highest in the world.

Problems in Ukrainian district heating are similar to those facing other countries of the former Soviet Union. Sharp increase in fuel prices up to the world level with heat tariffs lagging behind considerably worsened the financial state of all district heating companies. Lack of the funds for modernization of generating capacities and heat networks impacted the level of service, which in combination with consumers' lower ability to pay significantly reduced payments collection level. Heat supply infrastructure is operated beyond the service life and requires large investments for maintaining it in operating condition and covering existing heat demand.

At the same time, it is this inefficiency of existing heat supply and consumption systems that creates significant potential for fuel and energy saving, which increases interest to this sphere in connection with environment protection problems. Heat supply in the buildings sector accounts for approximately 15% of all fuel consumed in Ukraine, and there is a huge potential for energy efficiency improvement in this sector illustrated by the following figures. Specific fuel consumption for heat generation in communal energy sector of Ukraine is 0.180-0.200

t.c.e. per 1 Gcal compared to 0.150-0.160 t.c.e. in Western countries. Specific heat consumption for heating and hot water supply of Ukrainian buildings is 1.5-2 times higher than in Western countries with similar climate conditions.

High energy intensity of municipal heat supply in Ukraine is a very serious problem that has the following important implications:

- growing dependence on external fuel supplies (mainly from Russia) purchased at world prices;
- high fuel component of heat tariffs and consequently high level of tariffs themselves, overstraining the budgets of most families and leading to significant non-payments by households;
- higher than necessary consumption of fossil fuel by utilities, with a considerable potential for fuel saving and corresponding greenhouse gas (GHG) emissions reduction.

There exist a number of barriers that hinder Supply and Demand Side energy efficiency improvement in district heating systems. These include: macro-economic conditions (such as high taxes and unstable taxation policy, unstable local currency), inconsistency of regulatory and legal policies, non-payment crisis, imperfect pricing policy, institutional weaknesses, ownership inefficiency, lack of information and about existing opportunities for energy efficiency and relevant experience, high transaction costs for relatively small energy efficiency projects, unsatisfactory financial state of district heating companies, consumers and local budgets, difficulties in arranging financing for efficiency projects, lack of capacity and experience in preparing, implementing and managing energy efficiency projects, technical deficiencies of heat supplier and consumer systems, absence of incentives to energy saving for majority of heat consumers.

Increased energy prices in the Central and Eastern European countries after the collapse of the Soviet Union and development of market economy opened opportunities for energy service companies that reduce energy costs for their clients and reimburse themselves from the savings produced. ESCO business is also appearing in Ukraine. There already exist a state-owned company UkrEsco, and several private ESCOs, which is an indication that there is a healthy market for ESCOs in the country.

The proposed project addresses a key issue in the reduction of greenhouse gas emissions through large-scale improvements in energy efficiency in Ukraine's communal heat supply sector. These improvements will result from a four-part approach: (1) capacity building to create the basis for systematic energy efficiency activities at the local level; (2) an integrated approach of supply and demand-side improvements to achieve maximum fuel savings and emissions reduction; (3) attraction of external investment resources for an energy efficiency program in a pilot city; and, (4) project-specific replication measures including development of relevant procedures, guidelines, information materials and their dissemination, and public awareness-raising through the involvement of NGO's, in particular those concerned with environmental and energy efficiency problems.

The project consists of two main components: (1) establishment of the municipal energy service company (ESCO) and (2) demonstration of the energy saving program. The potential municipality selected, in consultation with the government and executing agent, is Rivne. Implementation of the energy saving program will be done in two phases; (1) implementation of the demonstration program through funding available in this project and (2) implementation of the city-wide energy saving program in Rivne and its replication to other cities through investments allocated in addition. The full project is divided into the two stages. Stage 1 includes establishment of the municipal energy service company (ESCO), demonstration implementation of energy efficiency measures, and part of project replication and dissemination activities. Stage 2 starts upon successful completion of the Stage 1 and includes implementation of city-wide energy efficiency investment program and larger replication activities. Reference to Stage 2 has been included in this project document to provide information on the context of the larger project; however, the financial commitments included in this project document are limited to Stage 1 activities only.

II. OBJECTIVES OF THE EVALUATION

The evaluation is initiated by the UNDP Ukraine country Office. Evaluation is being undertaken to assess the results of the UNDP/GEF Project Climate Change Mitigation in Ukraine Through Energy Efficiency in Municipal District Heating (Pilot Project in Rivne). The Evaluation consultant is expected to explicitly assess achievement of the end of Phase 1-Stage 1 targets in Annex 9 of the Project Document with the purpose to confirm applicability and appropriateness of the Stage 2 of Phase 1.

Annex 9 of the Project Document

ANNEX 9. CRITERIA FOR CONTINUATION TO STAGE II: A CHECKLIST

Overarching condition: "A sustainable municipal ESCO is fully functional based on cost recovery from its services and investments from the government, local authorities, and the private sector."

Enabling Environment Conditions

- Software for billing/accounting by consumption of energy developed and in use for all buildings in demonstration project
- Model energy performance contract (EPC) developed and mechanism tested through pilot measures
- Legislation/regulation allowing the transfer of funds saved through energy efficiency into the municipal ESCO; i.e., cost recovery scheme developed and implemented
- Funds allocated by the municipality for energy subsidies adjusted
- Requests from at least 2 other municipalities for services (in the form of an official Letter of Interest)

Financial Institutional Conditions

- Full-scale feasibility study for Stage II investment project completed, including an analysis of the current business environment in Rivne
- Documents for equity/loan approval processes drafted
- Investment materials promoting ESCO developed and distributed to potential investors in the relevant language(s)
- Commitments by local stakeholders sufficient to attract external investors formulated
- Investors/financiers for ESCO selected
- ESCO financial agreements signed
- Successful transfer of the savings from the UNDP funds into the municipal ESCO

Other Institutional Conditions

- Pilot municipal company established
- Operational procedures of the ESCO finalized
- Terms of Partnership with the City of Rivne drafted, signed, and shown to be adhered to during the pilot project
- Supply-side and demand-side measures installed during the demonstration and verified
- Cost performance of energy efficiency measures demonstrated
- Energy savings and emission reductions verified independently
- ESCO staff trained in conducting energy audits and capable of conducting audits without external support

Note: The above criteria will be assessed during a technical and financial review of the project based on an evaluation mission by a 1-2-person international expert team at the

conclusion of Stage I. In the event that an item is not achieved but does not jeopardize the sustainability of the project, the reviewer(s) will need to elaborate.

Stakeholders for Consultations

- | |
|---|
| <ul style="list-style-type: none"><input type="checkbox"/> Ministry of Economy and European Integration of Ukraine;<input type="checkbox"/> Rivne Oblast and City Administrations. Also, selected elected authorities<input type="checkbox"/> Ministry of Environmental Protection of Ukraine (GEF focal point)<input type="checkbox"/> State Committee on Communal Services<input type="checkbox"/> State Committee on Energy Saving of Ukraine;<input type="checkbox"/> Major donors, such as EBRD, WB and others.<input type="checkbox"/> Private sector, working in the area;<input type="checkbox"/> Banking sector;<input type="checkbox"/> UNDP Project and Program staff;<input type="checkbox"/> other. |
|---|

III. PRODUCTS EXPECTED FROM THE EVALUATION

The expected outputs from the mission are:

UNDP/GEF format Project Evaluation Report agreeable to the UNDP/GEF standards and requirements (GEF Monitoring and Evaluation Policies and Procedures effective January 2002, Global Environment Facility Guidelines for Implementing Agencies to conduct Terminal Evaluations effective May 2003 and UNDP Programming Manual effective April 1999);

- Presentation of findings by the consultants to all stakeholders, including UNDP Ukraine Office, UNDP GEF, national partners.

The evaluation report outline should be structured along the following lines:

1. Executive summary
2. Introduction
3. The project(s) and its development context
4. Findings and Conclusions
 - 4.1 Project formulation
 - 4.2 Implementation
 - 4.3 Results
5. Recommendations
6. Lessons learned
7. Annexes

Report should not exceed 50 pages in total. First draft of the report should be submitted to the UNDP Country Office within one week of completion of the in-country part of the mission and circulated for comments to government counterparts (Rivne Oblast Administration, Rivne Major Office) and project management team.

If there are discrepancies between the impressions and findings of the evaluation team and the aforementioned parties these should be explained in an annex attached to the final report.

IV. METHODOLOGY OR EVALUATION APPROACH

The evaluation mission will partner closely with the Government of Ukraine and UNDP Country Office. The mission will receive its primary support from programme management of the Rivne project that will take care of day to day management and support issues. In delivering the outputs, the mission will undertake the following tasks:

Phase I – Initiation (about 1 day):

- Rallying of the team;
- Development of the assessment methodology;
- Preparation of detailed workplan.

Phase II – Information Collection and Analysis (about 3 days):

- Review the documents and reports produced by the project, government, private sectors, academia, donors, development organisations and UNDP (see Box 1);
- Field visit for consultations with the Rivne project sites, other UNDP programme and projects sites, local administrations, local authorities, successful enterprises or entrepreneurs and other local institutions.

Phase III – Preparation of the Report (5 days):

- Preparation of the draft papers;
- Discussion on the first draft with UNDP, Government and all stakeholders;
- Finalisation of the Report.

Based on the above tasks, the mission will formulate the UNDP/GEF format Project Evaluation Report agreeable to the UNDP/GEF standards and requirements (GEF Monitoring and Evaluation Policies and Procedures effective January 2002, Global Environment Facility Guidelines for Implementing Agencies to conduct Terminal Evaluations effective May 2003 and UNDP Programming Manual effective April 1999)

Box 3- Reference Materials

- Presidential decree and strategy on poverty alleviation (15 July 2001).
- Summary of the draft government program to implement the strategy.
- Presidential decree on “main directions of social policy for the period until 2004” of 24 May 2000.
- UNDP Programming Manual
- UNDP Operations Manual
- “Climate Change Mitigation in Ukraine Through Energy Efficiency in Municipal District Heating (Pilot Project in Rivne)” project document
- Project Action Plans
- Project Reports including Quarter and Annual reports
- PIR
- other.

Box 2 - Stakeholders for Consultations

- Ministry of Economy and European Integration of Ukraine;
- Rivne Oblast and City Administrations. Also, selected elected authorities
- Ministry of Environmental Protection of Ukraine (GEF focal point)
- State Committee on Communal Services
- State Committee on Energy Saving of Ukraine;
- Major donors, such as EBRD, WB and others.
- Private sector, working in the area;
- Banking sector;
- UNDP Project and Program staff;
- other.

Project Action Plan (Annex 2. of this TOR) could be used as a reference document against which the project evaluators can measure project progress.

V. EVALUATION TEAM

The evaluation will take place during October 2004 and will be undertaken by an international consultant. He/she will receive the support of a team of 2 national observers, one representing Government of Ukraine (Ministry of Economy and European Integration), another - civic sector (Ukrainian Association of Local and Regional Authorities) and will be assisted by a translator/interpreter, preferably having a technical background.

The international consultant will function as the Facilitator (hence Team Leader) for the mission. He/she will be responsible for the entire work of the mission and to deliver the expected outputs of the mission (high quality UNDP/GEF format Project Evaluation Report agreeable to the UNDP/GEF standards and requirements (GEF Monitoring and Evaluation Policies and Procedures effective January 2002, Global Environment Facility Guidelines for Implementing Agencies to conduct Terminal Evaluations effective May 2003 and UNDP Programming Manual effective April 1999):).

Specifically, the international consultant will perform the following functions:

- (a) train and guide the evaluation team
- (b) elaborate the research methodology of the evaluation
- (c) lead and conduct the evaluation mission in cooperation with the government, public and private sector in national and local levels;
- (d) formulate and submit to UNDP Ukraine a comprehensive *UNDP/GEF format Project Evaluation Report agreeable to the UNDP/GEF standards and requirements (GEF Monitoring and Evaluation Policies and Procedures effective January 2002, Global Environment Facility Guidelines for Implementing Agencies to conduct Terminal Evaluations effective May 2003 and UNDP Programming Manual effective April 1999)*

Qualifications and experience of international consultant:

Requirements

- Masters or Ph.D. degree in social sciences related to international development, i.e. economics, political economy of development, international relations, public and business administration or equivalent
- Extensive (at least 10-year) experience and proven track record with environment and energy efficiency field, policy advice, development, formulation and implementation in these areas, preferably at national level, including field experience, strategic planning and evaluation;
- Strong inter-personal and presentation skills
- Proficiency in English (knowledge of Russian or Ukrainian would be an asset).

Desirable

- Experience with ESCO development both in public and private sectors
- Experience in project creation and management for emerging countries, including cost assessments and sustainability issues
- Prior experience in the private sector would be a strong asset
- Prior experience with UNDP in programme/project

VI. IMPLEMENTATION ARRANGEMENTS

The Evaluation mission will take place in October, 2004.

The mission will be supported by the Rivne Project staff and UNDP Senior Programme Manager responsible for the Environment area.

The mission will coordinate its work closely with the Government of Ukraine and UNDP. The mission will take responsibility for its own schedule (though support will be provided by the Rivne project).

The Project evaluation team will report to the UNDP Resident Representative. Briefing/debriefing with Country Office is essential.

Box 4 – Implementation Schedule

◆	Initiation	1 days
◆	Analytical phase – information generation and analysis (including field visits)	
	3 days	
◆	Preparation of first draft papers	3
	days	
◆	Discussion and comments	1 day
◆	Final draft of the Report	1
	days	
		Total: 9 working
days		

VII. SCOPE OF THE EVALUATION- SPECIFIC ISSUES TO BE ADDRESSED.

This section describes the categories that the evaluation will look into in line with the evaluation report outline included in section III. It also highlights specific issues to be addressed under each broad category.

An annex providing more detailed guidance on terminology and the GEF Project review Criteria is an integral part of this TORs (please see Annex 1 in the TORs).

Please note that some of the categories in the findings and conclusions need to be rated in conformity with the GEF guidelines for final evaluations.

1. Executive summary

Brief description of project

Context and purpose of the evaluation

Main conclusions, recommendations and lessons learned

2. Introduction

- Purpose of the evaluation
- Key issues addressed
- Methodology of the evaluation
- Structure of the evaluation

3. The project(s) and its development context

- Project start and its duration
- Problems that the project seek to address
- Immediate and development objectives of the project
- Main stakeholders
- Results expected

4. Findings and Conclusions

In addition to a descriptive assessment, all criteria marked with (R) should be rated using the following divisions: Highly Satisfactory, Satisfactory, Marginally Satisfactory, Unsatisfactory

4.1. Project Formulation

Conceptualization/Design (R). This should assess the approach used in design and an appreciation of the appropriateness of problem conceptualization and whether the selected intervention strategy addressed the root causes and principal threats in the project area. It should also include an assessment of the logical framework and whether the different project components and activities proposed to achieve the objective were appropriate, viable and responded to contextual institutional, legal and regulatory settings of the project. It should also assess the indicators defined for guiding implementation and measurement of achievement and whether lessons from other relevant projects (e.g., same focal area) were incorporated into project design.

Country-ownership/Driveness. Assess the extent to which the project idea/conceptualization had its origin within national, sectoral and development plans and focuses on national environment and development interests.

Stakeholder participation (R) Assess information dissemination, consultation, and "stakeholder" participation in design stages.

Replication approach. Determine the ways in which lessons and experiences coming out of the project were/are to be replicated or scaled up in the design and implementation of other projects (this also related to actual practices undertaken during implementation).

Other aspects to assess in the review of Project formulation approaches would be UNDP comparative advantage as IA for this project; the consideration of linkages between projects and other interventions within the sector and the definition of clear and appropriate management arrangements at the design stage.

4.2. Project Implementation

Implementation Approach (R). This should include assessments of the following aspects:

- (i) The use of the logical framework as a management tool during implementation and any changes made to this as a response to changing conditions and/or feedback from M and E activities if required.
- (ii) Other elements that indicate adaptive management such as comprehensive and realistic work plans routinely developed that reflect adaptive management and/or; changes in management arrangements to enhance implementation.
- (iii) The project's use/establishment of electronic information technologies to support implementation, participation and monitoring, as well as other project activities.
- (iv) The general operational relationships between the institutions involved and others and how these relationships have contributed to effective implementation and achievement of project objectives.
- (v) Technical capacities associated with the project and their role in project development, management and achievements.

Monitoring and evaluation (R). Including an assessment as to whether there has been adequate periodic oversight of activities during implementation to establish the extent to which inputs, work schedules, other required actions and outputs are proceeding according to plan; whether formal evaluations have been held and whether action has been taken on the results of this monitoring oversight and evaluation reports.

Stakeholder participation (R). This should include assessments of the mechanisms for information dissemination in project implementation and the extent of stakeholder participation in management, emphasizing the following:

- (i) The production and dissemination of information generated by the project.
- (ii) Local resource users and NGOs participation in project implementation and decision making and an analysis of the strengths and weaknesses of the approach adopted by the project in this arena.
- (iii) The establishment of partnerships and collaborative relationships developed by the project with local, national and international entities and the effects they have had on project implementation.
- (iv) Involvement of governmental institutions in project implementation, the extent of governmental support of the project.

Financial Planning: Including an assessment of:

- (i) The actual project cost by objectives, outputs, activities
 - (ii) The cost-effectiveness of achievements
 - (iii) Financial management (including disbursement issues)
 - (iv) Co-financing 5
- Sustainability. Extent to which the benefits of the project will continue, within or outside the project domain, after it has come to an end. Relevant factors include for example: development of a sustainability strategy, establishment of financial and economic instruments and mechanisms, mainstreaming project objectives into the economy or community production activities.

Execution and implementation modalities. This should consider the effectiveness of the UNDP counterpart and Project Co-ordination Unit participation in selection, recruitment, assignment of experts, consultants and national counterpart staff members and in the definition of tasks and responsibilities; quantity, quality and timeliness of inputs for the project with respect to execution responsibilities, enactment of necessary legislation and budgetary provisions and extent to which these may have affected implementation and sustainability of the Project; quality and timeliness of inputs by UNDP and GoC and other parties responsible for providing inputs to the project, and the extent to which this may have affected the smooth implementation of the project.

4.3. Results

Attainment of Outcomes/ Achievement of objectives (R): Including a description *and rating* of the extent to which the project's objectives (environmental and developmental) were achieved using Highly Satisfactory, Satisfactory, Marginally Satisfactory, and Unsatisfactory ratings. If the project did not establish a baseline (initial conditions), the evaluators should seek to determine it through the use of special methodologies so that achievements, results and impacts can be properly established.

5 Please see guidelines at the end of Annex 1 of these TORs for reporting of co-financing

This section should also include reviews of the following:

Sustainability: Including an appreciation of the extent to which benefits continue, within or outside the project domain after GEF assistance/external assistance in this phase has come to an end.

- Contribution to upgrading skills of the national staff

5. Recommendations

- Corrective actions for the design, implementation, monitoring and evaluation of the project
- Actions to follow up or reinforce initial benefits from the project
- Proposals for future directions underlining main objectives

6. Lessons learned

This should highlight the best and worst practices in addressing issues relating to relevance, performance and success.

7. Evaluation report Annexes

Evaluation TORs

Itinerary

List of persons interviewed

Summary of field visits

List of documents reviewed

Questionnaire used and summary of results

Comments by stakeholders (only in case of discrepancies with evaluation findings and conclusions)

VIII. TERMS OF REFERENCE ANNEXES

Annex 1: Terminology in the GEF Guidelines to Terminal Evaluations

Annex 2: List of Documents to be reviewed by the evaluators

7.2 Appendix 2 : Itinerary (Mission Agenda)

Appendix 2 : Itinerary

Agenda
for Terminal Project Evaluation Mission
Climate Change Mitigation in Ukraine Through Energy Efficiency
in Municipal District Heating (Pilot Project in Rivne)

Date, time	Event	Contacts
<u>October 31</u>		
14:10	Arrival in Kiev (Borispol airport). PARIS/DEGAULLE KIEV BORISPOL AIR FRANCE 2652 H . Accommodation. (<i>Responsible person: Ms. Ksenia Semenova</i>)	<i>Alexey Paschenko</i> Office: (0362) 26 1889 Mobile: (067) 7440050 E-mail: undp-rivne@ukr.net
<u>November 1</u>		
9:00	Meeting with UNDP Senior Programme manager Mr. Sergei Volkov	
10:00	Meeting with the Project CTA Dr. Suresh Hurry	
11:00	Meeting with the Project Manager Mr. Alexey Paschenko	
13:00	Lunch	
14:00	Meeting with the Ministry of Economy and European integration of Ukraine (MEEI) representatives	
15:30	Briefing with UNDP management: <ul style="list-style-type: none"> • Mr. Manoj Basnyat (UNDP Resident Representative) • Mr. Suresh Hurry (Chief Technical Advisor) • Mr. Sergei Volkov (Senior Programme Manager) 	
16:00	Meeting with Association of local communities and authorities (AoLCA) representative (Ms. Iryna Kovalchuk)	
16:30	Departure for Rivne.	<i>Mr: Alexey Paschenko</i> Office: (0362) 26 1889 Mobile: (067) 7440050 E-mail: undp-rivne@ukr.net

20:00	Accommodation at "Myr" hotel	
<u>November 2</u> 8:30	<p>Meeting with the National Project Director Mr. Vasyl Bertash:</p> <ul style="list-style-type: none"> • MEEI Representative • Ms. I. Kovalchuk (AoLCA representative) • Mr. S.Volkov (Senior Programme Manager) • Mr. O. Paschenko (Project Manager) • Mr. V. Zakladny (ESCO-Rivne Director a.i.) • Mr. P. Sergiychuk (DHC "KomunEnergia" Director) 	<p style="text-align: right;"><i>Mr. Alexey Paschenko</i> Office: (0362) 26 1889 Mobile: (067) 7440050 E-mail: undp-rivne@ukr.net</p>
10:00	<p>Meeting with Rivne city mayor Mr. Victor Chayka:</p> <ul style="list-style-type: none"> • MEEI Representative • Ms. I. Kovalchuk (AoLCA representative) • Mr. S.Volkov (Senior Programme Manager) • Mr. O. Paschenko (Project Manager) • Mr. V. Zakladny (ESCO-Rivne Director a.i.) • Mr. V.Panchuk (International Projects Coordinator in the city of Rivne) • Mr. O.Kravchuk (Rivne deputy mayor) 	
11:30	Kick-off meeting	
13:00	Lunch	
14:00-18:00	Meeting with the Project / ESCO-Rivne staff	
<u>November 3</u> 10:00	<p>Meeting with the municipality of Ostrih (Mayor – Mr. T. Pustovit):</p> <ul style="list-style-type: none"> • Ms. I. Kovalchuk (AoLCA representative) • Mr. V. Matsun ("Ostrihvodocanal" director) • Mr. S.Volkov (Senior Programme Manager) • Mr. O. Paschenko (Project Manager) • Mr. V. Zakladny (ESCO-Rivne Director a.i.) 	<p style="text-align: right;"><i>Mr. Alexey Paschenko</i> Office: (0362) 26 1889 Mobile: (067) 7440050 E-mail: undp-rivne@ukr.net</p>
11:30	Meeting with Ostrih water supply company "Ostrihvodocanal" director Mr.V.Matsun	
12:00	<p>On-site visit: Ostrih water management (water-purifying) station</p>	

13:00	Lunch	
15:30	Reviewing Project documentation	
November 4 9:00 10:00	On-site visits: <ul style="list-style-type: none"> ➤ Power Plant ➤ Heating main ➤ Individual heat substations (5, 7 Mitskevycha Str.) ➤ Central heat substation (5 Mitskevycha Str.) 	
9:00 – 12:00	Interview with ESCO-Rivne financial department. Reviewing documentation	Evaluation performed by Ms. Iryna Kovalchuk
10:30	Meeting with DHC “KomunEnergia”: <ul style="list-style-type: none"> • Mr. P.Sergiychuk (“KomunEnergia” Director) • Mr. T. Trotskiy (MEEI representative) • Ms. I. Kovalchuk (AoLCA representative) • Mr. S.Volkov (Senior Programme Manager) • Mr. O. Paschenko (Project Manager) • Mr. V. Zakladny (ESCO-Rivne Director a.i.) 	
12:20	Lunch	
13:00	Evaluation of the Project results <i>(according to the project success criteria, indicated in the Project Document Annex 9)</i>	
17:00	Meeting with “Credit Bank” representatives: <ul style="list-style-type: none"> • Mr. S.Volkov (Senior Programme Manager) • Ms. I. Kovalchuk (AoLCA representative) • Mr. O. Paschenko (Project Manager) • Mr. V. Zakladny (ESCO-Rivne Director a.i.) • Ms. T.Yegorchenkova (Financial Manager) 	
16:30	Reviewing project documentation	
November 5 9:00	Interview with ESCO-Rivne staff: <ul style="list-style-type: none"> • ESCO-Rivne Director a.i. Mr. V.Zakladny • ESCO-Rivne Commercial manager Ms. O.Tarnagurska • ESCO-Rivne Financial manager • Ms. T.Yegorchenkova 	
11:00	Reviewing project documentation Evaluation of the Project results	

	<i>(according to the project success criteria, indicated in the Project Document Annex 9</i>	
12:30	Meeting with Infrastructure Consult Halle representatives (ISC, Halle, Germany)	
13:00	Lunch	
14:00	Interview with ESCO-Rivne staff: <ul style="list-style-type: none"> • ESCO-Rivne Energy auditor Mr. O.Novitskiy • ESCO-Rivne Energy auditor – ecologist Ms. S.Poskryobysheva • ESCO-Rivne Procurement officer Mr. O.Kravchuk • ESCO-Rivne Lawyer Ms. I.Romanchuk • ESCO-Rivne Assistant Ms. L.Bodyahova 	
16:00	Reviewing project documentation	
<u>November 6</u>	Individual work (developing of Evaluation Report) during weekend	
<u>November 7</u>	Individual work (developing of Evaluation Report) during weekend	
<u>November 8</u>		
9:00	Preparation of the draft Evaluation Report	
15:00	Meeting with local communities and Apartment owners associations (optional)	
16:30	Preparation of the draft Evaluation Report	
<u>November 9</u>		
9:00	Preparation of the draft Evaluation Report	
14:00	Work on Evaluation Report Presentation	
16:00	Meeting with the city lightning company “Misksvitlo” (Mr. Letskalyuk, the Director): <ul style="list-style-type: none"> • Ms. I. Kovalchuk (AoLCA representative) • Mr. O. Paschenko (Project Manager) • Mr. V. Zakladny (ESCO-Rivne Director a.i.) 	
<u>November 10</u>		
9:00	Presentation of the draft Evaluation Report. <ul style="list-style-type: none"> • Mr. V.Bertash (First deputy governor) • Mr. V.Chayka (Rivne mayor) • Mr. T. Trotskiy (MEEI representative) • Ms. I. Kovalchuk (AoLCA representative) • Mr. S.Volkov (Senior Programme Manager) • Mr. P.Sergiychuk (“KomunEnergia” Director) • Mr. Letskalyuk (“Misksvitlo” Director) • Mr. O. Paschenko (Project Manager) 	

	<ul style="list-style-type: none"> • Mr. V. Zakladny (ESCO-Rivne Director a.i.) 	
10:00	Discussion.	
12:30	Meeting with the Project/ESCO-Rivne staff	
13:00	Lunch	
14:00	Departure for Kyiv	
<u>November 11</u>	Meeting with ESCO-Rivne consultants: ESCO-Commerz, TPF Consulting (optional)	
<u>November 12</u> 9:00	Debriefing with UNDP management: <ul style="list-style-type: none"> • Mr. Manoj Basnyat (UNDP Resident Representative) • Mr. Sergei Volkov (Senior Programme Manager) 	
<u>November 13</u> 15:05	Departure for Canada. Borispil airport Flight (AF 2653).	

Appendix 3 : List of persons interviewed

THE PERSONS INTERVIEWED

1. UNDP Senior Programme manager Mr. Sergey Volkov.
2. Project CTA Dr. Suresh Hurry.
3. Project Manager Mr. Alexey Paschenko.
4. UNDP resident Representative Mr. Manoj Basnyat.
5. Representative of the Association of Local and Regional Authorities Ms. Iryna Kovalchuk, Key Expert on International Activity Issues.
6. National Project Director, First Deputy Head of Rivne Oblast State Administration Mr. Vasyl Bertash.
7. ESCO-Rivne Director Mr. Viktor Zakladny.
8. DCH "KomunEnergia" Director Mr. Petro Sergiychuk.
9. Rivne City Mayor Mr. Victor Chayka.
10. Rivne Deputy Mayor Mr. Olexandr Kravchuk.
11. International Projects Coordinator in the City of Rivne Mr. Volodymyr Panchuk.
12. Ostrih City Mayor Mr. Taras Pustovit.
13. Ostrih water supply company director Mr. Volodymyr Matsun.
14. ESCO-Rivne lawyer Ms. Ivanna Romanchuk.
15. ESCO-Rivne Financial Manager Ms. Tetyana Yegorchenkova.
16. ESCO-Rivne Procurement Specialist Mr. Olexandr Kravchuk.
17. ESCO-Rivne Assistant Ms. Lyudmyla Bodryahova.
18. Administrative Assistant Ms. Nataliya Olshanska.
19. Community Mobilization Expert Mr. Olexiy Mykhasyuk.
20. ESCO-Rivne Energy Auditor Mr. Olexandr Novitskiy.
21. ESCO-Rivne Energy Auditor – Environmentalist Ms. Svitlana Poskryobysheva.
22. ESCO-Rivne Commercial Manager Ms. Oksana Tarnahurska.
23. Rivne Branch Credit Bank Ukraine Director Mr. Vitaliy Kuchevskiy.
24. Rivne Power Plant Director Mr. Mykola Boyar.
25. German Government Technical Assistant Coordinator Dr. - Ing. Hettler Volker.

7.3 Appendix 4 : Summary of field visits

The evaluator visited the following sites:

- Municipalities – meeting with the Rivne city mayor Mr. V. Chayka; meeting with the Ostroh mayor Mr. T. Pustovit.
- Boiler Power Station in Rivne city.
- Retrofit boilers and control panel in Ostroh city.

a) **KomunEnergiya District Heating – Rivne**

The evaluator can establish that the following works were actually performed:

- installation of the district heating pipelines between boiler plant located at 71 Kn. Volodymyr St. and heat-network chamber (valve room) no. 39 in the city of Rivne,
- rehabilitation and renovation of the automation and control system for the boiler units installed in the boiler house at 71 Kn. Volodymyr St. in the city of Rivne,
- rehabilitation and renovation of the two boiler units installed in the boiler-house at 71 Kn. Volodymyr St. in the city of Rivne,
- rehabilitation and renovation of the gas burners for boiler units installed in the boiler-house at 71 Kn. Volodymyr St. in the city of Rivne,
- arranging of the variable speed drive system for forced draft units of B-25-15 boiler and supply-line pumps in the boiler-house at 71 Kn. Volodymyr St. in the city of Rivne,
- arrangement of individual heat substation in the residential building located at 5 Mitskevitcha St., in the city of Rivne,
- arrangement of individual heat substation in the residential building located at 7 Mitskevitcha St., in the city of Rivne,
- reconstruction of central heat substation located at 5 Mitskevitcha St., in the city of Rivne,
- installation of individual heating substation in the residential buildings 46 Dubenska St., 42 Kievskaya St., 77 Kievskaya St. in the city of Rivne.

After the field visits the evaluator had a meeting with the Chief of the public utility company DHC “KomunEnergiya” Mr. P. Sergiychuk. The KomunEnergiya is a second share-holder of ESCO-Rivne and currently is also a major client with a total investment of 132 500 hrivnas into the statutory fond. The first and the main share-holder of ESCO-Rivne is the Communal Enterprise “Misksvitlo”, which owns 50, 1 % of all shares with a total investment of 135 000 hrivnas.

b) **Ostroh - Vodokanal**

In Ostroh city the major and the technical director talked about their technical needs, cost break-down structure, gave the overall review and explanation about the project implementation and its social impact. The general manager demonstrated willingness for cooperation, great transparency, patterning the information, provided to the evaluator. The technical director, who guided the field visit, as being able, answered correctly to all technical questions, asked by the evaluator. The mayor, Mr. T. Pustovit, expressed a great willingness to participate with ESCO-Rivne in other future developments, patterning to some other municipal facilities, such as the public lightening system improvement.

7.4 Appendix 5 : List of documents reviewed

LIST OF DOCUMENTS REVIEWED:

1. United Nations Development Programme Project of the Government of Ukraine: Project Document.
2. Terms of Reference. Climate Change Mitigation in Ukraine through Energy Efficiency in Municipal District heating (Pilot Project in Rivne). Terminal Evaluation.
3. UNDP/GEF Project "Climate Change Mitigation in Ukraine through energy Efficiency in Municipal District Heating (pilot Project in Rivne)". UKR/01/G31/A/1G/99. Annual project report 2003. Kiev-Rivne 2003.
4. UNDP/GEF Project "Climate Change Mitigation in Ukraine through energy Efficiency in Municipal District Heating (pilot Project in Rivne)". UKR/01/G31/A/1G/99. Quarterly progress report - 1st Quarter 2004. Kiev-Rivne 2004.
5. Close corporation "Municipal Energy service Company of Rivne" "ESCO – Rivne". Energy Efficiency Plan for the City of Rivne. Rivne – 2004.
6. Closed Joint Stock Company "Municipal Energy services Company of Rivne" "ESCO – Rivne". Technical monitoring of boiler-house in the prince Vladimir street, 71 in Rivne (July, 2004). Rivne – 2004.
7. Model standard agreements of energy effective contract. Closed Joint Stock Company "Municipal Energy services Company of Rivne" "ESCO – Rivne", 2004.
8. ESCO regulative changes guaranteeing of compensating expenditures by "ESCO-Rivne". Closed Joint Stock Company "Municipal Energy services Company of Rivne" "ESCO – Rivne", 2004.
9. Business Plan of the activities for the year 2004 of "ESCO-Rivne". Closed Joint Stock Company "Municipal Energy services Company of Rivne" "ESCO – Rivne", 2004.
10. Financial contracts signed by "ESCO-Rivne". Closed Joint Stock Company "Municipal Energy services Company of Rivne" "ESCO – Rivne", 2004.

7.5 Appendix 6 : Comments by stakeholders

**APPENDIX 6
COMMENTS**

During the presentation of the first draft report in the office of the Mayor of Rivne and later at the UNDP office in Kiev, the following responses to some points presented by Mr. L.P. Lavoie, Senior Evaluation Manager, were brought up:

- Mr. Chayka, the Mayor of Rivne, confirmed the fact that the municipality is ready to allocate, within the city's budget, the resources needed for the "ESCO-Rivne" project implementation (on preferential terms);
- In new residential housing, it was envisaged to install separate water supply, heating and energy meters, established independently for each unit. This work began 3 years ago. All participants agreed that energy users should not pay for a square meter, but for the actual amount of resources used. 100% payment can only be guaranteed in such cases.
 - Presently, the implementation of the project on the renovation and refurbishing of the hospital, boiler-house and maternity ward provides 350 thousand UAH in returns each year. These returns can be guaranteed by the city's budget.
 - As for the payback period, the Mayor mentioned that, in Rivne as well as in the whole of Ukraine, it is difficult nowadays to find short-term investment projects. The Soviet Union has left a bad legacy to post Soviet Union countries, including Ukraine. This means most equipment is outdated and serious investment resources and time are needed to remove and rehabilitate it.
 - The Mayor confirmed his willingness and capacity to provide the "ESCO-Rivne" project with a credit line.
 - In regards to attracting new financial resources, the Mayor was surprised to hear that Kreditprombank or Gazbank were considered as potential investors. A half a year ago, the municipality started negotiations with its main partners. Privatbank and Aval Bank. Following the negotiation results, they proposed to open a credit line in the amount of 5-6 million UAH. This is why Mr. Chayka is confident that, if need be, such resources can be drawn.
 - As for the payments are concerned, Mr. Zakladny mentioned that the first money resources started to return regularly in May and that, as of November, they were fully paid back.
 - The evaluation and assessment of the implementation of the project results as well as market monitoring activities have been performed by ESCO-Rivne as of January 2004.
 - As for the meeting with the Krediprombank, it should be mentioned that the meeting was not organized as a planned meeting aimed at a presentation, but as a work session to demonstrate ESCO-Rivne's staff at work. For the time being, reliable and positive relations have been established with several banks. A number of them have sent letters of interest to ESCO-Rivne, expressing their willingness and readiness to open credit lines. The ESCO has established a feasible strategy in regards to opening an operating credit lines for the implementation of project activities.

Business Plan

ESCO - Rivne

Rivne 2005

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Abbreviations and Acronyms

AOA – Apartment-Owners Association
 CIS – Commonwealth of Independent states
 CO₂ – Carbonic Acid Gas
 CO – Community Organization
 EPC – Energy-Performance Contract
 ESCO – Energy Service Company
 FG – Functional Group
 GEF – Global Ecology Facility
 GDP – Gross Domestic Product
 GHG – Green House Gas
 NGO – Non-Governmental Organization
 PR – Public Relations
 UNDP – United Nations Development Programme

Appendixes

APPENDIX 1: *Drafts of the Energy Performance Contracts*

APPENDIX 2: *Financial Plan for the years 2005-2008*

APPENDIX 3: *Scheme of Work with Budget Institutions*

APPENDIX 4: *Company Management 3D Structure*

1. EXECUTIVE SUMMARY

1.1 Background

Ukraine is one of the least energy efficient countries in the world and has the greatest emissions level per unit of GDP among CIS countries. A recent inventory of the total emissions from Ukraine showed the figures that significantly exceeds the levels in most European countries and is also one of the highest in the world. An inventory estimated that total emissions from Ukraine in 2002 were 487 million tons of CO₂ equivalent (the corresponding figure for 2001 was 482 million tons). This results in a per capita emission of 10 tons of CO₂ equivalent per year. Heat supply in the buildings sector accounts for approximately 25% of all fuel consumed in Ukraine, and, therefore, there is a huge potential for energy efficiency improvement in this sector, which Ukraine wants to actively pursue.

Problems in Ukrainian district heating are similar to those facing other countries of the former Soviet Union. Sharp increase in fuel prices up to the world level with heat tariffs lagging behind considerably worsened the financial state of all district-heating companies. Lack of the funds for modernization of generating capacities and heat networks impacted the level of service, which in combination with consumers' lower ability to pay significantly reduced the level of payment collection. Heat supply infrastructure is operated beyond the service life and requires large investments for maintaining it in operating condition and covering existing heat demand.

At the same time, it is this inefficiency of existing heat supply and consumption systems that creates significant potential for fuel and energy saving. Heat supply in the buildings sector accounts for approximately 15% of all fuel consumed in Ukraine, and there is a huge potential for energy efficiency improvement in this sector illustrated by the following figures: Specific fuel consumption for heat generation in communal energy sector of Ukraine is 0.180-0.200 t.c.e. per 1 Gcal compared to 0.150-0.160 t.c.e. in Western countries. Specific heat consumption for heating and hot water supply of Ukrainian buildings is 1.5-2 times higher than in Western countries with similar climate conditions.

There exist a number of barriers that hinder supply and demand side energy efficiency improvement in district heating systems. These include: macro-economic conditions such as high taxes and unstable taxation policy, unstable local currency, inconsistency of regulatory and legal policies, non-payment crisis, imperfect pricing policy, institutional weaknesses, ownership questions, lack of information about existing opportunities for energy efficiency and relevant experiences, high transaction costs for relatively small energy efficiency projects, unsatisfactory financial state of district heating companies and consumers, difficulties in arranging financing for energy efficiency projects, lack of capacity and experience in preparing, implementing and managing energy efficiency projects, technical deficiencies of heat supplier and consumer systems, and the absence of incentives to energy saving for the majority of heat consumers.

Energy service company (ESCO) can design, implement and finance all necessary energy efficiency investments in municipal buildings, the district heating networks and other energy consuming local facilities through energy performance contracts (EPC) or other suitable contractual arrangements. This approach aims at providing up-front investment through a portion of the savings actually realised. The ESCO concept represents an excellent vehicle for systematic energy efficiency as it deals with numerous clients, it is flexible in the decision-making process and - based on its business orientation - it is interested in multiplying energy efficiency activities through expansion of its customer base.

Community involvement through social mobilisation to the energy efficiency activities is very promising. Accordingly, all beneficiary households and other stakeholders in selected residential areas should participate fully in implementing energy saving initiatives. Through social mobilisation, communities should be sensitised and become aware of the benefits of energy efficiency measures through the ESCO approach - in terms of energy and cost savings, as well as in terms of the environmental impact (reduction of GHG emissions).

1.2 Objectives

ESCO-Rivne has doubled aim:

- (1) *Support the energy efficiency development in communal sector of Rivne with further replication on other regions of Ukraine*
- (2) *Promotion of energy saving among the Rivne inhabitants.*

The first aim - support should be done through cooperation with local communal enterprises and local authorities, budget institutions etc. ESCO-Rivne has already established the necessary contacts and now in the phase of working out the projects.

The second - universal experience shows that well-coordinated efforts are needed for convincing local communities in energy efficiency necessity.

The major goal of ESCO-Rivne is to contribute through its initiatives to the reduction of greenhouse gas emissions through large-scale improvements in energy efficiency in the communal heat supply sector in Rivne.

These improvements will result from a four-part approach:

- (1) *Capacity building to create the basis for systematic energy efficiency activities at the local level;*
- (2) *An integrated approach of supply and demand-side improvements to achieve maximum fuel savings and emissions reduction;*
- (3) *Attraction of external investment resources for an energy efficiency program in Rivne; and,*
- (4) *Public awareness-raising through the involvement of communities and NGO's, in particular those concerned with environmental and energy efficiency problems.*

ESCO-Rivne does not limit its business activities by the municipal frames only. Company is prepared to develop and implement energy saving projects in other areas (the industrial sector and in non-manufacturing business).

1.3 Mission

Our mission is to provide clients across Rivne region and Ukraine with comprehensive energy saving services for all types of buildings, regardless of their ownership, - from concept planning and design works to turn key completion. All the works are done by highly skilled professional team working together, using common sense and practical experience.

1.4 Keys to Success

- (a) Provide professional quality services on time and budget;
- (b) Guarantee the calculated energy savings;

- (c) Develop a follow-up strategy to gauge performance with all clients;
- (d) Implement and maintain a quality control and assurance policy

2. COMPANY SUMMARY

2.1 Justification

The ESCO business approach presents the most effective way for systematic energy efficiency activities for both supply and demand-sides and works at municipal level because it is oriented towards operation with numerous clients of various types, it reduces transaction costs and can tackle a large number of similar and relatively small-scale projects that could not be financed separately using traditional approaches. ESCO Rivne possesses the necessary expertise for project preparation and implementation; performs design works, building and assembly jobs balancing and commissioning; it is quick and flexible in making decisions about financing of projects and is intrinsically interested in multiplying energy efficiency activities through expansion of its customer base.

2.2 Ownership

The Municipal Energy Service Company was legally registered in the City of Rivne on November 12, 2003 as closed joint-stock company with the official name “ESCO-Rivne”.

The shareholders are the Oblast Administration and City government (municipality). Due to the fact that Oblast Administration and City Government (municipality) are not legal entities ESCO-Rivne’s founders and stockowners are:

- The District Heating Company “KomunEnergia“ (controlled by and reporting to Oblast Administration), 49.53% of stock shares and
- The Municipal Enterprise “Misksvitlo” (controlled by and reporting to Rivne municipality), 50.47% of stock shares.

The Statutory fund (authorized initial capital) is approximately US\$ 50’000.00 (see table below):

ESCO-Rivne Founders/shareholders	No of Stocks	Capital, UAH	Shares
DHC “KomunEnergia“	53	132500,00	49.53%
CE “Misksvitlo”	54	135000,00	50.47%,
Total	107	267500,00	100.00%

With the purpose of increasing the ESCO-Rivne employees’ personal commitment in Company’s potency and success the shareholders decided to hand over 10% of the shares to the ESCO-Rivne staff. Thus the shares ratio will change:

ESCO-Rivne Shareholders	No of Stocks	Capital, UAH	Shares
DHC “KomunEnergia“	48	120000.00	44.53%
CE “Misksvitlo”	49	122500.00	45.47%
ESCO-Rivne staff	10	25000.00	10%
Total	107	267500,00	100.00%

2.3 Company Location and facilities

The ESCO-Rivne home office was established in the city of Rivne, North-West Ukraine. The office space is estimated to be 150 square meters. The office rooms are equipped with two telephone lines and high-speed Internet connection. Under the current UNDP cooperation the office has been fully renovated and equipped with computers and office equipment, telephone switchboard, etc. and will be transferred to ESCO-Rivne for once the project comes to an end. Similarly all other investments made by UNDP such as energy auditing equipment as well as the vehicle, etc. will be handed over to ESCO-Rivne. Company's web-site is being developing and it is already used as a marketing tool. The domain name of "esco-rivne.com" has already been reserved. ESCO-Rivne Internet address is <http://www.esco-rivne.com>

2.4 Business Concept

The role of the ESCO Rivne is to design, realise and finance all necessary and cost effective investments in the municipal buildings, the district heating network or other energy consuming local facilities through energy performance contracts (EPC) or other applicable contracts, aimed at providing up-front investments, reducing the facilities' energy, operation and maintenance costs, and reimbursing the investments through a portion of the savings actually realized.

2.4.1 Energy performance contracts (EPC)

Energy performance contracting is a relative newcomer to the energy management industry in Ukraine, but it has been well established worldwide (particularly in the US and Canada) for over 10 years. An energy performance contract (EPC) is, in effect, an outsourcing arrangement for energy efficiency, where an external contractor takes total responsibility for achieving outcomes. This is the only form of energy management consultancy where it is possible to obtain a guarantee that energy savings will be achieved. You can performance contract a single savings measure, a whole building, or a whole organization. Bigger contracts are more cost effective.

There are a number of different types of energy performance contract, but all share the following common features:

- The EPC contractor enters into a long term (5-10 year) relationship with you.
- Benchmark energy performance levels are defined and energy efficiency upgrades are identified and implemented by the EPC contractor.
- Risk of non-performance of energy efficiency upgrades is carried by the EPC contractor rather than you.

Thus EPCs are a means of achieving energy efficiency that allows the risks and responsibilities of implementation and maintenance of savings to be passed onto the EPC contractor. This is in contrast with traditional energy management techniques which produce recommendations for efficiency improvement which you have to act on at your own risk.

2.4.2 The process

An Energy Performance Contract (EPC) is an agreement between an Energy Service Company (ESCO-Rivne) and its Client to provide energy services to a particular facility of the Client. This agreement includes a facility survey, as well as the design, installation, financing, and maintenance or management of the facility's energy systems or equipment in order to improve its energy efficiency. The energy savings are guaranteed and are used to repay the cost of the project. This comprehensive approach combines several of the project stages which traditionally have been done one step at a time.

A preliminary project scope should be included in the Request For Proposals so that a more effective comparison can be made of proposals used in selecting an ESCO. The project scope must be directly related to energy savings. Projects that do not reduce energy use are not appropriate. Projects that replace, repair, or maintain systems and equipment that are covered by previous EPCs are not acceptable. For example, repair or replacement of lighting fixtures or temperature control systems that were installed by a previous EPC, water conservation plumbing fixture replacement, replacement of paper towels in toilet rooms with electric hand dryers, fire alarm systems, security systems, telephone systems, technology cabling, etc. and any work in new construction are not appropriate for EPCs.

An energy performance contract commences with a detailed feasibility study, from which a performance contract proposal is produced. This normally consists of both a technical report on the potential energy savings on site but also a proposed form of contract, plus details of how the results of the performance contract will be identified and measured.

From the other hand for the Client the process is much simpler. Instead, the stages of feasibility, design, installation or construction, maintenance and training can now be done with one procurement process - the Energy Performance Contract. Additionally, through EPC, results are guaranteed and financing is provided allowing ESCO to get complete project, financing, installation, and guaranteed results simultaneously.

Once this is accepted, the energy performance contractor implements the energy savings measures, along with a monitoring regime that enables the levels of savings achieved to be explicitly identified. The energy performance contractor guarantees the level of savings to be achieved, and if this level is not met then the contractor pays the difference.

In an Energy Performance Contract, there is no up-front capital requirement. The upgrades and energy efficient improvements can be made immediately with savings guaranteed by the contractor to cover all project costs. If these savings are not achieved, the agency receives a check for the cost difference from the contractor.

The chosen contractor will perform a comprehensive energy analysis on the facility to identify the most cost effective energy conservation measures. The contractor and facility staff, in collaboration, then select the specific projects. Installation, maintenance and appropriate staff training are completed by the contractor.

In a typical Energy Performance Contract, the contractor (ESCO-Rivne) provides the financing directly to the Client. Since vendor financing does not always provide the lowest cost, the ESCO-Rivne have developed and implemented a procedures of open tender process for supply. This includes:

- supply of goods (equipment),

- services (design, installation works, commissioning etc.), and
- contracts of supply on turn-key basis.

Vendor financing rate and terms are compared to the rate and terms of the EPC Master Lease in order to ensure the lowest cost of financing.

For its clients ESCO-Rivne uses different types of EPC:

- sale contract, when the ownership is being transfer to client at the moment of contact completion and the payment is based on long term basis;
- Rent agreement when the Client provide rent payments during preliminary calculated pay-back period;
- Leasing contract the Client provide lease payments during preliminary calculated pay-back period and the transfer of ownership is foreseen by the contract.

To secure its business and funds allocation ESCO-Rivne concludes Pledge agreement (Collateral) with its Client.

2.4.3 Defining the Scope

The EPC project scope must be complete and designed to be independent of any and all other projects that may be proposed or underway and all construction and administrative costs necessary to install EPC work must be the responsibility of the ESCO-Rivne. If the EPC work includes multiple buildings, each building requires a separate project submission and project costs must be separated by building. "Phasing" whereby different parts of work in the same building in the same year are submitted separately and do not constitute a fully functioning system or complete elements of work is not allowed. Since EPCs represent guaranteed installed cost installations with a defined payback period, change orders to EPCs are not acceptable and any additional segments of work will be processed as new, separate project submissions, each requiring a building permit. Each project must stand on its own as a complete, fully operational, code compliant project. Each project submission must individually meet all the requirements for submission of final plans and specifications, including the payback provision. It is not appropriate for an EPC to be dependent upon the school district or other contract to perform work necessary for its installation. For example, turning over materials or equipment for installation by another contractor is not appropriate and demolition or removal of existing equipment, final connections to heating equipment or electric fixtures, lintels, louvers, curbs, equipment pads, construction or reconstruction of space necessary to install EPC equipment, etc. need to be included in the EPC agreement.

2.4.4 Benefits

An EPC provides the ESCO-Rivne Client with energy savings immediately, as well as equipment upgrades, building enhancements, and increased comfort and reliability. It meets statutory requirements, buys needed energy efficient equipment, frees monies to meet other Clients needs, and uses future energy savings which can improve the aging building stock.

Energy Performance Contracting is practical, efficient, and flexible.

2.5 Start-up Plan

The start-up plan is determined by the terms of Cooperation Agreement between UNDP, State Committee for Energy Conservation, Rivne state oblast administration, Rivne Municipality and the shareholders – DHC KomunEnergiia and CE MiskSvitlo.

3. PRODUCTS AND SERVICES

3.1 Service Description

ESCO-Rivne provides all services related to the implementation of energy efficiency and saving measures, which the client cannot or does not wish to do by itself, the include:

1. Conducting energy audits;
2. Preparation of proposals for energy saving projects;
3. Developing and providing financing arrangements;
4. Development of full procurement package (contracts, technical specifications);
5. Procurement of all equipment and services;
6. Supervision of contractors' works during construction and installation phase;
7. Monitoring and verification of the contract performance during further operation;
8. Taking all the risks during project implementation and further operation;
9. Guaranteeing of the energy savings to the client.

Our Company offers innovative and economic design services, unusual financial schemes, and state-of-the art design technology.

3.2 Competitive Comparison

ESCO-Rivne offers their clients superior service accompanied with state-of-the-art analysis and design capabilities. We will offer cost-effective approaches of reducing the energy consumption of client's installation.

Our Company will implement a quality assurance, control and monitoring program for all projects undertaken. This document will serve to focus on the standards which will be achieved and means of measuring performance.

3.3 Fulfilment

ESCO-Rivne has qualified professionals to supplement computer aided design and drafting services, analysis support services which are areas that we can afford to contract out without risking the core values provided to the clients.

We have fostered several alliances with suppliers of equipment and services, including heat meters, pre-insulated pipes boilers etc. as well as with subcontractors – specializing design and installation companies.

3.4 Expected Results and Comparative Advantage

Successful operations of ESCO-Rivne will promote the solving of different problems:

- **Technical**
- **Organizational**

- **Economical**
- **Ecological**
- **Social**

Comparative advantages of ESCO-Rivne projects implementation consist in quick problem-solving of heating within peculiar buildings / apartment house / residential district; ESCO-Rivne is not limited by the organizational or municipal budget and can attract funds from the outside; community involvement into the decision-making raises local self-governance and participation between the inhabitants and authorities.

3.5 Sourcing

The major sources of ESCO-Rivne funding are:

- (1) **Company profit.** Revenue from the performing commercial contracts by ESCO-Rivne (there is the decision of current shareholders to revert all ESCO-Rivne profit during first three years of operation into the new projects).
- (2) **Direct investments to Company.** Contributions to the ESCO Statutory Fund by the Company shareholders.
- (3) **Commercial loans** from local and foreign banks, funds, other financial institutions;
- (4) Repayment from the completed demonstration project contracts, financed by UNDP
- (5) Grants

3.6 Financial Plan

The UNDP / GEF project foresees that ESCO-Rivne will get the income from pay-back. This income will be received in the form of rent and percent from energy saving. Prospective pay-back period is 4 years. The ESCO-Rivne Financial Plan for the years 2005-2008 is provided as APPENDIX 2.

4. MARKET AND CLIENTS

4.1 Situational Analysis

Rivne region is situated in the North-Western part of Ukraine. Its territory is about 20'000.00 square kilometres and amounts to 3.3% of the whole territory of Ukraine. Population of Rivne region is 1'200'000 of people (2.3% of the whole population of Ukraine). The region has 14 rayons.

Small and medium enterprises are mostly concentrated on trade (41.8%), industry (18.8%) and civil works (8.5%).

Rivne region has business import / export relations with 71 countries in the world. The major partners are: Russian Federation, Germany, Italy, Byelorussia, the Netherlands, Czech Republic, Slovak Republic, France, Hungary and Poland.

Rivne region has developed and approved "Sustainable Development Plan for the years 2001 - 2010". The Plan consists of 132 projects with the total amount of investments about US\$ K 113.00 One of the top-priority development lines is the energy constituent / energy consumption reduction.

The industrial market for energy efficiency projects' implementation in the region is very attractive. There are a number of large enterprises with huge energy consumption: JSC RivneAzot, Kostopyl Basalt and Heat-Insulating Materials Plant, Berezno Match Plant, Flax Plant and Bonded Fabric Plant in the city of Rivne. Taking into account that now ESCO-Rivne has no accurate data about the actual energy consumption on the abovementioned enterprises, we can estimate the energy saving potential as 50-60%, which is the average figure for Ukraine.

State / municipal sector of Rivne region is typical for Ukraine. That is why the lessons learnt here are very important and worth broad dissemination.

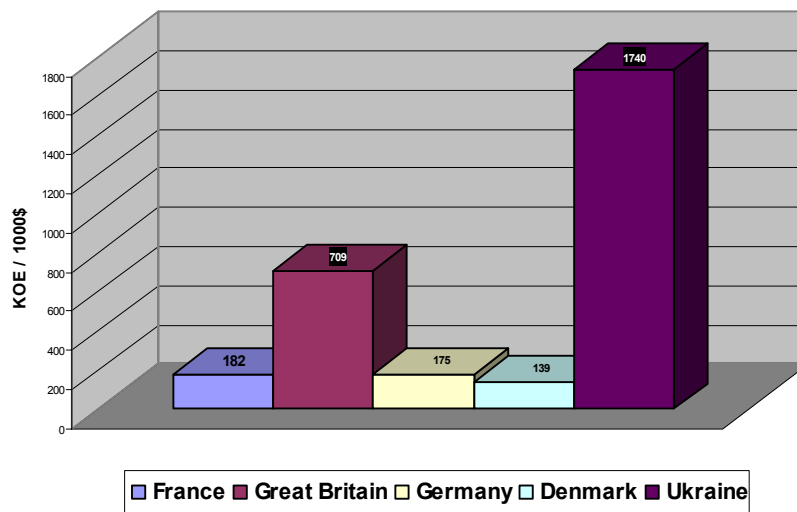
The region has 1055 educational institutions. In Rivne there are 29 schools, 33 kindergartens and 7 grammar schools. The city has about 50 municipal (office) buildings. In the region there are 880 health care institutions, about 20 of them are situated in Rivne. The region also has 438 gyms and sport schools, including 11 covered swimming pools.

Thus, the potential market capacity for energy saving projects implementation is big enough for successful operation of ESCO-Rivne.

4.2 Market Summary

Specific energy consumption in Rivne oblast is 3321 KOE per capita, GDP per capita is 3282\$, energy consuming GDP - 1012 KOE/1000 \$ (Ukraine at all consumes of fuel and energy resources 4600 kg of Oil Equivalent (KOE) per capita, while GDP per capita in Ukraine is only 2500 \$). These parameters in France comparable to Ukraine on territory and a population are accordingly 3845 KOE and 21113 \$. The energy intensity of GDP of Ukraine is 1740 KOE/1000 \$. That in 10 times exceeds a level of France - 182 KOE/1000 \$.

Energy Intensity of GDP



4.2.1 Energy saving market indications:

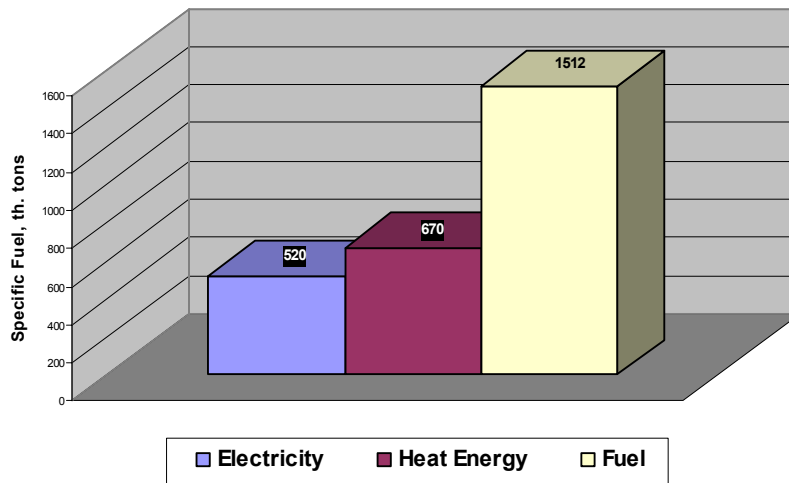
1. Local market exists as a territorial segment of definite volume at the Ukraine energy saving market;

2. Real demand and proposal on the technologies and equipment at the given market segment;
3. Existence of systematic purchases and sales of technologies, equipment or services, which provide real energy resources economy (natural gas, fuel oil, light oil-products) or power bearers (electricity, heat power, compressed air) for buyers or promote this;
4. Existence of Energy Saving infrastructure.

4.2.2 Energy saving potential:

Energy saving potential is estimated with the account of possibility of low cost energy saving

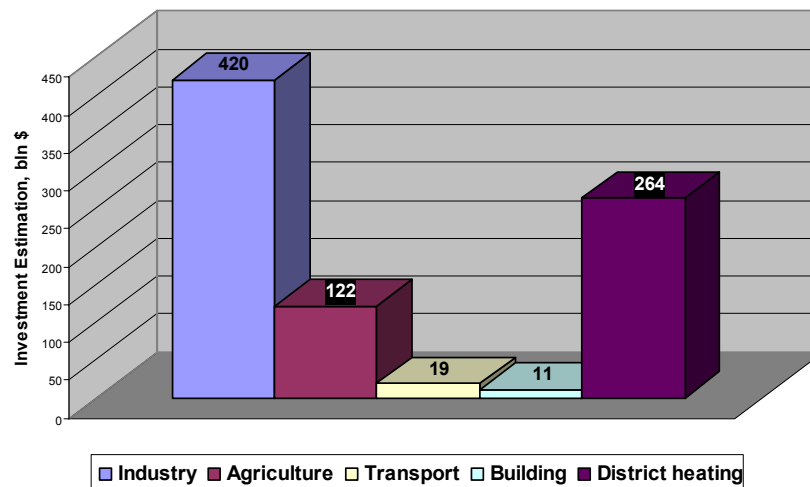
Volume of Potentail Energy Saving Local Market



technologies and equipment, for payback period of 3-5 years.

Energy Saving market volume and structure of Energy Saving potential differentiation on types of energy resources and branches of industry are below in natural and cash indexes in chart.

Investment Estimation of the Energy Saving Market Territorial Segment



Estimation of investment for the potential volume of the Energy saving market territorial segment of Rivne Oblast is given below.

Investment estimation of the Energy Saving market territorial segment (for implementation energy saving projects for pay-back period of 3 years).

4.2.3 Actual volume of the local energy-saving market

The figures provided reflect Region necessities precede from Region investments possibilities.

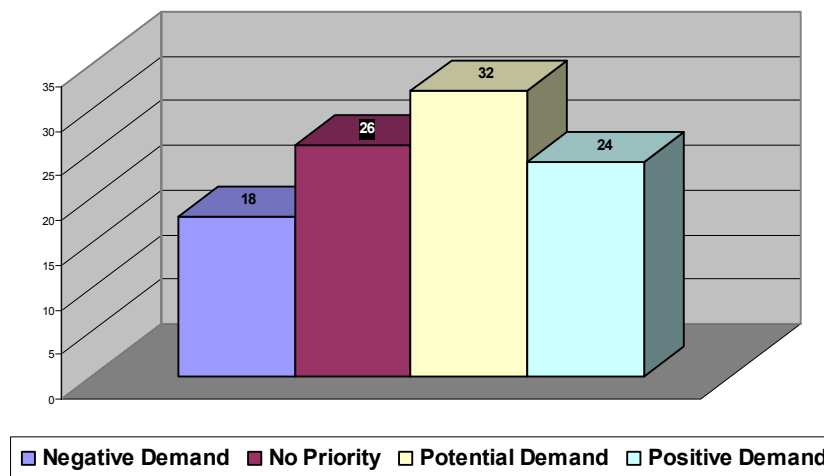
In real situation Region resources are limited and energy saving actual market for technologies and equipment is considerably narrowed.

For valuation of real market volume it is important to take into account distribution of character demand at local energy saving market, when positive demand value is only 24%.

4.2.4 Demand structure at local energy saving market

Different groups of potential buyers were interviewed on the valuation demand character on the local energy saving market segment in Rivne Oblast. The following distribution of positive answers received (amount of interviewed - 52).

Demand Structure of the Local Energy Saving Measures



4.2.5 Market Demographics

All the ESCO-Rivne customers are divided into two big groups: demand-side customers and supply-side customers. The general profile of ESCO-Rivne customer consists of the following geographic, demographic and behavior factors:

Geographic:

- Since ESCO-Rivne is the municipal company, the priority geographic target is the city

of Rivne and Rivne region.

- ESCO-Rivne doesn't limit itself with the Rivne region only. We are open to any customer all over Ukraine.

Demographics:

- Participate in an industry that involves interaction with the energy / environment, generally these companies will participate in the following industries: district heating, hot water supply, sewage systems, city lightening etc.
- Yearly revenues are multi-million dollar amounts.
- ESCO-Rivne investments made in energy efficiency during last year are about 1.5 million of US dollars.

Behavior:

- Have an impact on the environment that is generally viewed as negative (great GHG emission, exceeding fuel consumption etc.).
- Are often interacting with local communities in regards to their work within the environment.

4.2.6 Market Segments

Rivne municipal district heating system is closed, double-piped with direct and indirect schemes of consumers' attaching to the heating and hot water supply.

In the city of Rivne heating is provided from the district, quarter and local boiler-plants.

The rated heat flow provided for consumers (installed load) is 452 GCal / hour (507 gig calories / hour taking into account the losses in heating mains) – according to information of DHC “Komunenergia”. On the balance of DHC “Komunenergia” there are 36 boiler-plants with the installed capacity of 784.3 Gcal / hour and the total power among them:

- Up to 3 Gcal / hour – 13 (total installed capacity – 17.9 Gcal / hour);
- From 3 to 20 Gcal / hour – 10 (total installed capacity – 112.9 Gcal / hour);
- More than 20 Gcal / hour – 13 (total installed capacity – 653.5 Gcal / hour).

182 boilers with the different capacity from 0.07 to 30.0 gig calories / hour are installed in the boiler-houses.

The majority of consumers receive heat from the boiler-plants where the steam heating-units (types B-25-15GM, DKVR-10/13, E-1/9 etc.) and the hot-water boilers (types PTVM-30, KVGM-30, GVG-8M, TBG-4P, KBNG-2.5 etc) are installed. 46 boilers have operation period more than 20 years; efficiency of 2 boilers is less than 82%.

Natural gas is used as the main fuel on all the boiler-plants. The heating mains are double-pipe subsurface manifolds in the no-go channels Ø 100...500 mm. The distributive networks from Central Heating Chambers (CHC) are four-pipe subsurface manifolds Ø 32...150 mm in the no-go channels.

According to the information of DHC “Komunenergia” the heating manifolds' extension in the double-pipe calculation is 186.5 kilometers, including those with pre-insulated pipes – 12 kilometers. The nets' extension with expired operation period is 160 kilometers.

The substantial part of the heating mains demands replacement, the manifolds have damaged thermal insulation, and some runs are flooded with the subsoil water. According to the information of DHC “Komunenergia” losses in the heating mains amount to 10-13% (on some runs the losses are even bigger – 30-40%).

Heat supply to the consumers is done by direct-heating systems and indirect systems through Central Heating Chambers there are 79 CHC on the balance of DHC “Komunenergia”. Most of CHC have out-of-date technological equipment which demands replacement. The control and automatic units are almost absent in the CHC.

In the city of Rivne there are 1432 high-rise buildings. 78 of them have CHC installed. $\frac{3}{4}$ of the total heating falls at the apartment houses.

The major problems of municipal district heating in the city of Rivne are the following:

- (1) Low efficiency of boilers’ heat generating equipment and central heating chambers that causes improper quality of hot water and heating services;
- (2) High level of heat carrier losses in the mains and building connections;
- (3) High level of heat energy losses in commercial, budget and apartment buildings.

Electricity for the city of Rivne is transmitted by AES RivneEnerg Company (75% of the Company shares belong to American AES Group).

The total length of transmission and distribution lines in Rivne region is 27 000 kilometers. Electricity is supplied to 403 000 end-users around the region. The average annual consumption rate is 700 GWh.

City lightning is provided by Communal Enterprise MiskSvitlo. This company also builds and services the local power grid.

The water transport and drainage systems of Rivne are pertained to and used by Municipal Communal Enterprise “RivneVoda”.

The water transport system is combined – for economic and domestic, industrial and fire-prevention purposes. It consists of:

- Water wells (artesian wells);
- Water-pumps stations;
- Water-pipes;
- Subscriber's drops.

The water wells are situated out of town. The distance between Rivne city and the basic water well is about 17 km. The water transport system of Rivne includes 3 water-tower stations and about 250 km of water-pipes.

The drainage system is combined. It means that the domestic sewage and rain water are drained by the common system of headers.

The municipal sewage system includes 190 km of drainage systems, 14 basin pumping stations, main drainage pump plant and the municipal water purifier station.

Annually the municipal drainage system exports about 30 billion m³ of sewage. The municipal water purifier station can refine approximately 9 billions m³ of sewage (about 30%). Other sewage is exported by the main pump plant to the Joint-Stock Company “AZOT” water purifier station, which is situated at a distance of 17 km from the city of Rivne. For pumping over the sewages the basin pumping stations use 11.6 billion KWT/hour annually, and the main pump plant uses 7.5 .6 billion KWT/hour annually. The rate of electricity use for sewage pumping over is the following:

- Drainage system basin pumping stations – 0.56 KWT/hour/m³;
- Main drainage system pump plant – 0.43 KWT/hour/m³;
- In general for drainage system – 0.91 KWT/hour/m³.

Cost of sewage 1 m³ transportation amounts to 70% of general drainage service tariff.

4.2.7 Target Markets and Clients

The target group of ESCO-Rivne clients consists of two local communal enterprises – DHC KomunEnergiya and CE MiskSvitlo. Both Companies are ESCO shareholders and clients in the same time. It determines the specific relations with the Companies and demands well-balanced conduct of all related parties to avoid conflict of interests. While the situation allows a unique opportunity to estimate the energy efficiency both from the supply side point of view and from the demand side position and implement the Comprehensive Resource Planning. The most important issue here is the possibility to perform projects’ expenses analysis and choose the best cost-effective variant.

Another group of clients includes Rivne Municipality and Rivne oblast administration (Governor’s office). Taking into account that these bodies were the founders of ESCO-Rivne, local authorities provide permanent support to the Company.

The other typical clients of ESCO are the following:

(a) Municipal Clients

- Apartment Houses
 - Apartment Owners Associations
 - Renters’ Associations
 - Cooperative Housing
 - Condominiums
- Social and Leisure Institutions
 - Theaters
 - Cinemas
- Education Institutions
 - Universities
 - Secondary / grammar schools
 - Kindergartens
- City lightning
- Water supply and sewage
- City waste treatment system
- Heat supply
- Power stations (co-generation)

(b) Industrial Clients

- Heat consumers

- Industrial heat
- Space heating
- Ventilation systems
- Electricity
 - High-voltage systems
 - Low-voltage systems
 - Territory lightning
- Compressed air systems
 - Compressors
 - Piping

4.2.8 ESCO-Rivne Clients' Characteristics

Communal enterprises (like KomunEnergiya or MiskSvitlo) are the typical ESCO-Rivne clients. Such companies are looking for fixed charges reduction (standard expenses for fuel) and / or operation / service costs. Usually these are the state or municipal enterprises that provide communal services to the end-users.

The industrial group of clients is characterized by the out-of-date equipment. These clients are interested in energy saving measures implementation on their installations.

The majority of end-users are not aware of the energy saving possibilities. They have low motivation for energy saving.

4.2.9 Market / Clients' Needs

Communal enterprises of Rivne use obsolete and sometimes exhausted equipment. Such equipment demands replacement to reduce operation costs and negative impact on the environment. These enterprises need to implement energy efficiency concept for different types of activity. State institutions are extremely interested in reducing the operation costs because it will allow funds' shifting for other budget lines.

ESCO-Rivne is providing its customers with a selection of different energy-saving activities. While there are many construction / installation firms, none can offer such a comprehensive set of financial and engineering services. ESCO-Rivne seeks to fulfill the following benefits that are important to its customer:

- **Selection:** A reasonable range of energy-efficiency / saving – specific services.
- **Professionalism:** The Company has the best experts in engineering, project financing and management and huge network of suppliers and sub-contractors.
- **Accessibility:** ESCO-Rivne will serve clients at whatever location is best; this is the often outdated sites and buildings.
- **Customer Service:** The client will be impressed with the level of attention that they receive from ESCO-Rivne experts.
- **Competitive Pricing:** ESCO-Rivne's pricing schemes are always competitive within the local Energy Industry due to the basic principle of ESCO-Business financing – short to long term credit payment.

4.2.10 Market Trends

The market trend for the Energy Industry is increasing of energy efficiency with reduction of fuel consumption and, as follows GHG emission. Ukraine to a great extent remains behind the

Western European countries, especially in the effectiveness of energy use and saving. Rivne Oblast as a one of Ukraine regions has its territorial Energy Saving market segment with own characteristics and tendencies. But in many cases they differ a little from the all-Ukrainian.

The majority of competitive companies are under pressure to offer a wider range of services. The reasoning behind this trend is that the engineering firms will be able to capture more energy-related business if they offer a one-stop-shopping solution for many energy-saving services. Because of these current trends, ESCO-Rivne emphasizes on turn-key project's implementation and pro-long credit payment basis, concentrates on their core competencies, flexibly addresses market needs, and ignores the trends that some of the industry is following.

4.2.11 Market Growth

The economic situation in Ukraine has had a major influence on potential energy efficiency investments. The Ukrainian economy has declined each year since independence in 1991 and soon after that energy arrears have also been a major problems, particularly in the state and municipal sectors. When a company doesn't pay for energy, energy efficiency is rarely economical. Inflation, barter and non-payments have driven interest rates up as high as 300%, though they are currently between 25 and 60% for most commercial customers.

The ESCO industry in Ukraine is quite new. Most energy efficiency companies working in Ukraine do not use performance contracting, nor can they provide financing for projects. Actually, the UkrESCO is the only ESCO in Ukraine with significant financing available specifically for energy efficiency. Several regional ESCOs have also been created, and foreign ESCOs have also tried to enter the Ukrainian market, though none is able to provide the full range of services of a typical ESCO.

There are also numerous engineering and consulting companies in Ukraine that provide energy efficiency services, but they do not use EPC. Many of these organizations are small and / or associated with Ukrainian technical institutes.

Industry is likely to be the major source of ESCO projects in Ukraine for the next few years because industrial plants can provide collateral and guarantees, private industrial plants have lower energy arrears than most state-owned organizations such as district heating systems, and profitable manufacturers can be found. Municipal market is under-explored despite of significant number of potential projects that can be implemented there.

4.3 SWOT Analysis

The following SWOT analysis captures the key strength and weaknesses within the Company, and describes the opportunities and threats facing ESCO-Rivne.

<i>Scope of Analysis</i>	<i>Strength</i>	<i>Weaknesses</i>
<i>Organization</i>	<ul style="list-style-type: none"> Highly-qualified staff with strong professional and personal relationships within the industry. A solid service offering that is currently unmatched in the area in terms of expertise. Flexibility in non-standard situations and individual approach to the client. ESCO-Rivne team personal commitment in the business success. 	<ul style="list-style-type: none"> The lack of brand equality as a result of the newness of the Company. Low understanding of ESCO-concept by majority of local customers. Bad command of the English Language. Low level of special software skills.
<i>Market:</i>	<ul style="list-style-type: none"> The energy saving market is highly-grown ESCO-Rivne is working up the municipal energy saving market 	<ul style="list-style-type: none"> Low paying capacity of the potential clients.
<i>Services:</i>	<ul style="list-style-type: none"> Turn-Key basis of all the energy saving projects Tender basis for all procurement procedures Guaranteeing of the energy savings to the client Licenseses for design and civil works 	<ul style="list-style-type: none"> Complexity of pay-back guarantee. Complicated financial agreements due to imperfection of the existing legislation.
<i>Finance:</i>	<ul style="list-style-type: none"> ESCO-Rivne use its own money or attract them for energy saving projects implementation, so the Client has no need to look for the funds Short-to-long term credit payment Comparatively low annual interest (9-10%) 	<ul style="list-style-type: none"> Absence of project insurance practice against a background of high project risks. Complexity of actual energy saving reflection in the accounting transactions.
<i>Innovation:</i>	<ul style="list-style-type: none"> The ESCO concept is completely new for Ukrainian energy market Rendering the services on long-term credit or co-finance base Pay-back period linked to the actual energy saving 	<ul style="list-style-type: none"> Low understanding of Energy Performance Contracting by the potential clients. Complexity of pay-back guarantee. Complexity of linking the Energy Performance Contracts to the existing legislation.

Scope of Analysis	Strength	Weaknesses
Marketing:	<ul style="list-style-type: none"> • ESCO-Rivne is the only one energy service company in Western Ukraine • Quality of our services is competitive with other companies, but the prices are lower • Flexibility in project preparation 4) End-user oriented commercial and information campaign 	<ul style="list-style-type: none"> • Low interest of potential clients in energy saving. • ESCO-Rivne is comparatively new company and has no patrons yet.
Factors	Opportunities	Threats
Demand factors	<ul style="list-style-type: none"> • The ability to increase marketing efficiencies over time as the company becomes better known. • The energy saving market grows highly - positive demand is about 24%. • The ability to build a strong client base due to ESCO-Rivne's concentration on a market niche. 	<ul style="list-style-type: none"> • Low paying capacity of the potential clients. • Complexity of financial agreements guarantees.
Competition factors	<ul style="list-style-type: none"> • ESCO-Rivne is the only one municipal energy service company in Western Ukraine. • Fundamentally new approaches to projects' funding and pay-back. • Turn-key basis of projects' implementation (from ToR development to procurement and installation). 	<ul style="list-style-type: none"> • Competition from a number of engineering companies dealing with energy efficiency / heating / hot water supply. • Market is full with energy-efficient equipment offers. • Comparatively high cost of energy saving projects.
Economic factors	<ul style="list-style-type: none"> • Community-based energy saving projects is easy-to-implement and beneficial for both ESCO and the inhabitants. • Well-established project's funding mechanism. 	<ul style="list-style-type: none"> • Low level of citizens' income and hence, low ability to pay for communal services. • Imperfect tax policy. • Deep setback in production.
Environmental factors	<ul style="list-style-type: none"> • All ESCO-Rivne projects are oriented on CO₂ emission reduction. <p>All ESCO-Rivne projects are accompanied by information / education campaigns for population awareness increasing.</p>	<ul style="list-style-type: none"> • Low interest of industrial objects in environment protection. <p>Low population awareness of energy saving.</p>

4.4 Competition

The general competitors of ESCO-Rivne are:

- **Small, local dealer / installation companies:** these companies are small, highly-tailored, typically one principal, and their clients are from the surrounding area.
- **General engineering / consulting companies:** these firms practice a wide range of engineering services from energy audit to energy saving equipment installation. Some of the engineering companies are large and have dedicated departments for different types of clients; others have generalists that do everything.
- **Large national firms:** these companies are quite large and they serve great industrial plants and manufacturers. But mostly these large companies are oriented on big-budget projects and ignore comparatively small municipal projects.

Equipment producers / suppliers still dominate on the Ukrainian energy efficiency market. Sometimes they can provide project financing with attractive credit terms (so called supplier's credit). But the suppliers are interested in promotion of their own equipment and that is why they will never offer a client the optimal decision.

The majority of Ukrainian consulting companies provide energy audit and design works, but have no funds for proposed project's implementation and, thus, can not guarantee the calculated energy saving.

For implementing the energy saving actions an enterprise should use owned assets or attract them from the outside. Usually commercial banks grant loans for a short time and their interest rate is very high (approximately 20-24%).

Other energy service companies can perform the whole scope of technical works (preparation and implementation of the project, install and place the equipment in operation) using their owned assets. In this case the pay-back period can be more enduring and linked with the energy saving. ESCO provides its services with the interest rate of 16-18%.

In comparison with other energy service companies ESCO-Rivne is able to provide energy services with lower interest rate – 12-14%.

	Commercial Bank conditions	Other Energy Service Companies conditions	ESCO-Rivne conditions
Terms of credit repayment	1-2 years	3-5 years	3-5 years
Annual interest rate on the credit	20-24%	16-18%	12-14%

4.5 Services

ESCO-Rivne offers a wide range of energy efficiency and energy saving services. These services will typically used by district heating companies, electricity / lightening companies, industrial plants, water supply / sewage companies, municipal objects, apartment houses associations / condominiums etc – those companies and organizations who are looking to improve their energy consumption. Specifically, the main services offered are:

1. Conducting energy audits;

2. Preparation of proposals for energy saving projects;
3. Developing and providing financing arrangements;
4. Development of full procurement package (contracts, technical specifications);
5. Procurement of all equipment and services;
6. Supervision of contractors' works during construction and installation phase;
7. Monitoring and verification of the contract performance during further operation;
8. Taking all the risks during project implementation and further operation;
9. Guaranteeing of the energy savings to the client.

ESCO-Rivne distinguishes the energy saving projects by their pay-back period:

- Short term projects: up to 1 year
- Medium term projects: from 1 to 3 years
- Long term projects: from 3 to 5 and more years

Taking into account the current economic situation in Ukraine and recommendations of ESCO-Rivne International consultants the company prefers to implement short-term and medium-term projects. It doesn't mean that ESCO-Rivne refuses from implementation of large long-term project but the preference is dictated by necessity to mitigate the risks of non-payments.

4.6 Keys to Success

The keys to success are:

- Attention to details
- System approach
- Professionalism
- Result-orientation

4.7 Critical Issues

ESCO-Rivne is still in the speculative stages as an energy service provider. Its critical issues are to continue to take a modest fiscal approach; expand the projects undertaken at a reasonable rate, not for the sole purpose of generating revenues, but because they are able to serve the new projects with as much attention as if they had only one project.

5. MARKETING STRATEGY

ESCO-Rivne will use a combination targeted advertising and networking to generate visibility and communicate Company's message that they are premier energy service provider in the Western Ukraine that possesses the ability to offer unprecedented specialized energy services and flexibility to help the customer reduce his energy consumption and increase general efficiency of the site.

The advertising will be done in accordance to the customers' distribution to demand and supply side: in specific industry journals, local newspapers, and web-site.

The networking activities will be quite effective in leveraging the already existing relationships that ESCO-Rivne team members have established through years working in the different industries and through participation in specific events.

5.1 Mission

ESCO-Rivne mission is to provide the customer the highest quality of energy services. We exist to attract and maintain customers. When we adhere to this maximum, everything else will fall into place. Our services will always exceed the expectations of our customers.

5.2 Marketing Objectives

- Maintain positive, steady growth each month.
- Increase visibility and competitiveness of ESCO-Rivne within the industries and the targeted companies / communities.
- Experience at least 25% of new clients attracted to ESCO-Rivne from referrals.

5.3 Financial Objectives

- Stable pay-back from the implemented projects
- Mitigate project risks
- Have access to at least US\$ M 20 in the form of combination of open credit line, direct investments, investments into ESCO-Rivne projects and project co-financing from third parties.

5.4 Target Markets

The selected customer segment will be targeted in a specific advertising and networking campaign.

- **Advertising:** This campaign will target each of the prospective customers. The advertisements will generally be placed within appropriate industry trade journal / web-site. The advertisements will be used to communicate the message that ESCO-Rivne is a specialized energy service company that can work hand-in-hand both with the suppliers and consumers of energy, providing them with comprehensive energy saving services. The advertisements will detail the different services ESCO-Rivne provides as well as the rich experience the founders have in this niche.
- **Networking:** Since both of the ESCO-Rivne founders have a long history in energy / electricity market, they have a long list of contacts that have developed over the years. ESCO-Rivne will leverage these contacts to raise visibility regarding the Company and establish relationships with these companies so ESCO-Rivne can begin to serve them. Because this market niche is fairly small and very specific, people in the space tend to know each other and a lot of business is transacted among acquaintances. This nature of the industry will make networking activities all the more effective.

5.5 Positioning

ESCO-Rivne will position itself as the premier energy service provider in the Western Ukraine. District heating companies, water suppliers, communal services, industrial plants and all other energy consumers will appreciate the experience and insight that ESCO-Rivne brings to the table.

ESCO-Rivne will leverage their competitive edges to achieve the proper positioning. The competitive advantages that ESCO-Rivne enjoys are:

- **Specialized skill set:** This competitive edge allows ESCO-Rivne to provide unusually keen insight into the customer's industry and how that applies to actual energy saving.
- **Flexibility:** As a comparatively small company ESCO-Rivne is able to meet the customer's special needs by offering a very flexible service. This flexibility allows ESCO-Rivne to work hand-in-hand with the company and the community to serve their customer and work with him in any capacity required to fulfill the client's needs in the most effective way. Often this means working with the customer and the various hierarchical levels within the company.

5.6. Strategy Pyramids

The single objective for ESCO-Rivne is to be known and recognized as the top-ranked energy service provider. The marketing strategy will seek to first create customer awareness regarding the new firm, develop a customer base, and work toward building customer loyalty and referrals.

The message that ESCO-Rivne seeks to communicate is that ESCO-Rivne offers the most professional, experienced and attractive energy saving services in the region. This message will be communicated through a variety of methods. The first method is various advertising. The advertisements will be launched within the respective industry trade journals, web-sites and exhibitions.

The message will also be communicated through a strategic networking campaign that leverages all of the professional and personal relationships that the shareholders have formed over their years of professional experience.

The last method of communication is through the use of ESCO-Rivne own web-site. The marketing of the web-site will incorporate the following actions:

- Search engine submission. For all the prospective customers / investors that are unaware of ESCO-Rivne and are using the Internet to research the possible service solutions to their problem, ESCO-Rivne will professionally submit their site individually to all of the popular search engines so that ESCO-Rivne's site appears at the top of the search list.
- Advertising of the site through the various written materials that ESCO-Rivne will disseminate to prospective customers / investors. Developing of the Company news' subscription mechanism and automatic press-release distribution among the targeted media on a constant basis.

5.7 Marketing Mix

ESCO-Rivne's marketing mix is comprised of the following approaches to pricing, advertising and promotion, and customer service.

- **Pricing:** The pricing scheme will generally be based on a per project estimate that takes into account the complexity of work, provided guarantees for risk mitigation as well as the resources that will need to be expended for successful project completion.
- **Distribution:** The service will be distributed wherever it is needed.
- **Advertising and Promotion:** The most successful promotional activities will be targeted advertising and strategic networking.

- **Customer Service:** Obsessive customer service is the mantra. The customer will be satisfied, regardless of the short-term cost. The very business model recognizes the idea that customer satisfaction will ensure long-term profits.

5.8 Marketing Research

During the initial phases of the marketing plan development, several focus groups were held to gain insight into targeted customer groups and their decision-making process and important variables for that process.

Another source of marketing research is a data compiled by local communities.

6. STRATEGY AND IMPLEMENTATION

6.1 Marketing and Sales Strategies

The overall ESCO Market Development Strategy consists of 10 individual strategies:

Strategy #1: Set Measurable Goals for a Sustainable Industry

The commitment of resources to the promotion of ESCO-Rivne must be tied to measurable goals that relate to the creation of a sustainable industry.

Strategy #2: Establish a Program for Achieving These Goals

A defined program with measurable goals over a set period of time presents a defined challenge to stakeholders and the ESCO industry.

Strategy #3: Creation of Alliances

A concerted and integrated effort is required to achieve these goals. This effort will be driven by a coalition of public and private sector stakeholders established for the express purpose of implementing the program within a limited time period.

Strategy #4: Position the ESCO-Rivne Option

Positioning is aimed at articulating a clear position for energy-efficient technologies compared to other economical and ecological options in the minds of purchase decision makers. ESCO-Rivne proposes integrated technologies which offer unique benefits compared to other options, including heating and hot water supply.

Strategy #5: Reduce Technical Uncertainty

To alleviate technical uncertainty, market influencers must be provided with the information they need to reduce their sense of uncertainty. The strategy would be designed to address the technical advantages of the energy-efficient technologies and equipment. It would also focus on the primary technical problems through initiatives such as an integrated design (co-generation; heating and air conditioning etc.); updated installation guidelines; building design integration manual for architects; and technical resources such as a website, reference sites, and monitored sites.

Strategy #6: Obtaining Certifications and Licensees

Standardized engineering and users manuals for energy-saving equipment and all necessary certificates and licensees will be developed and made available to potential clients and investors.

Strategy #7: Commitment by Government to the Energy Saving

Rivne Oblast State Administration and Rivne Municipality would issue a procurement policy directive to apply uniform energy-saving methods for municipal buildings, social objects and apartment houses.

Strategy # 8: Create Awareness for the Energy Efficient Option

An integrated marketing communications campaign will be designed to make purchase decision makers aware of the energy-efficient options. While this campaign could utilize different media, it would likely include: public relations activities, community mobilization, seminars and workshops, mailings, advertising in trade publications, attendance at trade shows, and a website.

Strategy #9: Develop Service Sales Materials

Creation of a comprehensive and flexible ESCO-Rivne presentation kit directed at non-technical decision makers is an important step. To secure buy-in to the ESCO option, non-technical executives require a basic understanding of energy saving benefits, features, and relative advantage.

Strategy #10: Utilize Innovative Financing

New and innovative financing will foster growth in the energy saving industry. Because of the higher first cost of energy efficient equipment, implementation of different investment strategies can significantly increase the relative advantage of ESCO-Rivne. Some suggested financing schemes include Energy Performance Contracts, Leasing Contracts and Energy-Efficient Management Contracts.

6.2 Community Mobilization

There is widespread dissatisfaction amongst clients concerning current levels of heat and hot water supply in Rivne. In particular, residents are hard pressed to pay monthly heating bills that consume 30 - 50% of their average monthly wage. The combined effects of low satisfaction with current service levels and generally low abilities to pay significantly complicate the implementation of sustainable energy efficiency measures in Rivne. Because of this, consumers must increasingly be involved in decision-making processes. Knowledge and awareness should be created amongst beneficiary communities about the immediate impact and the benefits that energy efficiency measures can have - not only on the environment, but more importantly on businesses and personal lives.

Community / social mobilisation is taken as the first step towards implementation of any initiative by ESCO-Rivne within the community. The main goal of community mobilisation is to harness people's potential to help them. In doing this, people need social guidance to utilise their potential to:

- organise themselves for pooling resources and to achieve economies of scale;
- identify and prioritise what they are able and willing to undertake;
- arrange, secure and facilitate the flow of required resources to the stakeholders;
- monitor, lobby and establish linkages between stakeholders of the community and other agencies, such as local and regional government and non-government organisations and donors.

The above mentioned goals can only be achieved if the actors are organised around their common problems and interests. It is therefore recommended that stakeholders form the following types of organisations:

- **Community Organisations (CO):** a CO is an organisation of people living in the proximity (neighbourhood, residential buildings) sharing (a) common interest(s) related to their social and economic development in general and to energy efficiency in particular. Residents and other interest groups are assisted by the project to form their own organisation in order to harness their potential to help themselves.
- **Functional Groups (FG):** FGs are formed from members from within the CO, to participate and represent the community or interest group in specific / specialised tasks - such as planning and monitoring of energy efficiency measures/initiatives.

The organisational structure best suited has to be discussed with the different COs from case to case.

The community development process essentially takes place in four distinct phases:

Phase I: introduce the project and ESCO approach in the communities, identify and establish partnerships with potential (pilot) COs (Interest groups, neighbourhood committee, AOA, etc.);

Phase II: formation of (pilot) CO, identify most suitable organisational set-up;

Phase III: identify communities' needs and formulate (pilot) energy efficiency projects;

Phase IV: planning and implementation (operational and financial resource mobilisation).

At the beginning of the process a stakeholder workshop should be conducted, aiming to:

- Introduce the project and approach (ESCO mechanisms, energy/cost saving potentials, etc.) to as many stakeholders as possible, including regional and municipal authorities, public and private enterprises/businesses, neighbourhood and other interest groups, potential partner NGOs, etc.
- Identify main problem areas in the field of energy efficiency;
- Discuss possible solutions and interventions.

Consumers can only be convinced about the viability of an approach based on their involvement and participation - and potential investors and donors can only be attracted - if the ESCO approach can be made visible through successful examples to a wide public.

6.3 Public Relations Strategy

The ESCO-Rivne public relations concept foresees permanent development in accordance with the company's development stage. It means that PR strategy will change depending on the ESCO's evolution (projects' implementation, attraction of new investors or customers, obtaining of grants, etc.). Since ESCO-Rivne is a relatively new company and the energy service business is not well-developed in Ukraine, the PR concept of or company is based on three critical points:

- **Stage I:** ESCO-Rivne image formation with focus on peculiar market segment (energy efficiency and energy saving technologies);
- **Stage II:** Efforts for the firmly establishing on the gained market;
- **Stage III:** Innovation activity for the market expansion.

The detailed PR-concept of ESCO-Rivne is done in Annex.

6.4 Alliances

In the process of performing energy-saving contracts the following alliances can be concluded:

- Creation of consortiums for large-scaled projects implementation;
- Partnership, twinning program;
- Cooperation with foreign partners engaging them into the projects' funding and investing.

The preliminary scheme of foreign (external) investors attracting is given in the Appendix 5.

6.5 Milestones

In the process of its development ESCO-Rivne can look back on the following main achievements:

- (a) Establishing of the ESCO-Rivne;
- (b) Formation of the company's Statutory Fund;
- (c) Staffing the ESCO-Rivne;
- (d) Training of personnel;
- (e) Obtaining licensees for different technical works performing;
- (f) Purchasing all necessary special equipment;
- (g) Signing of agreements securing repayment from the contracts, implemented in the framework of Demonstration Project;
- (h) Re-investing of the repaid funds;
- (i) External investors' attraction.

The detailed description of each milestone is done in Appendix 4.

6.5 City-wide Energy-saving Program Details:

Energy efficiency measures proposed for the district heating system and its users consist of the following:

- *Supply-side measures for large and medium-size boiler plants:* Retrofitting the existing boilers (making the boiler furnace and gas ducts air-tight; installing high-quality insulation over the boiler surfaces, fittings and heat pipes; improving the air distribution system of the burners; installing modern burners; reconstructing convective shafts and convective surfaces; heat recovery from exhaust gases; re-circulation of exhaust gases; installing automatic controls for combustion processes; installing variable speed drives on boiler fans and ventilators); replacement of boilers (together with installing re-circulation of exhaust gases); measures for the boiler plants as a whole (automated water treatment; anticorrosive make-up water treatment; automatic control of the technological processes at the boiler plant; variable speed drives on circulating pumps; information system for the operation of the boiler plant); and a heating region dispatch management system with a commercial metering subsystem.
- *Supply-side measures for small boiler plants:* Replacing the boilers and heat recovery from exhaust gases; automating the water treatment and information systems for boiler plant operation.
- *Supply-side measures for the heat transportation system (transmission / distribution pipelines and heat substations):* Replacing transmission and distribution pipelines with pre-insulated pipes; retrofitting part of the existing group substations (installing modern

heat exchangers, controls, etc.; creating an information system for group substation operation); decentralizing the hot water supply by eliminating part of the group substations and installing individual building-level substations.

- *Demand-side measures*: installing commercial metering of heat consumption; heating system controls; hot water apartment-level metering; heat insulation of pipes; installation of radiator reflectors.

In evaluating financial returns from the investment program, achievable energy and cost savings were estimated on a conservative basis; cost estimates are based on current quotations of suppliers and include 10% contingency. The following assumptions were used in cash flow analysis: 10% nominal discount rate; 5-year investment period; period of analysis - 20 years; gas price (practically only fuel consumed by the heat supply system) - \$47 per 1000 m³ in the year 2002 with annual growth rate at 4.5%; electricity price at \$0.04 per kWh with 3.5% annual growth rate.

7. ORGANISATION

7.1 ESCO-Rivne Activity

ESCO-Rivne like any other energy service company has limited tangible assets, so its major asset is ESCO's staff.

Taking into account the extreme importance of adequate personnel selection for ESCO-Rivne, the Company has developed the recruitment procedure based on the free competition among all candidates.

7.2 ESCO-Rivne Key Staff

The world experience shows that energy service companies hire two types of experts:

- Skeleton Staff
- Supplementary Staff

For today the skeleton staff of ESCO-Rivne consists of:

- (i) Director
- (ii) Financial Manager
- (iii) Commercial Manager
- (iv) Lawyer
- (v) Project Manager
- (vi) Energy Auditor (2 positions)
- (vii) PR Assistant
- (viii) Marketing Assistant
- (ix) Director's Assistant

7.3 Management

The shareholders' assembly is the administration superior body of ESCO-Rivne. The shareholders' assembly terms of references cover the following:

- Determination of the ESCO-Rivne development mainstreams and approving its plans and execution reports;
- Making of alterations and addendum to the Regulations;

- Election and recall of executing agency and inspection commission members;
- Approving of ESCO annual activity results, including branch establishments; approving reports and conclusions of auditing commission; order of profit division; terms and orders of dividends payment; fixing the order of losses cover;
- Approving the procedure rules and other internal documents; fixing the organizational structure of the enterprise;
- Fixing the terms of remuneration of labor for leaders of ESCO, its branch establishments, branch offices etc;
- Settling the questions of terms and orders of dividends payments;
- Decision making of enterprise activity termination and winding up the branch establishments, branch offices etc;
- Settling the questions of enterprise issued shares purchasing.

ESCO-Rivne has developed the comprehensive set of mandatory legal documents necessary for its business.