

**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 mission<sup>1</sup>, 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
<b>Project Formulation</b>	<b>HS</b>	<ul style="list-style-type: none"> <li>▪ Sound project formulation</li> <li>▪ Relevant shareholder selection with a good balance between the Demand Side and Supply Side</li> <li>▪ Technically, the project can be replicated in other Oblasts of Ukraine</li> </ul>
Conceptualization/Design	HS	
Country-Ownership	HS	
Stakeholder Participation	HS	
Replication Approach	S	
Internal Resource Mobilization	S	
<b>Project Implementation</b>	<b>S</b>	<ul style="list-style-type: none"> <li>▪ Adequate set of contractual documents</li> <li>▪ 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.</li> <li>▪ Too soon to actually assess the actual cost-performance and risk. Only estimated figures are available at this point in time</li> <li>▪ Potential EE Projects extended to other municipalities. Contacts have already been established and letters of interest</li> </ul>

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<sup>1</sup> 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"> <li>▪ Projects are expected on the Demand Side with the Rivne Public Lighting Co. Some others are also expected with the municipality of Ostrih.</li> <li>▪ 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.</li> <li>▪</li> </ul>
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	
<b>Results</b>	<b>HS</b>	<ul style="list-style-type: none"> <li>▪ Satisfactory results taking into consideration that the ESCO was only established one year ago.</li> <li>▪ 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.</li> <li>▪ Manifestation of Interest made by 4 other municipalities.</li> <li>▪ Decree and Regulatory frameworks have resulted in stable energy-related budgeting.</li> <li>▪ 13 EE projects are planned but their implementation is not yet started or underway.</li> <li>▪ Advertising material and special folders have been prepared.</li> <li>▪ Promotion material was sent to bankers.</li> <li>▪ Letters of Interest were received from new investors.</li> <li>▪ ESCO was established and financial agreements were signed and shares have been paid by both shareholders.</li> <li>▪ UNDP payment has been effected (Stage 1-Phase 1).</li> <li>▪ ESCO obtained a first credit line (200 k\$)</li> </ul> <ul style="list-style-type: none"> <li>▪ Weakness related to banker follow-ups</li> <li>▪ GHG emission reduction verified for projects conducted with DHC in Rivne but not clearly estimated for other projects included in the project portfolio</li> <li>▪ Lack of cost-performance ratio in terms of Payback on projects completed or planned since the projects selected are mostly on the Supply Side.</li> </ul>
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)		
<b>Recommendations</b>		
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: KomunEnergia - 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 end<sup>2</sup> 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 Monitor<sup>3</sup>, 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.

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<sup>2</sup> 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.

<sup>3</sup> 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 Document<sup>4</sup> 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	<b>HS</b> 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	<b>Rating not applicable</b> because what has been accomplished so far was effectively done but this is not enough to introduce consumption-based billing to energy end-users.

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<sup>4</sup> Ref : Project Document UKR/01/G31/A/!G/99, July 2<sup>sd</sup> – 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><b>S</b></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><b>MS</b></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><b>S</b></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><b><i>The SATISFACTORY rating by the evaluation team means the project should proceed to Stage 2.</i></b></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 Kotloenergoproekt, 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 Kotloenergoproekt, 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 Spektr-TV, 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

	Municipality					
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Source: ESCO-Rivne/November 2004

#### 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

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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 CO<sub>2</sub> 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*

- 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.

### 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.

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

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

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

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

	<ul style="list-style-type: none"> <li>• Mr. V. Zakladny (ESCO-Rivne Director a.i.)</li> </ul>	
10:00	<b>Discussion.</b>	
12:30	<b>Meeting with the Project/ESCO-Rivne staff</b>	
13:00	<b>Lunch</b>	
14:00	Departure for Kyiv	
<b><u>November 11</u></b>	<b>Meeting with ESCO-Rivne consultants: ESCO-Commerz, TPF Consulting (optional)</b>	
<b><u>November 12</u></b> 9:00	<b>Debriefing with UNDP management:</b> <ul style="list-style-type: none"> <li>• Mr. Manoj Basnyat (UNDP Resident Representative)</li> <li>• Mr. Sergei Volkov (Senior Programme Manager)</li> </ul>	
<b><u>November 13</u></b> 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 Mykhasyyuk.
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) KomunEnergia 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 “KomunEnergia” Mr. P. Sergiychuk. The KomunEnergia 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 - 1<sup>st</sup> 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.