

April 28, 2014

## Response from EBRD—Approval by Mail: CTF Ukraine: District Heating Modernisation (EBRD)

CTF Program Comment Response Matrix	
1. Country/Region	Ukraine
2. CIF Project ID#	
3. Project/Program Title	Ukraine District Heating Modernisation Program (the Program)
<b>UK Comments</b>	
How does the project fit with the IBRD's DH project?	The two projects are fully complementary and implemented in close co-operation. They take very different approaches to the challenge, which enhances their complementarity.
Will the EBRD use evidence from the IBRD's project to inform policy discussions on tariff reform with GoU?	EBRD and IBRD have co-operated closely in developing the policy advice on tariff reform, and remain in close co-ordination on this.
Moreover, EBRD has a DH project in Kazakhstan co-financed by the CTF. Have any lessons been learned from that project, if so, how has it influenced the development of this project?	The lessons learnt and applied are as follows: <ul style="list-style-type: none"> <li>- It is more efficient to address the whole system in a single investment, rather than in stages.</li> <li>- Covenanting tariff increases is a key element in moving clients to financial sustainability.</li> </ul>
Will CTF finance support the installation of gas-fired power/heat generating technology?	No, this would be financed by the EBRD loan and/or the E5P grant. It should also be noted that any such investment would focus on either CHP or high-efficiency heat production, rather than stand-alone power production.
What is the status of the regulatory reform roll out? The project document is a little out of date and states that this is going to happen in 2013.	The Regulatory Reform TC rollout was delayed due to discussions on the funding rules and procurement procedures between the World Bank and E5P. To resolve the issue, the Government of Sweden (SIDA) agreed to fund the assignment with the condition that the joint nature of the World Bank-EBRD TC is preserved. Following completion of the tender for the consultant selection the implementation is anticipated to start in Q 3/2014.
On the <b>affordability concerns</b> for the lower income deciles. Has the EBRD discussed the political implications of this issue with the GoU?	The issue has been discussed with the GoU by the EBRD as well as by the IMF and the World Bank. Recognising the need to increase the tariffs and alleviate the fiscal pressures of the huge tariff and gas subsidies on the budget (assessed by the recent World Bank study at 7 per cent of GDP) the GoU has confirmed a number of times the intention to raise the tariff in parallel with improved targeting of subsidies through social security reform.
Does this cause a reputational risk for the project?	We do not think this to be the case, since the project will contribute to mitigate bill rises through energy efficiency in the face of rapid increases of the price of natural gas in the domestic sector.
Please could you provide some information on the evaluation activities that will be supported with grant available for advisory services, evaluation and knowledge management activities?	This will take the form of a mid-term evaluation in line with e.g. the GEF approach, as well as a case study and other lessons-learnt documents produced by EBRD.
If the sponsor is a public entity, why is this CTF project not treated as a public sector project (rather than a private	Each sub-project will be structured as a normal private sector project would be. E.g. the loans will be made to companies, not to municipalities. The loans do not benefit from any sovereign

<p>sector project as set out in the CTF cover page)? There doesn't appear to be any private leverage associated with the project.</p>	<p>guarantee. It is also perfectly possible that the companies will be privatised over the course of the loan tenor.</p>
<p>The proposal does not provide details on how the CO<sub>2</sub> reductions of 350,000tCO<sub>2</sub>/yr were calculated. Could EBRD clarify the calculations including project boundaries, baselines, lifetime of technology or investment, energy savings, type of GHGs included, and emissions conversion factors?</p>	<p>The calculation is erroneous, many thanks for catching it, and should be corrected for an investment volume of EUR 200 million. The calculation and assumptions are carried out at the end of this document.</p>
<p>We would like to see some more detail related to how the project meets the CTF investment criteria.</p>	<p>We hope that the responses provided here and below outline this in more detail. We would be happy to respond to any more detailed questions, should any remain.</p>
<p>Regarding the emission conversion factor: The estimated magnitude of energy savings of 350 GWh/yr equivalent suggests that EBRD relied on an emission conversion factor of 1t of CO<sub>2</sub>/MWh, the current operating margin emission factor in Ukraine based on the coal-fired marginal technology. For energy savings related to decreased electricity use the counterfactual of coal-based base-load electricity generation seems appropriate. However, the conversion of energy savings from improved efficiency of heat generation, decreased network losses and decreased residential heat consumption should be based on avoided gas-based heat generation instead.</p>	<p>See calculation below. The calculation was erroneous.</p>
<p>The evaluation of the political risks seems inadequate in terms of the current dynamics in Ukraine. Many of the projects are based in eastern Ukraine, where there is much uncertainty. We would like to see a more up-to-date assessment of the political risks.</p>	<p>We agree that the short-term risk is high, but expect the situation to normalise and return to a more stable environment prior to any sub-projects being signed.</p>
<p><b>GER Comments</b></p>	
<p>Risks to market transformation (p. 10): "Cities chosen will have to have modest debt levels and demonstrate resilience ... to various negative revenue and / or expenditure shocks, through stress tests." -&gt; Could you provide some more information on this please?</p>	<p>For each individual operation, in order to assess the credit risk of the Company and the City, projections for the City and the Company are to be stress-tested against a pessimistic macroeconomic scenario, including parameters such as currency devaluation, higher cost of funds, lower volumes of sales, etc. This allows the EBRD to assess the vulnerability of the Company and the City to various negative revenue and/or expenditure shocks and confirm their good credit standing, and it is considered essential for the success of the project.</p>
<p>Risks to market transformation (p. 10):</p>	<p>For each individual operation the loan documentation will have</p>

"risks are mitigated by... appropriate covenants in the loan documentation and structuring of the Project" -> Could you provide some more information on this please?	appropriate covenants (reflective of the risk profile and the outcome of the stress-testing) limiting the level of debt for both the Company and the City (the latter one if the project is structured with a municipal guarantee), e.g. covenanting the financial performance, covenanting establishment and proper functioning of the project implementation unit, application of the EBRD Procurement Rules.
Pricing: Please provide some more information, especially we want to know how high the floor interest rate is and how high average interest rate is estimated.	The floor interest rate is estimated at 75 BP fixed. The average interest rate is dependent on the calculation of emission reductions from each project, but is unlikely to be considerably higher than the floor rate.
Political risk: Seems rather high than medium at the time.	We agree that the short-term risk is high, but expect the situation to normalise and return to a more stable environment prior to any sub-projects being signed.

### Compliance with CTF Investment Criteria

#### a) Potential for GHG Emissions Savings :

The project technology can be classified as: Commercially Available – High Mitigation Potential. The calculation below is based on the signed L'viv project, for which the CO<sub>2</sub> emissions reduction was assessed under the E5P methodology, and then pro-rata increased to an investment volume of EUR 200 million. Marginal abatement cost is below USD100/tCO<sub>2</sub> lifetime. The results are set out below:

##### a1) Energy savings (natural gas equivalent):

1.5 TWh/yr, 30 TWh lifetime

##### a2) CO<sub>2</sub> savings:

420,000tCO<sub>2</sub>/yr

8.4mtCO<sub>2</sub> lifetime (20yr)

#### b) Cost effectiveness (@USD1.35/EUR1):

USD5.95/tCO<sub>2</sub> (CTF)

USD32.14/tCO<sub>2</sub>

The assumptions underlying these calculations are as follows:

Project boundaries	The project boundary is the district heating system of a company or the subsection of the same in which the investment is taking place, from the generation to the building sub-station end.
Baselines	The baseline is specific to each project, and consists of the known current performance of the system in which the investment is taking place, and where appropriate the known values of e.g. the Ukrainian power system.
Lifetime of technology or investment	20 years
Energy savings	Energy savings are generated in two ways: <ol style="list-style-type: none"> <li>1) Direct, by the improvement of efficiency of components e.g. through replacement, and the reduction of losses in e.g. pipes.</li> <li>2) Indirectly, by e.g. reducing water losses (reduced power demand for pumping) or by replacing grid-delivered electricity by high-efficiency co-generation.</li> </ol>
Type of GHGs included	CO <sub>2</sub> and Methane
Emissions conversion factors	Natural gas: 2tCO <sub>2</sub> /kNm <sup>3</sup> Electricity: 1.06tCO <sub>2</sub> /MWh delivered

- c) **Demonstration Potential at Scale**  
High. The technology and project-based approach is replicable throughout Ukraine, and indeed other countries with centralised DH systems. The project approach is scalable, and procurement of high-efficiency co-generation and individual building substation units will help reduce the additional cost of the advanced technologies employed in Ukraine, reducing the investment requirements for similar projects in the future.
- d) **Development Impact**  
High. On the demand side, the project will contribute to increased affordability of heat for vulnerable clients throughout Ukraine. On the supply side, the project will support the corporitisation and market-based delivery of efficient heating services by municipal service providers, and will introduce them to normal financing practices in the sector. The project will also lead to the creation of employment, and increased comfort levels in apartments.
- e) **Implementation Potential**  
Very high. Projects with similar scope are being implemented with E5P funding, and in Kazakhstan and Russia. The technology is standard, albeit not widely adopted, and poses no additional risks from a technology perspective. The close involvement in working with the regulator and the municipal companies in implementing the projects will increase their capacity and ensure that the programme will be implemented without undue delays.
- f) **Additional Costs and Risk Premium**  
Additional costs are incurred for the use of demand-side technology, and additional cost risk is introduced through the promotion of high-efficiency co-generation. Concessional and grant funds are required to alleviate these.
- g) **Financial Sustainability**  
Individual sub-projects will quickly move towards financial sustainability through the covenanted tariff increases. The sector overall will be helped to move towards this through policy dialogue carried out with the regulator and government, and the already introduced increases for the price of natural gas used in the residential use.
- h) **Effective Utilization of Concessional Finance**  
The low cost to the donor of the CO<sub>2</sub> savings that will be achieved indicates a very effective use of concessional finance.
- i) **Mitigation of Market Distortions**  
The market is currently artificially distorted against the operators of district heating systems. The use of concessional finance does therefore not cause any market distortion.
- j) **Risks**  
The main risks related to:
- i. the general political and reform environment in Ukraine including, inter alia, potential political unwillingness to set tariffs based on consumption and at full cost recovery or lag in setting up the tariffs;
  - ii. failure to implement the Project; and
  - iii. failure to introduce changes in the way the Company operates. While there is currently substantial political country risk, the expectation is that this is a crisis which will be resolved prior to the signing of sub-projects.
- k) **Risk Mitigation**  
The risks outlined above are mitigated by:
- i. support by the Mayors and the City Councils of the cities selected for the project;
  - ii. ensuring good competence and motivation of the management team and providing technical assistance;
  - iii. appropriate covenants in the Loan documentation and structuring of the Project; and

- iv. the operating Integrated Approach which strengthens the EBRD's leverage when pursuing reform components and policy dialogue with the Ukrainian authorities in the district heating sector.