

## CTF PRIVATE SECTOR PROPOSAL

<i>Name of Project or Program</i>	<b>KAZAKH RAILWAYS: SUSTAINABLE ENERGY PROGRAMME</b>	
<i>CTF amount requested</i>	Investment	US\$ 15 million equivalent
	Advisory services component	US\$ 0 million equivalent
	Implementation and supervision budget	US\$ 162,000 equivalent
	Knowledge Management	US\$ 100,000 equivalent
	<b>Total</b>	<b>US\$ 15.262 million equivalent</b>
<i>Country targeted</i>	Kazakhstan	
<i>Sector targeted</i>	Renewable Energy	
<i>Indicate if proposal is a Project or Program</i>	<p>The request is for CTF investment support of US\$ 15 million in total, provided in two phases.</p> <p>The first phase would cover US\$ 7 million to be provided for an investment program to support the installation of Renewable Energy Technologies in the premises of Kazakh Railways (KTZ). KTZ are going to implement a US\$ 200 million energy efficiency and renewable energy investment program. The investment into renewable energy will represent US\$ 35.4 million of the overall program. CTF funding is sought for 20% of this element of the programme. The KTZ Energy Efficiency Investment program has already passed EBRD's concept review stage and became mandate-ready in September 2011.</p> <p>The second phase is to provide concessional finance for the second phase of the renewable energy investments within KTZ, which will be mandate-ready within 1 year after CTF approval. If KTZ does not wish to proceed with further investments into renewable energy at that time, the available finance will be applied to the KAZSEFF programme, on the basis that the KAZSEFF Programme provides a different channel to the market<sup>1</sup>. In this case the CTF Trust Fund Committee will be informed and asked for approval prior to the channel switch being made. A new external review of the submission would be provided at that stage.</p>	
<i>Transfer of Funds by the Trustee to the Implementing Entity</i>	Express authorization of the CTF Trust Fund Committee is requested to allow for the full up-front transfer of CTF resources required for the Investment Component to EBRD prior to the first commitment by EBRD pursuant to a signed loan agreement with a participating borrower (the Investment Component).	

<sup>1</sup> KAZSEFF is a bank-intermediated sustainable energy finance programme of the EBRD, which is currently undergoing re-design. <http://www.kazseff.kz/>

## PROGRAM FIT WITH CTF OBJECTIVES AND KAZAKH INVESTMENT PLAN

The CTF promotes scaled-up financing for demonstration, deployment and transfer of low-carbon technologies with significant potential for long-term greenhouse gas emissions savings. This project would fall under the sector/program of **renewable energy development** as outlined in the CTF Investment Plan for Kazakhstan. It will provide innovation in combining renewable energy use with buildings and transport infrastructure.

Kazakhstan is well endowed with renewable energy resources, but only a small fraction of this potential is utilized. Kazakhstan's emissions levels, (it is the largest emitter of greenhouse gases (GHG) in Central Asia), are a combined result of high energy intensity, relatively high economic output, and a coal-dominated energy sector (to produce electricity and heating). The most daunting challenge for renewable energy projects is thus to compete with the abundance of easily, domestically available cheap but carbon-intensive fuels such as coal and oil.

The proposed project will help Kazakhstan to address its energy and climate change challenges by making a major contribution in three critical areas:

- (i) enhancing energy security by improving use of renewable energy sources and increasing reliability and stabilizing costs of heat supply by demonstrating the feasibility of supply of heat from renewable sources;
- (ii) supporting a clean energy transition by focusing on meeting energy needs in an environmentally sustainable manner and thereby reducing greenhouse gas emissions; and
- (iii) increasing private sector involvement in renewable energy market by stimulating demand for renewable energy technologies supplied by private sector technology providers

## PROGRAM FIT WITH CTF INVESTMENT CRITERIA

### **Potential GHG Emission Savings**

Kazakhstan has set itself a renewables target of 1 TWh of renewable electricity production by 2014.<sup>1</sup> No target for renewable heat exists, but the government is supportive of this form of renewable energy delivery. The renewable energy element of the KTZ Energy Efficiency Investment Program will result in the direct avoidance of 165 kt CO<sub>2</sub>/yr, or 2.44 mt CO<sub>2</sub> over the lifetime of the programme.

The investments will be undertaken in parallel with energy efficiency improvements, to ensure that renewable energy is used effectively.

### **Cost Effectiveness**

Kazakhstan's CTF investment plan estimated the average unit abatement costs for wind, solar power and other renewable installations to be below \$US50/t CO<sub>2</sub>eq.

Based on the initial assessment of the KTZ Renewable Energy Investment Project, the CTF cost per ton of CO<sub>2</sub>e avoided over the life of the project is US\$ 6.1/t CO<sub>2</sub> or 0.16 tCO<sub>2</sub>e/1US\$ invested from CTF resources, while total investment cost is US\$31/t per ton of CO<sub>2</sub>e avoided over the life of the project, within the parameters of the CTF Investment Plan for Kazakhstan.

The most important GHG emissions benefit would be achieved by switching of heat supply from outdated coal boilers and stoves to ground source heat pumps and solar thermal collectors.

### **Demonstration of Market Potential at Scale**

Kazakhstan has a very low market penetration of renewable energy technologies in the built environment. Furthermore, there is currently only very weak demand for both solar thermal and geothermal heat pumps in the

country, due to a lack of supplier interest, and the additional cost of installing these uncommon technologies. The relatively low cost of local coal is another barrier to the introduction of renewable heat technologies.

The solar energy resource potential is great for the vast territory of Kazakhstan. The number of sunny hours is 2,200-3,000 per year, and the energy of solar radiation is 1,300-1,800 kW/m<sup>2</sup>/year. Despite the very favourable conditions for solar energy, there is little use of the resource. In 2002, a demonstration solar water heating system was installed at an infant orphanage in Kyzylorda, Kazakhstan. As of June 2009, no other solar systems have been planned or installed. By 2011 two private companies installed solar collectors in their own operations. The market for the solar collectors requires a boost as there is at the moment low awareness of the technology and its benefits. The aim of the CTF investment would be to support the installation of large numbers of solar collectors in prominent locations (such as railway stations), with high visibility. It is expected that this initial large-scale investment will encourage suppliers to scale up their sales and after-sales investments in Kazakhstan. EBRD is in parallel preparing a financing facility that would have the ability to provide support to vendors of renewable and energy efficiency technologies.

The use of ground source heat pumps for heating has a very low penetration in the Kazakh market, despite the presence of all the main suppliers of heat pump technologies in Kazakhstan. As per 2011 there are less than 50 installations of heat pumps for generating heat in Kazakhstan. The aim of the CTF investment would again be to encourage suppliers to scale up sales and after sales activities, on the basis of a large-volume contract.

Considering the size of the investment program and its geographical spread, the initial demonstration effect of the program is going to be substantial. The investment programme will cover up to 30% of the KTZ buildings. It is expected that positive experience with the technologies will lead to further market expansion by additional installations in remaining buildings, and other public buildings throughout Kazakhstan.

### **Development Impact**

Concrete development impacts from this project will be:

- (i) Reduced environmental impacts and emission from the operation of KTZ buildings, by replacing coal and diesel fuel with renewable energy and utilizing electricity more efficiently.
- (ii) Reform in product and services procurement within KTZ
- (iii) Ability of many of the buildings and railway stations to become independent of fossil fuel supply.
- (iv) Creating jobs in the renewable energy sector

### **Implementation Potential/Risks**

Implementation risks relate to whether the performance of the underlying investments will perform as expected, and produce the expected amounts of energy. These risks will be mitigated by CTF resources which offer an attractive incentive to undertake the Project.

The use of CTF resources, however, creates its own set of transformation risks, such as the risk of subsidy dependence, distortion to the renewable energy market, thereby delaying transition to commercial viability and competitiveness of the companies. These risks will be mitigated through an investment focus on sound management, service and environmental practices (which may not be in the immediate commercial interest of companies), and a strong focus on creating demand-pull. The fact that EBRD is also supporting the wider renewables agenda in Kazakhstan focusing on the development of sound policy and regulation will further mitigate these risks. Based on the demand-pull created by the KTZ Renewable Energy Project, EBRD will also pursue dialogue and potential investments in technology suppliers of renewable heat technologies in Kazakhstan and the wider region.

Particular risks include the following, with their likelihood indicated in brackets:

- **Project implementation (medium)** - while a priority for KTZ, the Energy Efficiency Programme presents a number of risks including: i) availability of finance and competition with other capital expenditure needs; ii) project preparation and identification of most appropriate technological solutions; and iii) the capacity of KTZ to develop, manage and execute a complex programme of installations across multiple sites. These issues are

mitigated by:

- The economic and operational benefits associated to the programme (also in respect to competing projects) and by the strategic importance attributed by KTZ management to energy efficiency.
  - The EBRD finance, which will provide the resources for implementing the first phase of the Programme, providing KTZ with the experience to further scale-up and possibly utilise other sources of financing, including finance raised on an off-balance sheet basis.
  - The technical cooperation package complementing the EBRD finance, which will be designed to address the other main risks described above. In addition, KTZ internally possesses varied technical expertise in developing and implementing complex infrastructure projects.
- **Kazakhstan macroeconomic risk (low)** - Rail freight growth rates traditionally correlate to the GDP, and the global crisis severely affected the Kazakh rail sector. To address the challenges of the crisis, KTZ implemented the series of anti-crisis measures and there are now clear signs of a recovery in the real economy and in the rail sector.
  - **KTZ corporate risk (low)** - KTZ is an asset of enormous importance to the economy of Kazakhstan, and the Government also views KTZ as a key strategic asset. Kazakhstan Railways has a solid balance sheet with a high equity base and low to moderate level of debt. KTZ is rated as lower medium investment grade by S&P, Moody's and FITCH.
  - **Competition (medium)** – KTZ market share (in terms of freight wagons it operates) has been falling steadily over the last decade. It is expected that competition will further increase in the freight segment once the planned liberalisation is completed. The current Project will contribute to improve the competitiveness of KTZ in the medium term by reducing its cost base.
  - **Regulatory/adverse government action (low)** - railway sector reform is being implemented, and the new restructuring programme was approved by the Government in 3Q 2010. The likelihood of reversal of the process is assessed as low.

**FX risk (medium)** – KTZ revenues are based on fixed Tenge denominated tariffs, while substantial amount of debt is denominated in US\$, subjecting the company to FX risk. A Tenge-denominated loan from EBRD alongside the US\$-denominated loan from the CTF would help to partially mitigate the risk.

#### **Additional Cost and Risk Premium**

In the absence of direct government support for renewable heat, additional costs have to be borne by the investors in markets with very low to no penetration of these technologies. The concessional terms of the CTF loan help to address these. The EBRD's detailed industry knowledge from its other countries of operation will help with its ability to evaluate and assess the risks related to the sector and also transfer this knowledge into the market for future projects.

#### **DETAILED DESCRIPTION OF PROJECT**

This project aims to achieve sector transformation; the project scope goes far beyond the current practice in the Kazakh energy supply in the built environment.

Concessional funds from the CTF will be instrumental in enabling investments in increased environmental standards, energy management standards and implementation of procurement rules within the existing constraints. The risk of creating subsidy dependence and distortion to competition will be mitigated by appropriate structuring.

The project is an element of a larger corporate energy efficiency loan to KTZ, which will fund the energetic upgrading of buildings owned by KTZ. CTF funds would only be used to fund all elements of renewable projects within the larger energy efficiency projects. The CTF funds will be drawn down pari-passu with the EBRD loan, to fund 20% of

all loan proceeds for KTZ provided under the EBRD KTX Energy Efficiency Investment Program related to renewable energy investments, and hence will only fund 20% of these investments at any given point in time.

#### *Technical Assistance Component*

The project will be supported by a comprehensive technical assistance programme to provide feasibility studies and implementation support. The Project Technical Assistance Component of US\$450,000, which will be fully funded by grants from bilateral donors, will cover among others the following scope:

#### *Project related TC*

- (i) Project preparation and implementation support (feasibility study)
- (ii) Project management and procurement assistance;
- (iii) TC support to enable identification of ongoing investments into renewable and energy efficiency

#### *Safeguards and Procurement*

Detailed financial analysis and assessment will be conducted as part of the standard EBRD approval process. This analysis will focus on debt capacity of the Borrower, available Sponsor/ third party support, required tariff increases and affordability constraints, implementation capacity and macroeconomic risks, integrity due diligence procedures.

Procurement arrangements will be in accordance with the EBRD Procurement Policies and Rules, and the Client will be required to comply with the policies and rules for public sector operations.

#### **Loan Terms**

EBRD loans will have maturities and pricing and fees to be determined based on internal analysis of borrower credit worthiness with a tenor of 10 years.

CTF loans are expected to have an identical maturity of up to 10 years, with grace on the principal up to 1.5 years, followed by semi-annual repayments. Pricing will be 75 bps fixed with fees equivalent to fees for EBRD loan funds. The project justifies the use of concessional loan terms by the additional cost of the chosen renewable energy technologies. Pricing and terms are in line with the principles laid down in EBRD Document *Multilateral Climate Investment Funds (CIF) – Rules of the Special Fund* (BDS09-201), which established CIF operations at the EBRD.

Should the terms of the CTF loan to client banks under KAZSEFF be different from the terms set out here, full information would be given to the CTF Trust Fund Committee to enable it to take a decision on whether EBRD could commit the remaining funds in KAZSEFF in Phase 2 of the programme.

<b>Summary CTF Terms for KTZ</b>	
Instrument:	Senior Secured Loan Financing – not subordinated to EBRD Finance
Amount:	Up to US\$ 15 million equivalent
Tenor:	10 years (to match the full investment);
Fees	1 % Front-End 0.5 % Commitment
Pricing:	75 basis points Fixed
Expected Commitment Date:	November 2011 to September 2012
Expected Disbursement Date:	January 2012 to December 2012

#### **Market Transformation**

The following is a summary of the most important impacts of this project on the market for renewable energy.

#### Overview

The Project is undertaken in parallel with a substantial energy efficiency investment programme of US\$ 200 million.

The project will include installation of ground source heat pumps and solar collectors in more than 600 locations throughout Kazakhstan.

Emission reductions:

The Project will deliver significant reductions in CO<sub>2</sub> emissions due to the fact that the majority of installations will substitute outdated coal, diesel and electric boilers with renewable technologies (ground source heat pumps, solar thermal collectors). Due to the size of the Project it is envisaged, that i) technology cost reduction will be achieved, thus supporting further investments by KTZ, and ii) technology providers will scale up their investment in the renewable heat market in Kazakhstan, contributing to market transformation.

Demonstration effects of new products and processes and replicability:

In the renewable heat sector, the development and implementation of a multi-site pilot project by a highly visible company on a national scale and in a key sector of the Kazakh economy will not only have a significant impact in terms of energy and carbon savings, but will also have significant demonstration effect to the business community and population in Kazakhstan.

The proposed project will cover buildings in up to 600 locations. This is 30% of the total KTZ building stock and therefore there is a substantial potential for future expansion of the investments into renewable energy sources in the premises of KTZ, as well as that of other companies with large numbers of buildings, following the successful demonstration of the technologies.

Setting standards for improvements in business management:

The Project will help develop and demonstrate efficient and effective approaches to delivering renewable energy projects in the built environment through changes to the business model. It will help introduce benchmarks and objectives in the contractual terms, and include best business practices to be applied and enforced. TC provided to the Client will strengthen institutional management, environmental awareness, and will assist the Client in the application of public procurement rules.

The development of higher standards for energy performance is actively supported by the Bank through the on-going and planned TA projects which will also support KTZ to: i) introduce energy efficiency considerations in its procurement procedures; and ii) review alternative financial mechanisms for scaling up energy efficiency investments (e.g., through ESCO models).

**Programme Indicators**

*General*

The success of the Project will depend on the pace of modernisation and implementation of Energy Efficiency Investment Programs within KTZ. KTZ has already prepared an implementation schedule for individual technologies, however the exact locations for installation will need to be confirmed and the engineering feasibility study will evaluate technical feasibility of a particular technology in the selected location.

The Framework will report on its indicators in line with the CTF results measurement framework (CTF/TFC.6.6 of 28 October 2010), and its underlying logic model. The list of indicators below will be tracked by EBRD throughout the project implementation phase.

*Numerical Indicators*

Indicator	Baseline	Anticipated Results by December 2015 (5 years)
Program		

GHG emissions directly avoided by <u>the Program</u>	N/A	165,000 tCO <sub>2e</sub> /year at the end of the five-year period 2011 to 2015 2.44 mtCO <sub>2e</sub> over the 15-year lifetime of the investments.
Other emissions avoided by <u>the program</u>	N/A	411 tNO <sub>x</sub> /year, 1,030 tSO <sub>x</sub> /year, 1,099 t of dust per year at the end of the investment period. 6,186 tNO <sub>x</sub> , 15,463 tSO <sub>x</sub> and 16,496 t of dust over the 15-year lifetime of the investments.
Jobs created by the programme	N/A	150 by the end of the investment period
CTF financial leverage for <u>the Program</u>	N/A	1:4 (CTF:EBRD) 1:4 (CTF:(EBRD and project sponsors))
Lifetime CTF cost effectiveness for <u>the Program</u>	N/A	0.16 tCO <sub>2e</sub> /1US\$ invested from CTF at the end of the five-year period 2011 to 2015

*Transformation Indicators*

<b>Transformation impact objectives of framework</b>	<b>Monitoring benchmarks</b>	<b>Implementation timing</b>
Demonstration effects	Successful implementation of project and dissemination of achievements to representatives of different sectors.	During implementation, annual reporting covenanted
Setting standards: setting standards for corporate governance and business conduct	Introduction of public procurement rules that will lead to a higher transparency in public procurement.	During implementation and repayment

Note: the carbon savings and capital cost intensity for the full US\$ 15 million were extrapolated from the US\$ 7 million investment programme where a detailed analysis has been done by KTZ and EBRD.

## Annex A

### Indicative Budget for Technical Assistance Program

#### CTF Advisory Services Component

<b>Activity Overview</b>	<b>Year 2011-2013</b>	<b>CTF Contribution</b>	<b>EBRD/Donor/Sponsor Contribution</b>
<b>Project Preparation</b>	US\$ 100,000		US\$ 100,000 (EBRD)
<b>Policy Dialogue</b>	0	0	0
<b>Feasibility Studies and Technical Assistance work</b>	US\$ 350,000	0	US\$ 350,000 (EBRD/bilateral donor 50%, KTZ or other private 50%)
<b>Capacity Building</b>	0	0	0
<b>CTF/CIF Knowledge Management</b>	0	0	0
<b>Total</b>	<b>US\$ 450,000</b>	<b>0</b>	<b>US\$ 450,000</b>

## Annex B

### Management Budget

<b>Kazakh Railways Sustainable Energy Programme</b>			
<b>1. Project Implementation (pre-signing)</b>	<b>CTF</b>	<b>EBRD</b>	<b>Sub-Total</b>
	<b>20%</b>	<b>80%</b>	
	<b>Year 0-10</b>	<b>Year 0-10</b>	
(Due diligence; legal review; contractual and site visits)	28,000	112000	140,000
(Staff costs - fund management; project programme management)	28,000	112000	140,000
<b>Subtotal</b>	<b>56,000</b>	<b>224,000</b>	<b>280,000</b>
<b>2. Project Supervision (post signing)</b>	<b>CTF</b>	<b>EBRD</b>	<b>Sub-Total</b>
	<b>20%</b>	<b>80%</b>	
	<b>Year 0-10</b>	<b>Year 0-10</b>	
(Contractual and site visits)	36,000	144000	180,000
(Fund's and Financial Controls; monitoring & reporting; site visits; restructuting; evaluation)	70,000	280000	350,000
<b>Subtotal</b>	<b>106,000</b>	<b>424,000</b>	<b>530,000</b>
<b>Total Project Management Budget</b>	<b>162,000</b>	<b>648,000</b>	<b>810,000</b>