

April 05, 2013

## Review of European Bank for Reconstruction and Development (EBRD) Clean Technology Fund (CTF)

### Private Sector Proposal:

#### Turkey Residential Energy Efficiency Finance Facility (TuREFF), Municipal Sustainable Energy Facility (MunSEFF) and Turkey Sustainable Energy Facility II (TurSEFF II)

1. I have reviewed the EBRD CTF private sector proposal for the Turkey Residential Energy Efficiency Finance Facility (TuREFF), Municipal Sustainable Energy Facility (MunSEFF) and Turkey Sustainable Energy Facility II (TurSEFF II) using my expertise and experience of the Turkish market situation as well as experience gained implementing energy efficiency financing, such as the (a) EE financing facility TuRSEFF; (b) Residential EE financing facility REE under the SEFF framework; (c) development of municipal EE financing for IFI in transition countries; (d) EE policy advice in Turkey, “National Energy Efficiency Strategy”; and (e) implementation of EE in residential and public buildings in Turkey, including energy audits pilot projects and building regulation. This review is relating to the full request for USD 70 million.  
**I strongly support and endorse this CTF proposal for the reasons summarised below.**
2. **The Programme builds** on the EBRD’s investment and market development experience (a) in Turkey; (b) in residential EE financing facilities in Bulgaria and three CIS countries and (c) in municipal sustainable energy financing in a number of the Bank’s countries of operation. The Programme will take and adapt this experience and these instruments to Turkey and therefore represents an important new initiative of considerable financing volume appropriate to the market potential.
3. Given Turkey’s tightening electricity and gas supply/demand balances, the cost-effectiveness of energy saving and energy efficiency has been identified as the key sector for greenhouse gas mitigation interventions by the government. Furthermore, this energy efficiency – energy security – environment nexus is consistent with the energy and climate goals of the European Union and effectively contributes to Turkey’s EU accession process. The Framework Programme is fully in line with the **CTF objectives and guidelines** in light of a combination of factors, including: (a) significant potential for large-scale GHG emission reductions; (b) high cost-effectiveness of GHG emission reductions; (c) the presence of additional costs or risks associated with the GHG emission reduction investment that affect its financial viability; (d) high demonstration potential, including scope for replication of results on a wider scale; (e) institutional and market transformation potential; and (g) high implementation potential in Turkey. The Programme can satisfy the above set of criteria in Turkey, can also meet the purposes of the CTF Investment Plan and is in line with the Energy Efficiency policy targets of Turkey to reduce the country’s energy by 20% until 2023 (compared to 2008).

#### **Residential EE financing window**

4. Energy efficiency in buildings is a relatively new topic in Turkey, and the **driving factors** for an EE investment decision are (a) the demand to counter-steer the increasing portion of households’ costs for energy, electricity and gas prices which have doubled over the last decade, (b) a change of attitude of the population to the growth of individual assets, such as property, and (c) the need to improve the refurbishment procedure of housing, leading to more comfort and an improved living quality, in particular in housing areas of low construction quality which have to a large extent been built over the last three decades.  
Around one third of the energy consumed in Turkey is used for heating and cooling. More than 80%

of the buildings in Turkey do not have sufficient heat insulation, still have single glazing windows and use solid fuels, mainly coal for primary heating, while in contrast more than 80% of the housing stock is connected to the natural gas network.

Turkey is well endowed with renewable energy resources, in particular solar, environmental and geothermal heat which would be usable for covering parts of its own heat/cooling demand of buildings, but only a small fraction of this renewable energy heating potential is utilised.

5. The **market potential** for EE in the residential housing sector in Turkey is high, which can be demonstrated by a simple estimation based on the following assumptions: (a) of the 18 million households in Turkey, one third is located in colder climatic regions, being highly relevant for EE measures (Anatolia, Black Sea region, etc.); 20% of these households are in private ownership by creditworthy clients of TuREFF PFIs. If 30% of them were to consider to take up TuREFF funding, this would result in 360,000 households as potential sub-borrowers/sub-projects; (b) the investment costs of a package of the most appropriate EE measures in an average dwelling amount to 10,000 USD including installation costs and VAT, and consisting of the replacement of windows and individual boilers, wall/roof insulation, solar water heaters for DHW and air-to-air heat pump air conditioners, resulting in an overall potential volume of 3,600 million USD. It would be an appropriate and prudent strategy for the EBRD and the Framework Programme to approach this market by a TuREFF pilot phase of 350 million USD which could cover approximately 10% from the conservatively estimated potential in the colder climatic regions.
6. The Programme will **deliver substantial CO<sub>2</sub> emission reductions** at a comparatively low specific investment cost of approx. 1.45 kWh annual energy saving per invested USD over the long lifetime of technologies at 20 and more years. Annualised cost of energy savings over such lifetime and based on the average of current interest rates applied by Turkish banks to residential customers account for 0.056 USD per kWh saved, which is half the current electricity tariffs and higher than average households tariffs for gas and heat. This means saving energy is already economically attractive for population using mostly electricity for heating, air-conditioning and domestic hot water, while decrease of energy subsidies on gas, coal and heat will make energy efficiency attractive for those using these fuels in the future. The Programme brings a high level of financial sustainability of sub-projects with co-benefits such as increasing the living comfort through better hygiene, and enabling a healthier environment in residential buildings. The energy saving and emission reduction potentials of the TuREFF pilot phase under the above assumptions are considerable (a) annual energy savings potential in residential sector of 0.5 TWh representing approx. 0.2 % of the primary energy consumption of the residential sector of 249 TWh, and (b) annual CO<sub>2</sub> emission reduction up to 200 ktonne representing approx. 0.1 % of the country's CO<sub>2</sub> emission volume. Those effects can be increased by an extension of the TuREFF financing model in terms of market coverage by increasing the number of viable sub-borrowers, the number of PFIs, regional coverage, marketing and the respective increase of the financing volume, after a successful first phase.  
Taking the above example of an EE investment package for a dwelling of 10,000 USD, energy savings of 60% can realistically be reached, which leads to a payback time of 8-10 years under the current energy tariffs for households. Assuming the financing of that EE package by a TuREFF loan, considering the financing costs and an investment incentive, a loan maturity of 5 to 7 years should be appropriate to refinance the investment from the energy costs saved, although having the ability to provide longer tenors, which the CTF gives the local banks, will increase the attractiveness of the investment for the end borrower.
7. The **economic development co-benefits** of the proposed Programme will be signified by: (a) the reduction of the energy import dependency of Turkey; (b) the development of a functioning and integrated equipment market linked to the EU EE technology markets, enabling and stimulating EE equipment manufacturers and installers in Turkey to comply with Best Available Technology (BAT) performance requirement for the increasing domestic market, (c) increased employment and private sector involvement in particular in non-industrialised regions through the development of local production and installation services for EE equipment triggered by TuREFF financing, and (d)

reduced local pollution due to the displacement of coal and other polluting fuels for local energy needs. The Programme will be an effective contribution to transforming the traditional use of more polluting energy sources into cleaner household energy sources by providing financial instruments combined with advisory services for market adaptation and penetration.

8. The Programme will have a significant **demonstration effect** by introducing new financing instruments to a fragmented market with a high potential for adaptation, and in parallel an intensive development of capacities at PFIs for the utilisation of efficient, standardised instruments. The Programme offers an integrated solution of financing, technical assistance and regulatory development and will link together stakeholders from the residential sector with financing institution, technology suppliers and engineering professionals.
9. The proposed interventions are fully **in line with the EBRD strategy** in Turkey. In particular, the EBRD is engaged in close policy dialogue with the Government of Turkey on a number of issues relating to e.g. renewables and energy efficiency legislation, energy performance contracting and the related budget code for municipal authorities. This dialogue is based on a 'Sustainable Energy Action Plan' between the Bank and the Government, signed in 2011, and it will be a fundamental element in assuring the implementation of the Clean Technology Fund investment plan in Turkey. Special focus is given to areas where the transition gaps are significant and where the Bank's finance and expertise are additional to what commercial and non-commercial funding sources can provide. The provision of investments to private sector investors in energy efficiency through PFIs supports the on-going reforms in the residential housing and municipal financing sector of Turkey, including the promotion of favourable market conditions for the development of energy efficiency instruments.
10. The Facility will have a **transformative impact** dimension in Turkey by enabling accelerated EE investments or attaining the recently set new building regulations, partly transposing provisions of the EU Directive on Energy Performance of Buildings (EPBD). As this mainly concerns new building construction, which is developing rapidly anyway, further instruments should be assessed to extend the TuREFF residential financing window to fund additional EE measures of new constructions to comply and exceed the new energy performance requirements.
11. Furthermore, the **Programme complements the initiatives** of other international donors which are active in the development of residential EE and municipal infrastructure in Turkey, such as the EC, the EIB and the GfGF. The scope of TuREFF will go far beyond current practice in building refurbishment and reach by offering instruments to meet the financial demand of viable EE projects accompanied by intensive TA and investment incentives.

Despite the overall conducive legal and regulatory frame energy efficiency and the cost effectiveness of EE investments, the major progress on EE financing facilities in Turkey has been achieved in the industry and SME sector. Financing facilities for residential energy efficiency is lagging behind the market demand. Governmental EE programmes concentrate mainly on the promotion of energy efficient appliances and devices in the residential sector and lighting in the public sector, while the potential of high energy wasting building envelopes remains mostly untapped. The residential sector EE financing facilities recently launched by international donors (a) are of comparatively low financial and TA volume, (b) lack a programmatic approach to make an impact, (c) usually cooperate with single PFIs only, (d) have insufficiently developed distribution channels, and (e) have had a limited reach so far.

Those residential EE financing facilities in Turkey are (a) the French Global Environment Facility (managed by the AFD) in cooperation with KOSGEB, which has included residential EE since 2012; (b) the credit line to Şekerbank financed by the Green for Growth Fund launched in June 2010; and (c) the credit line to Şekerbank, financed by the German Ministry for Economic Cooperation and Development and KfW with financing from the Council of Europe Development Bank (CEB) and OeEB, including TA from the European Union.

Compared to the facilities mentioned above, TuREFF will have the advantage of EBRD's comprehensive know-how on implementing large-scale, dedicated EE financing facilities, its successful experience of residential EE facilities in other countries and municipal financing

combined with an appropriately sized TA component.

As a number of - to some extent - competing facilities offered by international donors and Turkish banks are already available, and place less stringent requirements on the local banks, the pricing and technical assistance policy for the TuREFF funds will be decisive for its success and adoption by PFIs and finally the sub-borrowers. This is the key role which the CTF can play in conjunction with the experience of the EBRD in structuring residential energy efficiency facilities in ensuring that TuREFF moves the market beyond its current standards.

12. The **financial instruments** of the proposed Framework Programme TuREFF residential financing window address the particular needs of the residential housing sector as the possibility of receiving credits to finance energy efficiency projects in Turkey is currently limited. There is also a lack of know-how for the realisation of energy-saving potentials which will be addressed by TuREFF's accompanying TA and the implementation of standardised instruments on project assessment, facility marketing and capacity building at PFIs to reach the target group of individual sub-borrowers in the highly fragmented market. Special credit instruments granted by PFIs to households, in particular with incentive schemes and longer maturity, close to the payback time of the individual EE investments, will close a funding gap and therefore support nationwide energy efficiency.
13. **Gaps remain** in Turkey between the strong economic development and market potential for EE projects versus the low penetration rates for energy efficient equipment in the residential sector. Current issues are detailed in the following: (a) The main gap is the lack of awareness of energy saving opportunities, along with limits in the planning and implementation capacities of projects. (b) There is also a lack of the capacities, understanding and time of loan officers dealing with too wide a range vs. the demand to provide an initial technical advisory service to potential sub-borrowers, (c) Financing the insulation of apartment buildings with multiple ownership, as commercial banks can or will not lend to the owners' management companies, and securing such loans through individual owner collateral. (d) The insulation of the envelope of a multi-apartment building requires the agreement and common liability of the tenants (at least 4/5), while house owner associations and condominiums are still weak in initiating and planning collective EE investments. (e) Around 50% of the Turkish population being deemed as not creditworthy by commercial banks, thus the wish to invest in energy efficiency of dwellings is not always implemented easily.  
A major cause of these gaps is the lack of effective project delivery and appropriate financing mechanisms dedicated to the target group of project sponsors and developers. I note that funding, in particular with longer maturities, is necessary but by itself not sufficient to develop, finance and implement residential and municipal EE projects. Other services are needed to market EE projects programmatically, prepare projects for investment and build capacities of market actors, including suppliers, installers, service companies, financial institutions, as well as local and regional administrations. Successful EE programmes combine: (a) access to finance, with financial products structured and adapted to the target market with (b) project development and project delivery mechanisms that generate a flow of investment projects, along with services that build capacities of market actors to develop the EE business on a commercial basis.
14. An initial set of recommendations to overcome these barriers and build successful **implementation procedures** comprises, among other well-known and proven instruments, (a) a fully interactive on-line knowledge and advisory system, supported by a reasonable public and in-bank promotional campaign and combined with training of loan officers, (b) provision of eligibility criteria which are kept very simple, with little or no additional documentation required from the loan officer's side, (c) streamlining of the procedures and making the TA consultant develop and use efficient tools for the standardised processing of tens of thousands of small-sized projects, (d) provision of a legal advisory tool for sub-borrowers separated into two parts for new projects and building refurbishment, and (e) cooperation with vendors who have good access to the customer base and tend to finance customers who are otherwise not deemed creditworthy. Another route for building level projects may be the engaging of licensed ESCOs, combining the technical assistance with a Building Energy Performance Certificate which shall be an obligation to benefit from investment incentives. This approach will support Turkey in the implementation of the legislation but will require intensive TA to

build the capacities at the ESCO's side.

The Turkish attitude to doing business is based to a high degree on personal relationships and networks which opens additional opportunities for financing instruments for the residential EE financing window in particular for the scattered market structures. Such opportunities are vendor financing and leasing for non-building integrated EE equipment for which good experience has been made in TurSEFF, or respectively leasing branches of leading Turkish banks. Through partnership agreements between PFIs and professional, locally active suppliers and installation companies, the distribution channels can be reinforced, which can contribute to a wider awareness and market reach of TuREFF. The fact that the head of a Turkish household – the potential TuREFF sub-borrower – tends to be reluctant to spend additional time and effort on planning, financing and realising an EE measure provides an advantage to one-stop-shop financing mechanisms.

### **Municipal Sustainable Energy Financing Facility (MunSEFF)**

15. There are around 3,000 **municipalities in Turkey**; 29 of them are metropolitan municipalities. However, new legislation is under way to reclassify their status. As a result, more than 500 small municipalities will lose their municipality status. These changes will be finalised and come into effect before local elections in 10/2013.

Municipalities have until now only been able to access funds for infrastructure and energy efficiency financing from Iller Bank, the Turkish governmental development bank, and with special permission also loans from IFIs, backed by a Treasury guarantee. There is no dedicated financing programme for municipal EE with the financial participation of multi- or bilateral development banks; although the above-mentioned GGF and AFD facilities offer a relevant financing window. Setting up MunSEFF as a dedicated pilot to introduce commercial finance into the municipal market in Turkey is therefore a commendable move by EBRD.

16. The poor credit record of municipalities and the non-availability of long-term funds remains a **fundamental problem** for the development of the sector. Locally raised revenues at low levels of expenditure coverage are centrally controlled and adjusted; in turn, municipalities depend to a high degree on state support to cover debt and to almost 90% for investments.

The Ninth Five Year Plan 2007-2013 has set the goals to provide more effective technical and financial consultancy services to municipalities in the implementation of urban infrastructural investments. In this frame, the municipal sector provides a large **market potential** and remains attractive with regard to EE/RE improvements and associated lending.

New government policy obliges municipalities in Turkey to address their waste and wastewater treatment, and their energy usage. However, they typically lack the technical know-how as well as the understanding of potential solutions. Typical EE and RE potentials are (a) wastewater system rehabilitation, (b) waste management (including waste-to-energy and landfill gas), (c) street lighting and (d) municipality-owned buildings. Small municipalities are an important target for sustainable energy measures. The opportunity is substantial due to the need of investment in public cost-cutting measures, coupled with a lack of knowledge and skilled teams in small municipalities.

Where direct financing of municipalities is difficult or not possible, **EPC/ESCO financing** type projects between small municipalities, reputable EPC suppliers and local private financing institutions are possible. There are already examples in Turkey, amongst others a landfill gas project financed in Samsun and a wastewater sludge and landfill site in Kayseri, showing the projects' viability and the readiness of the government to support such projects as they solve several problems at the same time.

17. It is difficult to estimate the overall market potential for municipal EE investments and to which extent the funds allocated to MunSEFF of 26 million USD could cover the realistic demand. Many municipal EE investments are integrated in larger infrastructure projects donated by direct governmental or IFI funding and not easy to separate and commercialise to make them bankable under TuREFF. Thus, it is an appropriate and prudent strategy for the EBRD and the Framework

Programme to approach this market segment with a smaller pilot phase, comprising of funding and intensive TA to the local banks and end clients, to remove the barriers as indicated above. This should if possible be done in collaboration with the governmental İller Bank, and a special focus shall be given to funding measures in the building sector, such as the EE refurbishment of existing facilities or buildings, where the facility could benefit from complementarity with TuREFF. Nevertheless, even the relatively small proposed volume for the pilot can, due to the nature of the projects, lead to substantial CO<sub>2</sub> emissions savings of up to 100,000 tCO<sub>2</sub>/yr, or 0.05% of Turkey's emissions.

18. For the development and **implementation of MunSEFF, pioneering work is** required to (a) turn the results of municipal regulatory reforms into investment practice, (b) develop appropriate financing and guarantee mechanisms with the government and its banks, (c) develop implementation modalities and capacities with commercial or governmental PFIs, (d) align the facility mechanisms with governmental financing and co-financing mechanisms as well as central governmental planning and approval procedures, by SPO (State Planning Organisation),(e) support and guide the development of ESCO business towards reliable financing services which are appropriate and acceptable for municipal clients, and finally (f) secure complementarity to EU initiatives, such as pre-accession, structural funds and programmes, e.g. IEE (Intelligent Energy for Europe) and (if Turkey becomes eligible for it) ELENA under observation of compliance with rules on competitiveness.

The ambitious target of the Turkish government to reduce CO<sub>2</sub> emissions has already called municipalities to action. Currently five municipalities in Turkey are signatories of the European initiative the Covenant of Mayors (CoM) with a fast increasing trend. The municipal Sustainable Energy Action Plans (SEAP) which will have to be prepared in this frame to reach their set targets, will outline concrete measures and investment projects and represent potential for sub-projects for MunSEFF.

MunSEFF will have a high **development impact** through the maintenance of medium to high additional costs and risk premium. Concessional finance can be highly and efficiently utilised for the complex task, as experience in the same field has shown in Slovakia, Bulgaria and Ukraine.

### **SME Window**

19. The provision of additional technical assistance to support the substantial expansion of the SME financing window with no concessionality being offered expands on the success of the EBRD/CTF TurSEFF facility. It will enable the continued transformation of SME energy efficiency lending markets on a commercial basis and deliver substantial reductions of energy use and CO<sub>2</sub> emissions in Turkey. CO<sub>2</sub> emissions reductions are not assessed, since EBRD stated these will continue to be considered under the original TurSEFF framework.

### **Considerations**

20. It would be prudent to follow a distinct **implementation approach** for the residential and municipal EE facilities due to the huge differences of the targeted sub-borrowers and sub-projects, the PFIs involved, the financing instruments and distribution channels. Additionally, there is experience of combined EE financing facilities, e.g. SME and residential EE, which turned out to be challenging in their implementation as the financing products vary greatly.
21. The contribution to the **mitigation of market distortion effects** of the Programme will be high (a) for TuREFF, as there are a number of competitive financing instruments for the residential building EE sector which are already on the Turkish market and (b) for the municipal EE window, as this area has not been covered to date by local banks or IFI with a dedicated EE financing instrument. However, for the latter it is crucial to avoid the coinciding of governmental funding programmes for sovereign tasks with the concessional funding of TuREFF.

22. The ESCO business is still underdeveloped in Turkey; existing and registered ESCOs lack financial and technical capacities to serve the market demand. The EBRD is supporting the development of the regulatory framework for **Energy Performance Contracting (EPC)** in the frame of policy dialogues with Turkey, aiming to stimulate this market by developing ESCO pilot projects and drawing on its lessons learnt in some CIS countries. This will establish the required capacities for functioning energy services, e.g. to municipal and building-level residential customers and will stimulate the demand for funding ESCOs. Nevertheless, the development of the financial sustainability of the ESCOs will remain a **major challenge** which can be addressed by MunSEFF by concessional funding conditions paired with guarantee instruments, which will not have distortion effects as the ESCO market under the EPC model is not existent. In contrast this will meet the demand to overcome the infancy of EPC business in the near future and contribute to the transition to commercial viability and the competitiveness of ESCO companies. This is in full line with the targets as set out by the Government of Turkey, heading towards the creation of a self-sustaining ESCO industry supporting the exploitation of the energy saving potential in particular in the public/municipal sector under commercial EPC mechanisms. The distortion risk will be mitigated through an investment focus on sound management and financial modelling, a combination of real technical and financial service practices, viable projects and portfolios, linking CTF finance, to close the equity gap with appropriate financial pricing levels.

### Summary

23. **Taken all together**, the Programme's combination of financing sources, the comprehensive TA component as well as the EBRD's strong EE financing execution capacities, regarding residential EE and SE financing in Turkey all constitute a recipe for success. The market potential as well as the regulatory framework is conducive to adapting dedicated financing instruments to be provided by TuREFF.

Respectfully submitted,

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### **Sources of information for the review:**

- (1) CTF Private Sector Proposal Turkey residential Energy Efficiency Finance Facility (TuREFF);
- (2) EBRD TuRSEFF – Turkey Sustainable Energy Financing Facility, Implementation experiences, November 2011;
- (3) Turkey “National Energy Efficiency Strategy”; MENR, 2004, and up-date 2009
- (4) KfW Update of the Pre-Feasibility Study of January 2009, “Promotion of Energy Efficiency in Turkey through financial institutions”
- (5) Clean Technology Fund Investment Plan For Turkey, January, 2009 , Meeting of the CTF Trust Fund Committee
- (6) Market Demand Study, Assessment of Sustainable Energy Investment Potential, EBRD, July 2009
- (7) EBRD Strategy For Turkey, April 2012
- (8) EBRD Sustainable Energy Action Plan (SEAP). March 2011
- (9) Phone interview with: Former Team Leader of TurSEFF, Ms. Janna Fortmann, MWH

### **Abbreviations used:**

AFD	Agence Française de Développement	IEE	Intelligent Energy for Europe
AS	Advisory services	IFI	International financing Institution
BAT	Best Available Technology	KfW	KfW Entwicklungsbank, Germany
CEB	Council of Europe Development Bank	KOSGEB	SME Development Organization
CIS	Commonwealth of Independent States	MDB	Multilateral Development Bank
CoM	Covenant of Mayors, EU initiative	MunSEFF	Municipal Sustainable Energy Financing Facility
CTF	Clean Technology Fund	OeEB	Austrian development Bank
DHW	Domestic Hot Water	PFI	Partnering Financing Institution, Partner bank
EBRD	European Bank for Reconstruction and Development	RE	Renewable Energy
EC	European Commission	SEAP	Sustainable Energy Action Plans
EE	Energy Efficiency	SEFF	Sustainable Energy Finance Facility
EIB	European Investment bank	SME	Small and Medium Enterprises
ELENA	European Local Energy Assistance,	SPO	State Planning Organisation
EPBD	Energy Performance of Buildings Directive	TA	Technical Assistance
EPC	Energy Performance Contract	TC	Technical Cooperation
ESCO	Energy Service Company	TuREFF	Turkey Residential Energy Efficiency Finance Facility
EU	European Union	TurSEFF	Turkey Sustainable Energy Financing Facility
GGF	Green for Growth Fund	TWh	Terawatt-hour
GHG	Greenhouse Gas(es)	UNDP	United Nations Development Programme
GoT	Government of Turkey	VAT	Value Added Tax