Climate Investment Funds

CTF/TFC.10/6
October 23, 2012

Meeting of the CTF Trust Fund Committee
Istanbul, Turkey
November 3, 2012

Agenda Item 4

UPDATE ON INVESTMENT PLAN FOR TURKEY

(SUBMITTED BY THE GOVERNMENT OF TURKEY)

REPUBLIC OF TURKEY
PRIME MINISTRY
The Undersecretariat of Treasury

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Ankara,

23.10.2012* 17095

To: Ms. Patricia BLISS GUEST
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Re: Revised CTF Investment Plan of Turkey

Dear Ms. BLISS GUEST,

With reference to the Undersecretariat of Treasury's letter of September 10, 2012 regarding our request to update Turkey's CTF Investment Plan, we would like to inform you that Turkey's Investment Plan has been revised. Please kindly find attached the Update Note on CTF Investment Plan which has been included in the agenda of the CTF Trust Fund Committee Meeting on November 3, 2012.

Thank you for your kind cooperation.

Best regards,

Evren DİLEKLİ
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Encl.

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CLEAN TECHNOLOGY FUND

INVESTMENT PLAN FOR

REPUBLIC OF TURKEY

Update Note

October 2012

TURKEY

CLEAN TECHNOLOGY FUND INVESTMENT PLAN

Update Note

October 2012

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List of Abbreviations

CBCC	Coordination Board on Climate Change
CSEF	Commercializing Sustainable Energy Finance Program for Turkey
CSP	Concentrated Solar Power
CTF	Clean Technology Fund
CY	Calendar Year
DAM	Day-ahead Market
DFI	Development Financial Institution
EBRD	European Bank for Reconstruction and Development
EE	Energy efficiency
EMRA	Energy Market Regulatory Authority of Turkey
ESCO	Energy Services Company
EUAS	Electricity Generation Company of Turkey
FI	Financial Intermediary
GDRE	General Directorate of Renewable Energy
GHG	Greenhouse Gases
GWh	Giga Watt hour
IBRD	International Bank for Reconstruction and Development
IFC	International Finance Corporation
MDB	Multilateral Development Bank
MENR	Ministry of Energy and Natural Resources
MoD	Ministry of Development
MoEU	Ministry of Environment and Urbanization
MRV	Monitoring, Reporting and Verification
MunSEFF	Municipal Sustainable Energy Financing Facility
MW	Mega Watt
NCCC	National Communication on Climate Change
PMR	Partnership for Market Readiness
PV	PhotoVoltaic
RE	Renewable Energy
ResiSEFF	Residential Sustainable Energy Financing Facility
SE	Sustainable Energy
SME	Small and Medium Enterprise
TEIAŞ	Electricity Transmission Corporation of Turkey
TKB	Development Bank of Turkey
TSKB	Industrial Development Bank of Turkey
TurSEFF	Turkey private sector Sustainable Energy Financing Facility

EXECUTIVE SUMMARY

1. **The Clean Technology Fund (CTF) Phase I has been a success for Turkey.** The three projects that were approved by the CTF Trust Fund Committee are on track to meet or exceed their goals, and there are concrete plans to seek approval of remaining projects in early 2013. A total of US$1,982 million is expected to be leveraged from US$172 million in CTF financing. The financed Renewable Energy (RE) projects are expected to generate a total of 7,100 GWh/year [1], the energy efficiency (EE) projects are expected to reduce energy consumption by 2,714 GWh/year. These RE and EE projects are expected to reduce GHG emissions by 4 million tCO_2e/year. The program made substantial contributions to the government's goals to enhance energy security, support a clean energy transition and increase private sector involvement in the energy sector. Key impact indicators of the CTF Phase 1 investments are shown in **Table 1**.

Table 1: Key Performance Indicators of the CTF Phase 1 Investments in Turkey

Impact Indicator	Volume of Impact from CTF Investments	National Total Volume of Impact Indicator	CTF Impact as share of Turkish Total (%)
Power Generation	7.1 TWh	194 TWh[2]	3.7
Energy Savings	2.7 TWh	216.3 TWh[3]	1.2
CO2 Savings	4 mtCO2/yr	256.3 mtCO2/yr[4]	1.6

2. **The World Bank Private Sector Renewable Energy and Energy Efficiency (PSREEE) project accomplished its objectives of accelerating the development of small hydro and wind, and pioneering large industrial scale energy efficiency**. Sub-loans through the Industrial Development Bank of Turkey (TSKB) and Development Bank of Turkey (TKB) pioneered transactions in small hydro, wind energy generation and energy efficiency investments in large industrial manufacturing. The project was successfully implemented and IBRD approved an additional US$500 million loan in addition to the original US$500 million in November 2011. Overall, the US$100 million in CTF financing leveraged US$1.53 billion, and TKB and TSKB were able to attract an additional US$1 billion for renewable energy and energy efficiency from other international financiers. As of June 2012, 969 MW of renewable energy capacity had been installed, and 17 energy efficiency projects completed for a total GHG emission reduction of 3.2 million tCO_2e.

3. **EBRD Turkey Sustainable Energy Financing Facility (TurSEFF) project was equally successful**. The program originally totaled US$200 million (US$ 40 million from CTF and US$ 160 million from EBRD). An additional US$85 million was leveraged from EBRD, JBIC and CTF, increasing the total amount of the facility finance to US$285 million. The program financed 290 renewable energy projects (from geothermal to biogas, wind and hydro), and energy efficiency projects for a total investment value of US$500 million. The projects are expected to provide annual energy savings equivalent to 2,814 GWh (equivalent to 242,000

[1] Uses 78 percent weighted availability of small hydro and wind resources
[2] IEA data for domestic supply of electricity in 2009
[3] IEA data for TFC in the Industry sector in 2009
[4] IEA data for 2009

toe/year), reduce energy import costs by about US$150 million annually at current oil prices, and at the same time provide up to 760,000 tCO_2e in annual GHG emissions reductions. In addition, and as a result of the banking relationships developed, EBRD also launched the Mid-size Sustainable Financing Facility (MidSEFF) in January 2011. MidSEFF is a joint EBRD/EIB US$1.268 billion [5] facility, structured purely on a commercial basis, and supported by a comprehensive technical assistance programme. It is aimed at diversifying the existing generation capacity with new renewable energy resources. Currently, US$455 million has been disbursed into 18 projects (equivalent to 380 MW) for a total investment cost of US$559 million. This Facility is expected to finance 50 subprojects with total subproject value of US$1.82 billion. Approximately 1,000 MW of renewable energy capacity will be installed, providing 3,600 GWh of green energy and more than 2 million tCO_2e abated per annum.

4. **The Commercializing Sustainable Energy Finance Program for Turkey (CSEF I) led by the International Finance Corporation (IFC) focused on energy efficiency through retrofits and upgrades in manufacturing, printing, food and textile sectors.** US$21.7 million from CTF leveraged US$93million to finance 53 projects leading to 29,700 tCO2e/year in GHG emission reductions. All of the US$93 million has been disbursed to local banks and to sub-borrowers. The forthcoming US$28.3million IFC Private RE/EE project (to be submitted for approval to the CTF Trust Fund Committee in 2013) is focused on financing solar and geothermal projects. Financing utility-scale solar energy projects in Turkey is currently not possible because there are no solar energy generation licenses. Considering the Turkey's high technical solar potential (estimated to be 380 TWh by the use of solar parabolic trough technology), and the starting of the solar license applications in June 2013, IFC expects that private investors to be highly interested in investing in solar energy this coming year.

5. **The TEIAS Transmission and Smart Grid project to be supported by the World Bank is on track to seek CTF Trust Fund Committee approval in 2013.** TEIAS' US$350 million investment was approved by the Turkish Ministry of Development for the 2013 Investment Plan. US$23million additional investment is still to be approved by the Ministry of Development. It is expected that the project will be approved in the 2013-14 financial year. This project is critically important in order to support the integration of the generated wind energy into the national transmission system. According to the Energy Market Regulatory Authority of Turkey (EMRA), wind energy as a percentage of total energy consumption has grown from 0.04 percent in 2005 to 2 percent in 2011 and is projected to continue to grow rapidly as the Government targets 20,000MW of installed Wind capacity by 2023; hence the implementation of modern grid management and control systems is timely and essential.

6. **Substantial resources have been invested in Turkey in wind, small hydro and large scale industrial energy efficiency and some commercial financing has become available.** Total wind installed capacity reached 2,089 MW as of August 2012. In large scale industrial energy efficiency, CTF support helped to reduce the transaction costs associated with industrial energy efficiency, and made it cost effective. For each ton of GHG emission reduction, there is a

[5] EUR 975million, assumes a 1.3 conversion rate from EUR to US$

net benefit of US$31.6[6] as the reduction in energy consumption through improved efficiency translates into significant financial savings.

7. At this stage, the CTF Turkey Investment Plan has already achieved the financing volume originally indicated, though US$78 million of the original allocation remains to be disbursed. **Most strikingly, while the investment plan foresaw co-financing to reach US$1,850 million on CTF finance of US$250 million, thus far, US$1,982 million have been achieved, 7 percent above target, on CTF finance of US$172 million - 32 percent less than expected.** The Government of Turkey has therefore already achieved 103 percent of target investment and 107 percent of co-financing, while utilizing only 69 percent of plan CTF support. Nearly 100 percent of the US$172 million released by the CTF has already been disbursed.

Table 2: Phase I financing achieved by end 2012 (US$ million) based on CTF Project Approvals[7]

Financing Source	**WB Private Sector RE/EE**	**EBRD TurSEFF/IFC CSEF & IFC private RE/EE Projects[8]**	**Total**
CTF	100	72	172
World Bank	1,000		1,000
IFC/EBRD		311	311
Turkey[9]	431	215	745
Others[10]		25	25
Total Achieved by End 2012	**1,531**	**623**	**2,154**
Of which co-financing	***1,431***	***551***	***1,982***
Total Investment Planned under Investment Plan	**1,130**	**520**	**1,650**
Difference	**+35.5%**	**+19.8%**	**+20.1%**

8. **The diversification of technology and source of alternative energy is still a policy priority for the Turkish Government.** CTF support has provided financing for renewable energy projects mostly in small hydro, with some wind and geothermal investments. The Government's strategy clearly indicates a goal to diversify the technology deployed in the Turkish market. New technology-based tariff reflects the Government's policy, as electricity produced by wind, geothermal and solar technologies have all gotten favorable tariff settings.

[6] Based on estimates from the First NCCC where the likely EE incremental economic cost is -US$15.5 billion for reducing CO2e emissions by 49.1 mtCO2e.
[7] Implementation of Phase I will conclude through 2013 and 2014, subject to projects being approved by the CTF Trust Fund Committee
[8] This does not include the EBRD/EIB MidSEFF facility.
[9] The Government, banks (incl. TSKB, TKB, Halkbank, etc.), investors, and TEIAS
[10] Bilateral (JBIC) and EU Commission

Though the financial viability of these technologies have been improved through the new tariff regime, the advanced RE technologies still face barriers since: (a) the lack of experience in these technologies make it a more risky investment from investor and financiers' perspective, (b) due to lack of economy of scale, the capital cost of these technologies are still high relative to other conventional technologies.

9. **In Phase II, the Government of Turkey plans to tackle the market barriers that have impeded scaling up of energy efficiency investments beyond the large industrial sector, and continue investments in less conventional RE technologies.** Turkey recently adopted its Energy Efficiency Strategy which aims at decreasing the energy intensity of the economy by 20 percent by 2023. According to a World Bank study, Turkey could achieve an estimated energy savings of US$3.0 billion per year—around 8.0 million toe, which is about 25 percent of the 2007 energy consumption levels. .[11] Tackling energy efficiency in Small and Medium Enterprise (SME), residential, municipal, and building sectors is critical in order to meet this goal. The SME sector accounts for 99 percent of all enterprises, 27 percent of total output, and 80 percent of employment in Turkey. Buildings (residential, commercial and public buildings) are responsible for 30 – 40 percent of the total energy consumption, and hold 20 - 40 percent potential energy savings. Less conventional RE technologies, such as solar, biomass, geothermal and biogas, still require incentives and support before they can be taken up on commercial basis. Turkey's solar technical electrical energy potential (using parabolic trough technology) is estimated at 380,000 GWh/year, and biomass potential at 8.6 Mtoe/year; hence there is great potential in the sector. Additional resources are necessary to overcome the current significant challenges and to realize the potential.

10. **The main barriers that the Government of Turkey proposes to tackle in promoting energy efficiency investments in SME, residential, buildings and municipal sectors are high transaction cost, underdevelopment of Energy Service Companies (ESCOs), and lack of awareness**.

a. *High transaction cost*
There are higher cost associated with assessing and preparing EE investments relative to the small size of the loans, and these have deterred sponsors and financiers alike. This is especially so for the SME sector, where the technical capacity required is usually not available within companies;

b. *Underdevelopment of Energy Services sector*
The energy management services sector, including ESCOs, is still at an infant stage in Turkey. They face challenges not only in getting EE projects, but also in obtaining financing. Many of them do not have access to finance as they lack collateral or capital required to obtain financing. There is a lack of regulatory, as well as legislative improvements to drive their development.

c. *Lack of Awareness*
EE investments usually involve well established technologies and provide high rate of return with short payback periods, with Government providing various incentive schemes. However,

[11] "Tapping the potential for energy savings in Turkey", World Bank, 2010

the awareness of the benefits of EE investments or incentives provided for the promotion of EE investments is not very high.

CTF Proposed Allocation and Update of Project Financing Plan

11. The Government of Turkey is not proposing a reallocation of CTF funding under Phase I. However, it is updating expected co-financing under Phase I, and requesting US$140 million in CTF financing of Phase II. The proposed allocation of the financing is described below, and detailed justification and explanation is provided in Section II of this document and the Annexes.

12. **Table 3** represents the update to Turkey CTF Investment Plan. There are two major changes reflected in the tables:

(a) In Phase I, there is realized financing of already implemented projects WB private sector RE/EE, EBRD TurSEFF, and IFC CSEF projects, and current financing plans for WB TEIAS Transmission and Smart Grid and IFC Private RE/EE projects;

(b) In Phase II, financing of the proposed WB Small and Medium scale Enterprise (SME) EE project, IFC CSEF II and three EBRD Private Sector Bank-Intermediated Projects.

Table 3: Turkey CTF Indicative Financing Plan After Reallocation (US$ million)
Phase I Indicative financing (US$ million)

Financing Source	**WB Private Sector RE/EE** *Actual*[12]	**IFC CSEF I & IFC Private RE/EE** *Actual& Planned*	**EBRD TurSEFF** *Actual*	**WB TEIAS Transmission, & Smart Grid** *Planned*	**Total**
CTF	100	50	50	50	250
World Bank	1,000			300	1,300
IFC		213			213
EBRD			218		218
Turkey[13]	66		217	23	306
Others[14]	365		20		385
Total	**1,531**	**263**	**505**	**373**	**2,672**

[12] Actual is based on CTF Trust Fund Committee approved projects. Planned are projects in the investment plan, but have not been submitted for approval yet.
[13] Including the government, project sponsors, and local banks
[14] Other financing sources include other public financiers such as AFD, KFW, CEB and EIB

Phase II Indicative financing (US$ million)

Financing Source	IFC CSEF II	EBRD RE/EE (TurSEFF II, ResiSEFF MunSEFF)	World Bank SME Energy Efficiency	Total
CTF	20	70	50	140
World Bank			200	200
IFC	80-100			80-100
EBRD		250		250
Turkey[15]		175	45.35	220.35
Others	80	5	11.14	96.14
Total	**180-200**	**500**	**307**	**987-1007**

[15] The Government, Banks (incl. TSKB, TKB, Halkbank, etc.), and ESCOs

Introduction

13. **This note presents an update to the original Clean Technology Fund (CTF) Investment Plan of the Republic of Turkey, which was endorsed by CTF Trust Fund Committee in January 2009.** The updates reflect the developments in regulatory and environmental conditions as well as the new opportunities which emerged during the implementation of Phase I. At the time of the endorsement, Phase II was dependent on additional CTF funding availability and accommodation within the EBRD, IBRD and IFC financing envelopes. Based on the success of the implementation of CTF Investment Phase I, current CTF funding availability and partnership strategies with EBRD, IFC and WB, the Government of Turkey, supported by MDBs, is proposing US$140 million be allocated for the Republic of Turkey's Phase II Investment Plan, as already envisaged in the Investment Plan. Proposed projects under Phase II are focused on energy efficiency in sectors with challenging market barriers - SME, residential, commercial, buildings and municipal sectors - and less conventional renewable energy technologies - solar, biogas and biomass.

14. **The proposed plan is the cornerstone of Turkey's investment strategy for climate change and sustainable development.** The plan makes major contributions to three critical development objectives of the Government of Turkey: (1) *Enhancing energy security* – by improving energy efficiency as well as generating energy from locally available renewable resources (2) *Supporting a clean energy transition* – by focusing on meeting energy needs in an environmentally sustainable manner and thereby reducing greenhouse gas emissions; and (3) *Increasing private sector involvement* – in the development and financing of clean energy and energy efficiency investments – with credit intermediated through Turkish banks targeted at private sector investments, and reduced concessionality in Phase II of the program. The program also enables to the Government of Turkey to reduce the country's energy intensity through EE, and reduce the balance of account deficit (which is largely driven by energy imports) through EE and RE.

Status of Original Investment Plan Implementation

15. Despite two out of five projects not having come forward for CTF Trust Fund Approval, all of the plan's basic targets have either been met, or exceeded as shown in Table 4. The remaining two projects are now planned for implementation in 2013, and it is expected that Phase 1 of the investment plan will considerably exceed all targets set when it was originally proposed. This achievement of the projected investment volume has been the trigger to ask for the activation of Phase II of the Investment Plan.

Table 4: Target Levels and Achievement for Turkey's CTF Investment Plan

Target	Planned Value	Achieved Value[16]	Difference (%)
Total Investment	1,650	2,154	+20.1
CTF Investment	172	172	0
Co-Financing	1,850	1,982	+7

The status of the individual projects of the original plan implementation is summarized in Table 5.

Table 5: Status of Approved of CTF Projects

Project Title	CTF Approval Date	Actual / Projected MDB Board Approval Date	CTF** Funding ($ millions)	Leveraged Funding ($ millions)
RE/EE2, "Private Sector Renewable Energy and Energy Efficiency Project" (The World Bank)	March 2009	May 28, 2009	US$ 100 million	US$ 1 Billion* (IBRD loan), US$ 66 million (Sponsor Equity), US$ 365 million (Others)
TURSEFF (EBRD)	January 2010, September 2010 (extension)	May 2010, July 2011 (extension) July 2012 (extension 2)	US$50 million	US$455 million leveraged from EBRD, JBIC, the EU Commission, and private sector sources

[16] Based on CTF Trust Fund Committee approved projects

TEIAS Transmission/Smart Grid Project (The World Bank)	2013 (planned)	2013 (planned)	US$ 50 million	US$ 300 million (IBRD loan) US$23million (TEIAS)
CSEF: Commercial Sustainable Energy (IFC)	September 2009	2010-2011, 12/2012[17]	21.7	US$93 million(IFC)[18]
Renewable Energy (RE direct) (IFC)	May 2013 (planned)	November 2013 (planned)	28.3	US$120 million (anticipated)

*The loan was originally US$ 500 million, but additional loan of US$ 500 million was approved on Nov 22, 2011.Other financing sources include other public financiers such as AfD, KFW, CEB and EIB.
**CTF is currently funding a study "Turkey Impact Assessment on RE/EE market" study for US$244,000

Private Sector Renewable Energy and Energy Efficiency Project (World Bank)

Description:

16. The project's objective is to help increase privately owned and operated energy production from indigenous renewable sources, enhance energy efficiency, and thereby help reduce greenhouse gas emissions. The Project aims to achieve the objective by providing credit line of US$ 500 million of IBRD loan and US$ 100 million of CTF loan to two financial intermediaries (FIs); the privately-owned Industrial Development Bank of Turkey (TSKB) and the Government-owned Development Bank of Turkey (TKB).

Rationale:

17. In the absence of CTF support, it was anticipated that renewable energy development will remain restricted to the few existing large hydro developers and perhaps the initial (lower cost) wind energy sites. Without CTF support, it is unlikely that smaller hydro and wind projects will materialize at the expected scale, or that investors would experiment with relatively newer technologies such as solar or biomass. Finally, without CTF support, it is not likely that financial institutions would have considered energy efficiency investments, or that industry will be attracted towards such investments. In short, without CTF support, the Government's targets for greenhouse gas emission reductions and sustainable energy intensity levels may not be achieved at the scale and in the timeframe envisaged.

Progress:

[17] Last project under the CSEF program
[18] This figure includes $63M in the two approved projects and another $30M in the third project under development.

18. The Project has been implemented successfully and at the request of the FIs, the World Bank approved the additional financing of US$ 500 million on November 22, 2011. No additional CTF was provided.

19. So far, from IBRD and CTF resources, about 35 renewable energy projects with a total capacity of 969 MW have been financed, and are under construction as of June 2012. While the majority are hydroelectric projects, the project also finances four wind projects, and one geothermal project is under review. 18 energy efficiency projects have also been financed so far – these are in industries such as paper, petrochemicals, plastic, and iron and steel. Projects financed so far are estimated to contribute to greenhouse gas emission reduction of 2.3 million tCO2e per year. CTF financing has been utilized for 9 small hydros (less than 10 MW), 6 wind projects, and 18 energy efficiency projects. Assuming an investment lifetime of 20 years, the current CTF Cost Effectiveness is 1.56 US$/tCO2e.

TurSEFF: Turkey Sustainable Energy Financing Facility (EBRD)

Description:

20. The objective of this project was to scale up financing in two main areas: (a) demand side management and end-user efficiency in order to help the government reduce energy intensity; and (b) low carbon distributed generation to help Turkey improve its energy security. In line with this objective, and the objectives of the CTF, EBRD's activities in Turkey commenced in May 2010 with the signing of the Turkish private sector Sustainable Energy Financing Facility (TurSEFF) with four Turkish banks. TurSEFF focused on improving the efficiency on the electricity/energy consumption side, and making investments in renewable energy. In July 2011 another bank was signed on, and in July 2012, an extension with one of the initial four banks was signed.

Rationale:

21. One of the key limitations for wider implementation of EE and RE financing is the lack of financial resources and proper lending facilities, particularly for small-scale projects. This is because financial institutions view the EE & RE sectors as of higher risk - due to lack of technical capacity on their part to evaluate such projects - and potential borrowers are unable to establish bankability of their projects. CTF financing was instrumental in attracting the attention of the financial institutions to these fairly new fields, providing necessary know-how and developing a competitive market for these products.

Progress:

22. The program was originally planned to be a US$ 200 million facility (Including US$ 40 million from CTF), and it was successfully rolled out in June 2010 targeting small size EE / RE investments. JBIC provided US$ 20 million co-financing to one of the participating banks, and the EU Commission through its regional IPA programme provided US$5 million in technical assistance. The Facility was further increased in July 2011 by committing a further US$ 40 million from EBRD/CTF to an additional participating bank. In July 2012 one of the original banks signed for an extension of US$ 25 million from EBRD to provide TurSEFF funds to its existing pipeline, with no additional concessional finance or technical assistance, demonstrating

progress in achieving commercial sustainability. The total facility volume has therefore reached US$ 505[19] million from EBRD, CTF, and JBIC as summarized in Table 6.

19 Including TA support from the European Commission.

Table 6: TURSEFF Expected Performance against KPIs by August 2012

TURSEFF Expected Performance Against KPIs by August 2012				Difference to Target	
Indicator[20]	Target Level	Current Level	Expected Level	Current Level	Expected Level
Total Investment Volume (USD million, all sources) [21]	342	367	500	8%	46%
Multilateral/DFI Investment Volume (USD million)	200	209	285	4%	43%
Of this: CTF	*40.00*	*34.28*	*46.75*	-14%	17%
EBRD	*160.00*	*160.05*	*218.25*	0%	36%
JBIC	*0*	*14.67*	*20*		
Others sources of funding (e.g. local banks, project sponsors)	142	*158*	215	11%	51%
CTF Financial Leverage	01:07.1	01:07.6	01:10	6%	41%
Number of FIs in Programme	4	5	5	25%	25%
Number of Sub-Loans	240	216	290	-10%	21%
CO2 Savings (‘000 tons per yr)	640	600	760	-20%	1%
Primary Energy Savings (toe/yr)	n/a	179,000	242,000		
CTF Cost Effectiveness (tCO2/1 USD from CTF)	0.31[22]	0.24	0.30	-23%	-3%
Primary Energy Import Savings (USD million/yr)	n/a	113	153		
Total Energy Savings (GWh/yr)	n/a	660	895		

TEIAS Smart Grid Project (World Bank)

Description:

23. The Project is expected to support transmission expansion and strengthening for, among other reasons, support for wind energy integration into the grid. CTF resources are specifically proposed to be utilized for assisting TEIAS, the Turkish transmission company, in the design and implementation of the next generation of modern grid management and control systems which can enable large-scale integration of wind energy resources.

20 Original level refers to the EBRD proposal to the CTF Trust Fund Committee; Current level refers to the sub-projects disbursed by 31 July 2012; Expected level refers to the full disbursement of the Facility, to be achieved by end 2012

21 Expected additional investment volume, based on previous SEFF experience.

22 This figure is identical to the 0.23tCO2/USD CTF of the original proposal, but adjusted for a lifetime of 20 years, in line with World Bank practice. The EBRD proposed 15 years.

Rationale:

24. Electricity demand in Turkey is increasing rapidly at about 5 percent per year. The transmission system is witnessing increased strain on its network because of this higher than anticipated growth in electricity demand, particularly in the west and south-west of Turkey, but also increasingly in the east. At the same time, the Government's Energy Efficiency Strategy calls for 20,000 MW (16 percent of installed capacity) wind power generation capacity by 2023 – this capacity would offset the need for dispatching new lignite and coal fired power plants. This scale of wind development will create major challenges to the power system, in terms of required grid connections, transmission system reinforcement and grid management of large-scale intermittent generation (due to the inevitable variations in wind power generation).

25. The investments are expected to support the integration of intermittent power, such as solar and wind, and to support the Government target in development of these renewable sources. If wind energy development materializes as planned – 20,000 MW by 2023 – then the incremental reduction in CO2 emissions would be about 35 million tons per year in 2015 and about 49 million tons per year starting 2020.

Progress:

26. The project was delayed as TEIAS sought approvals from the Turkish Ministry of Development. It has now been fully defined, and TEIAS' US$350 million investment plan has been approved by Ministry of Development for the inclusion into the 2013 Investment Plan. The project will seek CTF Trust Fund Committee approval in 2013, and the project will be prepared and implemented in the 2013 – 2014 period.

Commercializing Sustainable Energy Finance "CSEF I" (IFC)

Description:

27. In September 2009, the CTF Trust Fund Committee approved the first private sector CTF proposal presented by IFC for a total amount of US$21.7 million. The "Commercializing Sustainable Energy Finance Program for Turkey" (CSEF I) is a program approach representing the comprehensive initiative to help develop Turkey's Sustainable Energy (SE) private financing by supporting local financial institutions on a programmatic base.

Rationale:

28. The CSEF I program is a part of an IFC/EBRD joint initiative to address energy efficiency for the commercial, residential and municipal sectors with a particular focus on smaller-scale energy efficiency projects. IFC's program is targeting primarily leasing companies as a means of promoting energy efficiency projects in SME sector by alternative financing vis a vis debt financing, while the EBRD have implemented a similar program in parallel, but targeting exclusively commercial banks.

Progress:

29. The two projects with two separate leasing company clients have been already committed and fully utilized; the third one is under development with a planned closing at the

end of CY 2012. The two approved projects were in the form of credit lines to the leasing companies, and were used solely to originate leasing transactions for SMEs and small commercial clients for EE projects in Turkey that met pre-defined eligibility criteria. The projects have been focused primarily to savings of electricity through technology lines retrofits and upgrades in manufacturing, printing, food and textile sectors. To date, the two projects combined have resulted in financing of 53 projects with total GHG emission savings of 29,700 tCO2e / year. Moreover, the two projects already implemented have served to help the leasing sector in Turkey recognize the importance of the energy efficiency investments and the importance to developing their ability to provide financing of EE investments in the SME sector.

Private Renewable Energy and Energy Efficiency (IFC)

Description:

30. From Phase I, IFC continues to have an unused US$ 28 million allocation for renewable energy projects. This is because the money was restricted to solar and/or geothermal projects. **Because the regulator will only accept the first 600 MW of solar license applications between June 10 and 14, 2013**, it was not possible to finance solar projects. Additionally there were only a handful of geothermal projects. IFC now plans to use the CTF funding from Phase I to finance solar, geothermal, and other renewable energy sources allowed by the CTF program, Licensing of solar projects by the regulator will make it more feasible. With an updated and broader strategy, IFC is well positioned to use the remaining funds from Phase I in 2013 and is not planning to request additional funding for renewable energy sector projects in Phase II.

Rationale:

31. IFC's intention for the development of its renewable energy program in Turkey is to use CTF to support the solar power generation projects. IFC believes that an initiative to support sustainable utilization of solar energy resources in Turkey would have the highest development impact on the renewable energy sector in the Country as well as the biggest impact on climate change. Financing utility-scale solar energy projects in Turkey is currently not possible due to the absence of solar energy generation licenses. With the first solar license applications in June 2013 and given the high solar potential of the Country, it is expected that private investors will be highly interested in investing into solar energy. In addition, a substantial contribution to the rapid growth of the solar electricity sector is expected to come from the installation of the systems under 500 kW which do not require license. . Indeed the investment process for this unlicensed systems of solar (for all type renewable including has already began)

32. Promulgated in the Official Gazette on December 29th, 2010, the Law No: 6094 Amending The Law on Utilization of Renewable Energy Resources in Electricity Generation, envisages a specific feed-in tariff for solar investments (13.3 US$ cent/kWh) that would, with the use of locally manufactured content increase up to 18.8 US$ cent / kWh for concentrated solar power ("CSP") and 20 USD cent / kWh for photovoltaic ("PV") investments. Although this new law offered a significant improvement compared to the previous scheme, with current solar investment cost levels the feed-in tariff is still perceived to be far below investors' expectations. IFC considers that the use of CTF would support the development of solar energy projects

mainly through lowering finance costs and providing adequate terms that may not be available in the local financial market.

33. In addition to using the CTF for solar energy investments, IFC continues to see geothermal as an important renewable energy resource for employing CTF funds under a programmatic and portfolio approach. From this perspective, IFC's initial target is to identify one to two geothermal projects that have the potential for CTF funding. IFC investment services together with IFC Advisory Services are visiting the local active and potential players in the Turkish geothermal market. Discussions with several companies are still continuing. This being said, in case it is not possible to identify enough projects for a programmatic approach IFC will look for alternative renewable energy projects in need of concessional finance with its financial intermediaries.

34. Finally, given the rapid increase in renewable energy capacity in the Country, a reliable distribution/transmission network is critical for supporting intermittent electricity generation. In this respect, as new wind and hydroelectric power plants are added to the grid, the distribution/transmission system is witnessing augmented strain on the networks and distribution/transmission lines are becoming increasingly loaded. It is expected that with the new solar projects that will come online by early 2014, the pressure on distribution/transmission networks will continue to increase.

Progress:

35. To date, IFC's strategy for using the Phase I allocation directly in real sector projects was focused on financing geothermal and solar projects. Due to a lack of appetite from private investors for geothermal and the absence of solar energy generation license issuances, there were few or no viable projects for private sector investments to take place. Moreover, it should be noted that IFC is focusing on less conventional/new renewable energy technologies, where the lead time to develop viable projects takes a little longer.

36. With the new developments in the RE sector mentioned above, IFC expects that private sector projects in this sector will pick up significantly and that in turn will provide opportunities for IFC to use the balance of the CTF funds under phase I for RE during 2013 and 2014.

Circumstances and Rationale for an Investment Plan Update

37. **Turkey's energy import dependence is high at over 70 percent**. At the same time, Turkey has an important strategic role, as it is located on an increasingly important oil and gas transit route from the Caspian Sea and the Middle East to Europe. Turkey lacks significant domestic energy resources and depends on imports (primarily natural gas, oil, and some coal) for over 70 percent of its energy needs. The major domestic resources are coal (largely lignite), hydropower (which currently supplies almost 23 percent of total electricity consumption, percentage varies annually with hydrological conditions) and oil deposits (which supply about 5 percent of total oil consumption). In 2010, natural gas accounted for the largest single share, about 32 percent in Turkey's primary energy mix, followed by oil at about 27 percent, coal at about 15 percent and lignite at about 14 percent. Renewable sources accounted for about 10,7 percent[23].

38. **Energy demand has increased at 6.33 percent in 2002-2011 annually on average for electricity, driven by Turkey's rapid economic growth, industrialization and steady population growth.** As energy import account for 20 percent of all imports and about 50 percent of its current account deficit, diversifying its energy sources to domestically available, renewable energy is identified as a key component in Turkey's Electricity and National Climate Change Strategies[24]. Energy efficiency (EE) has also emerged as a policy priority due to the relative high energy intensity of the economy. Although total primary energy supply per capita in Turkey is still low—1.44 toe/capital in 2010—compared to the OECD average of 4.39 toe/capita, the Turkish economy is comparatively energy intensive. In 2010, the economy required 0.19 ton of oil equivalent (toe) for every US$ 1,000 of GDP, compared with the OECD average of 0.14[25].

39. **Turkey's original CTF Investment Plan identified the energy sector as the key sector for CTF intervention based on the tightening electricity and gas supply/demand balances, the sizeable contribution of the energy sector to Turkey's CO2 emissions, and the cost effectiveness of energy efficiency**. This fundamental rationale remains valid with the continued rapid economic growth, industrialization, steady population growth and continued predominant reliance on fossil fuels, despite the fact that the share of renewable energy generation has increased significantly. The energy efficiency – energy security – environment nexus also remains consistent with the energy and climate goals of the European Union and effectively contributes to Turkey's strategy in the EU accession process.

40. **As a fast-growing emerging economy, the need for financing for environmentally responsible investments in Turkey remains high, and although significant progress has been made, investments in clean technologies and energy efficiency have been less than sufficient so far**. The Turkish government continues to implement a private sector oriented

[23] Third Programmatic Environmental Sustainability and Energy Sector Development Policy Loan (ESES DPL3) February 2012
[24] ibid
[25] IEA, "Key World Energy Statistics: 2012"

energy strategy, and is taking necessary steps to create an enabling environment for clean energy investments. However, recent deterioration of global financial conditions (or sluggish recovery at best) led to limitations on financing for Turkey as well as other countries. Increased borrowing costs, and reduced access to external finance during the last few years represented disincentives for entities carrying out clean technology and energy efficiency projects. Within this framework, CTF has provided an important incentive at the initial stages of the clean technology programs/projects. The blending of CTF concessional financing with World Bank Group and EBRD lending, and Turkey's own resources has made investments financially attractive and created a highly leveraged impact in the energy sector.

41. **The implementation of the CTF Investment Plan has been highly successful in Turkey. Out of the US$250 million endorsed by the CTF Trust Fund Committee under Phase I, US$172 million has already been approved and committed to projects by the MDBs and will be disbursed.** Implementation progress has considerably exceeded expectations. For example, IBRD co-financing for the Private Sector Renewable Energy and Energy Efficiency Project was increased in November 2011 from the original US$500 million to US$1 billion to be able to meet the demand for such financing. The remaining projects in the Phase 1 are expected to be submitted for approval in 2013, with the IBRD co-finance smart-grid project expected to be submitted to the CTF Trust Fund Committee for approval in 2013 and IFC is expected to utilize the remaining US$28 million during the 2013-2014 financial year.

42. **The focus of Turkey's Investment Plan on renewable energy development and energy efficiency has greatly helped accelerate the implementation of Turkey's strategy, and related laws and regulation.** Since the original CTF Investment Plan was endorsed by the CTF Trust Fund Committee in January 2009, the Government of Turkey has implemented the following policy actions that further support the development of RE and EE:

(a) Amended the Renewable Energy Law in order to provide prospective investors enhanced predictability about Turkey's support framework - including technology-based feed-in tariffs and firm off-take arrangements established on December 1 2011 as a complement to the new Day-Ahead Market;

(b) Issued a Monitoring, Reporting and Verification (MRV) regulation based on the MRV regulation in the EU Emissions Trading Scheme in April 2012, and joined the World Bank Partnership for Market Readiness[26] (PMR);

(c) Adopted the National Climate Change Strategy in May 2010, and issued a National Climate Change Action Plan in July 2011, which identified national priorities for mitigating GHG emissions, and building resilience through managing impacts; and

(d) Established the Climate Change Department in the Ministry of Environment and Urbanization to coordinate the expanding work program on climate change. In addition, The Coordination Board on Climate Change (CBCC) - chaired by the Minister of Environment and Urbanization and composed of high level representatives from various ministries as well as representatives of the private sector - was established to be responsible for inter-ministerial coordination.

[26] The Partnership for Market Readiness (PMR), launched by the World Bank in late 2010, is aimed at providing support to countries that are planning to use market based instruments to mitigate greenhouse gas emissions

43. **The Government of Turkey has set ambitious targets for itself in promoting renewable energy and energy efficiency investments.** It set very aggressive targets to increase the share of renewable resources in electricity generation to at least 30 percent by 2023 including increasing the total installed capacity of wind energy power plants to 20,000MW by 2023. Similarly, Turkey has set an ambitious target of reducing energy intensity (energy consumption per unit of GDP) by 20 percent by the year 2023 from the 2011 level as established in its Energy Efficiency Strategy issued in 2012. The Strategy also identifies the following main activities to improve Turkey's energy efficiency: (a) promote energy efficiency in the industries and services sectors; (b) reduce energy demand of buildings; (c) promote energy efficient appliances and products; (d) improve the efficiency of electricity generation, transmission and distribution; and (e) building capacity, market and financing for energy efficiency products, investments and services.

44. **While energy efficiency credit lines (from the Phase I) have initiated the market transformation process, much more assistance and funding is required to accelerate and strengthen the transformation by intensifying efforts to expand the EE investments in the SME, building, residential and municipal sectors to meet the targets**. The transformation is meeting its bottleneck due to market barriers that exist in the SME sector which accounts for 99 percent of all enterprises, 27 percent of total output and 80 percent of employment in the Turkish economy, and the buildings sector which accounts for 30-40 percent of total energy consumption, and has 20-40 percent potential savings; high transaction costs associated with assessing and preparing EE investments; and underdevelopment of the Energy Service sector because the firms face difficulties obtaining financing. Based on these circumstances and rationale, the Government of Turkey proposes to update the CTF Investment plan as described in the next section.

Proposed Changes to the Investment Plan

45. The Government of Turkey proposes to update the investment plan and allocate CTF resources to below projects (see Annexes I for details on these projects):

Phase I:

- There are no changes proposed to Phase I projects

Phase II:

- **World Bank SME Energy Efficiency Project**: Mostly focused on the private sector, project aims to scale up commercial bank lending to SMEs for energy efficiency, creating a private ESCO industry, and providing technical assistance to General Directorate of Renewable Energy (GDRE) which will provide policy and market support for developing the ESCO industry. US$50 million of CTF Phase II funds is proposed to further scale up financing for ESCO transactions to be piloted under the Project. The Project will have co-financing of US$200 million from IBRD, US$5 million from the Ministry of Energy and Natural Resources (including in-kind), US$3.64 million from the GEF, US$7.5 million from participating financial institutions, and US$40 million from sub-borrowers.

- **EBRD Private Sector Bank Intermediated Projects (TurSEFF II, ResiSEFF, MunSEFF):** Expanding EE to residential, buildings and municipal sectors whose markets have substantial barriers, creating an ESCO industry and scaling up RE to less conventional solar, biogas and biomass technologies. US$70 million of CTF Phase II funds is proposed to trigger US$250 million from EBRD and US$180 from other funding sources primarily private sector project sponsors.

- **IFC Commercial Sustainable Energy Finance (CSEF) Program:** Using risk sharing facilities, lines of credit, and capacity building programs to mobilize local financing to support EE/RE in the industrial, commercial and residential sectors. Program is designed to help transform the behavior of local financial institutions so that they will build up their in-house capacity to assess the technical and market risks of EE/RE, and become ready financiers for the sector. US$20 million of CTF Phase II is proposed to trigger between US$80 million and US$100 million from IFC, and US$80million from private sector sources.

46. The specific rationale of the updated and new proposed projects is summarized in Table 7 below. For details, please see Annexes I.

Table 7: Summary of Rationale for CTF Financing

Project	Summary of Rationale for CTF Financing[27]
World Bank SME Energy Efficiency Project (Phase II)	Transforms EE for SME in Turkey by providing financing and creating a new ESCO industry. Estimated to reduce GHG emissions by 1,330 000 tons of CO2e/year; and reduce energy consumption by 2,903GWh/year at a CTF cost effectiveness of 1.59$/tCO2e
EBRD Renewable Energy and Energy Efficiency Facilities Projects (TurSEFF II, ResiSEFF, MunSEFF) : (Phase II)	Transforms the EE market by scaling up activity in the residential, buildings and municipal sectors (on and off-balance sheet), in particular support for ESCOs, and expands RE generation by lending to less conventional solar, biogas and biomass technologies. Estimated to reduce Turkey's CO2 emissions by 700,000 tCO2/yr at a CTF cost effectiveness of 4.34 ($/tCO2)
IFC Commercializing Sustainable Energy Financing Program CSEF: (Phase II)	There is significant room for further growth of EE/RE funding in the country, especially using specialized financing mechanisms like third party financing thorough ESCOs, involving vendor financing mechanisms and further growth of the leasing industry. In the Phase II of the CSEF program IFC will focus on that market niches and encourage key market players to fill gaps on the market particularly in the industrial, commercial and residential sectors. IFC expects emission reductions of 10.6mtCO2e, RE generation of 2,100GWh, EE energy savings of 20,000GWh at a CTF cost effectives of US$1.89/tCO2e.

47. Table 8 represents the original Turkey CTF Investment Plan as presented and endorsed by the CTF Trust Fund Committee in January 2009, for both Phases I and II. The Government of Turkey is not proposing a reallocation of CTF funding under Phase I. However, it is updating expected co-financing under Phase I, and requesting US$140 million in CTF financing for Phase II. The proposed allocation of the financing is described below:

[27] Energy savings and GHG reduction estimations are calculated based on the assumption that power consumption from current generation capacity in Turkey will be displaced.

Table 8: Turkey CTF Indicative Financing Plan Endorsed in January 2009 (US$ millions)

Phase I Indicative financing (US$ million)

Financing Source	WB Private Sector RE/EE	EBRD TurSEFF/IFC CSEF & IFC private RE/EE Projects	WB TEIAS Transmission & smart grid	Total
CTF	100	100	50	250
World Bank	500		300	800
IFC/EBRD		250		250
Turkey[28]	530	170	100	800
Total	**1,130**	**520**	**450**	**2,100**
Expected Achievement At the End of IP Phase I (2014)	**1,531**	**768**	**380**	**2,679**
Of this Co-Financing	**1,431**	**668**	**330**	**2,429**

Expected co-financing of US$2,429 million will be 31.3% above the target level of US$1,850 million in the investment plan.

Phase II Indicative financing endorsed in 2009 (US$ million)

Financing Source	WB Private Sector RE/EE	EBRD TurSEFF/IFC CSEF & IFC private RE/EE Projects	SME & Public Sector RE/EE	Total
CTF	30	20	100	150
World Bank	300		400	700
IFC/EBRD		150		
Turkey	320	130	300	750
Total	**650**	**300**	**800**	**1,750**

48. Table 9 represents the update to Turkey CTF Investment Plan. There are two major changes reflected in the tables:

(a) In Phase I, there is actual financing of already implemented projects WB private sector RE/EE, EBRD TurSEFF, and IFC CSEF projects; and current financing plans for WB TEIAS Transmission and Smart Grid and IFC Private RE/EE projects;

(b) In Phase II, there is financing of the proposed WB Small and Medium scale Enterprise (SME) EE project, IFC CSEF II and EBRD Private Sector Bank-Intermediated Projects.

[28] The Government, banks (incl. TSKB, TKB, Halkbank, etc.), investors, and TEIAS

Table 9: Turkey CTF Indicative Financing Plan After Reallocation (US$ million)

Phase I Indicative financing (US$ million)

Financing Source	**WB Private Sector RE/EE** *Actual*	**IFC CSEF I & IFC Private RE/EE** *Actual& Planned*	**EBRD TurSEFF** *Actual*	**WB TEIAS Transmission, & Smart Grid** *Planned*	**Total**
CTF	100	50	50	50	250
World Bank	1,000			300	1,300
IFC		213			213
EBRD			218		218
Turkey[29]	66		217	23	306
Others[30]	365		20		385
Total Expected	**1,531**	**263**	**505**	**373**	**2,672**

Phase II Indicative financing (US$ million)

Financing Source	**IFC CSEF II**	**EBRD RE/EE (TurSEFF II, ResiSEFF MunSEFF)**	**World Bank SME Energy Efficiency**	**Total**
CTF	20	70	50	140
World Bank			200	200
IFC	80-100			80-100
EBRD		250		250
Turkey[31]		175	45	220
Others	80	5	11	96
Total	**180-200**	**500**	**307**	**987-1007**

[29] Including the government, project sponsors, and local banks
[30] Other financing sources include other public financiers such as AfD, KFW, CEB and EIB
[31] The Government, banks (incl. TSKB, TKB, Halkbank, etc.), and ESCOs

Potential Impacts of Proposed Changes on Investment Plan Objectives

49. Table 10 summarizes the assessment of changes to the original investment plan.

Table 10: Assessment of Proposed Changes

CTF Investment Criteria	Original Investment Plan	Updated Investment Plan
Transformational Impact	Financed wind, hydro and geothermal generation. Eased barriers and demonstrated the potential for energy efficiency across in the large industrial sector.	Transforms the EE industry in Turkey by developing **a new ESCO industry**; and financing **residential, SME, buildings, and municipal EE**. Will fund less conventional **RE such as solar, biogas and biomass expected to generate12,900GWh and EE investments are estimated to save a total of 67,000 GWh, and in total reduce GHG emissions by 56.6 mtCO2e over 20 years**.[32] Investment Plan for Phase II revised in order to focus on specific market barriers associated with EE and non-conventional RE
Potential for GHG Emissions Savings	Reduced GHG emissions without the EE focus because stakeholders were new to the market.	**Estimated to reduce total GHG emission by 56.6 mtCO2e over 20 years.** There are significant life-time savings due pursuing measures with longer life-time (e.g. buildings).
Cost-effectiveness	The mix of RE & EE would have had a blunted impact on cost effectiveness. Wind / small hydro are generally more cost effective in Turkey than less conventional	**The EE cost effectiveness is improved** in the new plan because of the dedicated focus and creation of an ESCO industry. However, **RE cost effectiveness will be lower** as the non-conventional technologies that are now targeted in

[32] GHG reduction estimations are calculated based on the assumption that power consumption from current generation capacity in Turkey will be displaced.

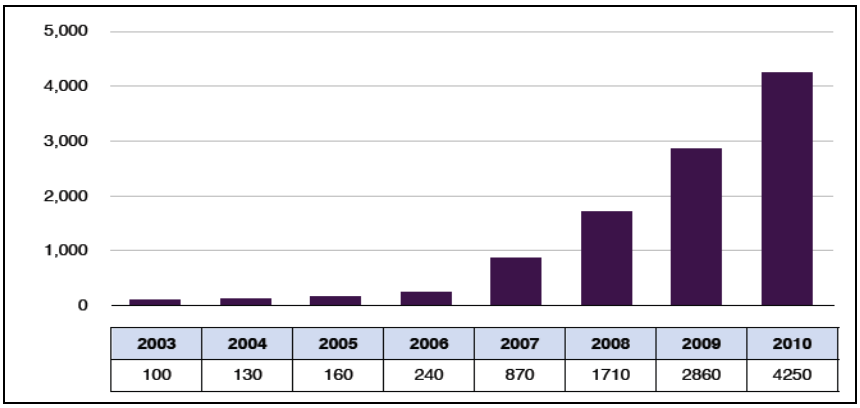
	technologies	this Phase 2 are more expensive. The overall CTF cost effectiveness for Phase 2 is estimated at 2.02$/tCO2, and the total cost effectiveness is US22.98/tCO2
Demonstration Potential at Scale	Judging from Phase I, demonstration potential at could have been high as well. Some success would have spilled the original phase II.	Demonstration potential at scale will be very high as well in this updated program. The emphasis on financial sustainability allows the private sector to thrive, and **the development of ESCO industry allows for expansive demonstration at scale.**
Development Impact	Significant development impact from additional financing and the increased interest and participation of the private sector in both development and financing sustainable energy projects	The updated plan is estimated to save an **additional 67,000 GWh of energy, reduce emissions by an additional 56.6 mtCO2e, and develop an ESCO industry** with the potential to create hundreds of jobs.
Implementation Potential	The potential is high as Turkey already is in its development path to further implement RE/EE projects, and the disbursement rate of the IFI loans have been the highest of all countries under the CTF program	**High as Turkey has demonstrated its successful ability to implement CTF projects**. Disbursement will be fast as measuring and monitoring systems are already in place, with higher leverage expected in Phase II.
CTF Additionality	The original plan neither had a focus on less conventional RE technologies nor the creation of an ESCO industry	CTF financing is critical to make these investments in Phase II possible because banks will typically shy away from engaging the risks and costs involved in the projects. In RE, CTF enables the financing of less conventional technologies (with higher risks and costs), which would otherwise not be financed. In EE , CTF enables financing in challenging sectors – SME, residential, buildings, commercial which would otherwise not be done as well. Additionally, CTF financing enables the creation of an ESCO which is critical for sustainability of EE after the projects are closed.

Transformational Impact:

50. The Phase II program will transform and promote further development of the energy efficiency industry in Turkey by developing a new ESCO industry, and establish a business case for financing EE investments in buildings, commercial, residential, municipal and SME sectors to save 44,000 GWh over 20 years, and reduce GHG Emissions by 25.2 mtCO2e. The energy savings will result in an increased competitiveness of the Turkish economy as less energy is consumed for dollar of the GDP.

51. The Chinese ESCO industry, which was developed through a World Bank and GEF co-financed project, gives some indication as to the potential transformational impact. The China Energy Conservation Project was approved in March 1998 providing grants and loans totaling US$78 million. Three ESCOs were formed and received training based on experience from the US and EU. By 2001, six new ESCOs had entered the market, having seen the success of the pilot. ESCOs had combined revenues of US$1.23 million[33] at the end of 2001. **Figure 1** shows the success that the industry had between 2003 and 2010. Their 2010 revenues reached US$4.25billion, on par with the US ESCO industry. However, transformation in Turkey will potentially be smaller at the beginning since there are very few companies that could serve as ESCOs and start implementing projects. Additionally, the Chinese industrial base is much larger than the Turkish industrial base, and has much higher energy intensity than Turkey.

Figure 1: Total Energy Performance Contracting Investments in China (2003-2010) (million US$ / year)



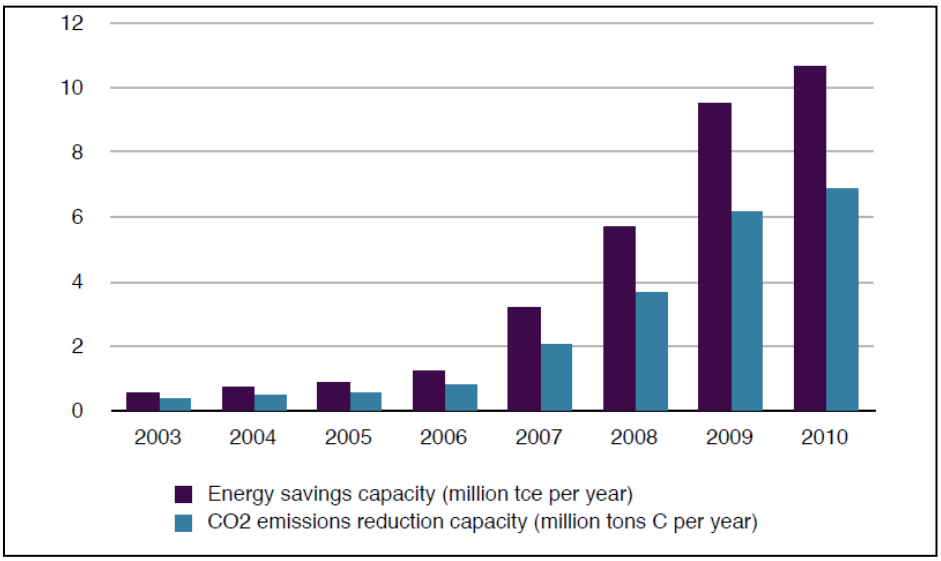
Source: China's ESCO Industry: Saving More Energy Everyday through the Market

52. Beyond the transformational impact on development of the new industry, the ESCO industry in China saved a significant amount of energy, and reduced a substantial amount of CO_2 emissions as shown in

[33] Assumes an exchange rate of 1 RMB equivalent to US$0.16

53. Figure 2. In 2010, the industry saved 11 million toe (90,000 GWh) of energy and reduced CO2 emissions by 7 million tons of carbon equivalent (25.7 million tCO_2e).

Figure 2: Total Energy Savings and Carbon Dioxide emissions from Energy Performance Contracting in China



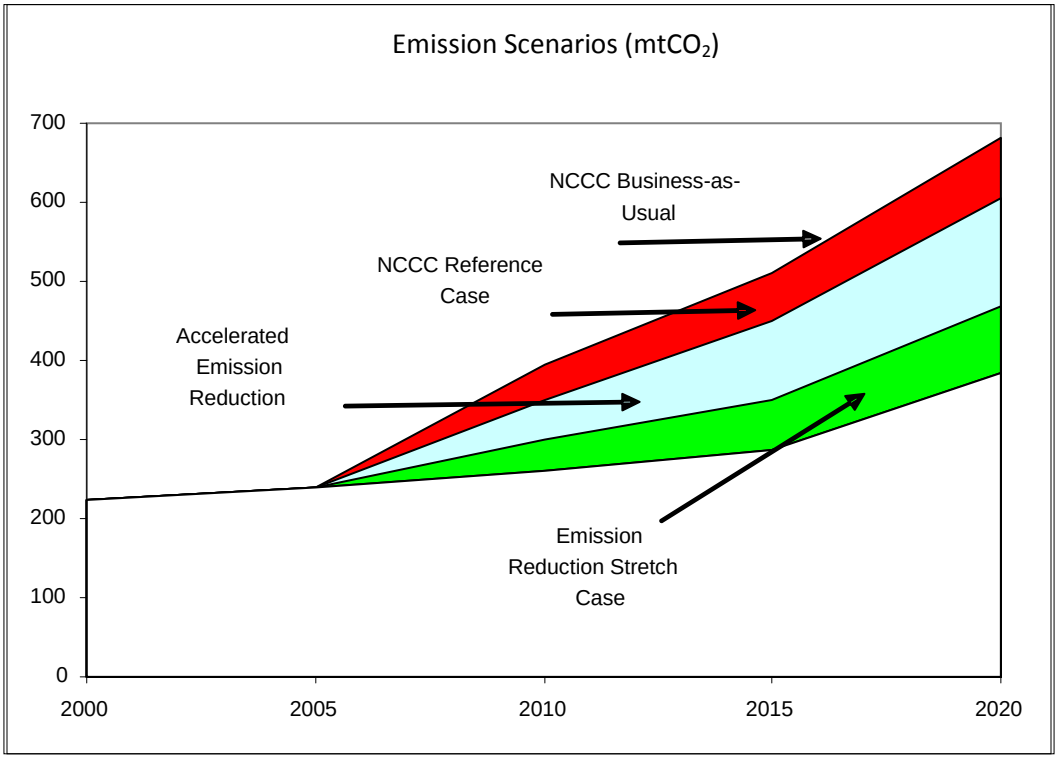
Source: China's ESCO Industry: Saving More Energy Everyday through the Market

Potential for GHG Emissions Savings:

54. The updated plan increases the GHG emission reductions to 56.6 mtCO2e over 20 years. This improvement applies on top of the Phase I plan which was already 31 percent below the business as usual case outlined in the National Communication on Climate Change (NCCC), which was submitted by Turkey to UNFCCC in 2006. The NCCC reference case, accelerated emission reduction case, and emission reduction stretch case are 11, 31 and 44 percent below the business as usual case respectively.

55. Thus the updated program falls into the accelerated emission category (light blue) as projected by the NCCC in Figure 3 below.

Figure 3: NCCC Emission Reduction Scenarios

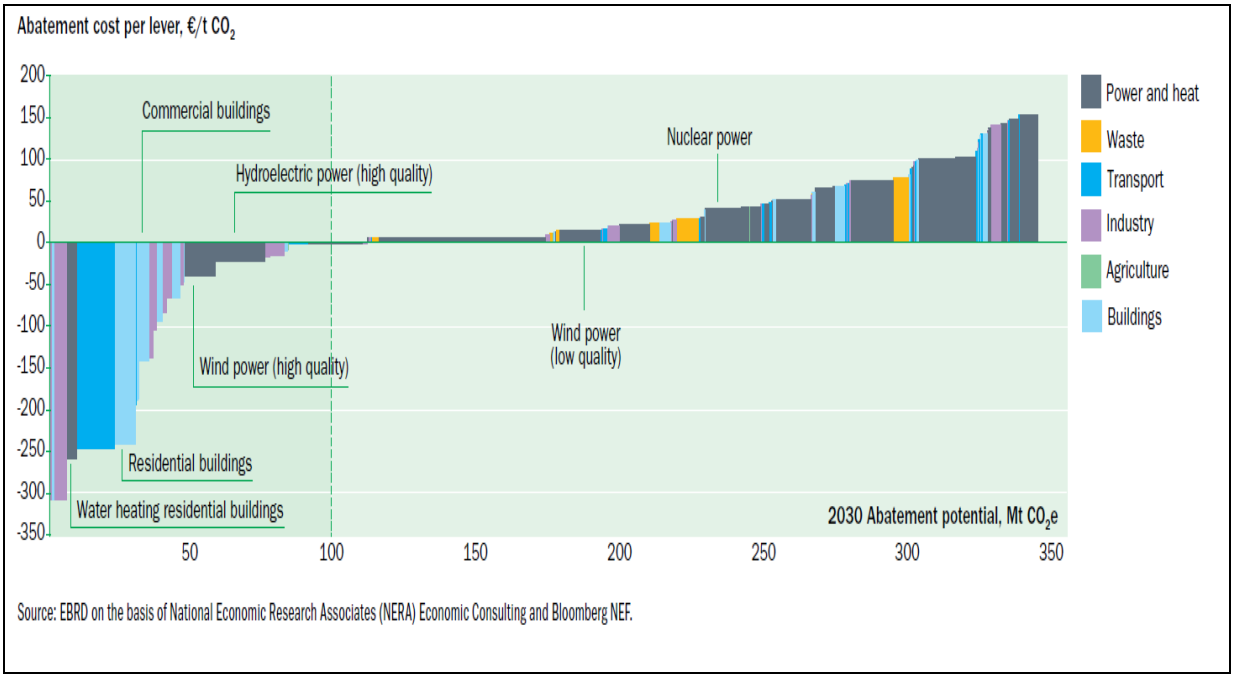


Source: Turkey's CTF Investment Plan, 2009

Cost-effectiveness:

56. The EE portion of the plan is expected to have very favorable financial cost effectiveness. Based on marginal abatement costs shown in Figure 4 many EE interventions result in a net benefit to the economy. For example, improving water heating in residential buildings has a net benefit slightly over US$250 / tCO2e, and commercial building retrofits have a net benefit close to US$150/tCO2e. This is because the EE improvements results in energy savings which translate into real financial savings. In addition, the cost effectiveness is expected to be better than Phase I because of the experience accumulated and implementation structure already in place from implementation of Phase I. The CTF overall cost effectiveness is 2.02US$/tCO2e, and total cost effectiveness is 22.98US$/tCO2e.

Figure 4: Turkish GHG Abatement cost curve beyond business as usual, 2030



57. The cost effectiveness of the renewable component of the program is expected to marginally decrease. Given that Phase I RE predominantly financed wind and small hydro, Phase II will finance solar, biomass and geothermal which are more expensive. As a result, the cost effective will decrease.

Demonstration Potential at Scale:

58. The demonstration at scale of the updated plan is much higher than that of the original plan, and phase I which was high already. The renewable energy and energy efficiency components of the original plan were so successful that the World Bank increased the loan by another US$500 million dollars, and EBRD secured an additional US$100 million beyond the co-financing foreseen in the plan. The development of the ESCO industry will make it possible to sustain promotion of energy efficiency investments well after the project closing; hence its potential is significantly higher. Moreover, there are a large number of commercial banks and financial institutions in Turkey that have the institutional capacity to add renewable energy and energy efficiency loans to their portfolios. The program also includes technical and policy support to GDRE so that they can provide additional policy support to accelerate the development of an ESCO industry and EE/RE investments in general.

Development Impact:

59. The proposed CTF Investment Plan is an important element of Turkey's strategy for climate change, and will have significant sustainable development impacts. Significant

development impact will flow from the creation of ESCO industry with the potential to create thousands of jobs. However, the CTF Investment Plan itself will save 67,000 GWh over 20 years as well. This translates into cheaper production costs which have the potential to reverberate through affected segments of the economy. Postponed investments in new fossil fuel generation can be invested in other parts of the economy as well.

60. Through its transformative impact, the use of CTF will help in reducing the energy intensity of the economy by 2020 by about 16 percent from present levels, under the Emission Reduction Stretch Case. Further, and perhaps more importantly, by supporting renewable and energy efficiency, the use of CTF will help ensure energy security – energy shortages usually have serious adverse macroeconomic impacts, and often also lead to usage of suboptimal sources of energy, which in turn has detrimental impacts on the environment.

61. The use of CTF will have very positive local as well as global environmental benefits. By enabling industry to use energy efficiently, and by promoting environmentally sustainable renewable energy resources, CTF would help reduce pollution and associated adverse impacts. Better air quality means better health. Labor-intensive renewable and energy efficiency projects provide employment.

Implementation Potential:

62. The implementation potential of the updated plan is very high. This is largely due to the implementation and supervision mechanisms that are already in place from phase I projects. Furthermore, Turkey has proven its ability to implement CTF projects given its disbursement rate and leveraged funding. Out of the US$250 million approved by the CTF Trust Fund Committee, US$ 172 million has already been disbursed, and the planned investment volume has been achieved. Additionally, the FIs (Financial Intermediaries) have experience working with the Implementing Agencies, World Bank, IFC and EBRD who all have extensive experience and expertise in implementing similar projects globally.

CTF Additionality:

63. CTF financing is critical to make these Phase II projects possible because banks will typically not engaging the risks and costs involved. In renewable energy, CTF resources enables the financing of less conventional technologies (with higher risks and costs), which would otherwise not be financed. In EE, CTF enables financing in challenging sectors – SME, residential, buildings, commercial which would otherwise not be financed as well. Additionally, CTF financing enables the creation of an ESCO which is critical for sustainability of EE after the projects are closed.

Risks and Mitigation Measures

64. The additional risks and their mitigation measures are outlined in Table 11 below.

Table 11: Risks and Mitigation Measures

Risk	Mitigation Measure	Residual Risk (low/moderate/high)
Macro-economic framework	The key to mitigating the most severe risk of further global economic disruption lies in sound economic management; and in particular measures to contain and reduce the current account deficit. Over the medium term, high productivity, higher exports to more diverse markets, higher domestic savings and greater EE and diversification are the key to reducing Turkey's dependence on external finance.	Moderate
Country engagement with the IFIs	The World Bank's FY12-15 Country Partnership Strategy is aligned with the Ninth Development Plan and the Bank maintains a strong dialogue on policy and program issues. Similarly, EBRD and IFC have strong relationships with the Turkish government and the private sector, and their strategies are fully aligned with government priorities.	Low
Country governance	Turkey has had a stable government since 2002 under the Justice and Development Party (AKP), facilitating the implementation of major reforms. Social consensus on the reform program and institutional capacity are needed for the implementation of the reform program. One key risk is that a prolonged focus on Turkey's constitutional reform agenda could narrow the coverage and scope of the economic reform agenda or lead to delays in its implementation. The EU accession anchor continues to mitigate political risks.	Low
Sector policies and institutions	The new electricity strategy and related legislative and regulatory measures provide strong support for EE initiatives. Turkey's electricity market provides a functioning market place for trading renewable electricity. Turkey recently adopted its Energy Efficiency Strategy which aims at decreasing the energy intensity of the economy by 20 percent until 2023.	Moderate

Implementing agencies	Local capacity to build and operate hydro and wind power facilities, and implement industrial projects including building retrofits and construction has been demonstrated as have the skills of the domestic financial sector to assess and supervise RE projects although financial assessment of EE activities is emerging. The ESCO market is starting to develop but still in its infant stage in Turkey, and therefore may not be adequate uptake or capacity of financiers to develop the sector further. EUAS and private developers have demonstrated capacity in the generation sector and TEIAS in transmission system control management. The decentralized nature and smaller size of RE and EE interventions mitigate impacts on power sector performance due to possible delays or failures of individual projects (except for the inevitable variation of wind, for which a Smart Grid approach is proposed). Technical assistance and external expertise will be sourced for Smart Grid development and to support assessment of EE opportunities- donor interest has been established.	Moderate
Technology	CTF will utilize EE technologies, some hydro, wind and RE technologies that have already been proven in country. CTF will also utilize technologies with a proven track record outside Turkey in the case of advanced RE technologies such as Smart Grid, biomass, solar and geothermal technologies. There may, however be a shortfall on implementation capacity domestically as they are new to Turkey.	Moderate
Environmental and Social Safeguards	WB/IFC/EBRD safeguards policies will apply to all interventions. Many Financial Intermediaries are already applying them under ongoing projects with EBRD, WB and IFC, as is TEIAS.	Moderate
Overall risk after mitigation	**Moderate**	

65. The overall implementation risk is proposed to be moderate due to the following identified risks: (i) Although all the banks have prior experience with the implementing agencies' requirements on safeguards and fiduciary responsibilities, the implementation may be affected as there is lack of experience in new transaction models, new business models such as ESCO contracts and attractive business opportunities based on them are not established, (ii) New markets, EE lending and ESCO markets, are difficult to develop and generally take longer time span to scale up, (iii) Though the technology itself may be mature in other markets, the capacity to construct and operate plants utilizing advanced RE technologies that are new in Turkish market may require strengthening.

Monitoring and Evaluation

66. **Table 12** below is the summary of the expected Results Indicators and their target values, subject to approval of the borrowers and boards of respective implementing agencies. For each project, the monitoring and evaluation will be implemented by the implementing agency as part of the monitoring process for the entire project, including co-financing and other contributions.

Table 12: Summary of High Level Results Indicators

Indicator	World Bank	EBRD	IFC	Combined
Total Finance	**307**	**500**	**180-200**	**987-1007**
Cumulative GHG Emissions Reduction (mtCO2e)	26.6	19.4	10.6	56.6
Cumulative RE Generated (GWh)		10,800	2,100	12,900
Cumulative EE Energy Saved (GWh)	34,840	12,160	20,000	67,000
CTF Cost Effectiveness (over 20 years) (CTF financing / total emission reduction over 20 years)	1.59	2.58	1.89	2.02
Total Cost Effectiveness (over 20 years) (Total financing / total emission reduction over 20 years)	22.34	25.77	17.92	22.98

67. Detailed project level monitoring will be done by teams established within each of the borrowers, and required to be in compliance with agreed monitoring arrangements and required reporting procedures with the respective implementing agency. The agreement should cover aspects such as eligibility, safeguards compliance, monitoring requirements etc. The implementing agencies will also make an assessment of the borrowers on their ability to be in

full compliance with the requirements outlined including financial management and procurement guidelines.

68. The implementing agencies will apply the CTF results framework, upon which the output, outcome and impact of the projects shall be measured. Since projects in this program will either be renewable energy or energy efficiency, the required results indicators will include indicators listed in Table 13 as per CTF guidelines on Monitoring and Evaluation.

Table 13: Sample of Indicators to be used[34]

Energy Efficiency Projects	**Renewable Energy Projects**
Core-Benefits	
Tons (millions) of CO2e directly mitigated, and cost per ton	Tons (millions) of CO2e directly mitigated, and cost per ton
Number of MWh saved	Number of MWh generated
Leverage factor of CTF funding by level of concessionality	Leverage factor of CTF funding by level of concessionality
Co-Benefits	
Net number of jobs created	Number and type of knowledge assets
Level of private/public sector capacity to build and operate clean production facilities	Net number of jobs created , Emissions other than CO2 saved

[34] Individual projects will include specific appropriate indicators including for development impact at the time of their submission for approval to the CTF Trust Fund Committee.

Annex I: Updated Project Concept Notes

TEIAS Transmission and Smart Grid Project (World Bank) – Phase 1 Project

Problem Statement

1. Electricity demand in Turkey is increasing rapidly (at about 5 percent per year over the last 5 years. The transmission system is witnessing increased strain on its network because of this higher than anticipated growth in electricity demand, particularly in the west and south-west of Turkey, but also increasingly in the east. Transmission lines are increasingly loaded, in some cases beyond levels that would be considered efficient from a reliability and system security perspective. Interruptions and voltage drops, though still few, are increasingly frequent.

2. At the same time, the Government's strategy calls for 20,000 MW by 2023[35] – this capacity would offset the need for new lignite and coal fired power plants. This scale of wind development will create major challenges to the power system, in terms of required grid connections, transmission system reinforcement and grid management of large-scale intermittent generation (due to the inevitable variations in wind power generation). Similar issues are challenging utilities in Europe and the USA, and significant research is currently ongoing on suitable power grid system controls to ensure efficient integration of intermittent wind generation. In this situation, incremental transmission investments are essential for system efficiency, reliability, and security. TEIAS' load flow studies under different scenarios of demand and supply growth show that it will require additional investments of about US$ 600-800 million over the next four years, of which about US$ 400 million is estimated to be needed for efficient wind energy integration. IBRD is involved in supporting transmission system expansion, improvement in system and market operation, and in load dispatch through advisory support, two loans and an on-going loan

Proposed Transformation

3. CTF resources are proposed to be blended with the next IBRD transmission loan which will support transmission expansion and strengthening for, among other reasons, support for wind energy integration into the grid. CTF resources specifically are proposed to be utilized for assisting TEIAS, the Turkish transmission company, in design and implementation of the next generation of modern grid management and control systems which can enable large-scale integration of wind energy resources. IBRD resources would focus on expansion of "conventional" transmission grid and system control reinforcements and interconnections.

4. In Europe and the USA, the challenges posed by wind generation are sought to be addressed through similar "intelligent" grids, which can respond to the challenges placed by

[35] Electricity Market and Supply Security Strategy Paper

growing intermittent wind generation, increasing demand, etc. These systems are currently under development by the European Technology Platform (Smart Grid) and Electric Power Research Institute (EPRI) in the USA36 (the IntelliGrid Program).

5. Forecasts by TEIAS show that if wind energy development materializes as planned – 20,000 MW by 2023 – then the incremental reduction in CO2 emissions would by about 35 million tons per year in 2015 and about 49 million tons per year starting 2020.

Implementation Readiness

6. TEIAS has identified an investment plan of about US$ 373 million to be financed in this project. Approval of US$ 350 million of the US$ 373 million investment plan has been provided by the Ministry of Development for inclusion into the 2013 investment plan. TEIAS is seeking approval for the additional US$ 23million, and it is expected that the project will be prepared and approved in 2013 – 2014 period.

7. TEIAS has significant capacity in implementing complex transmission projects, including in the areas of load dispatch, system operation and control, and market management. TEIAS also has significant experience with IBRD policies, having implemented several projects (in addition to the two that are currently ongoing) with IBRD financing.

Rationale for CTF Financing

8. In order for this significant level of wind energy to be implemented and utilized, significant effort needs to be placed in parallel, in developing and implementing a smart-grid solution in Turkey. Since this is a very innovative and complex concept, which is only now being tried in Europe and the USA, it would be beneficial to utilize CTF financing for this effort, given the concessional nature of CTF. Use of CTF resources in this endeavor would yield very significant results in terms of reduction of GHG emissions by increasing the capacity of the electricity grid to absorb renewable energy resources while maintaining the stability and reliability of the transmission system.

9. In addition to GHG reduction benefits, the implementation of the smart-grid and the development of wind energy have significant national-level benefits. It would help offset increased imports of natural gas, which would save the government important foreign currency, thus freeing up resources for social welfare and economic activities. Wind energy development also entails significant employment benefits, as indigenization levels increase and domestic industry develops to provide supplies and construction support.

10. The investments are expected to support the integration of intermittent power, such as solar and wind, and to support the Government target in development of these renewable sources. If wind energy development materializes as planned – 20,000 MW by 2023 – then the

[36] The European Technology Platform SmartGrids brings together European utilities, technology providers/manufacturers, regulators and government agencies. EPRI's IntelliGrid Program brings together a large number of US and two European electric utilities, technology providers, and agencies including the US Department of Energy.

incremental reduction in CO2 emissions would by about 35 million tons per year in 2015 and about 49 million tons per year starting 2020.

Financing Plan

11. The financing plan for this project is shown in the table below:

Table 14: TEIAS Project / Financing Source

Sponsor	**TEIAS**	**World Bank**	**CTF**	**Total Investment**
Contribution (US$ million)	23	300	50	373

Project Preparation Timetable

12. The project is expected to be prepared along the following timeframe:

Table 15: TEIAS Project preparation timetable

Government concept approval/ Bank concept review	March 2013
Project preparation	April – October 2013
Appraisal/ Negotiations	November 2013
Approval	March 2014
Project Completion	March 2018

SME Energy Efficiency Project (World Bank) – New Phase II Project

Problem Statement

13. **Energy efficiency is critical to Turkey's energy security, economy, as outlined in the Energy Efficiency Strategy and is a key component in Turkey's National Climate Change Strategy.** In 2009, the economy required 0.27 ton of oil equivalent (toe) for every US$ 1,000 of GDP, compared with the OECD average of 0.18. Energy Efficiency is needed in order to reduce the energy intensity and improve Turkey's economy. Despite a few projects done by the World Bank and EBRD, there are strong market barriers to scaling up EE investments, especially in SME sector which accounts for 99 percent of all enterprises, 27 percent of total output, and 80 percent of employment in the economy. These are namely; (i) Lack of Awareness –EE investments usually involve well established technologies and provide high rate of return with short payback periods, with Government providing various incentive schemes. However, the awareness of the benefits of EE investments or incentives provided for the promotion of EE investments among Small and Medium Enterprises (SMEs) are not very high. (ii) High transaction cost - Higher cost associated with assessing and preparing EE investments, compared with the small size of the loans, have deterred sponsors and financiers alike. This is especially so for SME sector, where the technical capacity required is usually not available within companies, (iii) Underdevelopment of Energy Service sector - The energy management services sector, including Energy Service Companies (ESCOs), are still at an infant stage in Turkey. They face challenges not only in getting deal flows, but also in obtaining financing. Many of them do not have access to finance as they lack the collateral or capital required in obtaining financing.

14. **SMEs, which are critical in scaling up energy efficiency, are usually in the market for medium- and long-term financing, but banks do not usually have adequately structured resources to offer them, mostly as a result of the short-term maturity structure of their liability base.** The maturity profile of banks' assets and liabilities remains extraordinarily short term in nature, with the average maturity of deposits oscillating at around 45 days, and just about half of loans bearing a remaining maturity of one year as of end-November 2011. Two-thirds of all loans are re-priced every quarter (25 percent every month) and almost all deposits being re-priced every month. Thus leaving SMEs open to severe liquidity and interest rate risk, as evidenced by the events in the aftermath of the global financial crisis when major banks significantly cut their exposures to SMEs in a matter of weeks.

Proposed Transformation

15. CTF resources are proposed to be blended with an independent World Bank project (IBRD Loan of US$ 200 million and GEF grant of US$ 3.6 million) to improve the energy efficiency of energy use in the SME sector by scaling up commercial bank lending for energy efficiency investments. The CTF resources will specifically be used to provide financing for innovative ESCO transactions while reducing concessionality in order to foster financial sustainability after disbursement In addition to improving energy efficiency, developing a new

ESCO industry will expand the EE market to smaller industrial enterprises thus contributing to larger aggregated reduction of GHG emissions.

16. The loans will be extended to the SMEs through three financial institutions: Halkbank, Vakifbank and Ziraatbank. A US$3.64 million Global Environment Facility grant and upcoming EU/IPA funded TA program will be used to provide technical assistance to the institutions, and technical assistance and policy support to General Directorate of Renewable Energy (GDRE), within Ministry of Energy and Natural Resources (MENR). GDRE will use the GEF and EU/IPA resources to: (i) raise awareness and disseminate EE information among the SMEs, (ii) policy and market support the development of the ESCO industry, and (iii) broaden institutional support for EE policy and programs.

Implementation Readiness

17. **The project is consistent with the Country Partnership Strategy (CPS) for the FY12-15 period, endorsed by the World Bank's Executive Board on March 27, 2012.** The CPS has three main strategic objectives and pillars: Strategic Objective 1 - enhanced competitiveness and employment; Strategic Objective 2 - improved equity and public services; and Strategic Objective 3 - deepened sustainable development. The project addresses all three strategic objectives, and it is going to the World Bank Board for approval in March 2013.

18. **In getting the project ready for implementation, the World Bank has drawn upon its experience (and lessons learned) from its energy efficiency projects using credit lines.** The projects are namely: China Second Energy Conservation (2002), China Energy Efficiency Financing (I in 2006, II in 2010), India Financing Energy Efficiency at MSMEs (2010), Tunisia Energy Efficiency (2009), Turkey Private Sector Renewable Energy and Energy Efficiency (2009), Ukraine Energy Efficiency (2011) and Uzbekistan Energy Efficiency Facility for Industrial Enterprises (2010), as well as recent World Bank and ESMAP publications.

19. **The three financial intermediaries (Halkbank, Vakifbank and Ziraatbank) have experience working with the World Bank, in particular on the Turkey Access to Finance for SME projects (2010).** The project has performed very well, and has some of the highest disbursement rates in the first Phase of the CTF program. The FIs have well-equipped Project Coordination Units (PCU) in-charge of marketing, project evaluation, appraisal, and safeguards aspects. Their skills will be extended to cover EE investments through training offered during the technical assistance portion of the project.

Rationale for CTF Financing

20. **CTF financing is critical to support energy efficiency given the challenges outlined above:** lack of medium to long-term financing, perceived high risks of energy efficiency due to lack of technical knowhow, and absence of ESCO industry to provide holistic energy efficiency services. The blending of CTF concessional financing with World Bank Group, EBRD and Turkey's own financial resources would make investments financially attractive and create a highly leveraged impact in the energy efficiency sector.

21. **The project fosters development through the involvement of the private sector, has transformational development impact through the creation of the ESCO industry, and results in a reduction of GHG emission.** These are characteristics central to the CTF program. Furthermore, the project is at the nexus of the energy security – environment nexus, which is consistent with the energy and climate goals of the European Union, and effectively contributes to Turkey's EU accession process. Institutional and regulatory revisions required to conform to EU directives and to foster EE investments will also be supported by a technical assistance program to be funded by EU/IPA in 2012.

Results Framework

22. The results framework for the modified investment plan are shown Table 16:

Table 16: Results Framework of the SME Energy Efficiency Project

Results Indicator	Units	Baseline	Expected Results in Original Investment Plan	Expected Results after Reallocation
Energy savings from investments financed under project	TWh	0	2,322TWh	2,903TWh
Associated GHG reductions from EE screening tool	000 tons of CO_2e/year	0	1,064	1,330
EE Investments Financed using the EE screening tool	Amount (USD million)	0	210	260
ESCO contracts signed and financed	Amount (US$ million)	0	20	70
Volume of Bank Support: Lines of Credit - SME	Amount (US$ million)	0	200	250

Financing Plan

The financing plan is summarized in Table 17

Table 17: Project Indicative Financing ($ million)

Financing Source	Amount (US $million)
CTF	50
World Bank	200
Financial intermediaries	40.35
Turkish Government	5
Others	11.14
Total	**307**

Project Preparation Timetable

23. The project is expected to be prepared along the following timeframe:

Table 18: Project Preparation timeline

Activity	**Date**
Government concept approval/ Bank concept review	February 3, 2012
Project preparation	February – November 2012
Appraisal/ Negotiations	January - February 2013
Approval	March 2013
Project Completion	March 2017

Private Sector Bank-Intermediated Projects (EBRD)

24. It is proposed that CTF Phase II in Turkey will build on the success achieved in Phase I. With the end of TURSEFF coming in 2012, and based on the experience acquired during Phase I, the use of CTF resources will support further expansion of bank-intermediated lending for energy efficiency and renewables into new sectors which are not yet as developed as SME lending. The second phase will focus on three complementary targets:

(i) provide financing for small EE / RE investments while reducing the level of concessionality and setting sector targets, both aiming at achieving sustainability after full disbursement;
(ii) unlocking more complex EE sectors such as residential and building energy efficiency and ESCO development, through a dedicated financing facility based on EBRD's experience in other countries; and
(iii) scaling up investment in less conventional RE technologies holding large GHG abatement potential such as solar, biogas and biomass (including use of municipal waste) and geothermal and, to a lesser extent, wind and small hydro.

25. In parallel, EBRD will also continue providing financing to recently privatized Electricity Distribution Companies (e.g. privatization of SEDAŞ) and newly established Energy Saving Companies ("ESCOs") for their investment plans in the field of EE, and to large renewable energy project developers and Turkish banks for the financing of medium-size renewable energy projects without CTF support in either case.

Problem Statement

26. With its young and rapidly growing population, Turkey's pace of urbanization and economic development has been fast. Energy demand per person and CO2 emissions have increased significantly, placing it among the growing power markets of the world over the last two decades. Additionally, under current forecast scenarios, GHG emissions are expected to continue rising in the coming decades. To mitigate these risks and foster sustainable development, energy-related policies have become priorities for the Government.

27. Despite this, there is still a significant funding gap in the area of energy efficiency (EE) financing in Turkey, especially in the area of sectors such as residential energy efficiency, financing for ESCOs, and financing of advanced technologies. The country remains currently at the lower end of the development curve regarding EE investments.

28. While the first phase of CTF-supported facilities implemented by the MDBs has achieved good success in a range of sectors, EE financing has not yet been mainstreamed and a lack of finance for energy efficiency persists in several sectors such as residential, building, municipal or SME energy efficiency due to three major reasons:

(i) the lack of awareness about potential energy savings and the positive financial returns of such projects;
(ii) the lack of know-how and expertise in this field; and
(iii)the lack of regulatory and legislative improvements to drive the development of ESCOs.

Proposed Transformation

29. The Government wants to further reduce the country's energy intensity, balance the current account deficit which is largely driven by energy imports and achieve an overall improvement to energy efficiency (and thereby increase the competitiveness) of the economy. According to estimates of the Ministry of Energy and Natural Resources (MENR) and the World Bank, Turkey has an energy conservation potential of at least, 12-14 mtoe/year, or nearly 15-20 percent of total consumption and USD 3 billion could be saved annually by implementing conservation measures, but to achieve this the sectoral reach of EE finance will have to be broadened, and new technologies need to be pushed into the market. The government's objective is to further scale up and mainstream funding for EE products through financial intermediaries to deliver measurable economic, environmental and social benefits, building on the success of Phase I of the CTF.

Implementation Readiness.

Financial Intermediaries

30. The Turkish banks are ready to implement these facilities, and the experience of EBRD in developing these schemes in other sectors and countries, as well as the very positive experience with TURSEFF and MIDSEFF will be applied to ensure smooth implementation. Use of financial intermediaries is a successful business model applied by EBRD in various regions, and has been very successful in Turkey, in specific sectors. EBRD runs such schemes in new EU Member States, Ukraine, Georgia, Russia, and the Western Balkans. The key objective is now to broaden sector coverage and reinforce success in sectors already covered.

31. As previously mentioned CTF Phase I contributed to structuring TurSEFF, a credit line aimed at promoting small scale EE / RE projects in the country. Current achievements include the disbursement of more than 80 percent of the original funds, annual energy savings equivalent to USD 113 million in oil imports and more than 600,000 tCO2eq emissions abated per annum. This is a solid foundation on which to build Phase II.

32. Additionally, and as a result of that banking relationship and clean energy mainstreaming, another facility geared towards larger RE / EE projects (up to EUR 50 million) was structured. Through the Mid-size Sustainable Financing Facility (MidSEFF) EUR 975 million have been mobilized. This Facility is expect to finance 50 subprojects for total subproject value of EUR 1.4 billion, for approximately 1,000 MW of installed renewable energy capacity, providing 3,600 GWh of green energy and more than 2 million tCO2 abated per annum.

Real Economy

33. Given the nature of Turkish industry, where large well diversified conglomerates also own major financial institutions (e.g. Akbank, YapiKredi, etc), these investments are used as a

model for their associated industries and for other major financial institutions causing a domino effect and an industry-wide impact. EBRD is aiming at having this impact not only in the scale-up of EE / RE investments in the country but also on the environmental and social principles applied in those projects as well as in the development on a national carbon market. This will be driven through direct loans to other subsidiaries of the conglomerates.

34. The on-going privatization many of the 21 distribution companies (DISCOs) also increases the need for financial support through the local banking system to promote EE improvements in the power sector. These companies, as well as many municipal clients who they serve, require specialized service provided by ESCOs in sectors such as street lighting, loss reduction or building EE, where significant saving potential and prompt financial returns may be achieved. Some regulatory barriers against these initiatives in the private sector are still present; nevertheless, with the recent progress of reforms the only barriers remaining are know-how and the availability of the EE financing.

35. Finally, the energy consumption in buildings (residential, commercial and public buildings) is estimated to be in the order of 30 – 40 percent of the total, holding potential savings between 20 – 40 percent of that energy consumption. Unlocking the energy and GHG saving potential of such complex sector requires a combination of concessional funding, awareness rising and technical support together with enabling policies. EBRD has successfully implemented such an approach in countries like Slovakia and Bulgaria, and there is a real need for it in Turkey.

36. EBRD is already preparing and/or implementing a range of technical assistance projects aimed at developing the more complex markets for ESCOs and residential lending in Turkey, based on a Sustainable Energy Action Plan agreed with the Turkish Undersecretariat of the Treasury in March 2011. These activities are financed by bilateral donors, e.g. Spain, and the EBRD Shareholder Special Fund.

Rationale for CTF Financing

37. One of the key limitations for wider implementation of EE financing is the lack of financial resources and proper lending facilities, particularly for more complex sectors such as residential and building energy efficiency, ESCO development, SME EE financing and mini and micro RE investments. Financial institutions still view the EE sector as higher risk, due to a continuing lack of technical capacity on the part of lenders to evaluate such projects and potential borrowers being unable to establish bankability of their projects, compared to more traditional sectors for lending. The CTF will continue to be instrumental in attracting the attention of both the financial institutions and potential investors to these fields, providing necessary know-how and developing a competitive market for these products. CTF can be used not only as a tool to unlocking new and complex market segments but also to justify the difference between a short-term quick fix and the long-term effective solution for the companies considering the EE investments. To achieve this, continued engagement of the CTF is required, both in providing concessional finance and the provision of funding for technical assistance.

CTF Phase II – Facilities and Financing Plan

38. Based on the above EBRD is proposing up to three separate Facilities, outlined below. The allocation of funds to these facilities is flexible within the overall request envelope at this stage. The reason for the flexibility is to ensure that the development of the lending market is driven by demand at the same time as regulatory changes make their way through the system. The exact allocation to each facility will be determined at a later stage.

i) **TurSEFF II**, a second phase of the soon-to-be-finalised TurSEFF, **with reduced level of concessionality** to strive towards EE commercial sustainability, clear targets in terms of sector allocation and participating bank engagement in the marketing activities; and
ii) **ResiSEFF**, a financing facility targeted towards promoting energy efficiency in the residential, municipal and building sector, which would also include support to energy performance contracting in the sector.
iii) **MunSEFF**, a facility providing funding to local banks for the financing of municipal projects such as ESCOs, public building refurbishment, and improvements to waste systems.

Project Preparation Timetable

- TURSEFF- II - Expected start of implementation is the 1st quarter of 2013 for TurSEFF II, with a duration of two years.
- ResiSEFF, the start of implementation is the 3rd quarter of 2013, with a duration of 3 years.
- MunSEFF – due to the necessary preparation of investments in this complex sector, implementation is not foreseen to commence until the 3rd quarter of 2014, with a duration of 3 years.

Table 19: Implementation and Approval Plan for EBRD Facilities for CTF Turkey Phase 2

Facility	Submission to CTF TFC	EBRD Board Approval
TurSEFF II	12/2012	04/2013
ResiSEFF	06/2013	12/2013
MunSEFF	03/2014	09/2014

Table 20: Financing Plan for EBRD Facilities for CTF Turkey Phase 2

Financing Plan for EBRD Facilities for CTF Turkey Phase 2								
Facility	Sector coverage	Volume CTF (USD million)	Volume EBRD (USD million)	Other Co-Financing (USD million)	Disbursement Dates (to PFIs)	CO2 Savings (tCO2/yr)	CTF Cost Effectiveness (tCO2/1 USD from CTF)	Total Finance (USD Million)
TurSEFF II	SME & comercial EE, ESCOs, Small RE							
ResiSEFF	Residential, Micro RE							
MunSEFF	Municipal ESCOs, waste, public buildings							
Total		70	250	180	Q1/2013 – Q3/2014	700,000	0.23	500
Of which: *Commercial co-financing*			250	175				
Concessional co-financing		60						
Technical Assistance		10	0	5				

Commercial Sustainable Energy Finance (CSEF) Program (IFC)

39. The IFC, together with CTF, can leverage skills, relationships and innovative financing instruments to design and implement transformational interventions to catalyze the deployment, diffusion and transfer of low-carbon technologies that are at, or approaching, "market take-off" phase in the energy sector. Specifically, these interventions include energy efficiency (EE) improvements in the industrial, commercial and residential sectors.

Problem Statement

40. Although sustainable energy financing markets in Turkey have experienced unprecedented growth in the last two to three years, significant barriers are still preventing both commercial banks and leasing companies from fully dedicating their activities towards EE and renewable energy (RE) investment across market niches. The level of market penetration, however, is still quite modest given the potential market in Turkey, particularly for specialized services, such as energy service companies (ESCOs) and vendor financing mechanisms.

41. Some key reasons for the for this situation is that (a) a majority of companies, especially SMEs, remain unaware of the potential for energy savings and are unwilling to make the upfront capital investments because they do not fully perceive the potential for financial returns from these types of investments; and (b) in the case of ESCOs, the overall regulatory environment is not conducive to promote the development of a vibrant ESCOs market.

Proposed Transformation

42. **IFC, with CTF, can further catalyze transformation of local financial institutions through a programmatic approach that addresses barriers caused by perceived market and technical risks**. IFC will use risk sharing facilities, lines of credit, and capacity building programs to mobilize local financing to support EE/RE in the industrial, commercial and residential sectors. This package will be designed to help transform the behavior of local financial institutions so that they will build up their in-house capacity to assess the technical and market risks of EE/RE, and become ready financiers for the sector. IFC's experience in implementing similar capacity building/investment programs in other developing countries clearly shows a successful domino effect - once a few initial financial institutions are successfully mobilized to finance these EE/RE projects, other institutions usually follow.

43. **After working with three of the seven key leasing companies in Turkey during Phase I of the CTF Commercial Sustainable Energy Finance (CSEF) Program, IFC sees significant room for further growth of EE/RE funding in the country**, especially using specialized financing mechanisms like third party financing thorough ESCOs, involving vendor financing mechanisms and further growth of the leasing industry. In Phase II of the CSEF program, IFC would like to focus on these market niches and encourage key market players to fill gaps in the market.

44. CTF resources for CSEF Phase II will be used in blended structures with IFC's own resources and will primarily be targeted to achieve minimum concessionality. This can be achieved primarily by using risk sharing facilities, where donor funds can foster high leverage and will primarily target key barriers in commercial lending.

Implementation Readiness

45. There are a number of private sector EE/RE projects that could be implemented during 2012-2015 with the appropriate financial / risk incentives. With more than ten years of experience mobilizing local financial institutions to finance EE/RE, IFC can promptly launch additional SEF finance program in Turkey once CTF funding support is secured. CTF funds will help improve the risk premium of portfolios of loans and investments from local financial institutions to support EE/RE investment. CTF funds will also fund capacity building activities for on-the-ground technical support to FI partners and other stakeholders such as ESCOs and project developers.

46. CSEF Phase II is consistent with the IFC Turkey Country Partnership Strategy (CPS) for FY12-15, endorsed by the World Bank Group Executive Board on March 27, 2012, in which IFC has a dedicated role to support private sector growth. The CSEF II addresses all three strategic objectives of the Turkey CPS (enhanced competitiveness and employment; improved equity and public services; and deepened sustainable development). Eligible sub-projects will go through the IFC project development cycle in FY14, which will start 1st of July 2013.

Rationale for CTF Financing

47. CTF funding is very important to be included in sub-projects, because client's perception of the higher risks associated with energy efficiency is creating a serious barrier in expanding of financing to this sector. CTF financing, together with IFC and private sector financing, creates an attractive mix and can result in financial terms which makes EE/RE investments more appealing and helps FIs adjust their risk perceptions and become more proactive when entering new market segments.

Financing Plan

48. The financing plan is summarized in Table 21:

Table 21: Project Indicative Financing (US$ million)

Financing Source	**Amount (US $million)**
CTF	20
IFC	80-100
Financial Intermediaries	50
End-users (private sector)	30
Total	**180-200**

Project Preparation Timetable

49. Sub-projects are expected to be prepared within the following indicative timeframe:

Table 22: Sub-Projects indicative timeframe

CSEF II Program Concept Approval	March 1, 2013
Project pipeline development	April-June, 2013
Project approval cycle	July 1st, 2013 – June 30, 2014
Project implementation	February 2014-December 2016

50. The expected results are summarized below:

Table 23: Expected Results

Indicator	**Expected Results**
Cumulative GHG Emmission Reductions (mtCO2e)	10.6
Cumulative RE Generated (GWh)	2,100
Cumulative EE Energy Saved (GWh)	20,000
CTF Cost Effectiveness (over 20 years) (CTF financing / total emission reduction over 20 years)	1.89
Total Cost Effectiveness (over 20 years) (Total financing / total emission reduction over 20 years)	17.92