IMPACT ASSESSMENT REPORT OF CLEAN TECHNOLOGY FUND IN RENEWABLE ENERGY AND ENERGY EFFICIENCY MARKET IN TURKEY

CLEAN TECHNOLOGY FUND

Final Report

January 2013

ECONOLER

ACRONYMS

AFD	Agence Française de Développement
BRSA	Banking Regulation and Supervision Agency
CBRT	Central Bank of the Republic of Turkey
CPS	Country Partnership Strategy
CSP	Concentrated Solar Power
CTF	Clean Technology Fund
DSI	General Directorate of State Hydraulic Works, Turkey
EBRD	European Bank for Reconstruction and Development
EMBI	Emerging Markets Bond Index
EE	Energy Efficiency
EIA	Environmental Impact Assessment
EIB	European Investment Bank
EIE	General Directorate of Electric Power Resources Survey and Development Administration
EML	Electricity Market Law
EMP	Environmental Management Plan
EMRA	Energy Market Regulatory Authority
ESCO	Energy Service Company
EU	European Union
EÜAŞ	Electricity Generation Company of Turkey
FI	Financial Intermediary
FMR	Financial Management Report
GHG	Greenhouse Gas
IBRD	International Bank for Reconstruction and Development (Worldbank group)
IFC	International Finance Corporation (Worldbank group)
IFI	International Financial Institution
IRR	Internal Rate of Return
ISE	Istanbul Stock Exchange
JBIC	Japan Bank for International Cooperation
JICA	Japan International Cooperation Agency
KfW	Kreditanstalt für Wiederaufbau, German Development Bank
LUCF	Land Use Change and Forestry
MD	Ministry of Development
MENR	Ministry of Energy and Natural Resources
MoEF	Ministry of Environment and Forest
$MtCO_2e$	Megatonne of Carbon Dioxide Equivalent
MW	Megawatt
NCCC	National Communication on Climate Change
PIF	Project Introduction File
PV	Photovoltaic
TEDAŞ	Electricity Distribution Corporation of Turkey
TEİAŞ	Turkish Electricity Transmission Company
TETAŞ	Electricity Trading Corporation of Turkey
TKB	Development Bank of Turkey
TPES	Total Primary Energy Supply
TSKB	Industrial Development Bank of Turkey
TWh	Terawatt hour
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change

TABLE OF CONTENTS

1 INTRODUCTION 1
1.1 Overview of the CTF Investment Objectives in Turkey 1
1.2 Transposition of the CTF Objectives into the IBRD, EBRD, and IFC Programs 3
1.2.1 IBRD 3
1.2.2 EBRD 5
1.2.3 IFC 7
2 ASSESSMENT OF THE IMPACT OF THE CTF ON THE EE/RE MARKET IN TURKEY 9
2.1 Assumptions and Data Quality Assessment 9
2.1.1 Carbon Savings Calculations 10
2.1.2 Primary Energy Savings Calculations 11
2.2 Direct Impact of CTF on the Market, Based on the Investments Catalyzed with CTF Money 11
2.2.1 Overall Impact of CTF 11
2.2.2 CTF Impact by Type of Projects (EE/RE) 15
2.2.3 CTF EE Impact by Type of Technology Used 16
2.2.4 CTF RE Impact by Type of Technology 18
2.2.5 CTF Environmental Impact 19
2.3 Impact of CTF on the Participating Banks (The Influence of CTF on the Banks' EE/RE Lending Business) 23
2.3.1 TKB 23
2.3.2 TSKB 25
2.3.3 Capacity building of the EBRD Supported Banks (Akbank, Denizbank, Garanti Bank, Is Bank, Vakifbank) 27
2.3.4 IFC's Capacity Building Support for CTF Clients 28
2.4 Impact of CTF on the Market (The Contribution of CTF to the Total Development of the EE/RE Market) 30
2.4.1 Key Legislative Changes in Turkey prior to and during the Period of CTF Disbursement 30
2.4.2 Development of the EE/RE Market and CTF's Contribution 31
2.4.3 Assessment of the Monitoring & Evaluation system in Turkey 33
2.5 Evaluation of the M&E Systems of Different Government Institutions 33
2.6 Recommended Framework for and Integrated M&E System for EE/RE Investments in Turkey 36
2.6.1 Indicators of M&E 36
2.6.2 Organization for M&E 37

LIST OF TABLES

Table 1: Allocation of Funds under Original Project 4
Table 2: CTF Investment Impact on the Market at September/October 2012 12
Table 3: Number of Projects per Bank 13
Table 4: Annual Savings per Bank 20
Table 5: CTF Annual Primary Energy Savings & Avoided Cost of Imported Oil 21
Table 6: Primary Energy Savings per Dollar Invested 23
Table 7: TSKB – Share of IFIs in EE Portfolio 26
Table 8: Major Legislative Improvements during CTF Implementation in Turkey 30
Table 9: CTF Indicators for RE Sector 35
Table 10: CTF Indicators for EE Sector 35
Table 11: Recommended Indicators for Integrated M&E System in Turkey 38

LIST OF FIGURES

Figure 1: Carbon Savings Calculation Check 10
Figure 2: Primary Energy Savings Calculation Check 11
Figure 3: Project Investment Breakdown by Local Bank 13
Figure 4: Number of Projects Financed by Local Bank 13
Figure 5: Timeline of Cumulative Project Investments 14
Figure 6: Project Investment Breakdown by Sources of Funding 15
Figure 7: EE/RE Investments by Local Banks 16
Figure 8: EE Investments Breakdown by Technology 17
Figure 9: EE Investments Breakdown by Financial Intermediary and Technology 17
Figure 10: RE Investments by Technology 18
Figure 11: RE Investments Breakdown by Technology 18
Figure 12: RE Project Investments by Technology by Bank 19
Figure 13: Annual Electrical, Thermal and Carbon Saving by Bank 20
Figure 14: CO_2 emissions reductions per dollar investment 21
Figure 15: Primary Energy Saved & Avoided Cost of Imported Oil per Bank 22
Figure 16: Timeline Development Project Investments 31

1 INTRODUCTION

1.1 OVERVIEW OF THE CTF INVESTMENT OBJECTIVES IN TURKEY

Given the tightening electricity and gas supply/demand balances, the sizeable contribution of the energy sector to Turkey's CO_2 emissions and the cost effectiveness of energy conservation, energy has been identified as the key sector for interventions under the Clean Technology Fund (CTF) in Turkey with a focus on the demonstration, deployment and transfer of low carbon technologies for renewable electricity generation and energy conservation. Furthermore, this energy efficiency – energy security – environment nexus is consistent with the energy and climate goals of the European Union and effectively contributes to Turkey's EU accession process.

In 2009, Turkey demonstrated its readiness to fight climate change by signing the United Nations Framework Convention on Climate Change (UNFCCC). In order to diversify its heavily fossil fuel-based energy production and consumption and to promote low-carbon development, Turkey was one of the first countries to receive CTF funds in 2009 and had utilized them by mid-2011.

As a result, the CTF provided up to USD 200 million in soft loans and technical assistance to promote private sector investment in energy efficiency and renewable energy projects in Turkey. Backed by this commitment, the International Bank for Reconstruction and Development (IBRD) provided an initial USD 500 million loan towards the program later augmented by additional USD 500 million, the European Bank for Reconstruction and Development (EBRD) provided and mobilized USD 285 million and the International Finance Corporation (IFC) provided USD 250 million for financing RE/EE projects. The total volume contributed and mobilized by the MDBs had reached USD 1.535 by the end of 2012.

The low-interest CTF loans aimed to increase privately operated renewable energy production and private sector energy efficiency, thereby reducing greenhouse gas emissions and energy cost, and ultimately contribute to the transformation of the Turkish energy sector by promoting environmentally friendly projects.

The Government of Turkey had a stated policy to implement the National Communication on Climate Change (NCCC) Reference Case in order to take Turkey 11 percent below the emission level of the business-as-usual (BAU) case. In order to push this further, the Government sought CTF support to move from the Reference Case to the Accelerated Emission Reduction Case (31 percent below BAU), and in energy efficiency towards the Emission Reduction Stretch Case (44 percent below BAU).

In order to achieve this, significant barriers needed to be overcome. The World Bank Group and EBRD's experience with renewable energy and energy efficiency investments in Turkey prior to the involvement of CTF showed that many projects which were likely to be financially viable remained unimplemented because of various combinations of five key barriers:

› Inadequate awareness of the benefits of energy efficiency and perceived high technical and financial risks of such projects among industry. Industry, particularly medium and large enterprises, perceives energy efficiency projects as technically risky and not delivering

commensurate financial returns, particularly when compared to the kind of financial returns expected from other investment options. Lack of familiarity with the range of energy efficiency technologies and processes, energy conservation investment, best practices, as well as the under-appreciation of financial benefits from energy conservation investments are primarily responsible for the high risk perception among industrial enterprises;

- Among banks, there is an insufficient capacity for evaluating renewable energy and energy efficiency projects and a perception that such projects entail high financial risks. There is a lack of adequate debt financing for such projects, primarily because banks are generally not familiar with such projects. The internal capacity for RE/EE project identification, evaluation and further processing is also low as a result. For industry, banks prefer new investments or investments that raise productivity or capacity, rather than investments aimed at reducing costs. An outstanding exception to this is the Industrial Development Bank of Turkey (TSKB), which had sufficient in-house technical and financial evaluation capacity for EE/RE projects;
- The capability of the regulatory administration to effectively implement energy efficiency policies and programs needs to be scaled up to meet new, ambitious RE/EE objectives. This is a significant challenge which initially requires adapted capacity building support;
- High transaction costs in developing renewable energy and energy efficiency investments. The transaction cost of developing renewable energy (other than large hydro and wind) and energy efficiency investments faced by industry as well as by banks is usually high. Such costs can arise from energy audits, feasibility studies and, sometimes, the need to shut down processes in order to rehabilitate or replace parts. These costs may be increased by a lack of adequate familiarity and experience with identifying and preparing such projects both within industry as well as in banks.

Further to this, the main limitation for wider project implementation of RE and EE financing was the lack of financial resources and proper lending facilities, particularly for small-scale projects and SMEs. Financial institutions (with the aforementioned exception) viewed the RE and EE sectors as higher risk, due to a lack of technical capacity on their part to evaluate such projects and an inability to establish the bankability of their projects on the part of potential borrowers. It was consequently expected that CTF would be instrumental in attracting the attention of the financial institutions to this new field by providing necessary know-how to help develop institutional capacity and a competitive RE/EE market in Turkey.

Turkey's fundamental strategy to achieve its energy policy objectives is "encouraging private/foreign investments." Accordingly, the Turkish government decided to implement a private sector oriented energy strategy and to take all necessary steps to create an environment that encourages clean energy investments. As one of the fastest-growing emerging economies, Turkey is in need of financing to realize its potential to implement environmentally responsible investments. The recent deterioration of global financial conditions has led to limitations on financing for Turkey as well as other countries. It has also increased borrowing costs and reduced access to external finance, which represent disincentives for entities carrying out clean technology projects. Within this framework, CTF with its guiding role agreed to provide the necessary incentive in the initial stages of the Turkey CTF 1 clean technology programs/projects, and to help Turkey move faster towards Accelerated Emission Reduction Case, by triggering and accelerating new investments.

The blending of CTF concessional financing with World Bank Group and EBRD lending and Turkey's own resources was expected to make investments financially attractive and create a highly leveraged impact in the energy sector. Thus, the CTF financing plan was seen as an important support for Turkey's efforts to achieve a reduction in GHG emissions.

The priorities defined for the assignment of available CTF resources are as follows:

- Renewable Energy: private sector investment in renewable energy (other than large-scale hydro), including wind, biomass, geothermal and solar, as well as small scale hydro (up to 10MW);
- SmartGrid (improved grid management) for intermittent renewable energy in particular wind power and solar; and
- Energy Efficiency in industry (large and small), commercial, residential and the public sectors.

Interventions have to focus on attracting financiers and investors and on accelerating the deployment of renewable technologies such as wind, solar, biomass, geothermal and small-scale hydro, in order to scale up implementation more aggressively. Given the significant barriers that are faced by such investments in Turkey in the absence of grants and/or subsidized financing, CTF is expected to help attract financiers and investors to promote energy efficiency investments. Finally, CTF aims to support smart grids development for improved wind and solar power management.

1.2 TRANSPOSITION OF THE CTF OBJECTIVES INTO THE IBRD, EBRD, AND IFC PROGRAMS

1.2.1 IBRD

The Private Sector Renewable Energy and Energy Efficiency Project was approved on May 28, 2009 and became effective on August 12, 2009. The project is expected to close on or before December 31, 2016 as scheduled. The project development objective (PDO) is to help increase privately owned and operated energy production from indigenous renewable sources, enhance energy efficiency and reduce greenhouse gas emissions within the market-based framework of the Turkish Electricity Market Law. To date, the project is considered by IBRD as performing well, and is expected to fully meet its development objective ahead of schedule.

Originally, the project was financed by an IBRD loan of USD 500 million and by USD 100 million from CTF funds, granted to two local financial institutions: Türkiye Sınai Kalkınma Bankası (TSKB) and Türkiye Kalkınma Bankası (TKB), and guaranteed by the Republic of Turkey. Through these banks, the project provides financing to private sector companies for renewable energy and energy efficiency investments. The allocation of the original loan and CTF funds to each FI is as follows:

Table 1: Allocation of Funds under Original Project

	IBRD	CTF
TSKB	USD 350 million	USD 70 million
TKB	USD 150 million	USD 30 million

The project was subsequently restructured in September 2011 to include additional provisions for analysis, implementation and monitoring of environmental issues by sub-project sponsors, including international best practices for the identification and evaluation of potential cumulative impact of hydroelectrical power plants. The restructuring also included the following changes: (1) change in categorization of small HPPs from "Emerging Renewable Energy" to "Commercial Renewable Energy"; (2) additional environmental and social safeguards requirements; (3) reallocation of funds; and (4) update of the applicable World Bank procurement guidelines to the latest edition. Shortly after the restructuring, the World Bank approved the additional financing of US$ 500 million at the request of the FIs on November 22, 2011. No additional CTF was provided in this process, and the loan amount provided under the project now totals at US$ 1.1 billion, including CTF co-financing originally provided.

As of end August 2012, TSKB has committed 83 percent of its total IBRD loans, and TKB has committed 43 percent of its total IBRD loans. Both institutions have disbursed more than 98% of their original IBRD loans. TSKB has committed 95% and disbursed 83% of their CTF funds, and TKB committed 100% and has disbursed 97% of their CTF fund allocation. As a result, the original IBRD loan is expected to close on or before the originally envisaged closing date of December 31, 2014. CTF disbursements stood at USD 82.4 million as of October 26, 2011. The CTF disbursement slowed down after the restructuring realigned the Project and FIs focus on more advanced RE technologies and EE investments. These technologies are still relatively underdeveloped in Turkey, and are taking a longer time to develop.

With the help of CTF resources, the project goal is to make a major positive contribution to three critical development objectives in Turkey: (1) improve energy efficiency as well as overall energy generation capacity and energy security—once replicated throughout the economy, the energy intensity of the Turkish economy could be about 16 percent lower by 2020; (2) focus on environmental sustainability by reducing greenhouse gas emissions—through its transformational impact, CTF could help the country reduce emissions by 44 percent by 2020 compared to the business as usual scenario; and (3) provide financing for private sector investments in clean energy with credit provided through Turkish banks to help increase private sector investments. The expectation was that with CTF support, the Project would demonstrate the viability of investments in underutilized renewable energy and energy conservation technologies, and widen the investor base. Further, by helping the financial intermediaries gain experience and build capacity in such projects, the use of CTF would catalyze further investments. It was thought that the use of CTF in this fashion would result in a sustainable business model likely to be replicated across the country.

The project was also designed to increase private investment in the energy sector significantly. At Project launch, financing available in Turkey for renewable energy was about USD 70–75 million per year. With the project, the annual financing available has remained below the level necessary,

but has significantly increased to USD 180–185 million per year. The Government's Ninth Development Plan has endorsed private sector development. The private sector is expected to be the primary source of the productivity gains and innovations required to sustain economic growth, generate employment opportunities and improving living standards. In helping implement this endeavor, the Project is playing a key role by fostering private investment in renewable energy generation.

Finally, the Project contributes to mitigating supply security risks in Turkey—on the supply side by supporting additional domestic energy generation capacity, and on the demand side, by assisting in improving energy efficiency. The Project thereby assists in preventing significant macroeconomic impacts which would arise if the country were to face sustained imbalances in the supply and demand for energy.

The project has financed 960 Megawatts (MW) of RE investments and energy savings of 1,840 tera calories (TCal) have been achieved through EE investments from the inception of the project until August 2012. These investments are expected to contribute to greenhouse gas emissions reduction of 3.3 million tons per annum. Within this portfolio, CTF financing has supported the development of 9 small hydroelectric power plants (HPPs), 6 wind, 1 geothermal, and 20 EE projects. The concessional character of the financing provided by the CTF is deemed to have been particularly important in promoting EE investments in sectors such as petrochemicals.

1.2.2 EBRD

With more than EUR 1 billion in active investments (for a total project value of EUR 3 billion) sustainable energy is a key sector for EBRD in Turkey, comprising almost 50% of its project portfolio. In March 2011, the EBRD signed a Sustainable Energy Action Plan (SEAP) with the Government of Turkey. This provides the EBRD with a medium-term road map for policy dialogue regarding associated technical assistance activities, based on a request from the Government, and the development of new investment projects for sustainable energy. The aim was to outline possible policy improvements to enhance the investment framework for sustainable energy, and thereby increase private sector investments in support of ambitious climate financing objectives. Within this scope, EBRD has supported the power market regulator (EPDK) in assessing the societal and economic benefits of smart metering technologies in the country and is now implementing assistance to the various ministries on a range of sustainable energy issues, such as ESCO development, or energy from waste.

Under the Sustainable Energy Initiative (SEI), the EBRD focuses on five particular areas:

i) Work with large corporate clients

ii) Sustainable Energy Credit Lines

iii) Power sector energy efficiency

iv) Renewables

v) Municipal energy efficiency

EBRD works with large industrial energy users to promote best practice and encourage companies to implement energy efficiency investments. This is done by combining financing with free-of-charge energy audits, energy management training and technical advice to help companies unlock potential savings. This approach is particularly adapted to Turkey which, as a growing economy, possesses a strong industrial base and thus has significant potential to improve its energy efficiency and reduce greenhouse gas emissions.

The EBRD has carried out energy audits and technical due diligence in various Turkish companies including Kaleseramik, Keskinoglu Poultry Farm, Tosyali Steel, TrakyaCam glass and several major cement producers. In addition, the EBRD has helped Aksa (the largest acrylic producer in Turkey) finance its energy and operational efficiency investments with a EUR 37 million loan (USD 48 million).

The EBRD has expanded its energy efficiency lending to small- and medium-sized enterprises (SMEs) by developing long-term credit lines to commercial banks for on-lending to small-scale projects. Credit lines are combined with technical assistance (for example energy audits) to banks and prospective borrowers to assist with project development.

A USD 285 million framework has been provided by the EBRD to commercial banks in Turkey for on-lending to private sector borrowers (including SMEs and households) for energy efficiency (EE) and small-scale renewable energy (RE) investments. Under the framework, the EBRD's loans have been co-financed by USD 46.7 million of concessional loan funding from the Clean Technology Fund (CTF). Under the Turkey private sector Sustainable Energy Financing Facility (TURSEFF), loans of up to USD 5 million for both private borrowers and companies are being disbursed via five partner banks: AkBank, DenizBank, Garanti Bank, IşBank and VakifBank.

Leveraging on the banking relationship already established through TurSEFF, the EBRD has also developed a Mid-size Sustainable Energy Financing Facility (MidSEFF, www.midseff.com), a financing facility of EUR 1 billion (EUR 525 million from the EBRD and EUR 300 million from the European Investment Bank (EIB) for on-lending, together with EUR 175 million from the EBRD for co-financing) via seven partner banks to promote mid-size (EUR 10–50 million) renewable energy as well as corporate and municipal infrastructure energy efficiency projects. In addition to supporting the scaling-up of sustainable energy investment in Turkey, MidSEFF also aims to develop the carbon markets in Turkey and align sustainable energy, environmental and social standards with those of the EU. Both facilities are supported by a comprehensive technical assistance program to provide implementation support to partner banks, sub-borrowers and project sponsors. Funding for the technical assistance program is provided by the European Union, in co-ordination with the Turkish Treasury, under the EU IPA 2009 funding allocation (EUR 7 million). An additional EUR 1.6 million technical assistance grant is provided by the CTF for TURSEFF.

In terms of achievements in credit lines so far, the EBRD indicates that by the end of October 2012, USD 240 million have been disbursed under TURSEFF in 350 projects with a total value of USD 463 million, representing 286,000 toe saved and 813,000 tonnes of CO_2 per year abated. Since December 2010, EUR 373 million have been disbursed under MidSEFF in 21 projects (9 small HEPP, 6 WEPP, 4 GEPP and 2 EE) for a total value of EUR 557 million representing 417 MW installed (and 1,524 GWh RE produced) and 892,000 tonnes of CO_2 abated.

The EBRD plans to continue to give priority to making targeted direct investments into renewable energy projects. Building on the EBRD's first investment in Turkey, the Rotor wind farm in Osmaniye, the Bank signed a EUR 45 million loan with Zorlu Enerji to finance the EUR 220 million 135MW Rotor wind farm, currently the largest in the country, which was financed jointly with IFC and EIB. In 2012, EBRD signed a EUR 100 million loan with Enerjisa to support Bares WEPP an 142 MW wind farm to be built in Balikesir.

Such investments are envisioned to take place initially in the wind and hydro sectors, though this is expected to broaden given the diverse and extensive renewable energy potential of Turkey. The EBRD is finalizing an in-depth study to assess the potential geothermal market in Turkey, and develop risk mitigation tools aimed at promoting private sector investment.

In additional, the EBRD has also carried out regional biomass and municipal waste resource assessments to identify commercially viable business models and opportunities.

Considering that Turkey's renewable energy investments are expected to significantly increase, the EBRD will assist in the production of a Strategic Environmental Assessment to assess and mitigate the cumulative environmental impact of such facilities.

In the municipal sector, sustainable energy investments have taken place in Bursa, Bodrum, Gaziantep and other cities.

1.2.3 IFC

In the last couple of years, as a consequence of its climate change mandate, IFC has actively focused on renewable energy investment. One of the key examples of this strategy in Turkey is the EUR 220 million (EUR 55 million from IFC) invested in the 135MW Rotor Elektrik wind farm in Turkey.

IFC's USD 75 million loan to Akenerji for hydropower projects also supports the Turkish government's agenda to boost the amount of energy provided by renewable sources, and demonstrate the viability of renewable energy.

In 2009 IFC led the structuring in Enerjisa's first phase investment by providing a debt package of EUR 513 million for hydroelectric power plants and the Bandirma gas-fired power plant, with capacity of 1,900MW. Again in 2011, acting as global coordinators, IFC, UniCredit, and WestLB AG arranged a EUR 700 million debt package for Enerjisa for the second phase of the company's investment program. The facilities comprise an IFC A/B loan facility, a parallel loan facility and a special dedicated facility from development finance institutions.

The financing is supporting the construction of Enerjisa's two hydroelectric power plants in Yamanli and Dogancay, and one wind power plant in Mersin. The projects will have total capacity of approximately 1 GW.

In September 2009, the CTF Trust Fund Committee approved the first private sector CTF proposal presented by IFC for a total amount of USD 21.7 million. The "Commercializing Sustainable Energy Finance Program for Turkey" (CSEF) is a comprehensive initiative to help develop Turkey's

Sustainable Energy (SE) private financing by supporting local financial institutions on a programmatic base.

IFC's CSEF took a complementary approach to EBRD's Energy Efficiency Financing program under CTF. While focusing on energy efficiency among SMEs, IFC focused on working with leasing companies (instead of financial intermediaries) as a way to expand the base of intermediaries providing energy efficiency financing to SMEs.

Two projects with two separate leasing company clients have already been committed and fully utilized; a third one is under development with closing planned at the end of CY 2012. The two approved projects were in the form of credit lines to 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. So far, about USD 78 million have been disbursed in 53 end-use projects. Given the difference of the leasing transactions from loan financing, this amount corresponds to the total value of the projects (project investment size is equal to leased amount and there is usually no equity in the transaction, except down-payment in some cases). The projects have been focused primarily on saving electricity through retrofitting and upgrades in manufacturing, printing, food and textile sectors.

In addition to CSEF program, which integrated CTF support directly into projects, IFC provided additional standalone EE/RE investments thorough FIs from its own sources in parallel. Since FY'08 (when IFC' first EE transaction in Turkey was committed) IFC has provided US$210 millions for EE/RE lending to Turkish FIs. Together with investment under CTF sponsored CSEF program, IFC total investment in Turkish EE/RE sectors thorough FIs reached US$285 million (incl. CTF) as of June 2012, out of which US$60 million was for RE and remaining US$225 million was for EE, mostly in SMEs.

On the infrastructure side (direct lending to projects and companies), since 2008 IFC provided an equivalent of USD 243.1 million to renewable energy projects on its own account (ie. this figure excludes B loans). No CTF funding has been used in these financings.

2 ASSESSMENT OF THE IMPACT OF THE CTF ON THE EE/RE MARKET IN TURKEY

2.1 ASSUMPTIONS AND DATA QUALITY ASSESSMENT

Econoler collected a range of information from the IFC, EBRD, IBRD and their partner local financial institutions (LFIs) including:

- Detailed project information for investments supported with CTF financing;
- Aggregated portfolio information from some of the banks about EE/RE projects financed from other sources of funding;
- Information in the form of interviews about the impact of the CTF on the internal lending processes and/or capacity building activities conducted by the LFIs.

Our assessment report is based on several assumptions:

- All quantitative data provided by the LFIs truly represent the actual project parameters and all derivative indicators (such as carbon savings, cost savings, etc.) have been correctly estimated.
- The useful life of all projects is equal to the presented life of the equipment.

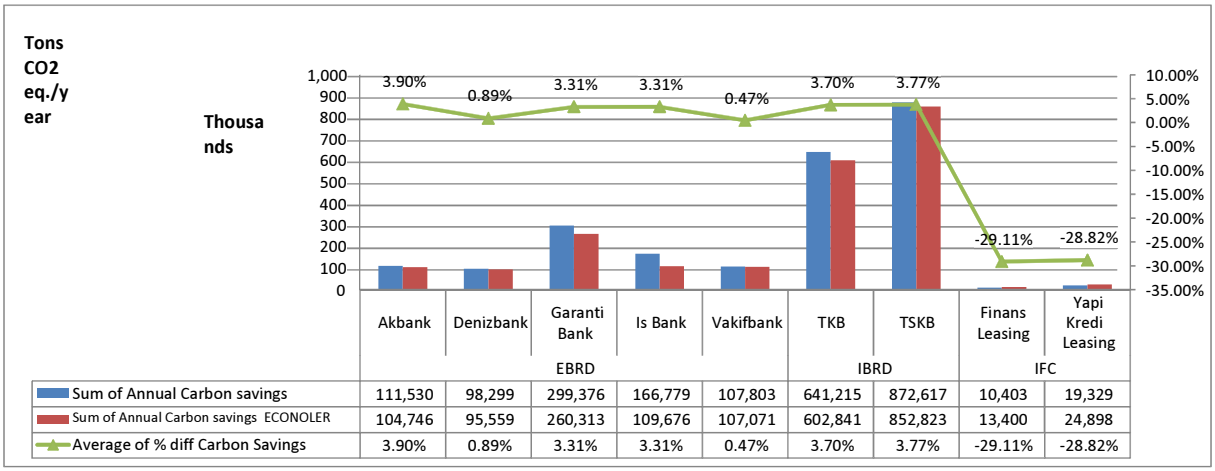
The quantitative project data received was assessed by Econoler EE/RE experts to determine the consistency and reasonableness of the following calculated indicators:

- Annual carbon savings of the projects (in tCO_2e per year)
- Annual savings of primary energy (MWh/year)
- Avoided cost of imported oil (USD/year)

Due to the time constraints of the project, our experts did not review the actual methodologies of the LFIs for calculation of the above parameters. Instead, Econoler conducted an alternative evaluation of the parameters based only on the project information received from the banks.

The results of this data integrity check are as follows.

2.1.1 Carbon Savings Calculations



	Akbank	Denizbank	Garanti Bank	Is Bank	Vakifbank	TKB	TSKB	Finans Leasing	Yapi Kredi Leasing
	EBRD					IBRD		IFC	
Sum of Annual Carbon savings	111,530	98,299	299,376	166,779	107,803	641,215	872,617	10,403	19,329
Sum of Annual Carbon savings ECONOLER	104,746	95,559	260,313	109,676	107,071	602,841	852,823	13,400	24,898
Average of % diff Carbon Savings	3.90%	0.89%	3.31%	3.31%	0.47%	3.70%	3.77%	-29.11%	-28.82%

Figure 1: Carbon Savings Calculation Check

Our data verification of the carbon savings shows that for EBRD and IBRD partner banks, the CO_2 emissions reductions have been calculated in a consistent and reasonable manner (Figure 1). Econoler's independent calculation varies very little for the calculations of the LFIs. Econoler's calculations are conducted to be reasonable-pessimistic and for this reason the difference is slightly in favor of the LFIs. Also in some cases the banks have also added to their CO_2 emissions reductions the impact of fuel savings (natural gas, oil), that have not been included in the data assessed by Econoler.

For IFC's two partners Yapi Kredi Leasing and Finans Leasing, however, there is almost 30 percent difference in the GHG emissions calculations in favor of Econoler's calculation. This difference is consistent across all projects, meaning that there is difference in the calculation, methodology for the carbon savings of the projects. In fact, the difference comes from the different CO_2 emission factors used by IFC and Econoler:

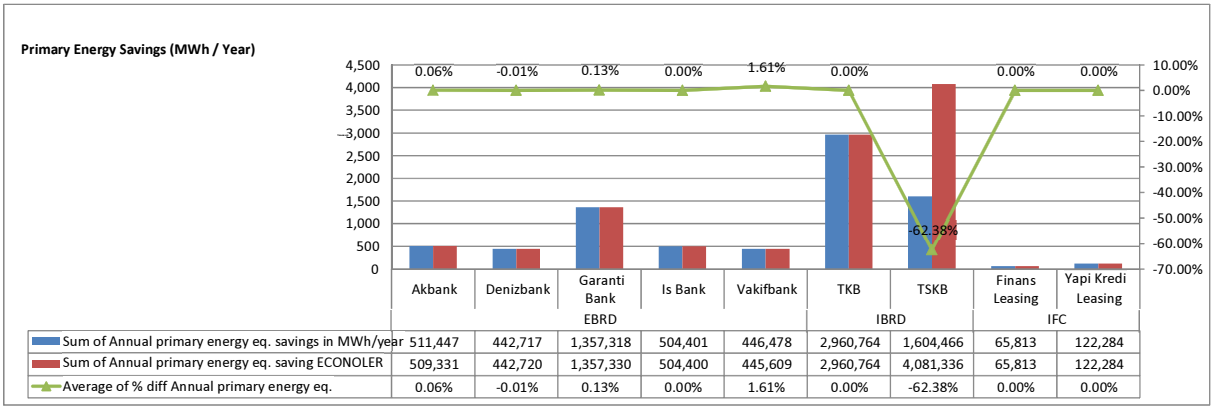
- 0.617 tons/MWh emission factor is used by Econoler[1]
- 0.479 tons/MWh emission factor used by the IFC.

For the purposes of this report we will be using the CO_2 emissions as reported by the LFIs and their partner banks.

[1] Source: ABB Group – Turkey Energy Efficiency Report (http://www05.abb.com/global/scot/scot316.nsf/veritydisplay/bcfe8957cb2c8b2ac12578640051cf04/$file/turkey.pdf)

EBRD for its MidSEFF uses 0.562 TCO_2/MWh as per recently listed carbon projects in Turkey. EBRD is about to engage in the modelling of the CEF for the country to avoid these discrepancies.

2.1.2 Primary Energy Savings Calculations



	Akbank	Denizbank	Garanti Bank	Is Bank	Vakifbank	TKB	TSKB	Finans Leasing	Yapi Kredi Leasing
	EBRD					IBRD		IFC	
Sum of Annual primary energy eq. savings in MWh/year	511,447	442,717	1,357,318	504,401	446,478	2,960,764	1,604,466	65,813	122,284
Sum of Annual primary energy eq. saving ECONOLER	509,331	442,720	1,357,330	504,400	445,609	2,960,764	4,081,336	65,813	122,284
Average of % diff Annual primary energy eq.	0.06%	-0.01%	0.13%	0.00%	1.61%	0.00%	-62.38%	0.00%	0.00%

Figure 2: Primary Energy Savings Calculation Check

The verification of the calculated savings of primary energy (in MWh/year) shows that Econoler's results match the calculation of the local banks with the exception of TSKB (Figure 2). The IFC partners did not provide data for estimated primary energy savings of their projects, so this data was reconstructed by Econoler. The difference in TSKB's calculation comes from the fact that they use a coefficient of 0.57 (meaning out of 100 percent primary energy, there are 43 percent losses in the energy system of Turkey and 57 percent of the energy reaches the system users). Econoler, and the other banks are using a coefficient of 0.33 (meaning that only 33 percent of the primary energy reaches the end users and there are 67 percent losses in the energy system. For the purposes of the assessment, Econoler has used the primary energy savings as reported by the banks.

As a recommendation, in future programs, LFIs should be required to report primary energy savings (in MWh or toe) and provide a universal set of coefficients to work with, to enable the compatibility of the data to be established.

2.2 DIRECT IMPACT OF CTF ON THE MARKET, BASED ON THE INVESTMENTS CATALYZED WITH CTF MONEY

2.2.1 Overall Impact of CTF

The total investment impact of the CTF on the market, in terms of leveraged investments is substantial (EE/RE investments for nearly USD 1.4 billion). It is summarized in Table 2 below.

Table 2: CTF Investment Impact on the Market at September/October 2012[2]

	Total Investment Amount	Total CTF Contribution
EBRD	**$445,580,973**	**$37,801,901**
Akbank	$113,148,266	$8,495,630
Denizbank	$65,216,221	$3,867,604
Garant Bank	$136,667,047	$11,329,996
Is Bank	$59,491,909	$4,367,121
Vakifbank	$71,057,530	$9,741,549
IBRD	**$853,288,539**	**$96,156,430**
TKB	$285,077,539	$30,000,000
TSKB	$568,211,000	$66,156,430
IFC	**$77,690,661**	**$15,538,132**
Finans Leasing	$52,381,466	$10,476,293
Yapi Kredi Leasing	$25,309,195	$5,061,839
Grand Total	**$1,376,560,172**	**$149,496,463**

According to the latest available disbursement information (as of end-September 2012), USD 149.5 million of CTF funds has leveraged a total of USD 1.38 billion in project investment, which is an impressive 1:9 leverage ratio. Although CTF was blended with International Financing Institution (IFI:IBRD, EBRD and IFC) funding, the role of the CTF as a catalyst is important as its low interest rate provides a more affordable blended interest rate to the borrowers. The EE/RE portfolio developed is quite diverse, because the partner LFIs selected for the program have very different investment profiles and client bases. They were provided different allocations of CTF and IFI funds. Understandably, TKB and TSKB hold the largest investment share of the CTF supported EE/RE loan portfolio, while Vakif and Denizbank have lent to the largest number of projects.

[2] None of the facilities had closed investment at the time this data was collected.

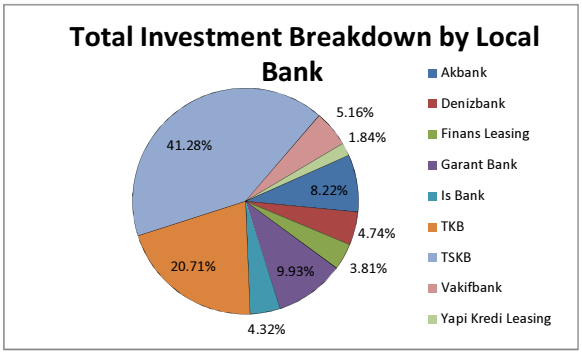


Figure 3: Project Investment Breakdown by Local Bank

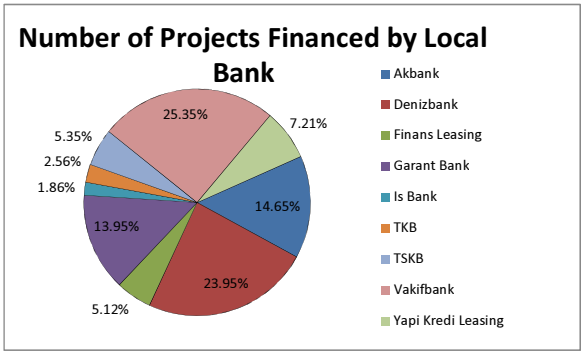


Figure 4: Number of Projects Financed by Local Bank

In total project investment volume supported by CTF, the IBRD supported banks (TKB and TSKB) hold the largest share—20.71 percent and 41.26 percent respectively (Figure 3). However, looking at the numbers of projects financed (Figure 4), we see a distinctly different picture. The EBRD and IFC supported local banks provided finance for more subprojects as compared with TKB and TSKB, as they focused on smaller significantly projects and a wider number of sectors, particularly regarding EE.

As the table below indicates, out of 430 projects financed in total with CTF support, Vakifbank takes the lead with 109 projects financed, closely followed by Denizbank with 103 projects. At the other end of the ranking are Is Bank with 8 projects[3] and TKB with 11 projects financed.

Table 3: Number of Projects per Bank

Banks	Count of Projects		
	TOTAL (incl.)	EE	RE
EBRD	**343**	**303**	**40**
Akbank	63	54	9
Denizbank	103	96	7
Garant Bank	60	54	6
Is Bank	8	6	2
Vakifbank	109	93	16
IBRD	**34**	**19**	**15**
TKB	11	1	10
TSKB	23	18	5

[3] Izbank signed its loan with EBRD 14 months after the first four loans, and is therefore behind the curve in developing its portfolio.

Banks	Count of Projects		
	TOTAL (incl.)	EE	RE
IFC	**53**	**53**	
Finans Leasing	22	22	
Yapi Kredi Leasing	31	31	
Grand Total	**430**	**375**	**55**

If we follow the dynamics of the investments in CTF supported funds, we can see (Figure 5) that the funds invested in RE and EE increased significantly after the inception of the CTF program (2009). The figure clearly displays the contribution of the CTF to the EE/RE financing of the partner banks. Whereas the number of projects financed remained steady (which is due to the administrative capacity of the banks to process certain number of projects at a time), the EE/RE amounts invested increased substantially. We can also see that the investments in EE outweigh the investments of RE towards the end of the period, indicating a change of focus by the banks from RE to EE, as they gradually realize the huge potential of the EE market.

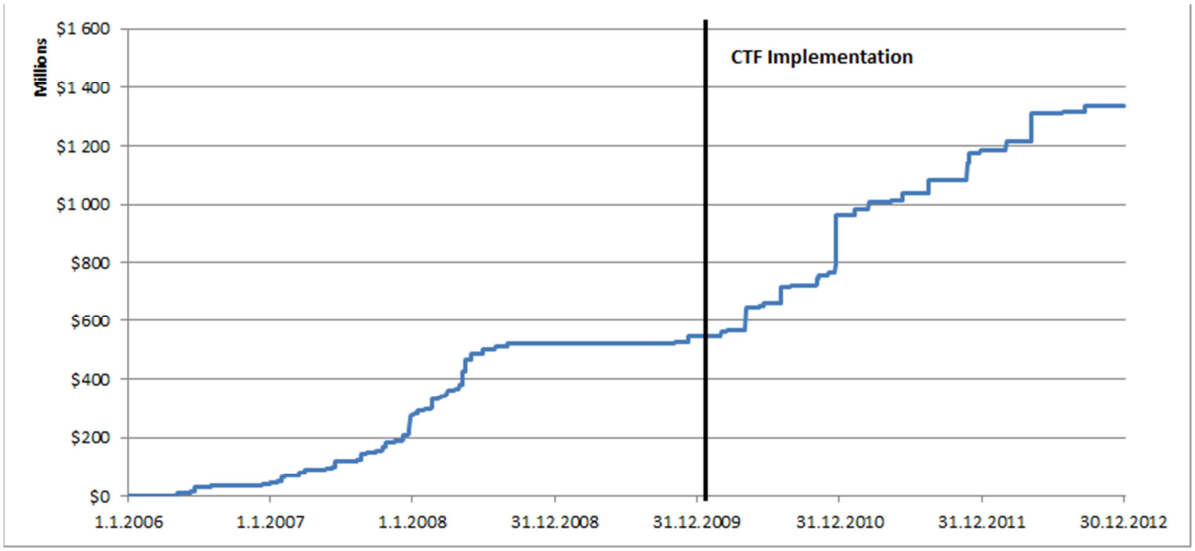
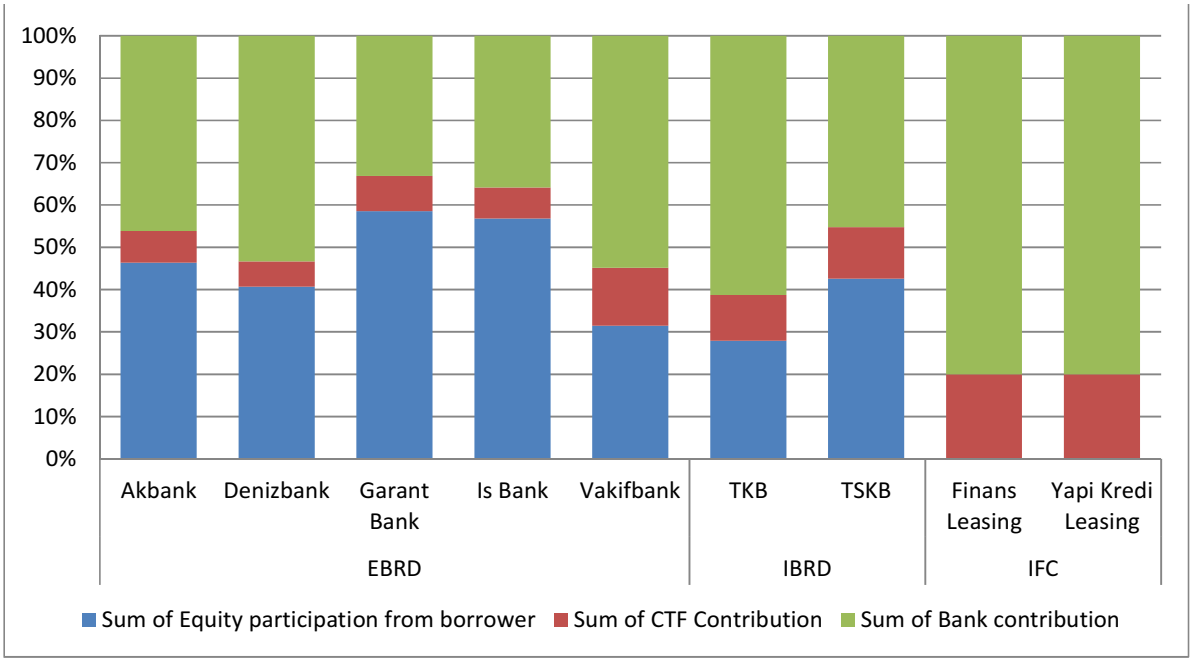


Figure 5: Timeline of Cumulative Project Investments[4]

One of the key contributions of CTFs is that banks have an incentive to blend them with their own funds or with funds provided by their sponsor IFIs. We can see (Figure 6) that one dollar from CTF leveraged project investment 9–10 times more than the CTF amount (3 to 6 times more equity investment). The only exceptions are the two IFC partners—lease companies, where the lessees do not put any equity in the projects. In those cases, CTF leveraged 4 times more lease

[4] Source: Project data provided by the partner local financial banks and leasing companies. Includes both EE and RE projects.

Investment. Figure 6, below, displays the aggregated breakdown of the project investments by sources of funding.



Note: Bank Contribution means IFI Loan, disbursed through the local bank

Figure 6: Project Investment Breakdown by Sources of Funding

To sum-up, in dollar terms, the impact of CTF (supported by the three partner IFIs) is outstanding. What is even more important is that CTF funds were not only blended with IFI funds but also with funds from the local banks and project sponsors. Although the Turkey EE/RE market is significant, leveraged investment of close USD 1.4 billion vs. USD150 million invested by CTF is quite an achievement.

2.2.2 CTF Impact by Type of Projects (EE/RE)

When we look at the type of investments financed by type of project, we see an overall balanced CTF supported project portfolio with about 56 percent of the total investments in EE projects and 44 percent in RE projects. The different local banks have different investment focus. Some are more geared towards EE and others towards RE projects. Extreme cases are Vakifbank, with over 92 percent of its CTF supported portfolio invested in EE projects. The IFC supported lease companies have only invested in EE projects.

Figure 7 below, shows the EE/RE investment breakdown by local bank.

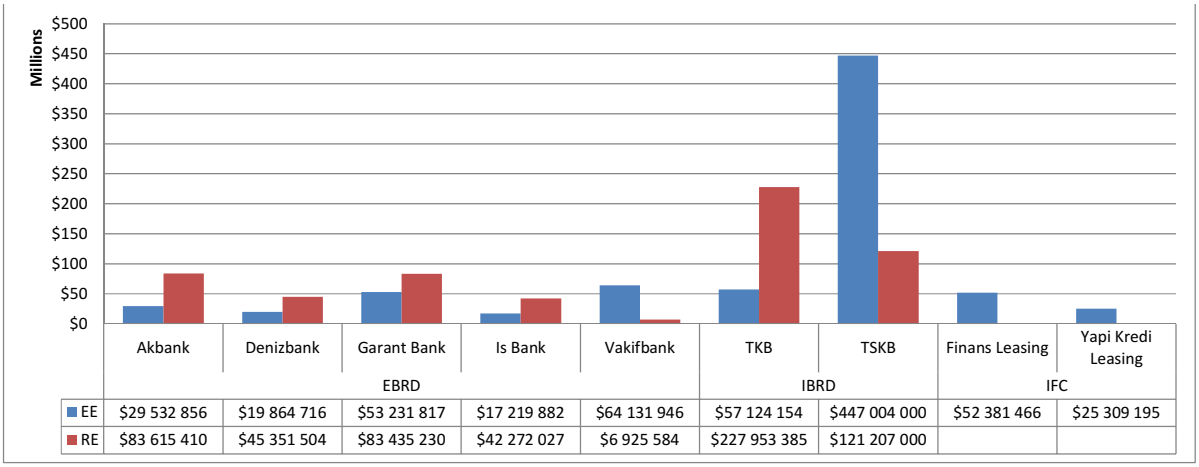


Figure 7: EE/RE Investments by Local Banks

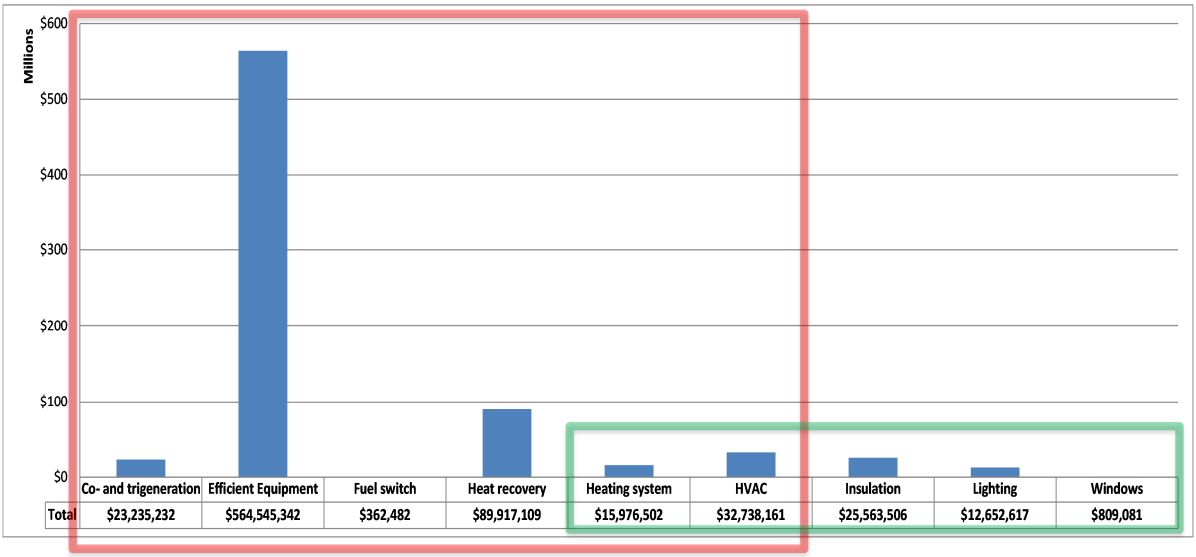
Whereas RE investments were well advanced in Turkey even before the CTF program, it is interesting to see how CTF impacted LFI thinking when it comes to EE/RE investment focus (Figure 5). Since the implementation of the CTF program and IBRD, EBRD and IFC support, based on the disbursement data provided from the local partner banks, we notice a significant increase in EE projects investments. RE investments on the other hand continue at the same pace, compared to the pre-CTF period.

In the last six months of 2012, RE investments have slowed down, whereas EE investments have continued at the same strong pace. This demonstrates that one of the key impacts of CTF is that there is now a broader investment focus within the partner LFIs, from RE towards EE projects. The partner banks have reported that this is a result of their increased capacity to evaluate, finance and monitor EE projects.

2.2.3 CTF EE Impact by Type of Technology Used

It is impressive to see the difference CTF funds have made to the project focus of LFIs. After the start of the CTF program, local partner banks quickly saw the attraction in EE projects to replace old equipment with more efficient models and in waste heat recovery projects. There is a substantial increase in investment in such projects compared to 2008, whereas the investments in the other technologies increased at the pre-CTF pace.

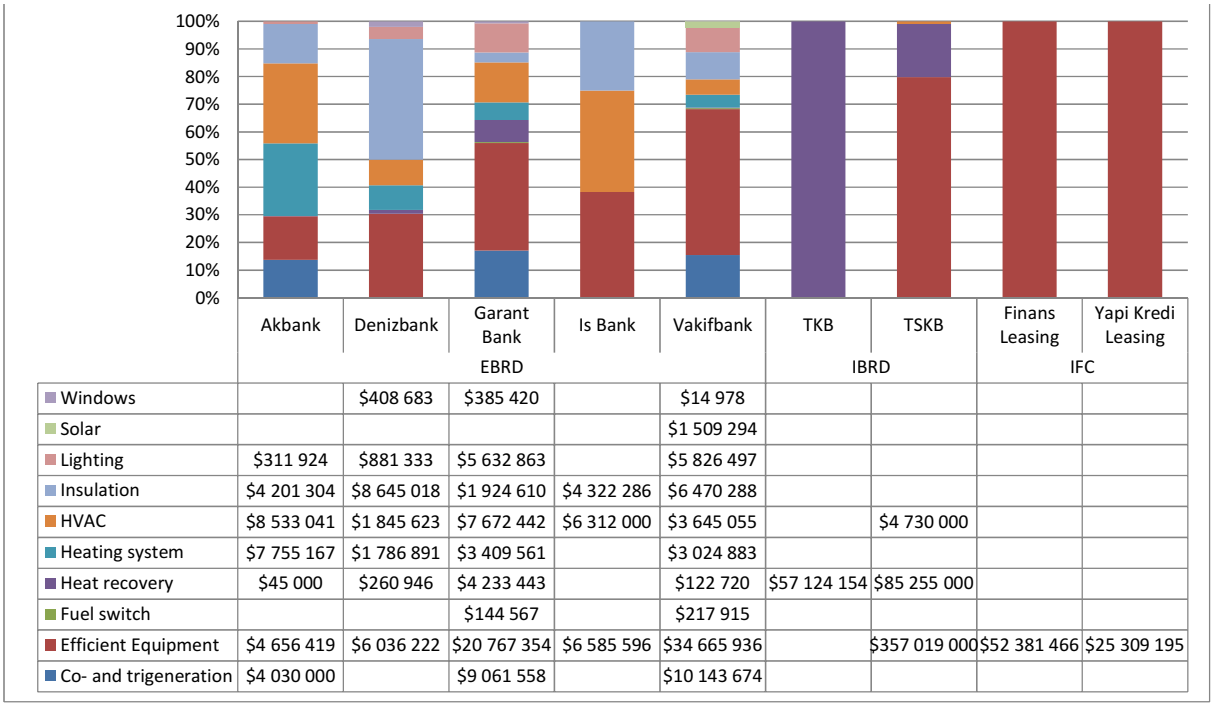
In the EE sector, CTF funds have been mostly used to finance projects to replace old equipment, with new more efficient models. Figure 8 displays all aggregated information about the types of EE projects financed with CTF funds. Projects investing in efficient equipment are 66 percent of the total CTF EE portfolio, followed by waste heat recovery projects at 19 percent. All other types of EE projects have less than a 15 percent share in the portfolio. Such breakdown shows an industrial focus of the EE investments (red box in Figure 8), with the residential EE market (green box) very much under-represented.



	Co- and trigeneration	Efficient Equipment	Fuel switch	Heat recovery	Heating system	HVAC	Insulation	Lighting	Windows
Total	$23,235,232	$564,545,342	$362,482	$89,917,109	$15,976,502	$32,738,161	$25,563,506	$12,652,617	$809,081

Figure 8: EE Investments Breakdown by Technology

Figure 9 clearly shows how each of the LFIs built their EE portfolio.



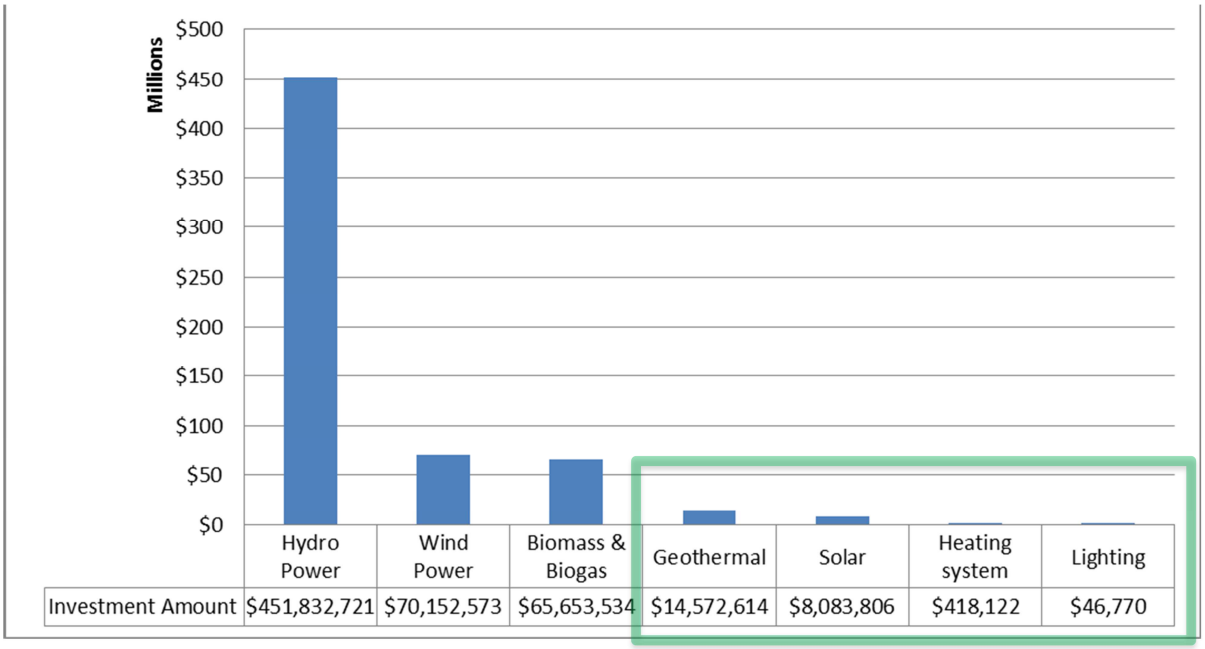
	Akbank	Denizbank	Garant Bank	Is Bank	Vakifbank	TKB	TSKB	Finans Leasing	Yapi Kredi Leasing
	EBRD					IBRD		IFC	
Windows		$408 683	$385 420		$14 978				
Solar					$1 509 294				
Lighting	$311 924	$881 333	$5 632 863		$5 826 497				
Insulation	$4 201 304	$8 645 018	$1 924 610	$4 322 286	$6 470 288				
HVAC	$8 533 041	$1 845 623	$7 672 442	$6 312 000	$3 645 055		$4 730 000		
Heating system	$7 755 167	$1 786 891	$3 409 561		$3 024 883				
Heat recovery	$45 000	$260 946	$4 233 443		$122 720	$57 124 154	$85 255 000		
Fuel switch			$144 567		$217 915				
Efficient Equipment	$4 656 419	$6 036 222	$20 767 354	$6 585 596	$34 665 936		$357 019 000	$52 381 466	$25 309 195
Co- and trigeneration	$4 030 000		$9 061 558		$10 143 674				

Figure 9: EE Investments Breakdown by Financial Intermediary and Technology

2.2.4 CTF RE Impact by Type of Technology

As expected, in the total CTF supported RE portfolio, hydro power projects are most prominent (Figure 11), followed by wind power projects. This is normal, given the number of licenses for hydro and wind EMRA has issued to date and the huge interest in hydro investment in Turkey.

Biomass and biogas RE projects have been aggregated in one category, which ranks third highest in terms of investment volume.



	Hydro Power	Wind Power	Biomass & Biogas	Geothermal	Solar	Heating system	Lighting
Investment Amount	$451,832,721	$70,152,573	$65,653,534	$14,572,614	$8,083,806	$418,122	$46,770

Figure 10: RE Investments by Technology

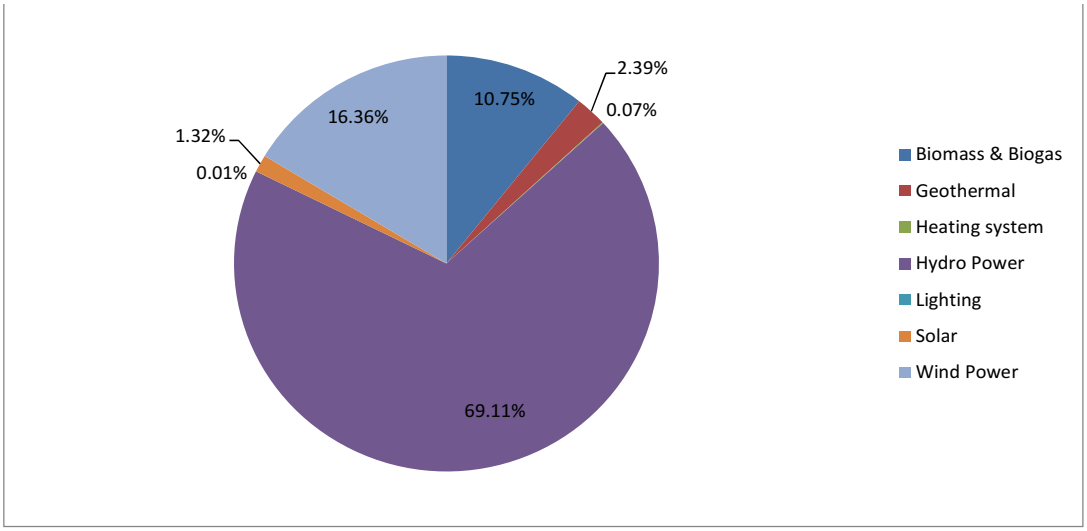
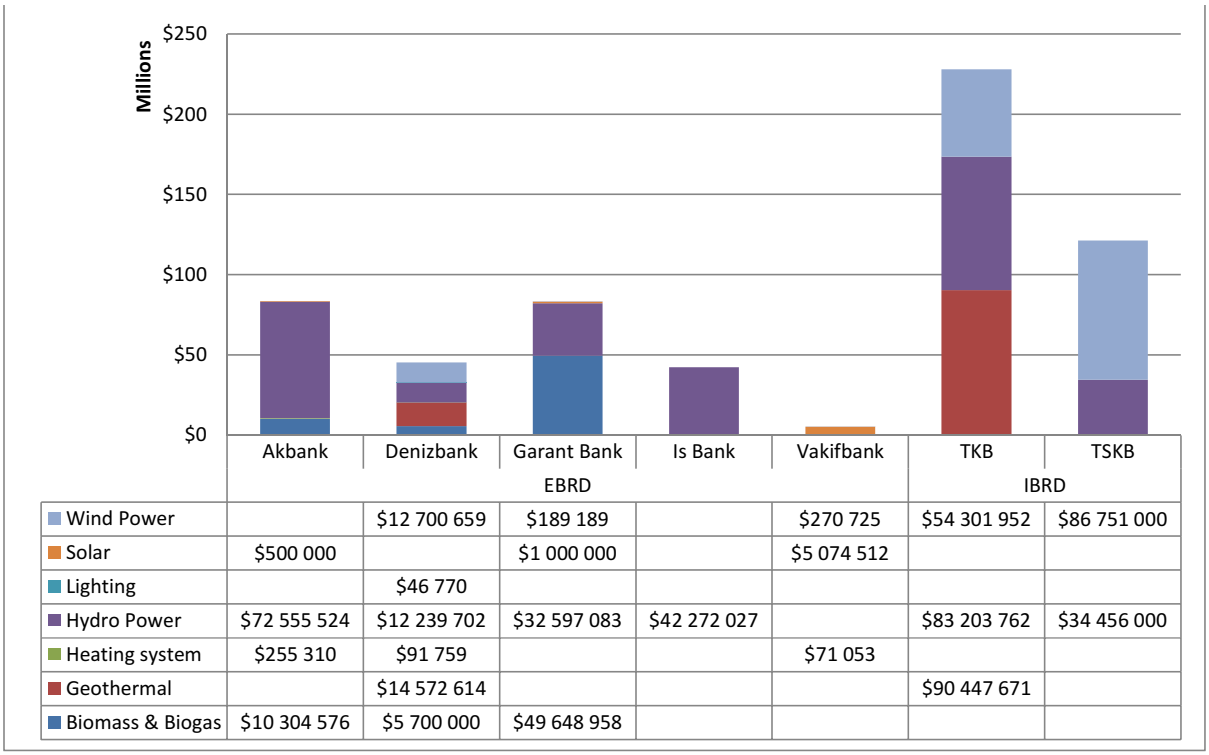


Figure 11: RE Investments Breakdown by Technology

Nearly all local banks have been heavily involved in financing hydro power projects in the last several years. The only exception are the IFC supported lease companies, which have invested only in EE projects and the EBRD-supported Garanti Bank, which has also invested significantly in biomass & biogas projects.



	Akbank	Denizbank	Garant Bank	Is Bank	Vakifbank	TKB	TSKB
	EBRD					IBRD	
Wind Power		$12 700 659	$189 189		$270 725	$54 301 952	$86 751 000
Solar	$500 000		$1 000 000		$5 074 512		
Lighting		$46 770					
Hydro Power	$72 555 524	$12 239 702	$32 597 083	$42 272 027		$83 203 762	$34 456 000
Heating system	$255 310	$91 759			$71 053		
Geothermal		$14 572 614				$90 447 671	
Biomass & Biogas	$10 304 576	$5 700 000	$49 648 958				

Figure 12: RE Project Investments by Technology by Bank[5]

From the project information provided by the local banks, it is evident that investments in hydro power projects continue to be strong. However, some of the banks have already indicated that they are planning to shift their focus in 2013 towards solar and geothermal.

The cumulative design capacity financed to date is as follows:

- Biomass & biogas projects – 39.25 MW
- Geothermal projects – 41.5 MW
- Hydro power projects – 118.64 MW
- Wind power – 92.37 MW

2.2.5 CTF Environmental Impact

One of the key CTF objectives is the promotion of sustainable development, through rational use of energy. In the context of Turkey, this matches with the government's heavy focus on reducing the country's dependence on energy imports.

[5] In the figure "Lighting" refers to solar PV powered lighting.

Since the program's inception, CTF has contributed to saving over 2 million tons of CO_2 equivalents, on an annual basis. If calculated based on the entire lifespan of the projects, the CTF funds are expected to contribute to saving more than 43 million tCO_2eq.

Table 4: Annual Savings per Bank

	Annual electricity saving/generation [MWh/year]	Annual thermal savings/generation [MWh/year]	Annual CO_2 savings
EBRD	**927,459**	**448,908**	**783,788**
Akbank	135,542	98,597	111,530
Denizbank	106,853	118,924	98,299
Garant Bank	438,332	29,050	299,376
Is Bank	90,711	229,520	166,779
Vakifbank	156,021	-27,183	107,803
IBRD	**2,086,925**	**718,084**	**1,513,832**
TKB	977,052	0	641,215
TSKB	1,109,873	718,084	872,617
IFC	**62,072**	**0**	**29,732**
Finans Leasing	21,718	0	10,403
Yapi Kredi Leasing	40,354	0	19,329
Grand Total	**3,076,456**	**1,166,991**	**2,327,352**

To better understand the source of these CO_2eq. emissions reductions, Figure 13 provides information about the electrical savings/generation and the thermal savings made by bank. In this figure, we summarized both EE and RE projects. Electrical energy savings and energy generation were aggregated in the blue bars and thermal energy savings are shown in the red bars.

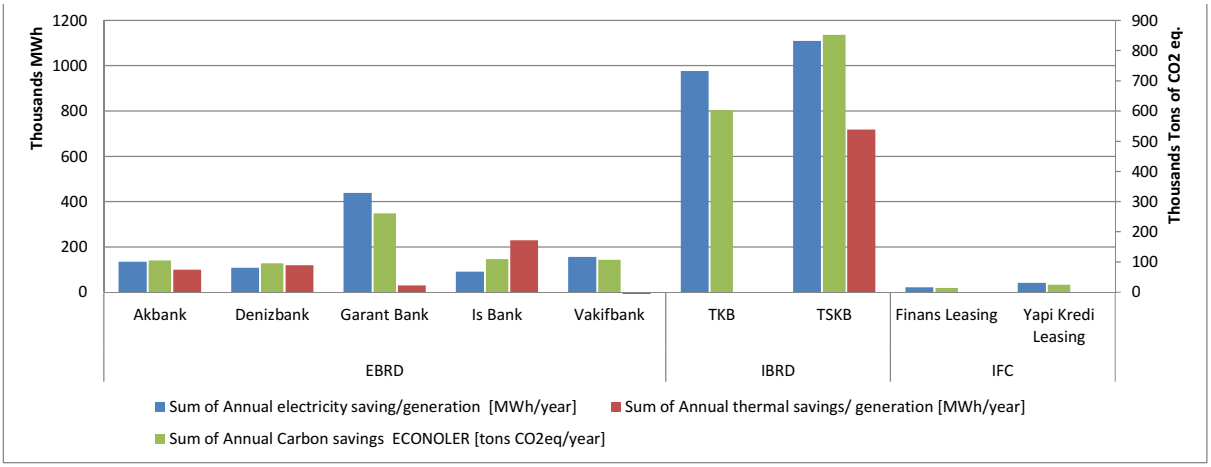


Figure 13: Annual Electrical, Thermal and Carbon Saving by Bank

An interesting aspect of the assessment is the expected annual CO_2eq. savings per dollar project investment (and CTF investment). This calculation includes both EE and RE projects. In total, the CTF portfolio is expected to achieve 1.59 kg of CO_2eq. savings per dollar project investment or 14.61 kg CO_2eq. savings per dollar CTF investment. Figure 14, below, shows these values broken down by local bank. When interpreting the figure, it should be remembered that portfolios predominantly invested in RE will have higher energy generation ("savings") and higher CO_2eq. emissions reductions, when compared to portfolios mainly invested in EE projects.

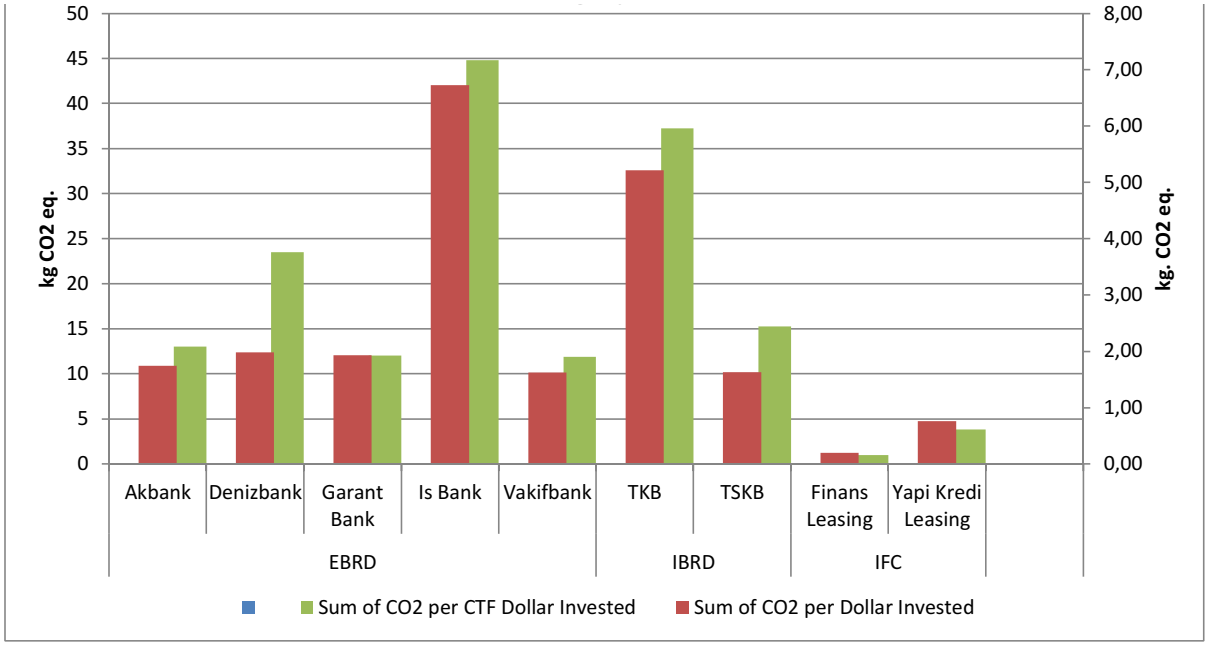


Figure 14: CO_2 emissions reductions per dollar investment

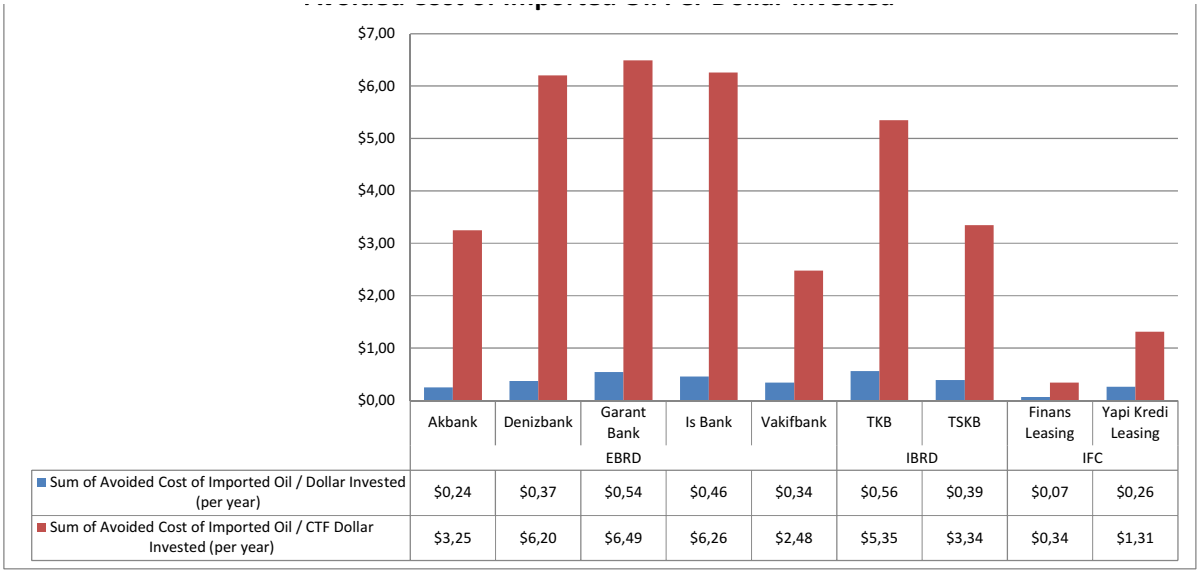
Apart from the huge reduction in CO_2eq. emissions, the CTF portfolio achieves significant annual savings of primary energy

Table 5: CTF Annual Primary Energy Savings & Avoided Cost of Imported Oil

	Sum of Annual Primary Energy Equivalent Savings [toe]	Sum of Avoided Cost of Imported Oil [USD]
EBRD	**280,257**	**$176,561,961**
Akbank	43,795	$27,590,609
Denizbank	38,067	$23,982,228
Garant Bank	116,709	$73,526,884
Is Bank	43,371	$27,323,490
Vakifbank	38,315	$24,138,749

	Sum of Annual Primary Energy Equivalent Savings [toe]	Sum of Avoided Cost of Imported Oil [USD]
IBRD	**605,512**	**$381,472,307**
TKB	254,580	$160,385,304
TSKB	350,932	$221,087,003
IFC	**16,173**	**$10,189,242**
Finans Leasing	5,659	$3,565,098
Yapi Kredi Leasing	10,515	$6,624,143
Grand Total	**901,942**	**$568,223,509**

It is clear that the CTF supported project investments contribute to avoided imports of 902 million toe or USD 568 million **per annum**, which is a sizeable step towards less reliance on energy imports for Turkey.



	Akbank	Denizbank	Garant Bank	Is Bank	Vakifbank	TKB	TSKB	Finans Leasing	Yapi Kredi Leasing
	EBRD					IBRD		IFC	
Sum of Avoided Cost of Imported Oil / Dollar Invested (per year)	$0,24	$0,37	$0,54	$0,46	$0,34	$0,56	$0,39	$0,07	$0,26
Sum of Avoided Cost of Imported Oil / CTF Dollar Invested (per year)	$3,25	$6,20	$6,49	$6,26	$2,48	$5,35	$3,34	$0,34	$1,31

Figure 15: Primary Energy Saved & Avoided Cost of Imported Oil per Bank

Another interesting finding from this assessment is that investing in EE is much more cost efficient and a much more sizeable step towards energy independence. It is clear from the table below, that EE projects like Insulation, replacement of old equipment with energy efficient one, waste heat recovery, cogeneration, etc. have the greatest impact on Turkey's energy independence(i.e. primary energy savings per dollar invested). This is a critical finding that indicates that Turkey should emphasize EE investments in order to reduce reliance on and cost of energy imports.

Table 6: Primary Energy Savings per Dollar Invested

	Investment Amount in USD	Primary Energy Savings in MWh/year	Annual Primary Energy Savings (kWh) / Dollar Invested
EE	$765,800,032	4,583,891	5.99
Insulation	$23,235,232	213,231	9.18
Heat recovery	$507,421,188	2,051,270	4.04
Co- and trigeneration	$362,482	320	0.88
Efficient Equipment	$147,041,263	1,643,120	11.17
Heating system	$15,976,502	66,445	4.16
Lighting	$32,738,161	70,564	2.16
HVAC	$25,563,506	503,508	19.70
Windows	$12,652,617	34,398	2.72
Fuel switch	$809,081	1,036	1.28
RE	$610,760,140	3,431,797	5.62
Biomass & Biogas	$65,653,534	906,555	13.81
Geothermal	$105,020,285	888,636	8.46
Heating system	$418,122	3,135	7.50
Hydro Power	$277,324,098	1,112,606	4.01
Wind Power	$46,770	115	2.45
Lighting	$8,083,806	19,189	2.37
Solar	$154,213,525	501,560	3.25

2.3 IMPACT OF CTF ON THE PARTICIPATING BANKS (THE INFLUENCE OF CTF ON THE BANKS' EE/RE LENDING BUSINESS)

2.3.1 TKB

The CTF program directly and significantly improved the bank's EE/RE lending business. To date, TKB has financed 1 EE project (EE loan of USD 41 million) under the CTF program and 5 EE project with TKB's own funds (EE loans of USD 84 million). In the RE area, TKB has financed a total of 10 RE projects with CTF support (RE loans – total USD 159 million) vs. 34 RE projects with TKB's own funds (RE loans – total USD 751 million). All this indicates the substantial impact of CTF on TKB's overall EE/RE financing.

TKB was allocated USD 30 million from CTF in addition to a USD 150 million IBRD loan. The USD 30 million CTF allocated to TKB was indeed a very small amount compared to the overall loan portfolio financed via TKB to the investors. In this regard, the CTF loans financed by TKB may not be representative in terms of contributing to the transformation of the Turkish energy sector. Yet, TKB's experience in some of the CTF-financed energy efficiency and renewable energy projects

showed that the low interest CTF loans, with its advantageous terms and conditions, helped the investors finance their projects more rapidly. It also became an important reason for these investors to work with TKB as their financing institution. Although the CTF loans had a small share in TKB's loan portfolio, it created a significant impact in terms of conducting new capacity building activities especially when considered in combination with the use of IBRD loans.

New EE/RE Policies & Procedures Adopted

Prior to the creation of CTF, TKB's project appraisal, implementation and evaluation criteria were mainly based on Turkish laws, regulations and procedures. With the creation of CTF and IBRD loans, TKB started to adhere to international World Bank policies and procedures, in addition to the current local regulations and procedures. The World Bank's environmental and social safeguard policies, which aim to prevent and mitigate undue harm to people and their environment in the development process, became a cornerstone for TKB. These policies provided guidelines for TKB and investors in the identification, preparation and implementation of programs and projects.

Environmental Assessment Team Created

As a starting point, an "Environmental Assessment Team" has been organized among the bank's staff. It is specifically responsible for the preparation and implementation of programs and projects in accordance with the World Bank guidelines and policies. This team, which was composed of civil and chemical engineers, was then expanded by the addition of two new environmental engineers who were specifically assigned to this team. TKB started to screen and set Environmental Assessment issues. Borrowers were advised of the TKB's EA requirements and the adequacy of EA reports were reviewed and determined. TKB effectively started to supervise the implementation of EA/EMP and advised the borrowers of the required changes.

More Effective Projects and Programs Implementation

In addition to the EA issues, the World Bank's safeguard policies for the Social, Cultural, Resettlement, Expropriation and Dam Safety aspects also started to be followed and supervised with great care by TKB staff. For example, TKB staff guide investors when arranging public consultation meetings which are held with the participation of local stakeholders, NGOs, Government Agencies and other individuals. When necessary, TKB staff participates in these meetings which discuss project details and any environmental and social benefits and impacts of the project. The purpose of public consultation meetings is to take into consideration the views and concerns of the local population in relation to the implementation of projects, and thus to avoid or mitigate any negative socio-economic impact or resettlement problems. As a consequence of following the World Bank guidelines, TKB has more transparent policies with regard to the public consultation and civil society participation.

The effectiveness and development impact of projects and programs supported by TKB has substantially increased as a result of attention to these policies. Capacity building activities have been both a result of and in support of the CTF and IBRD loans.

Capacity Building Activities at TKB

The institutional capacity of TKB in managing the CTF has improved as a consequence of the World Bank Safeguards Trainings conducted in 2010 and 2011. Safeguards Trainings comprised of sessions on World Bank environmental, social and legal policies; operational policies versus bank procedures and good practices; as well as general scope of sourcebooks, guidelines and regulatory frameworks with respect to energy investments. Environmental screening and categorization was one of the major topics that formed the basis of a series of questions and discussions. This led to the common understanding of World Bank requirements in relation to the risks and possible implications of diverse projects. The trainings included details on certain tools such as Environmental Assessment and Environmental Management Plans and Resettlement Plans. They also provided "lessons learned" from various cases throughout the world, along with hands-on exercises on training topics.

World Bank safeguard policies were particularly significant in terms of raising awareness of the fact that FIs are a major stakeholder in reducing and managing risks for both the project sponsors and also for the World Bank. Therefore, the trainings have led to a capacity building of the investors in the market.

In the process of applying safeguard policies, TKB was able to meet global standards and urged project sponsors in its portfolio to increase their standards for social and environmental concerns beyond compliance with national environmental legislation.

A third training in the CTF implementation course of included “cumulative impact training” which was focused on the cumulative environmental impacts of hydro power plants to give a general introduction of the concept and implement it in their EE/RE project portfolio. Consequently, TKB requested that its clients prepare cumulative impact assessments for their hydro power investments.

2.3.2 TSKB

TSKB was allocated USD 70 million from CTF with an additional USD 350 million IBRD loan. Although, TSKB had already been disbursing funds from other IFIs before the implementation of the CTF program, the impact of the CTF/IBRD facility on the bank’s EE/RE lending was important, because it was the most substantial EE/RE dedicated financing facility the bank was able to benefit from.

CTF/IBRD Financing was the First to Target EE Projects

Currently, TSKB’s EE portfolio contains 18 projects supported by CTF, blended with other funds. On average CTF’s contribution to the EE loans, compared to other IFI financing sources, is about 18 percent, achieving leverage of over 5 times. The currently breakdown of the TSKB’s EE portfolio by IFI source of financing is as follows:

Table 7: TSKB – Share of IFIs in EE Portfolio

Source of funds	Share in the EE portfolio of TSKB %
IBRD REL II	48.60
CTF	17.58
AFD	12.86
KfW	11.39
EIB	5.92
IFC	3.65

Capacity-Building Activities at TSKB

TSKB joined each of the trainings mentioned above for TKB, with their internal safeguards team. TSKB had its own session in the 2010 training, presenting the safeguard issues from an FI perspective. Along with the increased capacity through the World Bank trainings, TSKB has been implementing the Safeguards Policies of the World Bank with care. It has presented annual monitoring reports on its hydro power portfolio, which constitute a sensitive issue for the World Bank given the social and environmental concerns in this field. The World Bank also undertakes on-site audits of the hydro power sites with TSKB experts. This is another means of capacity-building for TSKB, so that it can further understand the perspectives behind the safeguards polices of the World Bank.

One of the strengths of TSKB in managing IFI loans is the environmental risk evaluation tool that the bank developed with KfW support in 2007. The tool was upgraded for increased sensitivity in 2010, along with the implementation of IBRD loans including CTF. As a result of its concerted efforts to evaluate and manage the social and environmental risks of its investment projects, TSKB received “Sustainable Bank of the Year Award” in the “Eastern Europe” category for the first time in 2008 and subsequently in 2009 and 2010 in an event jointly organized by IFC and the Financial Times.

With the positive contribution of the CTF program, the TSKB’s EE/RE portfolio increased substantially. Under the CTF program, the bank financed 18 EE projects (EE loans – total USD 247 million) and 5 RE projects (RE loans – total USD 91 million). The experience of financing these projects contributed to financing another 26 EE projects with TSKB’s own funds (EE loans – total USD 271 million) and 95 RE projects (RE loans – total USD 1.295 million).

Again, this is a clear indication that despite the modest financial contribution of CTF to EE/RE financing contribution, the impact of the program goes far beyond financial support.

2.3.3 Capacity building of the EBRD Supported Banks (Akbank, Denizbank, Garanti Bank, Is Bank, Vakifbank)

Team of Consultants Supported by EU Grant

Given the fund available for several SMEs, EBRD used a different model of capacity development, which involved a group of consultants who trained and assisted both the partner banks and also the beneficiary companies. Funding for technical assistance and training for implementation of both TURSEFF and MidSEFF facilities are provided by European Union under the EU IPA 2009 allocation of EUR 7 million. According to The EBRD consultants, a significant technical capacity has been established at the level of the branches and that partner banks. They are now capable of identifying energy efficiency projects, lending operations and associated procedures (legal, environmental, etc.) without the assistance of consultants.

TURSEFF engaged in substantial capacity building with partner banks (Akbank, Denizbank, Garanti bank, Is Bankasi and Vakıfbank). Training was held during the inception phase between July and December 2010.

In-Branch Coaching Sessions

In order to maintain smooth operation of the facility, EBRD provided significant help to the local banks through on-the-job trainings such as in-branch coaching. Since January 2011, TURSEFF has conducted regular “in-branch” coaching sessions in all partner bank branches, especially outside of Istanbul. These coaching sessions focused on how to identify and assess potential TURSEFF projects. More than 100 branches were involved in this type of coaching. This has been the most effective method of capacity building, when compared to workshops and seminars.

Capacity Building Workshops

TURSEFF also conducted a large number of workshops for engineers and business owners, both independently and in cooperation with partner banks. Several workshops took place in industrial zones in Turkey. More than 300 participants were reached this way. In four cases, the seminars were followed by walk-through audits (hands-on training of local engineers) at up to 10 companies in each of the zones.

TURSEFF conducted capacity building workshops on the energy efficiency business model for clients of partner banks. For each partner bank (with the exception of Is Bank), four such workshops have been carried out since the beginning of the project. In total, there have been more than 500 participants.

TURSEFF conducted capacity workshops with Business Associations as well, addressing the specific requirements of the relevant industry sectors. Industry sectors addressed include Tourism, Textiles, Metal Processing, as well as some general pan-sectorial associations. In these seminars the business model and the most suitable technical solutions were discussed. In all, more than 500 people have participated.

Supplier Events

Along with the capacity development activities of EBRD, the TURSEFF consultants also act as a reliable source of knowledge and information, particularly for SMEs that are, in general, easily misled by other actors in the sector, such as machinery and equipment dealers. Such technical assistance is provided free of charge due to the EU grant.

TURSEFF conducted two major supplier events. It shared suitable technical and financial models of sustainable energy financing, and provided a platform of exchange between potential investors, technology suppliers and TURSEFF partner banks. Each event attracted more than 100 suppliers as well as several investors.

Apart from the above-mentioned formal capacity-building sessions, TURSEFF conducted walk-through audits in more than 40 companies in Turkey. It worked closely with company personnel in the assessment and solution development process.

Partner Banks Started Forming Environmental Assessment Groups

In parallel to extensive technical support received for SME EE projects, partner banks have gained considerable experience in environmental compliance issues, related mainly to RE projects. Technical assistance in this respect was focused on EBRD environmental standards and procedures, such as project screening and requirements for compiling the Environmental and Social Action Plans.

Is Bank established a desk for handling environmental issues in RE investments, and observed in a short time that its clients have become more familiar with international standards for environmental and social concerns and thus more capable of meeting both national and international requirements.

Inspired by TURSEFF and MidSEFF processes, Garanti Bank has established a “sustainability committee” that coordinates assessments of environmental and social risks and formulates mitigation and monitoring plans. Garanti Bank also hires and manages independent consultant groups. Garanti developed the consultants’ environmental lending procedures along with their model for environmental risk evaluation. Garanti requests Environmental Action Plans from its project sponsors when significant environmental risks are a concern. Environmental and Social Impact Assessments are a required as an annex of loan agreements. Garanti Bank’s well-executed communication with project sponsors enables them to keep their market share with an increased the amount of environmental processes.

2.3.4 IFC’s Capacity Building Support for CTF Clients

Both leasing clients received training and continuous ad-hoc support from the IFC internal team (through emails, phone calls, meetings) when selecting/evaluating deals. They have also conducted their own internal capacity building using our training materials. In addition, they engaged local consultants to support them while booking/processing EE deals.

IFC's leasing clients received capacity building training and continuous ad-hoc support from the IFC internal team (through emails, phone calls, meetings). Both leasing companies (Yapi Kredi Leasing and Finansleasing) have also conducted their own internal capacity building using IFC's training materials. In addition, companies engaged local consultants to support them while booking/processing EE deals.

The capacity building exercise was provided by IFC in-house team in the form of full-day training with goal to educate FL officers about benefits of EE and RE and to help them utilize EE/RE credit line. Training was provided in English and Turkish and total audience reached over 70 participants. The training consisted of the few parts – EE improvements theory and EE measures, Renewable Energy Technologies, Marketing of EE and eligibility criteria and reporting requirements. Following topics under training were covered:

Theme I - Energy Efficiency/Renewable Energy Technologies

- Part 1: EE improvements theory: Energy versus Services, what we need from energy and implication to EE, Energy chain – from source thorough transformation to final use, SMEs and Energy, examples based on client portfolio, Measures to save energy (still from technical point of view), Heat sources, Renewable Energy, Building Constructions+ Lighting, Production, Transport, Renewable Energy technologies, main features, examples, Wind energy, biogas, small hydro, solar, geothermal
- Part 2: Economy of Energy Efficiency: Theory of calculation of savings, Energy audit, simpler methods, Financial indicators – payback period, cash-flow, NPV, IRR, Cost structure

Theme II - Market &Marketing of EE

- Market conditions in Turkey, Financial Products + Measures, Target groups and channels, Examples of marketing campaigns from CE and EU, Messages to be delivered, motivations of end-users, what to say when visiting clients

Theme III - Eligibility criteria and reporting requirements

2.4 IMPACT OF CTF ON THE MARKET (THE CONTRIBUTION OF CTF TO THE TOTAL DEVELOPMENT OF THE EE/RE MARKET)

2.4.1 Key Legislative Changes in Turkey prior to and during the Period of CTF Disbursement

Although, it cannot be attributed to the CTF or other renewable energy financing, major legislative improvements during CTF implementation in Turkey are highlighted below to give insight to the legal framework available at the time of CTF implementation.

Table 8: Major Legislative Improvements during CTF Implementation in Turkey

Date of Legislation	Title of Legislation
May 2005; amended December 2010	Law on Utilization of Renewable Energy Resources for the Propose of Generating Electrical Energy
October 2005; amended July 2011	Certification and Support of Renewable Energy Resources
2007	Energy Efficiency Law
2008	Energy Efficiency By-Laws › By-Law on Increasing Energy Efficiency for the Utilization of Energy and Energy Intensity › By-Law on Supporting Energy Efficiency of SMEs
December 2010	By-law on Electricity Market Tariffs

Amendments, based on experience with renewable energy investments, were made to the major RE legislation in 2010. This mainly affected the Law on Utilization of Renewable Energy Resources for the Propose of Generating Electrical Energy (RE Law), first enforced in May 2005. Such amendments have led to new regulations regarding the sale price and incentive mechanism of the electrical energy generated by the license holders. The Law provides price incentives based on renewable resource types and, encourages the use of mechanical and/or electro-mechanical parts manufactured in the local market with a bonus.

The RE Law also introduced the Renewable Energy Resources (RER) Support Mechanism. Producers are provided the advantage of the price incentives specified in the Law by participating in RER Support Mechanism, which is updated on an annual basis. In this framework, electrical energy generated from renewable energy resources is purchased at prices defined in the Law by suppliers with respect to their shares in the sale market. Producers are not obliged to contribute to the RER Support Mechanism, and the producers that do not want to participate in the mechanism may sell the energy they produce through bilateral agreements, or in the balancing and settlement market. The Law also brought forth provisions authorizing EMRA to audit the electricity production and distribution plants. Accordingly, EMRA may audit the electricity production and distribution plants by itself or may engage audit companies to do so. Procedures and principles related to this practice shall be governed by a regulation to be issued by EMRA.

With the regulation published in the Official Journal No. 27802 on December 31, 2010, a series of key amendments were made in the Electricity Market Tariffs Regulation. Along with the amendments made in the Regulation, other necessary amendments were also made in the related Communiqué. In this context, some regulations and amendments were made in the Regulation and Communiqué.

The major legislative framework for energy efficiency measures in industry is the Energy Efficiency Law of 2007 and its two by-laws of 2008: By-Law on Increasing Energy Efficiency for the Utilization of Energy and Energy Intensity and the By-Law on Supporting Energy Efficiency of SMEs including Training, Audit and Consultancy Services. According to the law, it is compulsory for the industrial plants consuming at least 1,000 toe per year to assign one of their employees as the "energy manager." For industrial establishments consuming more than 50,000 toe per year, they are required to set up an energy management unit. The companies are obliged to report on their energy management activities to DGRE. Industrial plants consuming more than 1,000 toe per year, and power plants with at least 100 MW of installed capacity must also report on energy consumption.

2.4.2 Development of the EE/RE Market and CTF's Contribution

It is difficult to untangle the role of the CTF program and market development in the growth of EE/RE lending by LFIs. This can more easily be assessed for the RE market, where the timeline of RE projects licensing can indicate market development and can be compared with the number of projects financed by LFIs.

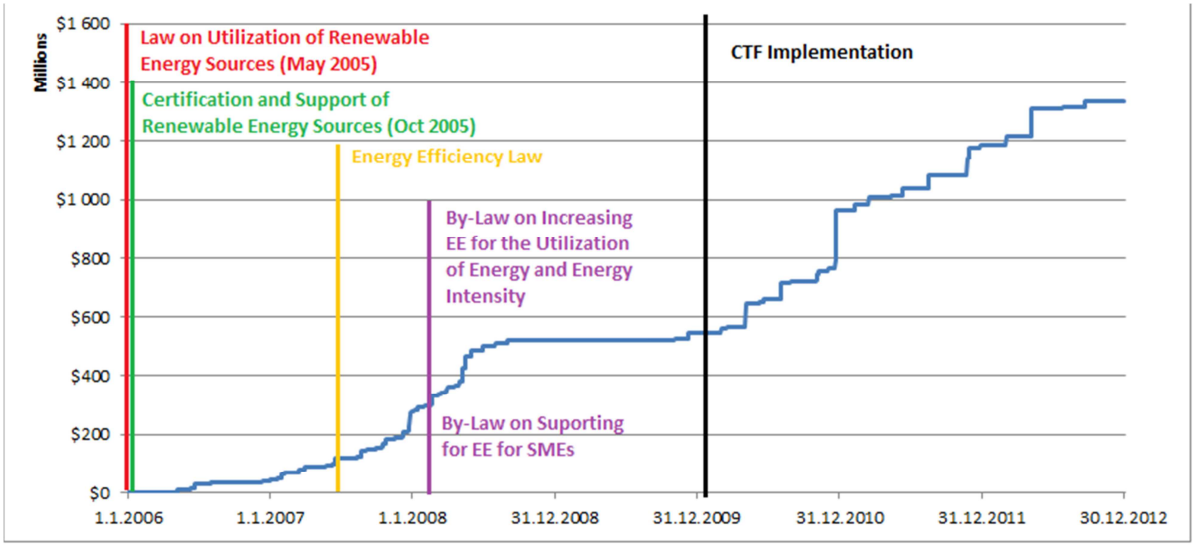


Figure 16: Timeline Development Project Investments[6]

[6] Source: Project data provided by the partner local financial banks and leasing companies. Includes both EE and RE projects.

When comparing the CTF RE portfolio vs. RE market development (measured through the licensing process of EMRA), we can conclude that CTF financed about 4.7 percent (in terms of numbers of projects) of the licensed RE projects. Of all 1160 RE licenses issued by EMRA, CTF financed 54 RE projects.

The RE sector is more mature than the EE sector, in terms of marketing, lending procedures, legislative framework and technical capacity at the level of project sponsors.

The impact of CTF in the RE field was limited because a large number of licenses for the larger scale hydro power investments were available during the period of fund implementation. The majority of larger and medium scale hydro power projects had already been financed via various schemes. Remaining small and mini hydro projects are less likely to apply for international financing. One reason is their insufficient credibility with banks. Some CTF partner banks have been discouraged by the international management and monitoring requirements for hydro power projects due to their social and environmental impacts.

It is practically impossible to compare in the same manner the development of the EE market with the development of the CTF EE portfolio.

In interviews with the local partner banks, the banks indicated that the success of CTF in financing RE and EE projects is due to a large extent to the lower interest rate of the CTF loans. This allowed successful blending of CTF with other (more expensive) funds to provide well-structured, reasonably-priced loans and create awareness in the EE and RE markets. As a result of this and the marketing efforts of the banks, the number of companies who directly apply for the funds is increasing gradually.

The majority of banks entered the energy sector with TURSEFF. Initially the banks did not have environmental screening tools, and they were assisted extensively by TURSEFF consultants. TURSEFF partner banks, as well as TKB and TSKB, indicated that due to CTF, they could offer their client loans with longer maturities at competitive interest rates, compared to non-CTF supported loans.

TURSEFF partner banks used the price advantage of CTF effectively. They preferred increasing their client base on the basis of competitively priced loans, rather than aiming to increase profit margins for the banks. This resulted in a larger volume of projects in the EE sector which is more difficult for the banks to market as compared to the RE sector.

Akbank was the first bank to fully utilised the TURSEFF funds. The bank quickly used up its EBRD loan allocation by financing a large number of EE projects, and requested an additional USD 25 million in funding from EBRD to finance the remaining pipeline. This was approved by EBRD in July 2012 and disbursed quickly without any concessional funding associated with it.

For Garanti bank, EBRD/CTF offer was the first program that enabled them to have competitive loan prices. The cost of EBRD stand-alone loans was not very competitive before the CTF program started. The CTF program enabled the bank to develop their project financing division and, as a result, the share prices of the bank appreciated.

In general TURSEFF opened doors for the partner banks in terms of new financing schemes with other IFIs, such as EIB and IFC, and in terms of new loans. TURSEFF also helped some of the banks enter the energy market in the first instance.

This has been reinforced by the subsequent interest by these banks in taking funds from EBRD for the financing of projects outside the boundaries of TurSEFF.

Similarly, it has been observed that non-CTF lines such as AFD loans disbursed through Halkbank enabled the bank's entry into the market, despite the challenges faced in marketing EE projects to SMEs. Halkbank reports that the majority of its EE project clients at the beginning of the scheme were SMEs at the technology upgrading and restoration stage. Along with the extensive capacity building and awareness-raising during the disbursement of funds, companies now take advantage of EE benefits and green their image. Halkbank received extensive capacity building support from AFD in terms of loan management and tools used to measure the GHG mitigation ratios of investments financed.

2.4.3 Assessment of the Monitoring & Evaluation system in Turkey

There is no integrated and systematic M&E mechanism for the impact of climate finance in Turkey, a reflection of Turkey being a fore-runner in implementing large volumes of climate finance. It is nevertheless possible to piece together data from inventories, databases and the portfolio-based monitoring systems used by National Banks and EBRD, as part of their commitment to CTF and non-CTF operational guidelines. This allows us a meaningful evaluation of the M&E Systems of Different Government Institutions.

Section 3.1 briefly provides background information on the legislative and institutional tools and mechanisms used at the level of government agencies. These tools monitor and report on the effects of measures that aim to increase the use of RE and EE initiatives.

2.5 EVALUATION OF THE M&E SYSTEMS OF DIFFERENT GOVERNMENT INSTITUTIONS

M&E frameworks include a range of indicators that can be assessed with the use of databases and targets set by the country for the CTF. This section sets out Turkey's institutional background in order to identify possible stakeholders in a future M&E system in Turkey. While the current set-up does not provide for a systematic inventory of CTF monitoring, the jurisdiction, capabilities as well as the plans stipulated in strategy papers by the stakeholders indicate that they are planning their roles in the M&E system.

One of the primary stakeholders is the Ministry of Energy and Natural Resources (MENR) which is responsible for legislative, regulatory and monitoring aspects of the energy sector. The Ministry compiles its inventories through its subsidiary organizations such as the General Directorate for Renewable Energy (GDRE, formerly the Electric Power Resources Survey and Development Administration, abbreviated EIE). The Energy Efficiency Strategy Paper for 2012–2023 assigns the GDRE the task of establishing committees and/or working groups by bringing together government

authorities, the private sector and NGOs and working toward the objective of monitoring and evaluation of the Energy Efficiency Strategy.

Another stakeholder emerges with the Energy Efficiency Law that sets the framework for "energy efficiency consultancy companies." GDRE has authorized 19 EE consultancy companies in the industrial sector (as of August 2012).

A more macro-scale player is the Energy Efficiency Coordination Board set up in 2007. The Board is responsible for preparing national energy efficiency strategies, plans and programs and for monitoring their effectiveness.

The Industrial Strategy Paper for 2011–2014 refers to planned action to control, monitor and report GHG emissions on the basis of GHG emissions avoided, and measured with the voluntary carbon trade mechanism.

A promising mechanism for monitoring nationwide improvement in GHG mitigation is the By-law on Monitoring of GHGs, which was enacted in 2012. The By-law is due to implement monitoring in 2015 and reporting responsibilities in 2016. The By-law limits monitoring of energy-intensive industries and sets the rules and regulations for monitoring, verification and reporting of GHG emissions.

The Ministry of Environment and Urbanization (MEU) plays a role in monitoring mitigated carbon emissions by registering voluntary carbon projects developed and implemented to reduce and limit GHG emissions based on reports submitted by project owners.

Turkey's Climate Change Action Plan for 2011–2013 responds to the need for GHG monitoring by underlining the need to revise existing legislation to ensure coordination between legislation issued by different authorities with regard to GHG emissions and increasing energy efficiency. The Action Plan also calls for developing, spreading and registering energy efficiency projects in the industry sector and further developing voluntary collaborations. Capacity building activities for SMEs constitute another part of the Action Plan, with an emphasis on development of new financing models in order to implement energy efficiency. Other action areas in the Action Plan are "promoting voluntary agreements for reducing intensity of GHG emissions" and the "transition to low-carbon intensity in the industrial sub-sectors".

One particular area of concern relates to reporting the impact of energy management efforts on GHG limitation. For this purpose, the Action Plan calls on MENR to cooperate with other stakeholders such as Ministry of Science, Industry and Technology, Ministry of Environment and Urbanization, Ministry of Development, Turkstat, national business associations, NGOs and private sector organizations. This action is planned for 2013–2015. However, indicators and means for assessment and reporting are not in place yet, which means that the system is likely to be delayed.

A reliable and extensive source of information is the local banks financing EE and RE projects, which are required to monitor the projects in the context of their loan agreements with IFIs. In order to have grounds for comparison, there is significant value in communicating IFI monitoring indicators with government stakeholders in order to incorporate these indicators into the planned nation-wide M&E systems.

Table 9 indicates whether the CTF indicators for the RE sector are currently used by the relevant government authorities. While it is possible to find a project-specific database for investments under IFI financing schemes, data availability is highly limited for the main stakeholders assessed here.

Table 9: CTF Indicators for RE Sector

CTF M&E Guidelines / Criteria / Requirements for an M&E system	MENR	Ministry of Development	MEU	IFI Partner Banks
Tons of CO_2e mitigated	No	No	Limited to Carbon Certificates	Yes
Net number of jobs created	No	No	No	Yes
Regulatory arrangements: degree of sufficiency	Yes	No	Yes	No
Capacity to build and operate (public/private companies)	Yes (on-site approval of projects)	No	No	Yes
Capacity to assess and supervise	Yes	Yes	Yes	Yes
MWh generated	Yes	Yes	No	Yes
Cost/GWh renewable energy compared to fossil fuels	Yes	No	No	No
Leverage factors	No	No	No	Yes

Sources: Interviews with representatives of these organizations.

A similar scenario is seen for the EE investments. CTF indicators and the availability of procedures and/or mechanisms in the current institutional set-up for the EE projects are indicated in Table 10.

Table 10: CTF Indicators for EE Sector

CTF M&E Guidelines / Criteria / Requirements for an M&E system	MENR	Ministry of Development	MEU	IFI Partner Banks
Tons of CO_2e mitigated	No	No	No	Yes
Net number of jobs created	No	No	No	Yes
Regulatory arrangements: degree of sufficiency	Yes	No	Yes	Yes
Capacity to build and operate clean production facilities (public/private companies)	Yes (Certified Energy Managers at industrial facilities)	No	No	No
Capacity to assess and supervise	Yes	Yes	Yes	Yes
MWh saved	No	No	No	Yes
Number of new connections for domestic/commercial consumers in rural and urban areas	Yes	No	No	No
Leverage factors	No	No	No	Yes
Knowledge assets	National level	No	No	Project/ Program level

Sources: Interviews with representatives of these organizations.

As seen in the above tables, the current institutional setup at the level of government organizations make an effort to keep track of the positive impacts of both EE and RE projects. Yet, there are strategies and plans to establish monitoring and evaluation systems through coordinated efforts by governmental and non-governmental organizations, in cooperation with the business sector.

In contrast to the amount of information on the government side, the impacts of EE and RE projects are well monitored at project level by financing institutions. Parameters such as CO_2 mitigated in RE projects and energy saved in EE project are estimated using calculation tools and technical assistance from FIs. A general observation is that considerable capacity is being established through the environmental standards and policies imposed as part of loan agreements between IFIs and partner banks, for both CTF and non-CTF lending. However, it is a fact that such achievements are not communicated with government authorities, who cannot provide a basis for comparison of contributions from various efforts. Therefore, even if projects are monitored, the results cannot be accurately attributed overall progress.

2.6 RECOMMENDED FRAMEWORK FOR AND INTEGRATED M&E SYSTEM FOR EE/RE INVESTMENTS IN TURKEY

2.6.1 Indicators of M&E

In the process of assessing the impacts of CTF for the purpose of this report, it is possible to observe several challenges that limit comparison of what has been achieved: lack of a baseline, limited availability of current data with limited disaggregation, complexities associated with multiple stakeholders and multiple funding mechanisms by different resources, etc. This brings us to the need for an integrated M&E system for EE/RE investments that can be used as a decision-making tool for the design of future financing schemes.

The preceding sections of this report show that stakeholders (ministries and local banks) seem to pay some attention to the impact of the projects in terms of the quantity of energy saved or produced. They also care about investment and production cost (per MWh installed and per MWh produced or saved), with an analysis of projects cost-effectiveness.

Especially with regard to EE projects, this is an essential issue. There is a risk that a number of projects considered EE contain, in reality, a very small EE component. As such the loan serves, in fact, to finance rehabilitation or modernization works, which would have taken place even in the absence of the funding facilities.

In the same way it is striking to see that the bulk of the financing in the RE field has been disbursed for large hydro facilities. It is undoubtedly RE, however not of the same nature of what as what is aimed for. An M&E system would provide a fuller picture of how much renewable energy is achieved, along with the costs of environmental mitigation, the extent of welfare gained, the CO_2 mitigated and the oil imports avoided.

2.6.2 Organization for M&E

In order to be able to observe whether financing initiatives in the face of low-carbon development are accomplished, it is important to establish a link between the financial and regulatory sectors. Therefore, while government authorities establish the basis for their database systems in the medium- and long-term, there is the need to coordinate various climate change funds using a platform where project-specific information can be regularly entered on the basis of a set of parameters. Such a platform would be best constituted in the form of a committee with the participation of the Undersecretariat of Treasury, MD, MENR, MEU, IFIs and partner banks. A prospective M&E Committee would serve to:

- set achievement goals in order to evaluate progress;
- set monitoring parameters to be used by various financing schemes in the energy sector on a common basis;
- evaluate the achievement of goals on the basis of contributions ;
- correlate the monitoring parameters with national inventories and action plans;
- assign responsibilities for each stakeholder organization.

At its inception phase, the coordinative committee, guidance and assistance from IFIs will be constructive, in terms of setting indicators and applying monitoring tools.

The table below provides a broad range of indicators that different stakeholders can use to assess the impacts of RE/EE investments financing schemes. Once an M&E committee is established, the inception phase should include setting goals, identifying indicators and allocating duties for each stakeholder. The domain of stakeholders can be expanded to include other significant agencies such the Turkish Statistical Institute, Banking Regulation and Supervision Agency, The Union of Chambers and Commodity Exchanges of Turkey, etc.

Table 11: Recommended Indicators for Integrated M&E System in Turkey

Stakeholder	Responsibilities	Indicators
Ministry of Development	Reporting	Welfare Indicators National Development Plans
MENR	Monitoring Verification	Number of New Connections for Domestic/Commercial Consumers in Rural and Urban Areas Annual Energy Generation Annual Primary Energy Equivalent Generation/Savings Annual Thermal Energy Generation/Savings Avoided Cost of Imported Oil
MEU	Inventories Verification	Tons of CO_2e Mitigated Number of EIA Reports for RE/EE Projects
Banks	Monitoring Reporting	Investment Amounts Financial Sources Project Life System Capacity Annual Energy Generation/Savings Annual Primary Energy Equivalent Generation/Savings Cost per MWh Generated Cost of Environmental Mitigation Savings from Oil Export
Ministry of Science, Industry and Technology	Inventories Reporting	Production Capacity (Sectorial) Technology Annual Energy Saving (Establishment Level)
IFIs		Costs of Technical Assistance Number of Staff Trained

Establishment of an M&E System may require a budget allocation for setting up electronic database systems, hiring/training of personnel within each stakeholder organization and legal/regulatory arrangements. It is recommended that the M&E establishment process can be scheduled to start within existing organizational set-ups and legal frameworks, under the overall coordination of the Undersecretariat of Treasury and with the support of the IFIs.

160, rue Saint-Paul, bureau 200, Québec (Québec), Canada G1K 3W1 Tél. : +1 (418) 692-2592 Téléc. : +1 (418) 692-4899
www.econoler.com