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The World Bank

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Report No: ICR00005150

IMPLEMENTATION COMPLETION AND RESULTS REPORT

ON THE

INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT LOAN
(IBRD-82420, IBRD-82430, IBRD-82440)
IN THE AMOUNT OF US$201 MILLION

TO

TÜRKİYE CUMHURIYETI ZIRAAT BANKASI A.Ş. (US$67 MILLION)
TÜRKİYE VAKIFLAR BANKASI T.A.O. (US$67 MILLION)
TÜRKİYE HALK BANKASI A.Ş. (US$67 MILLION)

WITH THE GUARANTEE OF THE REPUBLIC OF TURKEY

AND THE

GLOBAL ENVIRONMENT FACILITY GRANT
(TF-14579, TF-14580, TF-14581, TF-14582) IN THE AMOUNT OF US$3.64 MILLION

TO

TÜRKİYE CUMHURIYETI ZIRAAT BANKASI A.Ş. (US$ 0.9 MILLION)
TÜRKİYE VAKIFLAR BANKASI T.A.O. (US$ 0.9 MILLION)
TÜRKİYE HALK BANKASI A.Ş. (US$ 0.9 MILLION)
THE REPUBLIC OF TURKEY (US$ 0.94 MILLION)

FOR THE

SMALL AND MEDIUM ENTERPRISES ENERGY EFFICIENCY PROJECT

March 27, 2020

Energy & Extractives Global Practice
Europe And Central Asia Region

CURRENCY EQUIVALENTS

(Exchange Rate Effective January 31, 2020)

Currency Unit =		Turkish Lira
TRY 5.98	=	US$1
US$	=	TRY 0.17

FISCAL YEAR
July 1 - June 30

Regional Vice President:	Cyril E. Muller
Country Director:	Auguste Tano Kouame
Regional Director:	Lucio Monari
Practice Manager:	Sameer Shukla
Task Team Leader(s):	Jasneet Singh
ICR Main Contributor:	Zhihong Zhang

ABBREVIATIONS AND ACRONYMS

AfD	Agence Française de Développement
CO_2	Carbon dioxide
CPF	Country Partnership Framework
CPS	Country Partnership Strategy
CTF	Clean Technology Fund
DSCR	Debt service coverage ratio
EBRD	European Bank for Reconstruction and Development
EE	Energy efficiency
EIE	Electric Power Resources Survey and Development Administration
EIRR	Economic internal rate of return
ESCO	Energy service company
ESMAP	Energy Sector Management Assistance Program
EU	European Union
FI	Financial intermediary
FIRR	Financial internal rate of return
FM	Financial management
GDFR	General Directorate for Foreign Relations
GDP	Gross domestic product
GDRE	General Directorate of Renewable Energy
GEF	Global Environment Facility
GEO	Global Environmental Objective
GHG	Greenhouse gas
GWh	Gigawatt hour
IBRD	International Bank for Reconstruction and Development
IFI	International financial institution
INDC	Intended Nationally Determined Contribution
LLRF	Loan loss reserve fund
M&E	Monitoring and evaluation
M&V	Measurement and verification
MENR	Ministry of Energy and Natural Resources
MTR	Mid-term review
MWh	Megawatt hour
NEEAP	National Energy Efficiency Action Plan
OECD	Organization for Economic Cooperation and Development
PAD	Project appraisal document
PDO	Project development objective
PIU	Project implementation unit
RE	Renewable energy
SME	Small and medium enterprise
TA	Technical assistance
toe	Tons of oil equivalent
TL	Turkish Lira
UNFCCC	United Nations Framework Convention on Climate Change
US$	United States Dollars

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DATA SHEET

BASIC INFORMATION

Product Information

Project ID	Project Name
P122178	Turkey SME Energy Efficiency Project
Country	**Financing Instrument**
Turkey	Investment Project Financing
Original EA Category	**Revised EA Category**
Financial Intermediary Assessment (F)	Financial Intermediary Assessment (F)

Related Projects

Relationship	Project	Approval	Product Line
Supplement	P132189-Turkey SME Energy Efficiency Project	27-Mar-2013	Global Environment Project

Organizations

Borrower	Implementing Agency
Vakif Bank, Ziraat Bank, Halk Bank	Ministry of Energy and Natural Resources (MENR)

Project Development Objective (PDO)

Original PDO

The Project Development Objective (PDO) is to improve the efficiency of energy use in small and medium enterprises, by scaling-up commercial bank lending for energy efficiency investments. The global environmental objective is to reduce Greenhouse Gas (GHG) emissions through the removal of barriers to energy efficiency financing in the small and medium enterprises (SMEs) sector.

FINANCING

		Original Amount (US$)	Revised Amount (US$)	Actual Disbursed (US$)
World Bank Financing				
P122178	IBRD-82440	67,000,000	67,000,000	67,000,000
P122178	IBRD-82420	67,000,000	67,000,000	67,000,000
P122178	IBRD-82430	67,000,000	67,000,000	67,000,000
P132189	TF-14582	900,000	900,000	891,289
P132189	TF-14581	900,000	900,000	900,000
P132189	TF-14580	900,000	900,000	877,113
P132189	TF-14579	940,000	910,154	910,154
Total		**204,640,000**	**204,610,154**	**204,578,556**
Non-World Bank Financing				
Borrower/Recipient		100,580,000	49,750,000	77,390,000
Total		**100,580,000**	**49,750,000**	**77,390,000**
Total Project Cost		**305,220,000**	**254,360,154**	**281,968,556**

KEY DATES

Project	Approval	Effectiveness	MTR Review	Original Closing	Actual Closing
P122178	27-Mar-2013	22-Jul-2013	04-Mar-2016	28-Sep-2018	30-Sep-2019

RESTRUCTURING AND/OR ADDITIONAL FINANCING

Date(s)	Amount Disbursed (US$M)	Key Revisions
21-Jul-2015	45.00	Change in Results Framework Other Change(s)
26-Jul-2016	79.56	Change in Results Framework Change in Components and Cost Change in Disbursements Arrangements Change in Legal Covenants Other Change(s)
14-Mar-2018	157.35	Change in Results Framework Change in Loan Closing Date(s) Reallocation between Disbursement Categories Change in Legal Covenants Change in Implementation Schedule

KEY RATINGS

Outcome	Bank Performance	M&E Quality
Satisfactory	Satisfactory	Substantial

RATINGS OF PROJECT PERFORMANCE IN ISRs

No.	Date ISR Archived	DO Rating	IP Rating	Actual Disbursements (US$M)
01	30-Nov-2013	Moderately Satisfactory	Moderately Satisfactory	0
02	25-Jun-2014	Moderately Unsatisfactory	Moderately Unsatisfactory	15.00
03	06-Apr-2015	Moderately Unsatisfactory	Unsatisfactory	45.00
04	19-Jun-2015	Moderately Satisfactory	Moderately Satisfactory	45.00
05	16-Dec-2015	Moderately Satisfactory	Moderately Satisfactory	45.00
06	23-Jun-2016	Moderately Satisfactory	Moderately Satisfactory	78.09
07	03-Jan-2017	Moderately Satisfactory	Moderately Unsatisfactory	79.56
08	27-Jun-2017	Moderately Satisfactory	Moderately Unsatisfactory	94.90
09	09-Jan-2018	Moderately Satisfactory	Moderately Satisfactory	146.59

10	22-Jun-2018	Satisfactory	Moderately Satisfactory	180.20
11	27-Dec-2018	Satisfactory	Moderately Satisfactory	180.20
12	27-Jun-2019	Satisfactory	Moderately Satisfactory	190.84
13	30-Sep-2019	Satisfactory	Satisfactory	200.83

SECTORS AND THEMES

Sectors

Major Sector/Sector	(%)
Financial Sector	**25**
Banking Institutions	19
Other Non-bank Financial Institutions	6
Energy and Extractives	**75**
Other Energy and Extractives	75

Themes

Major Theme/ Theme (Level 2)/ Theme (Level 3)	(%)
Private Sector Development	**113**
Jobs	100
Enterprise Development	13
MSME Development	13
Finance	**13**
Financial Infrastructure and Access	13
MSME Finance	13
Environment and Natural Resource Management	**75**
Climate change	75
Mitigation	75

ADM STAFF		
Role	At Approval	At ICR
Regional Vice President:	Philippe H. Le Houerou	Cyril E Muller
Country Director:	Martin Raiser	Auguste Tano Kouame
Director:	Laszlo Lovei	Lucio Monari
Practice Manager:	Ranjit J. Lamech	Sameer Shukla
Task Team Leader(s):	Shinya Nishimura	Jasneet Singh
ICR Contributing Author:		Zhihong Zhang

I. PROJECT CONTEXT AND DEVELOPMENT OBJECTIVES

A. CONTEXT AT APPRAISAL

Context

1. Turkey's development during the 1990s was a story of notable turnaround thanks to successfully implemented structural reforms and sound macroeconomic management. Despite the global crisis of 2008-2009, the Turkish economy expanded by an average of 5.5 percent during the 2002-2011 period while per capita income more than tripled and reached US$10,469 in 2011. However, the strong recovery in economic growth was driven mostly by domestic demand, linked to high credit growth, and coupled with higher energy prices, causing a significant worsening in external balances and a rise in inflation. Given the global uncertainties, Turkey's external financing remained its key weakness and the financing quality was a concern in the short-run.

Energy Sector Context

2. Electricity demand had been growing between 7 and 8 percent annually on average, driven by Turkey's rapid economic growth, industrialization and steady population growth. Energy efficiency emerged as a policy priority due to the relative high energy intensity of the economy and its need to maintain its competitiveness. Although total primary energy supply per capita in Turkey was low at 1.44 tons of oil equivalent (toe) per capita in 2010, compared to the OECD average of 4.39, the Turkish economy was comparatively energy intensive. In 2010, the economy required 0.19 toe for every US$1,000 of GDP, compared with the OECD average of 0.14.

3. Energy efficiency was critical to Turkey's energy security and was a key component in Turkey's National Climate Change Strategy and Action Plan. According to World Bank estimates, the industrial and building sectors offered an aggregated energy savings potential of over 15 million toe of energy consumption per year, or 14 percent of total consumption, with corresponding greenhouse gas (GHG) emission reduction potential. Among its various initiatives, the Government took measures to support specialized energy efficiency (EE) and renewable energy (RE) credit lines, including the use of the Clean Technology Fund (CTF). To accelerate the realization of Turkey's EE potential, the Government approved a new National Energy Efficiency Strategy in February 2012, setting an overall target of reducing Turkey's energy intensity by 20 percent by the year 2023 from the 2011 level. The Strategy identified the following main activities to improve Turkey's EE: (a) promote EE in the industry and service sectors; (b) reduce energy demand of buildings; (c) promote energy efficient appliances and products; (d) improve the efficiency of electricity generation, transmission and distribution; and (e) build capacity, market and financing for EE products, investments and services.

4. Considerable achievements had been made in setting up regulatory and institutional frameworks to promote EE, but further support to the Ministry of Energy and Natural Resources (MENR) was needed. The legal, regulatory and institutional set-up to promote EE included a comprehensive set of regulations issued in 2008 and 2011 under the 2007 Energy Efficiency Law. There were ongoing efforts to align with relevant EU acquis and regulations and the Government programs and legislative/regulatory framework to achieve the targets outlined in the adopted national EE strategy. The General Directorate of the Electric Power Resources Survey and Development Administration (EIE) had been mandated since 1981 with EE policy making, implementation, and promotion. In November 2011, EIE was converted into the General Directorate for Renewable Energy (GDRE) and absorbed into MENR. Although the EE policy

tasks were transferred to MENR, the competency of MENR was not increased, and the Ministerial roles related to supporting programs became less clear, which led to the continuation of some institutional overlaps and competition in EE programming. Additionally, some secondary legislation was still needed to complete the planned policy framework and systematically enforce the existing policies and regulations.

Banking Sector Context

5. The reforms undertaken after the 2001 crisis allowed the Turkish financial system to come through the global financial crisis relatively unscathed. Supportive measures taken by the Turkish authorities, rapid rebound in capital inflows and economic activity also played a role in the Turkish banking sector withstanding the impact of the global crisis. Following an expansion in bank lending after 2009, credit growth started to slow down in 2011. Uncertainties regarding the global growth outlook and problems in the EU economy adversely affected domestic economic activity in 2012, thus weakening production and investments and bringing about a relatively faster deceleration in business loans and especially in the loans to small and medium sized enterprises (SMEs).

6. With deposits growing much slower than loans, banks were increasingly relying on foreign funding. Banks had bridged the gap between loan and deposit growth by using up liquidity in their balance sheet and increasing wholesale funding from abroad. The level of foreign funding was not high relative to other countries in the region but had been increasing. Although the Turkish banking system was funded largely by relatively diversified and stable core customer deposits, term structure was significantly short. Customer deposits funded more than 57 percent of assets in Turkish banks as a whole. As of September 2012, only 4.6 percent of the deposits were due to mature after one year and the average maturity of deposits was oscillating at around 76 days.

SME Sector Context

7. SMEs played a very important role in the Turkish economy owing to their crucial role in generating income and employment. SMEs accounted for 99 percent of all enterprises, 78 percent of employment, 55 percent of value added, 65 percent of sales, 50 percent of investments, and 59 percent of exports. However, SMEs were disproportionately burdened by business regulations, faced severe access to finance constraints, and lacked the ability to adopt and use the knowledge needed to make them more competitive. The Turkish Government was committed to a significant array of programs aimed at making industrial SMEs more competitive, more capable of applying modern technologies to improve production processes, and more effective exporters. One of the major priority areas for SME policies was access to finance.

8. After being severely underserved in the aftermath of the 2008 global financial crisis, SMEs were making inroads in gaining access to credit. While the largest proportion of loans (45 percent) is being allocated to corporate clients, SME credit accounts only for 22.8 percent of total banking sector credit. Nevertheless, while SMEs were usually in the market for medium- and long-term financing, banks did not usually have adequately structured resources to offer them. This was mostly a result of the short-term maturity structure of the Turkish banks' liability base, which leaves SMEs open to severe liquidity and interest rate risk, as evidenced by the events in the aftermath of the global financial crisis when major banks significantly cut their exposures to SMEs in a matter of weeks. In addition, lack of cashflow based financing and high collateral requirements further constrained access to finance to SMEs.

Theory of Change (Results Chain)

9. The Project design involved a World Bank loan and a Global Environment Facility (GEF) grant to improve the efficiency of energy use in SMEs by scaling up commercial bank lending for EE investments. It also had a global environmental objective to reduce greenhouse gas emissions through the removal of barriers to EE financing of SMEs. The World Bank loan provided credit lines to three Turkish financial institutions (FIs) to support EE financing to SMEs. The GEF grant provided technical assistance (TA) and risk sharing to the three FIs and policy support to MENR.

10. Three FIs (i.e., commercial banks) were chosen to participate in the Project due to their strong SME client bases and market presence in the SME sectors: Halkbank, VakifBank, and Ziraat Bank. Each FI received a credit line from the World Bank for on-lending to SMEs for EE investments. By providing credit lines, the Project expected to train the FIs and enhance the internal capacities to identify, appraise and monitor EE investments in order to demonstrate their viability as a banking product line.

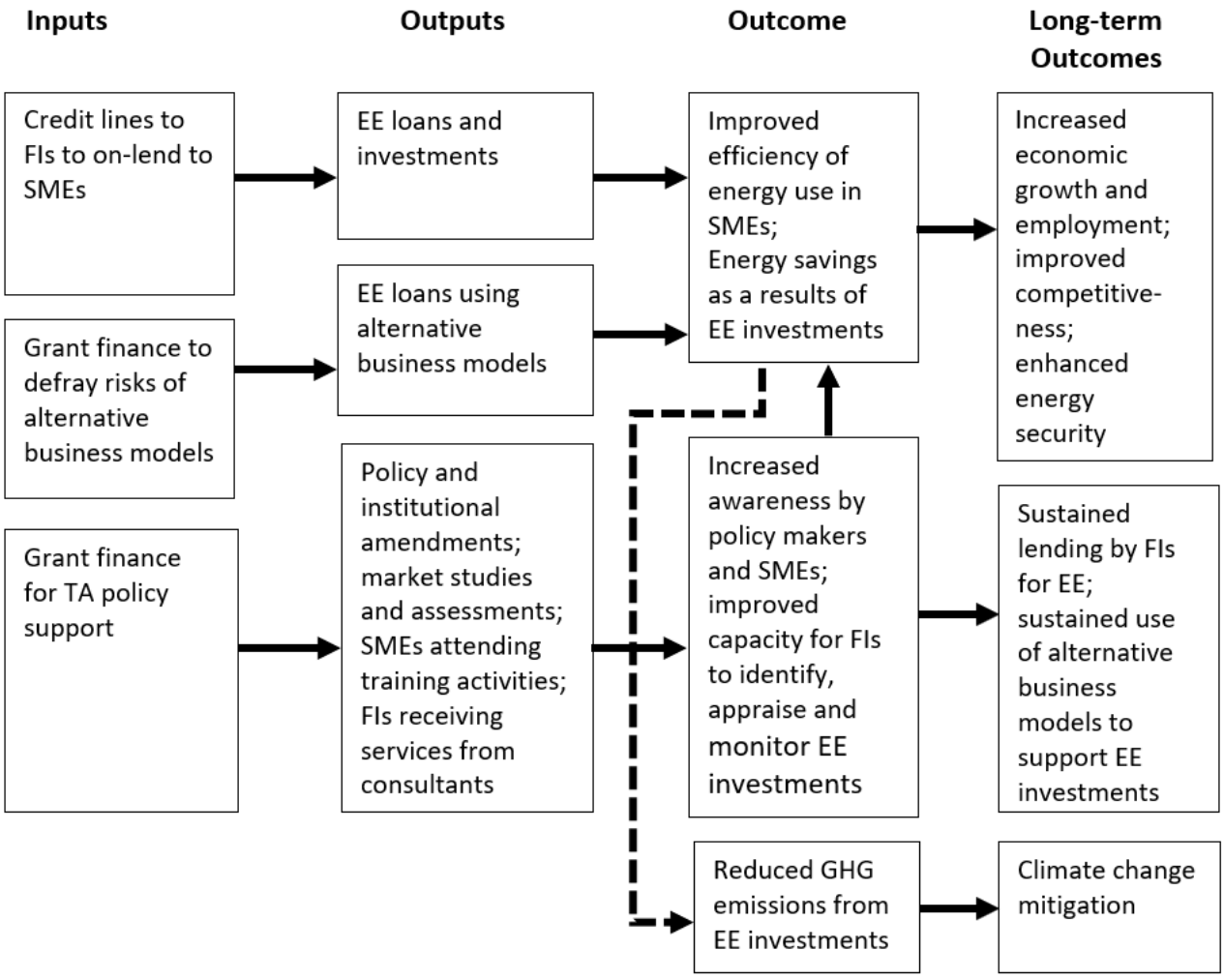
11. According to the Project Appraisal Document (PAD), although there were existing credit lines in Turkey for EE financing, many focused on larger industrial facilities and the EE market needs exceeded the available financing in Turkey. Furthermore, the Project aimed to supplement the market development efforts through its development of alternative business models, such as energy service companies (ESCOs), equipment leasing, and vendor credit.[1] ESCOs, despite their potentials as a cost-effective way of facilitating EE investments, had been unable to gain traction within the Turkish market. Hence, promoting ESCO business models and other alternative business models was an integral part of the Project's design to promote EE financing and scale up EE investments. To defray the risks associated with new loan products and help address the issue of high collateral requirement for SMEs, a portion of the GEF grant was made available to each of the FIs as a loan loss reserve fund to cover potential subproject failures or defaults.

12. The TA to the MENR was to be provided to the GDRE for policy support for dialogue on EE, capacity building, market development, and information dissemination. Within MENR, GDRE was mandated with policy and research on EE and RE and hence the Government counterpart for this Project for policy dialogue. Through the TA support, the Project intended to enhance the capacity of GDRE to meet its mandate and increase the utilization and effectiveness of its EE support programs.

13. Energy efficiency would reduce the operating costs of the SMEs, thus improving their competitiveness and create more employment. EE improvement would also reduce the growth of demand and import of energy, thus contributing to the improvement in the current account deficit. The Project would also enable SMEs to have access to longer-term credit than was usually available to them, thus improving the SMEs' access to finance. In addition, the PAD identified energy security and climate change as two areas where EE could make a significant contribution. The results chain of the Project is illustrated in Figure 1.

[1] Alternative business models refer to more innovative approaches for financing EE investments. During Project design, two models in particular were envisaged: (a) equipment leasing, where lease payments are structured to be paid from the estimated energy cost savings; and (b) ESCOs, where a firm can offer a blend of services—from audits to design and implementation—typically with some form of guarantee to ensure the energy cost savings are sufficient to service the loan. Vendor finance was added during project implementation; it is a form of financing in which a company sells equipment to the customer and allows for a deferred payment scheme.

Figure 1: Results Chain



Critical assumptions: (1) FIs are able to identify EE subprojects in SME clients; (2) SMEs are willing and able to take FI loans for EE improvements; (3) policy support to the Government will raise awareness of SMEs, enhance the knowledge and capacity of the Government, and lead to the adoption of improved EE polices and regulations for SMEs; and (4) FIs will continue to lend with their own resources after they have gained more experience with SME EE lending under the credit lines and understand the risks; (5) grant financing/risk sharing is sufficient to incentivize FIs to finance EE using alternative business models.

Project Development Objective (PDO)

14. The Project development objective is "to improve the efficiency of energy use in small and medium enterprises in the Republic of Turkey, by scaling-up commercial bank lending for energy efficiency investments." The Project also

included a GEF grant and a global environmental objective (GEO): “to reduce greenhouse gas emissions through the removal of barriers to energy efficiency financing in the SMEs.”

Key Expected Outcomes and Outcome Indicators

15. There are two key expected outcomes: (1) “Estimated energy savings from the project investments”, measured in “gigawatt hours (GWh)/year” (outcome indicator), which was revised to “Projected lifetime energy savings (MWh)” after the World Bank introduced an EE Core Sector Indicator; (2) “Associated GHG reductions from project investments”, measured in “tons of CO_2e/year” (outcome indicator).

Components

16. The Project consisted of two main components: (1) EE investments, and (2) policy support. It was designed to provide credit lines to three FIs (US$ 67 million each) to support EE financing to SMEs and a US$3.64 million GEF grant for technical assistance (TA) and risk sharing to the three FIs (US$0.9 million each) and policy and TA support to the GDRE within MENR (US$0.94 million). Detailed cost breakdown by component and sub-component is provided in Annex 3 (Table 3.1).

17. Component 1: Energy efficiency investments in SMEs. This component would provide investment lending to the SMEs and project development, appraisal, and monitoring. It consisted of three sub-components, with a total cost of US$294.95 million:

- IBRD on-lending (IBRD US$201 million, FIs US$50.25 million, and project owners/ESCOs US$40 million). The FIs would on-lend the IBRD loan at commercial rates in accordance with their own lending policies and assume all financial risks. Once 50 percent of the IBRD loan was committed to sub-borrowers, the FIs were expected to contribute the equivalent of 25 percent their own resources.
- Loan Loss Reserve Fund (LLRF) (up to US$1.35 million GEF grant for three FIs). The LLRF would provide up to US$450,000 per FI to help defray risks associated with new loan products and help address the issue of high collateral requirement for SMEs. For those subprojects utilizing alternative financing such as ESCO credit or energy savings performance-based leasing, up to 20 percent of the subloan could be provided as LLRF.
- Project development, appraisal, and monitoring (GEF US$1.35 million and GDRE US$1.0 million). Activities to be supported would include: (i) targeted market and other technical studies; (ii) energy audits for potential clients; (iii) technical due diligence for early subprojects and those involving new mechanisms or technologies; (iv) technical training for FI staff assigned to work on this Project; (v) development of special EE project financing products or structures, such as leasing, ESCO shared savings contracts; and (vi) verification and monitoring of energy savings during subloan repayment period.

18. Component 2: Policy support and Technical Assistance to GDRE. This component provided further TA to GDRE aimed to support ongoing policy dialogue on EE, enhance the enabling environment, and foster broader EE market development in Turkey. It consisted of three sub-components, with a total cost of US$10.94 million:

- Market development and information dissemination (GEF US$0.44 million, MENR US$2.0 million). The GDRE would lead efforts in the following areas: (i) awareness raising, training, and information dissemination to key market actors; (ii) market studies, assessments and options papers for future investment programs beyond the SME market; and (iii) stakeholder dialogue.
- Policy dialogue and capacity building within MENR (GEF US$0.35 million, MENR US$1.0 million). The following activities were envisaged: (i) review ongoing EE primary and supplemental policies to identify deficiencies and recommend actions for their resolution with a focus on the SME sector; (ii) review EE incentive and informational programs, conduct impact assessments, and develop a set of recommendations to improve utilization and impact of those programs; (iii) review institutional arrangements to strengthen the policy and implementation function for EE in all sectors; and (iv) staff training.
- Project management (US$6.0 million from the FIs, US$0.15 million from the GEF grant, US$1.0 million from MENR). Project implementation costs would include the costs incurred by the FIs' operational departments in identifying, appraising, and monitoring subprojects to be financed from the credit lines. Similarly, MENR would cover a portion of the operating costs of their project team, which would be responsible for managing their portion of the GEF grant.

B. SIGNIFICANT CHANGES DURING IMPLEMENTATION (IF APPLICABLE)

Revised PDOs, Outcome Indicators, Targets, Components, and Other Changes

19. During project implementation, three restructurings took place in July 2015, September 2016, and March 2018, respectively. There were no changes of the PDO or project components during the restructurings. Each restructuring focused on changes in some of the eligibility criteria and results framework targets, among other things, as a result of an unusual series of external factors which significantly and adversely impacted the SME investment climate and commercial bank lending.

20. During the first restructuring, the main amendment was the change in the eligibility of the debt service coverage ratio (DSCR) from 1.2 to 1.1 for subloans over US$1.0 million and removal of the DSRC criteria for subloans under US$1.0 million. This was requested by the FIs after noting that the economic slowdown at the time had affected cashflow projections for many of the SMEs, while many still met the FIs rigorous credit screenings. In addition, the two PDO indicators (energy savings and CO_2 emission reductions) were revised/updated to reflect the introduction of the Bank's Core Sector Indicators.

21. The second restructuring was a follow-on to the March 2016 Mid-Term Review (MTR). The Bank team and FIs had noted a continued weak investment climate, devaluation of the Turkish Lira (TL) and lack of necessary preconditions for development of ESCO-type deals as key challenges. To help address these bottlenecks, several additional changes were agreed, including: (i) adjusting definition of SMEs and Mid-Caps due to the currency devaluation which reclassified many exporting SMEs as Mid-Caps; (ii) introduction of equipment vendors providing supplier credit as an eligible sub-borrower); and (iii) introducing GEF-funded sub-grants as incentives for ESCO subprojects (see next para). A number of the end targets for the intermediate results indicators were also adjusted based on reprojections done during the MTR. Furthermore, the second restructuring included an increase of the LLRF loss coverage ratio from 20 percent to 50 percent and introduced sub-grants for pilot ESCO subprojects (up to 10

percent of the subproject investment amount) to help defray the higher transactions costs expected from such subprojects. The DSCR requirement on ESCO subprojects' end beneficiary was also removed to expedite FIs' subproject appraisal and structuring ESCO deals. A small portion of the GEF grant allocated for the LLRF was reallocated to existing consultancies to support ESCO subproject development, review and structuring of energy performance contracts, the development and oversight of measurement and verification (M&V) procedures.

22. The third restructuring in March 2018 was initiated to build on momentum gained in the previous year of implementation and the need to extend the Closing Date by one year, reallocate between the GEF grant categories to facilitate project progress, and other project elements (e.g., removal of cofinancing requirement, increase of Mid-Cap limits, adjustment of results framework as a result of the extension).

Rationale for Changes and Their Implication on the Original Theory of Change

23. The main rationale for the project restructurings was to proactively respond to changing conditions in the market and the broader investment climate in Turkey. In the context of overall project implementation, progress was initially slow due to a number of exogenous factors (corporate restructuring in two of the FIs, depreciation of the Turkish Lira, weak investment climate and repeated economic downturns, and political events), as well as the FIs' and SMEs' limited experience with EE investments and related risk averseness. Implementation progress started to improve during the first half of the calendar year 2015 as the FIs became more familiar with the EE criteria and market stability returned to some extent, and significant progress had been made since October 2016 (after the MTR and accompanying second restructuring). Progress with the three FIs was also uneven in developing alternative business models, and the overall disbursements remained below the projected pace needed to absorb the remaining funds within the original project closing date, hence the necessity for a one-year project extension. As the economic conditions and investment climate in Turkey stabilized and with marketing efforts stepping up from the three FIs, disbursement and project implementation improved. The changes introduced especially during the second and third restructurings, such as adding vendor companies and providing incentive grant for ESCO subprojects, were able to successfully stimulate the use of alternative business models, which in turn led to an uptake of the credit lines. These changes overall had a positive impact on accelerating disbursement and ensured that the Project was able to fully disburse and meet the PDO outcomes by the revised Closing Date of September 30, 2019.

24. Since the changes did not affect the Project objectives, components, institutional arrangements or target markets, they did not have any impact on the theory of change.

II. OUTCOME

A. RELEVANCE OF PDOs

25. Relevance of the PDO is rated **High.**

Assessment of Relevance of PDOs and Rating

26. Improving energy efficiency remains a strategic and policy objective for the Government's energy strategy as evidenced by its inclusion in various policy documents. These include the Energy Efficiency Law (2007), Secondary legislation on Energy Performance of Buildings (2009), Electricity Market and Security of Supply Strategy (2009), the National Climate Change Strategy (NCCS, 2010-2020), the National Climate Change Action Plan (NCCAP, 2011-2023) and the Energy Efficiency Strategy (2012). The Government places EE as a key component of its energy security strategy through its 10th and 11th Development Plans (2014 and 2019, respectively). And, the National Energy Efficiency Action Plan (NEEAP), approved in January 2018, calls for US$11 billion investment in energy saving measures to reduce consumption by 23.9 million tons of oil equivalent (or 14 percent) by 2023.

27. Energy efficiency is also critical for achieving the climate mitigation goal. Turkey is committed to the reduction of GHG emissions, having ratified the United Nations Framework Convention on Climate Change (UNFCCC) in 2004 and its Kyoto Protocol in 2009. In 2015, Turkey submitted its Intended Nationally Determined Contribution (INDC) to the UNFCCC, committing to reduce its GHG emissions up to 21 percent by 2030 compared to the business as usual scenario. The Government aimed to achieve this goal through several new policies and measures, including those related to EE improvements. However, the financing sources and mechanisms to implement such policies and measures are recognized as key constraints.

28. Improving EE in SMEs can help enhance energy security, employment creation and competitiveness of the economy. Given the high dependence on imported energy (over 75 percent), enhancing energy security remains an important development and strategic goal for the Government. In addition, SMEs continue to play a very important role in the Turkish economy in generating income and employment. Turkey's newly adopted 11th National Development Plan (2019-23) also emphasizes the central role of industry in economic growth and the importance of energy independence.

29. Improving EE in SMEs is also fully in line with the Bank's new Turkey Country Partnership Framework (CPF) FY18-21. The CPF includes EE among the key priorities for the energy sector cooperation between the Bank and the Government of Turkey as articulated under the CPF Focus Area 3 – Sustainability. Increasing energy efficiency in SMEs is also fully aligned with CPF Objective 9, namely "increased sustainability of infrastructure assets and natural capital," which has the following results indicators: (i) cumulative energy savings achieved through WBG-financed energy sector projects; and (ii) annual GHG emissions reductions.

B. ACHIEVEMENT OF PDOs (EFFICACY)

30. The achievement of the PDO (i.e., efficacy) is rated **Substantial**.

Assessment of Achievement of Each Objective/Outcome

31. Achievement of the PDO is assessed against four specific objectives of the PDO statement, which are to (i) improve the efficiency of energy use in SMEs in the Republic of Turkey, (ii) reduce GHG emissions, (iii) scale-up commercial bank lending for EE investments, and (iv) remove barriers to EE financing in the SMEs.

(i) Achievement of the objective to "improve the efficiency of energy use in SMEs in the Republic of Turkey" was High.

32. The projected lifetime energy savings from subprojects financed under the Project amount to 10.7 million MWh, which is 43 percent above the (revised) target value of the PDO indicator (see Table 1). Out of the 325 subloans, 283 subloans were extended to SMEs and 42 to Mid-Caps to purchase new and modern equipment, improve industrial processes, and upgrade production lines. Total investments came to more than US$268 million, including World Bank credit lines, FIs' own resources, and equity from the SMEs and ESCOs. See Annex 3 (Tables 3.2 and Figure 3.1) for an overview of the EE investment portfolio.

Table 1: PDO Indicators Measuring Specific Objectives (i) and (ii)

Indicator	Original Target	Revised Target	Actual	Actual/Revised Target
Projected lifetime energy savings (MWh)	6,140,000	7,500,000	10,730,743	143.1%
Associated GHG reductions from project investments (tons of CO_2e/year)	154,400	220,000	397,796	180.8%

Note: Original energy savings target in the PAD was 307 GWh/year but was converted to lifetime MWh after the Bank's Core Sector Indicators were introduced. This would have made the original target 6,140,000 MWh (over 20 years).

(ii) Achievement of the objective to "reduce GHG emissions" was High.

33. The associated GHG reductions from the subprojects amount to 397,796 tons of CO_2e/year, which is about 81 percent above the (revised) target value of the PDO indicator (see Table 1). The energy savings and the associated GHG emissions reduction shown in Table 1 were achieved through the 325 subloans and are thus directly attributable to the Project. It should be noted that both the GHG and energy savings targets were revised upward during the MTR based on the actual project implementation which had demonstrated a higher level of results than originally estimated based on a sample of representative projects. In addition, the investments made by some SMEs not only saved electricity but also fuels (coal, natural gas, etc.), which led to more energy savings and GHG reductions than originally anticipated.

(***iii) Achievement of the objective to "scale-up commercial bank lending for EE investments" was Substantial.***

34. The Project successfully mobilized commercial lending for EE investments in SMEs as well as co-financing from the SMEs and ESCOs. The Project deployed all US$201 million of the credit lines through the three FIs, which was understood as the core of commercial bank lending for this objective. Co-financing from the FIs would have been considered additional scale-up of commercial bank lending; however, the requirement (20 percent from the FIs or about US$50 million) was dropped during the third project structuring due to the investment climate.[2] On the other hand, the Project successfully leveraged about US$67 million of equity from the SMEs/ESCOs, which was 167.5 percent of the target value (US$40 million). Since the co-financing requirement was dropped, this objective was assessed against the delivery of the Bank credit lines (along with co-financing from the SMEs/ESCOs), which was fully achieved. This objective was also assessed in terms of the achievements to enhance the capacity of the FIs. Through implementation of this Project, all three FIs had significantly strengthened their internal capacities to identify, appraise, finance and monitor EE investments in SMEs in their headquarters and branch offices and expanded their network of partner ESCOs, vendors, and leasing firms to support EE investments. All three FIs expressed their interest and willingness to continue to finance

[2] In the PAD, the co-financing requirement was added as an aspirational target rather than as a core part of the PDO. The PAD included a provision that the target would be reassessed at the end of the second year of implementation if Project disbursements had not reached 50 percent. In fact, disbursements did not reach 50 percent until late in the fourth year, so this requirement was dropped. It should be noted that the FIs were willing to blend IBRD funds with their own. However, the weak investment climate led to subproject pipelines that were not sufficient to utilize the full credit line as well as the FIs' funds within the Project period.

EE investments going forward. Finally, the Project demonstrated the viability of alternative business models (leasing, vendor credit, ESCOs) to support EE investments, through more than 100 subprojects, and it is expected that these models will be able to continue to operate in the market and access commercial financing.

(iv) Achievement of the objective to "remove barriers to EE financing in the SMEs" was Substantial.

35. At appraisal, the PAD identified a number of market barriers that existed for scaling up financing for EE investments in SMEs in Turkey, which the Project sought to address through the TA program and EE investments. These barriers included:

- Lack of knowledge among banks and SMEs about EE opportunities, project performance and risks
- High transaction costs for small SME EE investments
- Financing constraints due to high collateral requirements
- Limited institutional capacity to identify, prepare bankable EE projects.

36. The Project delivered a range of awareness raising activities and analyses about EE opportunities, contributing barrier removal. The GEF grant to MENR supported a number of activities and outputs, including: (i) public awareness on EE (baseline assessment, communications strategy, awareness materials, the Bank's EE screening tool on MENR's project website); (ii) a policy gaps analysis conducted to identify shortcomings in the policy and regulatory framework for EE in SMEs; (iii) an evaluation of several MENR programs to support SME EE; (iv) ESCO market development activities (ESCO barrier analysis, case studies, sample ESCO contracts, M&V guidelines, proposed revisions to MENR's ESCO certification scheme, ESCO arbitration mechanism, design of a pilot ESCO grant scheme for MENR); and (v) a market assessment for EE in public buildings (which successfully informed a new Energy Efficiency in Public Buildings Project, which was approved by the Bank in November 2019). Collectively, these activities helped enhance the public policy framework for EE in SMEs while developing a set of outputs to help inform enhancements in MENR's programs going forward. Already, under the adopted NEEAP, a number of the recommendations emanating from these outputs have been taken into account.

37. Through project implementation, the internal capacity of the three participating FIs was significantly enhanced in identifying, appraising, and managing EE projects, although some challenges remain in scaling up commercial lending by the FIs themselves. In total, the three FIs extended 325 subloans, exceeding the target by over 62 percent. The FI consultants provided training to the participating FIs and visited hundreds of SMEs to help be understand EE benefits and opportunities. Training workshops were conducted for many staff of the local branches across different regions. The Project's TA also supported consultants to visit branches for portfolio screening and on-the-job training and the use of case studies to demonstrate real life examples and their benefits. As a result of the TA support and implementation of the credit lines, the participating FIs carried out extensive marketing on EE product lines, learned how to determine eligibility of EE, assess technologies and savings, and gained experience in working with ESCOs and using alternative business models. All three FIs considered the TA program instrumental in building their internal capacity to implement the credit lines while paving the way for scaling up EE financing in the future. However, without continued policy support, further market development (particularly for ESCOs) and further technical and financial assistance, it will remain a challenge for the FIs to fully mainstream EE financing to SMEs on their own. The high transaction costs of lending to SMEs for EE investments (baseline assessment of energy use, estimate of savings from new equipment, accessing 5-7 year working capital loans), the massive heterogeneous SME market, huge gaps in SME awareness about EE, and underdeveloped vendor/leasing/ESCO market for EE are still perceived to be major barriers by the FIs.

38. As noted previously, the Project was also successful in promoting alternative business models, although it is recognized more needs to be done to create a sustainable ESCO market in Turkey. The Project had an original target of 45 and revised target of delivering 60 loans using alternative business models, such as ESCO, leasing, and vendor financing. Among the three FIs, they delivered a total of 110 loans (about US$71 million) using these alternative business models, exceeding the target by 83 percent. The alternative business models were difficult for the FIs to implement, but the TA and early successes propelled them to replicate and scale them up as they proved to be an attractive way to utilize the credit line resources, since these companies all had their own technical capacity to identify, prepare and implement EE transactions. As a result, financing extended by the FIs through alternative business models reached over one-third of the total credit lines, and much of the funds committed in the last two years relied on these models. The participating FIs recognized the importance of the GEF grant to help stimulate the ESCO market and the considerable experience gained by the FIs and ESCOs in implementation and verification of these transactions. They also recognized the critical importance of having the GEF grants for TA for technical consultants to help develop the alternative business models. The ESCO market in Turkey, however, is still in the early stages of development, so much more will need to be done. The NEEAP has set a goal of standardizing ESCO services while strengthening the financing side to improve service quality and ESCO scale-up. Even for the participating FIs, despite the experience gained, they will likely need continued support to ramp up EE lending to ESCOs.

39. The **Substantial** rating for achieving the objective to "remove barriers to EE financing in the SMEs" is given in the context of both achievements and remaining challenges. While many barriers impeding EE financing in SMEs in Turkey remain to be removed given the large size of the market, it should be recognized that removal of barriers is a long-term undertaking and may require a broad range of policy, financing, capacity, market development and other interventions over time. Neither the Bank nor the GEF expected the full and complete removal of barriers for EE financing as a result of one project. Given the size of the GEF grant, the Project made significant contributions to removing barriers within the scope of the Project and paved the way for further scaling up EE financing in the SMEs in Turkey.

Justification of Overall Efficacy Rating

40. Given the above assessments, the **Substantial** rating for the overall efficacy is justified on the basis that the Project almost fully achieved its PDO with those four specific objectives.

C. EFFICIENCY

Assessment of Efficiency and Rating

41. Efficiency of the Project is rated **Substantial**. The efficiency of the investments was assessed in terms of the cost-benefit and cost-effectiveness analyses. The cost-benefit analysis compares the financial internal rate of return (FIRR) and economic internal rate of return (EIRR) of a sample of representative subproject investments both at the stage of appraisal and completion. Cost-effectiveness analysis assesses investment cost per unit of energy savings and investment cost per unit of CO_2 emissions reduction. The post-completion assessment applies the same metrics used during Project Appraisal. None of the loan proceeds were used for Project management by the three FIs, allowing 100 percent of the loan proceeds to directly invest in EE investments. Details of the assessment are provided in Annex 4.

This **Substantial** rating is based on the results of the cost-benefit analysis and cost-effective analysis of the EE investments, as well as the leveraging effect of the GEF grant.

(i) Cost-benefit was Substantial.

42. **Economic and financial analysis at appraisal.** At the appraisal stage, the Project team reviewed a sample of eight representative projects from different sectors that had been financed by the participating FIs through their other credit lines for financial and economic viability. Considered in the calculation were costs of the EE-related investment and incremental operational expenditures. Benefits considered for the analyses included energy savings and environmental benefits priced at US$10/ton of CO_2 mitigated. The FIRR was calculated using the same methodology but did not include any quantified CO_2 benefits. The simple payback periods were also calculated. The EIRRs ranged from 14.9 to 34.9 percent for sample subprojects that replaced equipment without increasing production capacity and from 13.3 to 81.1 percent for sample subprojects that increased production capacity. The FIRRs ranged from 13.4 to 30.5 percent for sample subprojects that replaced equipment without increasing production capacity and from 11.9 and 67.0 percent for subprojects that increased production capacity (see Annex 4 for further details).

43. **Economic and financial analysis at completion.** During the progress reporting, all three FIs provided data on each financed subproject, including the subproject and loan size, fuel saved, pre- and post-production levels, FIRR, and payback period. The average FIRR and the range were largely consistent with those in the sample projects reviewed at the appraisal stage (also see Borrowers' Completion Reports in Annex 5). Halkbank reported an average 24 percent FIRR of their EE investments, ranging from 9 to 88 percent, with an average payback of just over four years. VakifBank reported a similar average FIRR of 22 percent for their EE investments, with a similar range of 9 to 80 percent, and an average payback period of approximately five years. Data provided by Ziraat Bank showed a considerably higher FIRR than the other two FIs, with a very wide range of 9 to over 200 percent, with many projects in the 30-50 percent range. The average payback period for Ziraat Bank's investments was just over two years.

44. To complement the data and analysis provided by the FIs, the ICR team selected three subprojects (one from each FI) representing three different sectors for the economic analysis. Table 2 presents a summary of the economic analysis along with the financial analysis provided by the FIs for the same subprojects. Detailed assumptions and results are provided in Annex 4.

Table 2: Summary of Economic Analysis of Sample Subprojects at Completion

	EE Investment (US$)	Financial Analysis (Based on data from FIs)		Economic analysis w/ carbon	Economic analysis w/o carbon
		Payback (years)	FIRR (%)	EIRR (%)	EIRR (%)
Halkbank (mining, no capacity increase)	1,171,013	7.60	10.0	16.2	11.2
VakifBank (metallurgy, 194% capacity increase)	177,000	0.63	52.3	28.9	21.8
Ziraat Bank (textile, 57% capacity increase)	3,061,768	1.85	54.0	39.2	30.1

(ii) Cost-effectiveness was Substantial.

45. **Cost-effectiveness analysis at completion.** Cost-effectiveness was not assessed at the appraisal stage. At completion, the cost-effectiveness was assessed using two metrics based on data from the FIs: (1) cost of energy

saved (total EE investments divided by lifetime energy savings); and (2) cost of CO_2 reduced (total EE investments divided by total GHG emissions reduction). The assessment was carried out both at the portfolio level for the three FIs and at the subproject level using the same sample subprojects for the cost-benefit analysis. Table 3 summarizes the results of the cost-effectiveness analysis.

Table 3: Cost-Effectiveness of Subproject EE Investments at Completion

	Halk	Vakif	Ziraat	Total
Portfolio				
Cost-effectiveness of energy savings (US$/MWh)	20.1	54.9	19.8	25.0
Cost-effectiveness of GHG reduction (US$/tCO₂e)	62.2	119.0	23.7	45.0
Sample Subprojects				
Cost-effectiveness of energy savings (US$/MWh)	48.9	29.2	21.6	
Cost-effectiveness of GHG reduction (US$/tCO₂e)	83.8	50.0	36.7	

Data source: FI tables. It should be noted that the CO_2 reductions in the PDO indicators was in annual tons of emissions reductions, so these figures were multiplied by 15 years to determine the lifetime CO_2 reductions for the Project.

46. The Project's overall cost-effectiveness of the EE investments is quite favorable in terms of energy savings, at US$25/MWh (2.5 US¢/kWh). This is much lower than the cost of electricity supply in Turkey. The cost-effectiveness for GHG emissions reduction is also quite favorable, at US$45.0/tCO₂e. For the sample subprojects, the cost-effectiveness is fairly consistent with that of the portfolio, ranging from US$21.6-48.9/MWh for energy savings and US$36.7-83.8/ton of CO_2 reduction. These results are also somewhat comparable to similar EE projects financed by the Bank in the region, e.g., Ukraine Energy Efficiency Project and Turkey Private Sector Renewable Energy and Energy Efficiency Project.[3]

(iii) GEF grant leveraging was High.

47. From the GEF point of view, this Project achieved a very high leveraging effect, while the GEF grant also improved the efficiency of project implementation especially for the ESCO market. The US$3.62 million GEF grant (disbursed amount) leveraged more than US$268 million in EE investments, a leveraging ratio of 1:74. Such ratio is rare for the GEF, whose leveraging ratio is typically less than one-tenth of the ratio of this Project. Given the small amount of GEF funding, efficient use of the GEF grant was critical. The Project allocated the GEF grant for several purposes, including TA to the three FIs, policy and TA support to GDRE, and incentive for ESCOs. The US$2.7 million GEF TA and ESCO sub-grants supported more than 30 ESCO subprojects, which were financed by the FIs for a total US$13 million. The GEF sub-grant was also instrumental in raising awareness of the concept of ESCO among the FIs and the customers and paved the way for future replication and scale-up. Reallocating GEF resources as an incentive ESCO grant (as part of the project restructuring) provided an impetus for the FIs to undertake ESCO deals and thereby accelerated project implementation.

D. JUSTIFICATION OF OVERALL OUTCOME RATING

[3] Ukraine Energy Efficiency Project (sample subprojects at completion): US$19.2/MWh for energy savings and US$63.4/tCO₂e for GHG reduction; Turkey Private Sector RE and EE Project (sample subprojects at completion): US$17.0/MWh and US$26.0/tCO₂e.

48. Combining the assessments of Relevance (High), Efficacy (Substantial), and Efficiency (Substantial), the Overall Outcome is rated **Satisfactory**.

E. OTHER OUTCOMES AND IMPACTS

Gender

49. The Project had no provision to reduce gender gap. The Project's original results framework included a gender monitoring indicator (an intermediate indicator), requiring the FIs to track the percent of women-owned SMEs financed under the Project. During the restructurings, the end target for this indicator was revised to 0 based on the actual results to date. Although reducing gender gaps was not a requirement or an outcome indicator, the Project could have made more efforts to encourage the FIs to raise awareness of the gender gaps and promote women-owned businesses to achieve more positive gender impacts.

Institutional Strengthening

50. The Project substantially enhanced the institutional capacity of the participating FIs and MENR on EE financing for SMEs and built awareness of SMEs about EE through marketing and awareness raising activities. For FIs, their ability to market, identify, screen, appraise, finance and monitor EE subprojects was significantly enhaced. For MENR, their policies, programs, communications, ESCO development and other efforts were also strengthened. The successful completion of 325 EE subprojects, including 110 using alternative business models, created increased awareness and confidence about the benefits of EE investments.

Mobilizing Private Sector Financing

51. As discussed earlier, the Project had successfully mobilized about US$67 million private sector financing from the owners of SMEs and ESCOs. In addition, the Project has played a catalytic role in raising awareness among the FIs, the Government, and hundreds of SMEs on the EE market potential and demonstrated favorable financial and economic benefits of EE investment for future scaling-up.

Poverty Reduction and Shared Prosperity

52. Given that SMEs account for 78 percent of total employment in Turkey, support to the SMEs will have a positive impact poverty reduction and shared prosperity. More effective and competitive SMEs mean more employment opportunities and better livelihoods for the workers and their families and communities. By adopting new technologies, the workers also can learn new skills, making them better equipped for the future. By improving the use of energy in SMEs, the Project not only resulted in associated GHG reductions but also reduction of other local environmental pollution (e.g., NO_x, SO_x). The subprojects financed by the Bank loan also covered wide geographic regions of Turkey, thereby benefiting the economy, people, and communities in many areas across the country.

Other Unintended Outcomes and Impacts

53. As noted earlier, the GEF TA supported a study by MENR to assess public buildings in Turkey and estimated the investment needs and potential for EE improvement. The findings of this study provided critical market data for the design of a new EE project, the Turkey Energy Efficiency in Public Building Project (P162762). The design of this new project also drew lessons learned from the implementation experience of the Turkey SME EE Project, including institutional aspects of project management with MENR, the financing models with FIs including ESCOs, the

importance of policy dialogue and capacity building, as well as monitoring, verification, and evaluation of energy savings.

III. KEY FACTORS THAT AFFECTED IMPLEMENTATION AND OUTCOME

A. KEY FACTORS DURING PREPARATION

Project Design

54. According to the PAD, the Project design incorporated experience and lessons learned from previous Bank-financed EE projects using credit lines within and outside the ECA region from 2002 to 2011, such as those from China, India, Tunisia, Ukraine, Uzbekistan (some of which were co-financed by the GEF), and the Turkey Private Sector Renewable Energy and Energy Efficiency Project (2009), co-financed by the CTF. The Project design was also informed by World Bank and ESMAP publications related to EE financing and ESCO development.

55. Several lessons were explicitly incorporated into the Project design, such as selection of strong banking partners with demonstrated interest and commitment in lending to SMEs for EE, standardization of EE assessments to lower transaction costs, promotion of simple business models, clear and transparent eligibility criteria and ongoing TA to address changing market conditions and emerging implementation realities. All three participating FIs selected by the Government had extensive SME customer bases and strong technical staff, and all expressed interest to develop their EE lending businesses. During preparation, the Bank with support from ESMAP, developed an EE screening tool to help the FIs ensure the technical eligibility criteria (i.e., at least 20 percent reduction in energy use per unit of output or at least 50 percent of the project benefits to come from energy cost savings). The Bank also prepared a simple Project Data Sheet and Commissioning Sheet so the FIs could easily report financed subprojects. The FIs were provided TA funds to hire technical consultants to assist them with marketing, eligibility screening, energy saving reporting, ex-post verifications and training.

56. With respect to the development of a subproject pipeline and early successes, this is an area that could have been strengthened. None of the FIs had significant subproject pipelines at the time of the Project approval, which in part led to the slow uptake in the early years. This was in part due to the fact that the FIs wanted to hire the TA consultants before doing extensive marketing (which took time as none of the FIs were familiar with Bank procurement procedures), FIs were focused on other credit lines (e.g., Halk had an AfD credit line, Vakif had EBRD's TurSEFF, Ziraat had the Bank's SME 2), and the FIs did not want to identify subprojects too early for fear that the subprojects would become stale by the time the Bank credit line was declared effective. Unfortunately, none of the FIs had agreed to initiate the consultant procurement before the funds were available which significantly delayed some aspects of the Project.

57. Institutionally, the Project was discussed with the Electric Power Resources Survey and Development Administration (EIE), which during Project preparation was dissolved and integrated into the Ministry of Energy and Natural Resources (MENR) in November 2011. A dedicated project coordination group was not established under the new General Directorate for Renewable Energy (GDRE), which led to some uncertainties in the ability to manage a portion of the GEF grant given their attention on the restructuring. To assist with administration of the GEF grant,

the General Directorate for Foreign Relations (GDFR) at MENR was assigned the fiduciary functions for the MENR portion of the grant. However, the inclusion of the MENR in the Project in addition to the three FIs added to the complexity and coordination challenges of the Project.

Risks and Mitigation Measures

58. At appraisal, the overall implementation risk was assessed to be Modest: Modest for project design and delivery; Low for the risks for governance and social and environmental safeguard; and High for the capacity of the implementing agencies. Such assessment overall is considered appropriate. The mitigation measures (upfront portfolio and market assessment, development of ESCOs and product lines, etc.) proposed to overcome the capacity constraints of the implementation agencies were in the right direction; however, the Project still ran into difficulties during the initial years of implementation. A major risk that was not identified or anticipated was the economic downturns, which led to slow uptake of the credit lines by the FIs and the SMEs. With the improvement of the economic conditions and stepped efforts by the Bank team working closely with the counterparts (including intensive supervision and project restructuring), implementation moved back on track and, with one-year extension, the Project fully achieved its objectives.

B. KEY FACTORS DURING IMPLEMENTATION

Factors subject to the control of government and/or implementing entities

59. Project implementation involved three participating FIs for Component 1 (EE investments) and MENR for Component 2 (policy support and TA). All three FIs were committed to the successful implementation of the Project, as was evidenced by the full disbursement of the credit lines and active participation in capacity building activities at headquarters and local branches. They were in full compliance with the Bank fiduciary, environmental and social requirements. On the M&E front, the three FIs created and maintained a database of the subprojects and carried out energy savings verification, economic analysis, and timely reporting.

60. For Component 2, several departments of MENR were involved during implementation: MENR's GDFR, which served as the PIU for project coordination and oversaw fiduciary responsibilities, and GDRE, which was mandated with the policy and research on EE and RE within MENR, provided technical expertise and oversaw the preparation of the TORs and contract execution. Coordination between GDFR and GDRE had some challenges during implementation, which resulted in some delays. The situation improved after a coordination mechanism was established and high-level ownership by MENR was reconfirmed. Recruitment of competent staff with a specific experience in World Bank financial management and procurement rules proved to be a challenge for the PIU of MENR. Staff recruitment and retention was critical for project financial management and implementation.

Factors subject to the control of the World Bank

61. Regular and proactive supervision by the Bank contributed to the success of the project. Through the supervision missions, the Bank provided much-needed guidance and advice to the Government and the FIs, resolved implementation issues as they rose, and took adaptive measures to accelerate project implementation. The Bank had had three Task Team Leaders (TTLs) during six years of project implementation. Although lower turnover of TTLs would have been more desirable, there was little disruption during the change of TTLs, as all subsequent TTLs had

been on the task team and had been involved in the Project from appraisal to implementation. Adequate training on Bank procurement procedures would help speed up project implementation at the early stage. The Bank could have provided more training prior to the tendering and implementation phase to help the PIUs better understand the contract management procedures and Bank guidelines for procurement.

Factors outside the control of government and/or implementing entities

62. Several exogenous factors contributed to the initial slow implementation of the project. On the domestic front, Turkey underwent some political turmoil between 2015 and 2016, with two general elections in 2015 and a coup attempt and the declare of state of emergency in 2016. The political situation led to a general downturn in the Turkish economy and caused uncertainty among the business community. In addition, the economic slowdown was derived from rising current account financing needs, the need for structural reforms, and a depreciation of the Turkish Lira. On the international front, the slowdown in global growth especially in EU affected negatively the Turkish economy since EU was Turkey's major trading partner, and many SMEs relied on the markets in Europe for export. The slowdown in Turkish growth was also related to the regional uncertainties created by the Syrian civil war, which had a significant negative impact on tourism as well as other industries. These political and economic factors negatively affected the demand for SME borrowing as well as project identification and pipeline development.

IV. BANK PERFORMANCE, COMPLIANCE ISSUES, AND RISK TO DEVELOPMENT OUTCOME

A. QUALITY OF MONITORING AND EVALUATION (M&E)

63. The quality of M&E is assessed at the levels of design, implementation, and utilization.

M&E Design

64. The Project results framework appeared to be well designed overall, with appropriate indicators to measure the desired outcomes (energy savings and associated GHG emissions reduction), along with reasonable targets units of measurement. This is consistent with similar projects in other regions. However, there were three areas where the results framework could have been strengthened. The first relates to the component of the PDO "by scaling-up commercial bank lending for energy efficiency investments". It was not clear if this objective would be met if the FIs had fully utilized their respective credit line resources, or if this would depend on other factors, such as FI co-financing during the Project period, financing of EE by other commercial banks, and/or commitments to finance EE beyond the Project period. This objective could have been more clearly defined, with appropriate indicators developed. Second, there was lack of clarity with respect to the objective of "removing barriers to EE financing in the SMEs", and there were no clear indicators to measure the achievement. Third, the expected pace of implementation reflected in some of the intermediate targets could have been more realistic. The results framework, for example, projected 30 subprojects for US$35 million by the end of Year 1 which proved to be unrealistic. This milestone was not actually met until late in Year 2.

65. In addition, there were a few shortcomings with a few other intermediate indicators/targets. With respect to "percentage of active loans to women-owned businesses," the baseline was 0, the target was 15 percent for Year 1, 20

percent for Year 2, and 25 percent for Year 3 and thereafter. It was not clear how the annual targets were determined and if they were based on realistic market data. Several intermediate indicators/targets were significantly revised, e.g., the number of SMEs attending awareness raising activities had a target of 4,000, which was subsequently revised to 750; the volume of EE investments using the EE screening tool was revised from US$225 million to US$12 million. The results framework could have been more streamlined to include fewer intermediate indicators (the PAD included 12) and stronger analysis of the end targets.

66. The Project's underlying background analysis and rationale for Bank assistance was sound, and the Project design appropriately incorporated lessons learned from previous Bank operations in Turkey and other countries. The operation's theory of change was clearly articulated, and the results framework included outcome indicators for each of the two PDOs as well as a range of intermediate indicators to capture project outputs.

67. One notable strength of the project design with respect to M&E was the emphasis on monitoring and verification of energy savings during subloan repayment period. Such activities were well reflected and costed in the project design. In fact, this was one of the few Bank credit lines that emphasized conducting ex-post assessments of completed subprojects to verify that the energy savings estimates in the assessments/audits were actually achieved. Frequency and responsibility of data collection was clearly explained in the PAD and results framework. The Project design required both estimates of pre-project energy consumption and estimated savings based on technical feasibility reports and post-project energy savings based on data at commissioning. These measures and requirements laid a solid foundation for results reporting during implementation.

M&E Implementation

68. During project implementation, M&E data were collected and analyzed in a methodologically sound manner. The three FIs used an agreed format to collect detailed data at the subproject level, with parameters including baselines and post-project production and energy use, loan and investment amounts, and energy savings and GHG emissions reduction. Assumptions on estimating lifetime energy savings and GHG emissions reductions as well as emission factors to convert energy savings to GHG emissions reduction were consistently used for the subproject portfolios across the three FIs. It is indeed very impressive that the M&E system established by the Project and implemented by the FIs was applied to more than 300 subprojects of EE investments by the FIs. The high level of detail in M&E kept the Bank team well informed of the subproject portfolios of the FIs where EE investments were deployed and enabled the FIs and the Bank team to assess progress toward achieving the outcomes of the PDOs throughout project implementation.

M&E Utilization

69. M&E data on performance and results progress were effectively used to inform project management and related decision-making. Implementation progress was closely monitored using the Project's outcome and results indicators. The proactive management approach of the implementing agencies and the Bank allowed implementation issues to be identified, options to be developed and timely decisions to be made as needed. M&E data provided critical inputs to the FI progress reports. The M&E system provided the basis to enable the Bank team to make informed decisions regarding the changes made of subproject selection criteria and reallocation of GEF grants to accelerate disbursement and project implementation as well as modification of results framework (i.e., target values) during project restructurings.

Justification of Overall Rating of Quality of M&E

70. The overall quality of M&E is rated **Substantial.** The M&E system design was sound. The results framework had some minor shortcomings but were corrected during implementation. M&E implementation was sufficient to assess the achievement of the objective with the indicators in the results framework measured and reported in the ISRs. The quality of M&E utilization was high in that M&E information made a positive influence in the implementation direction and decision-making during project restructurings and provided strong evidence of achievement of outcomes.

B. ENVIRONMENTAL, SOCIAL, AND FIDUCIARY COMPLIANCE

71. Overall safeguards implementation performance is considered **Satisfactory.** The Project was assigned Category "FI" as project that involve a financial intermediary. The Environmental Assessment (OP4.01) was triggered because of the nature of activities which included small-scale subprojects. As the Project did not involve land acquisition, Resettlement (OP4.12) was not triggered. An Environmental Management Framework was prepared as specific investments were to be identified only during implementation. The participating FIs screened environmental impacts, worked with their clients to prepare subproject technical and environmental documents, and supervised implementation as required.

72. Fiduciary compliance is considered **Satisfactory.** The Project complied with all fiduciary covenants. Internal control arrangements were put in place, and adequate financial management (FM), procurement, and disbursement systems were maintained.

73. Financial management is considered **Moderately Satisfactory.** The Bank's supervision mission and annual Project audits did not note any significant problems or internal control weaknesses. The implementing agencies managed the Project in an acceptable way but with deficiencies that could have been addressed along the way. The participating FIs maintained proper systems for accounting and reporting but could have taken more ownership and commitment. The level of ownership and mastery vis-a vis the FM arrangements varied from one implementing agency to another. While all agencies were very fast in responding to queries, there were delays in complying with the deadlines for financial reports and audits. This was partly due to the overloaded schedule of staff with other responsibilities within their institution, and partly to technical issues where, in some cases, the appointed staff faced difficulties understanding the logic in the financial reporting tables or reviewing the auditors' draft reports and identifying major errors, which required some back-and-forth to maintain the FM arrangements at an acceptable level during implementation. A clear reporting structure to higher levels of management within the participating FIs and more targeted training to the staff appointed for FM functions would have been helpful. The final audit was carried out by an internationally affiliated firm, in full compliance with the international standards.

74. Procurement performance is considered **Satisfactory.** Procurement under the loan component was undertaken by respective private enterprise beneficiaries in accordance with the well-established private sector procurement methods and commercial practices. The GEF grant funded activities were implemented by the FIs and MENR which followed the World Bank's procurement policies and procedures. In light of small value goods or contracts, simple procurement method was utilized including request for quotations, or consultant qualification-based section. The procurement adequately met the World Bank's requirements to ensure that funds were used for

the intended purposes. There were procurement delays due to implementation bottlenecks, but the situation improved over time, and the Project reached full disbursement by the Project's revised Closing Date.

C. BANK PERFORMANCE

Quality at Entry

75. The Bank team focused on gaps and opportunities for interventions to improve energy efficiency in the SME sector in Turkey during project identification. During project preparation, the team considered all major relevant aspects such as technical, financial, economic, institutional, and procurement. Major risk factors and lessons learned from earlier projects were also considered and incorporated into the design. The Project was well grounded in the realities of Turkey and the challenges in financing EE investments in the SME sector and was focused on designing intervention strategies to achieve the Project's objectives. An experienced and committed task team was constituted to provide technical support for preparation. However, as noted earlier, the team could have paid more attention to improving the results framework and focused additional time on early subproject pipeline development.

Quality of Supervision

76. The Project was subject to implementation supervision missions approximately every six months that monitored progress and provided extensive support. The Bank team included the Task Team Leader, technical experts, environmental, social, financial management, and procurement specialists, and consultants. The team consistently and closely engaged the participating FIs and MENR. The Task Team collected relevant data on a regular basis and updated current progress against the baseline. ISRs were candid and targeted to outline important events, changes in the pace of implementation and highlighted issues for Bank management attention. The Task Team responded appropriately, generally worked proactively to address implementation challenges and on time to all Government's requests. The Bank team's support resulted in timely adjustments including project restructurings, adjustments to eligibility criteria, conversion of the GEF ESCO LLRF to subgrants and reallocations of funds. The Project had a very slow start, was rated Marginally Unsatisfactory for 5 of 13 ISRs, but was still able to fully disburse and meet all the PDO targets, pointing to substantial efforts taken during supervision by the team and the FIs.

Justification of Overall Rating of Bank Performance

77. Based on the above assessment at both Quality at Entry and Quality of Supervision, the overall rating of the Bank Performance is considered **Satisfactory**.

D. RISK TO DEVELOPMENT OUTCOME

78. The overall risk to development outcome is rated **Modest.** This assessment is based on four considerations: (i) technical and financial risk of the EE investments, (ii) enabling EE policy environment, (iii) economic conditions, and (iv) SME EE market transformation.

79. The technical and financial risk in achieving the expected outcomes of energy savings and GHG emissions reduction is low. Given the mature EE technologies deployed by the SMEs, the rigorous process of identifying and appraising the subprojects, and the good payback and financial and economic rate of return, the energy savings and GHG emissions reduction are likely to last through the lifetime of the subprojects.

80. The risk of lack of enabling policy environment for EE investments is low. The Government is fully committed to promoting energy efficiency as a core development and energy policy. Legal and regulatory measures have been strengthened, and institutional capacity is also being strengthened, through implementation of the National Energy Efficiency Action Plan and other policies and measures. The enabling policy environment will be conducive to the long-term sustainability of the EE investments as well as attracting more investments for energy efficiency in SMEs.

81. The risk of changing economic and political conditions is modest to substantial. Exogenous factors can impact the risk of development outcome, such as economic downturns, dampened export markets, and currency fluctuations, and political upheavals. These factors may have a negative impact on the financial situation of the SMEs and the EE investments. Rising energy prices may increase the cost of production for the SMEs, but EE investments should help the SMEs better cope with rising energy prices, while high energy prices can provide incentives for the SMEs to invest in energy-efficient technologies and measures in the long run.

82. The risk of the SME EE market not sustainably transformed is substantial. Despite the enhanced policy framework and capacity developed in the Government and participating FIs and SMEs, achieving long-term sustainability beyond the Project remains a challenge. The size of the SME market as well as the bank sector is enormous; alternative business models, especially ESCOs, still prove to be complicated and may require further support before they can realize their full potential. Continued support from the Bank will be critical to help sustain the development outcome of the operations to achieve market transformation of scaling up EE investments in SMEs.

V. LESSONS AND RECOMMENDATIONS

83. A number of important lessons have emerged from the Project. These are summarized below in three broad categories: (1) the use of financial intermediaries to support EE in SMEs; (2) project design aspects; and (3) broader lessons for achieving EE objectives.

(1) Using financial intermediaries to support energy efficiency in SMEs

84. **Strong management commitment and use of multiple banks allows for competition and sharing of lessons and experiences.** Success of the credit line required commitment from the senior management of the FIs and a conducive internal structure. Since most of the marketing was delegated to SME divisions, branch offices, and relationship managers, the willingness and ability of the FI management to ensure close collaboration between the PIUs at the headquarters and their other divisions was important, and the training, marketing strategies, and pipeline development also need to be properly calibrated and target the right staff. Furthermore, proper incentives were needed to motivate the marketing departments to fully commit the credit line resources and sustain the business line beyond the Project. To allow for some competition, the Government requested that the Bank include three FIs under the Project. While this created some challenges during supervision and spread the credit line and TA resources across three banks, the competition and sharing of lessons across the banks proved very important. This competition also

helped reduce the potential for market distortion through competitive pricing. There were several instances where one bank was able to advise another on implementation issues, such as how to structure the ESCO contracts and how to work with vendors.

85. **The use of a credit line with local banks was critically important to help address the gap in lending to SMEs for EE.** Despite the strong presence of the three FIs in the SME sector across a wide range of manufacturing and service industries, they had not provided much financing for EE improvements and upgrades because they did not know the business, typical subproject risks, or how to assess energy savings cash flows. The credit line allowed the FIs to learn by doing while benefitting from the more attractive terms of the Bank loan to allow for lending for EE projects with higher perceived risks, longer tenors, and newer business models. By using the resources dedicated to their FIs, they were able to build their capacity (in subproject identification, appraisal, monitoring) and develop this new line of business, which can now be sustained more easily without further inputs. It was also observed that the default rate under the Project was less than 2 percent for the FIs, lower than the typical default rate, which helped the FIs justify their EE businesses.

86. **The combination of the credit line resources and TA were also critical for success.** The provision of TA was very important for the FIs to develop their businesses – funds to support FI staff training, marketing events, development of standard documents and templates, etc. There was also a wide range of implementation issues that emerged during the implementation phase. Having Bank resources and supervision along with provisions for as-needed TA was critical in identifying and addressing these challenges. However, it is important that the provision of TA does not lead to FI dependence on external experts rather than to build their internal capacities, which appear to have been at least partially evident in some of the FIs.

(2) Project design aspects

87. **The use of TA funds to include policy work under the Ministry also helped ensure sustainability.** Policy and regulatory measures can help build an enabling environment for scaling up EE investments. The policy gaps analysis conducted under the GEF grant and parallel work contributed to the Government's development and adoption of the 2018 NEEAP. However, the inclusion of a fourth implementing agency under the Project added another layer of complexity in supervision and coordination. In the end, such policy support using GEF resources was important. But given the expanded mandate for MENR in the EE agenda, some plan for continued support to MENR could have been developed before the Project ended.

88. **The development of alternative business models, including off-balance sheet financing, is important to develop a sustainable energy efficiency market.** The FIs found the TA to promote the use of alternative business models, such as leasing of energy-efficient equipment, vendor credit from suppliers of energy-efficient equipment, and energy performance contracts through ESCOs to be very important in identifying subprojects and helping clients with the subproject preparation phase. While the FIs were cautious about such models in the early years, not wanting their banks to be viewed as promoting certain technologies or suppliers, they were eventually able to work with a variety of partners which proved to be an efficient way to use credit line sources. Financing extended by the FIs through alternative business models represented about 35 percent of the fund committed (mostly in the last two years) of the Project. ESCO deals as the guarantors of the performance contracts were particularly challenging due to the perceived risks. The TA support helped various stakeholders to understand the performance contract, while the

GEF incentive grant also made it attractive for the guarantors to enter into the performance contract based ESCO deals. These ESCO template contracts were since shared with MENR for further dissemination.

89. **The loan loss reserve fund for ESCOs was not successful, but the subgrants were able to stimulate some important experiences for ESCOs.** The LLRF was insufficient to allow the FIs to lend to small ESCO firms with weak balance sheets and little or no track record in the market. The experience with similar guarantee and other credit enhancement schemes in the region and beyond has generally yielded similar conclusions. The subgrants were designed to be small enough (initially 10 percent and increased to 20 percent in the final year of the Project) to help facilitate a number of ESCO deals. It therefore met its objective. However, all the FIs indicated that continued ESCO deals would require some grant or other incentives due to the added complexities and transaction costs for the clients.

90. **Flexibility should be built into project design.** The Project underwent three restructurings, and at least the first one could have been avoided if more flexible subproject eligibility criteria had been in place, or the eligibility criteria be specified in the Operational Manual rather than the legal documents. Given the challenges of generating deal flows for EE credit lines, design of EE projects should focus on a few key technical criteria.

(3) Broader lessons for scaling up energy efficiency

91. **Energy efficiency investments in Turkey are good, low-risk businesses for the FIs and have great potential for achieving both development and climate mitigation objectives.** As noted earlier, the cost effectiveness of the EE investments under the Project (at US$25/MWh) is substantial less than other energy supply options. These investments allowed the SME clients to modernize their equipment, expand their production lines, lower operating costs and in many cases improve the quality of their production in a wide variety of sectors across Turkey. The favorable FIRR and relatively short payback periods of the EE investments suggest that such investments are profitable for the SMEs and are a good business for the FIs. Furthermore, EE investments have achieved significant GHG emissions reduction, contributing to the Government's INDC under the Paris Agreement while strengthening its position for international climate change negotiations. Given the projected economic growth and high energy price, the Government should continue to consider EE investments as a cost-effective option for Turkey to meet both development and climate change objectives.

92. **Energy efficiency policies provide a critically important enabling environment for investments to be made but policies alone are an insufficient condition to ensure investments will be made.** Policies can provide a good framework, but they must be backed-up by regulations and enforcement, credible high-quality information and case studies, affordable and appropriate financing, technical capabilities, access to technologies and other factors. Engagement with the private sector and making the business case for EE is critically important to mobilize the banks, equipment suppliers, banks, and SMEs into the EE business.

ANNEX 1. RESULTS FRAMEWORK AND KEY OUTPUTS

A. RESULTS INDICATORS

A.1 PDO Indicators

Objective/Outcome: Improve the efficiency of energy use in small and medium enterprises

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Projected lifetime energy savings	Megawatt hour(MWh)	0.00 28-Mar-2013	307000.00 28-Sep-2018	7500000.00 30-Sep-2019	10730743.00 30-Sep-2019

Comments (achievements against targets):
The original target was in GWh/yr and revised target in lifetime MWh. The original target would have been 6,140,000 MWh.

Objective/Outcome: Reduce GHG emissions through the removal of barriers to EE financing in the SME sector

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Associated GHG reductions from project investments (Tons of CO2e/ year)	Tones/year	0.00 28-Mar-2013	154400.00 28-Sep-2018	220000.00 30-Sep-2019	397796.00 30-Sep-2019

Comments (achievements against targets):

A.2 Intermediate Results Indicators

Component: Component 1: Energy efficiency investments in SMEs

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Volume of bank funding: lines of credit - SME	Amount(USD)	0.00 28-Mar-2013	121000000.00 28-Sep-2018	106000000.00 30-Sep-2019	156928221.00 30-Sep-2019

Comments (achievements against targets):

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Total value of EE investments	Amount(USD)	0.00 28-Mar-2013	292600000.00 28-Sep-2018	230000000.00 30-Sep-2019	268393731.00 30-Sep-2019

Comments (achievements against targets):

Indicator Name	Unit of	Baseline	Original Target	Formally Revised	Actual Achieved at

	Measure			Target	Completion
Number of EE loans given	Number	0.00 28-Mar-2013	200.00 28-Sep-2018	200.00 30-Sep-2019	325.00 30-Sep-2019
Comments (achievements against targets):					

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Number of loans given using alternative business models	Number	0.00 28-Mar-2013	45.00 28-Sep-2018	60.00 30-Sep-2020	110.00 30-Sep-2019
Comments (achievements against targets):					

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
No of active loan accounts - SME	Number	0.00 28-Mar-2013	160.00 28-Sep-2018	160.00 30-Sep-2019	201.00 30-Sep-2019
Percentage of project-supported institutions that are reporting on this indicator	Percentage	0.00	100.00 25-May-2018	100.00	100.00
Comments (achievements against targets):					

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Portfolio at risk - SME Halkbank	Percentage	0.00 28-Mar-2013	2.00 28-Sep-2018	2.00 30-Sep-2019	1.00 30-Sep-2019

Comments (achievements against targets):

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Portfolio at Risk - SME VakifBank	Percentage	0.00 27-Mar-2013	2.00 28-Sep-2018	2.00 30-Sep-2019	2.00 30-Sep-2019

Comments (achievements against targets):

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Portfolio at Risk - SME Ziraat Bank	Percentage	0.00 27-Mar-2013	2.00 28-Sep-2018	2.00 30-Sep-2019	0.00 30-Sep-2019

Comments (achievements against targets):

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Percentage of active loans to women-owned businesses	Percentage	0.00 28-Mar-2013	25.00 28-Sep-2018	0.00 30-Sep-2019	5.07 30-Sep-2019

Comments (achievements against targets):

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
EE investments using the EE screening tool	Amount(USD)	0.00 28-Mar-2013	225000000.00 28-Sep-2018	12000000.00 30-Sep-2019	16150000.00 30-Sep-2019

Comments (achievements against targets):

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Number of SMEs personnel attending awareness raising activities	Number	0.00 28-Mar-2013	4000.00 28-Sep-2018	750.00 30-Sep-2019	836.00 30-Sep-2019

Comments (achievements against targets):

Component: Component 2: Policy support and TA to GDRE

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Policy and institutional amendments to improve EE programming	Text	n/a 28-Mar-2013	Final set of amendments submitted for approval/adoption 28-Sep-2018	Final set of amendments submitted for approval/adoption 30-Sep-2019	Set of recommendations prepared and partially adopted 30-Sep-2019

Comments (achievements against targets):

ANNEX 2. BANK LENDING AND IMPLEMENTATION SUPPORT/SUPERVISION

A. TASK TEAM MEMBERS

Name	Role
Preparation	
Shinya Nishimura	Task Team Leader
Jasneet Singh	Energy Efficiency Specialist
Salih Kemal Kalyoncu	Procurement Specialist
Zeynep Lalik	Financial Management Specialist
Esra Arikan	Environmental Specialist
Margaret Png	Lead Counsel
Jari Vayrynen	Senior Envirnmental Specialist
Chukwudi H. Okafor	Senior Social Development Specialist
Alper Ahmet Oguz	Financial Sector Specialist
Regina Oritshetemetin Nesiama	Senior Program Assisant
Selma Karaman	Program Assistant
Supervision/ICR	
Jasneet Singh	Task Team Leader (2017-ICR)
Shinya Nishimura	Task Team Leader (2011-2015)
Jari Vayrynen	Task Team Leader (2015-2017)
Salih Bugra Erdurmus	Procurement Specialist
Zeynep Lalik	Senior Financial Management Specialist
Hulya Bayramoglu	Procurement Team
Salih Kemal Kalyoncu	Senior Procurement Specialist
Arzu Uraz Yavas	Social Specialist
Esra Arikan	Senior Environmental Specialist
Selcuk Ruscuklu	Program Assistant
Lisa Lui	Lead Counsel
Aditya Alexander Lukas	Energy Efficiency Specialist
Thuy Bich Nguyen	Program Assistant

B. STAFF TIME AND COST

Stage of Project Cycle	Staff Time and Cost	
	No. of staff weeks	US$ (including travel and consultant costs)
Preparation		
FY11	3.950	19,928.45
FY12	52.731	203,499.09
FY13	24.261	134,829.01
Total	**80.94**	**358,256.55**
Supervision/ICR		
FY13	1.100	51,293.09
FY14	15.788	85,648.00
FY15	31.273	143,967.82
FY16	24.832	99,272.95
FY17	14.888	64,771.37
FY18	5.158	52,359.29
FY19	6.009	61,147.15
FY20	5.557	48,665.45
Total	**104.61**	**607,125.12**

ANNEX 3. PROJECT COST BY COMPONENT

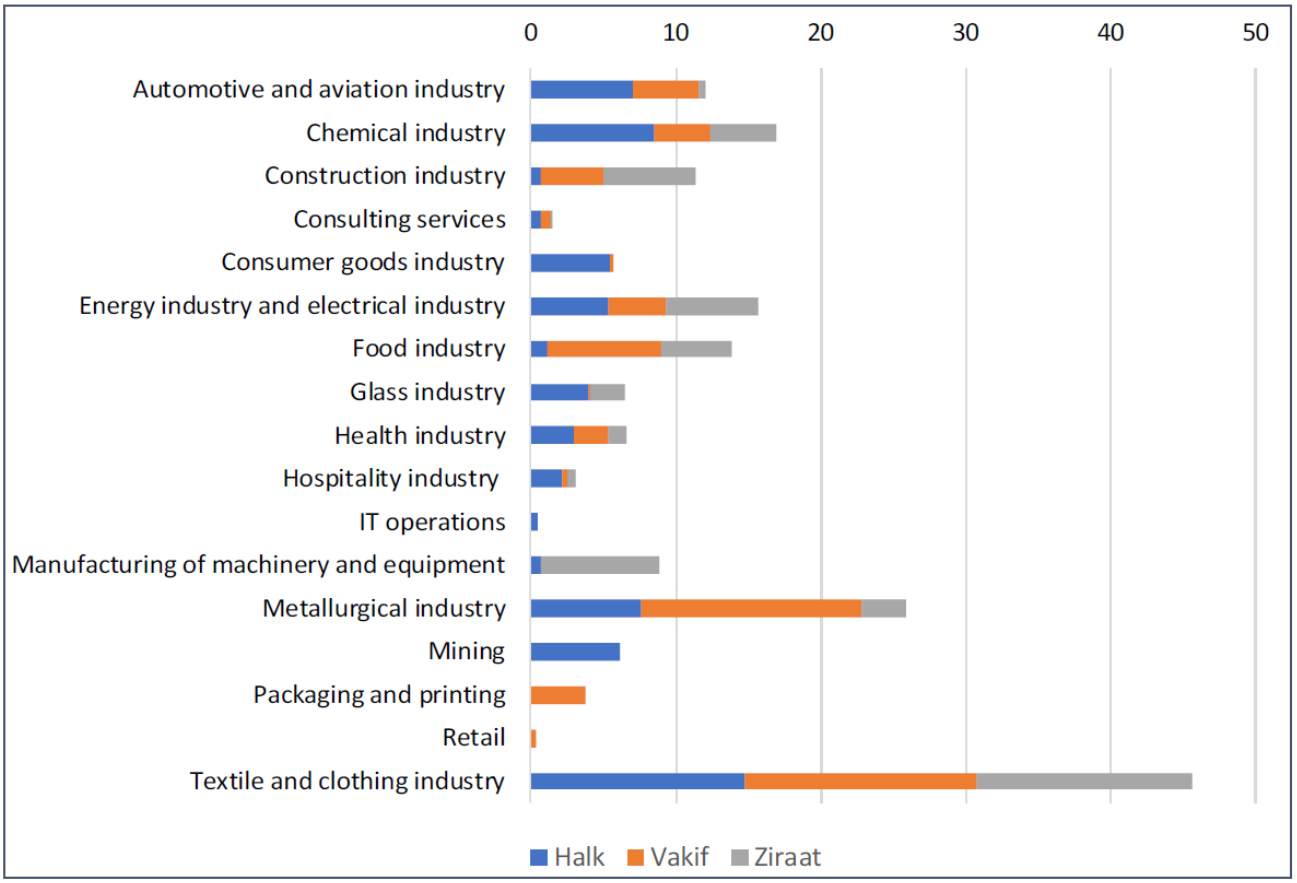
Table 3.1: Project Cost by Component

Project Component and Source of Financing	Amount at Approval (US$M)	Actual at Project Closing (US$M)	Percentage of Approval (%)
1. EE Investments in SMEs			
IBRD	201.00	201.00	100
GEF	2.70	2.67	99
FIs	50.25	2.86	6
MENR	1.00	0.00	0
SMEs/ESCOs	40.00	64.53	161
Total	294.95	271.06	92
1.1 IBRD on-lending			
IBRD	201.00	201.00	100
FIs	50.25	2.86	6
SMEs/ESCOs	40.00	64.53	161
Subtotal	291.25	268.39	92
1.2 LLRF and ESCO Sub-grants			
IBRD	0.00	0.00	
GEF	1.35	1.52	113
FIs	0.00	0.00	
Subtotal	1.35	1.52	113
1.3 FI TA (project development, appraisal, and monitoring)			
GEF	1.35	1.15	85
FIs	0.00	0.00	
MENR	1.00	0.00	0
Subtotal	2.35	1.15	49
2. Policy Support and Technical Assistance			
GEF	0.94	0.91	97
FIs	6.00	6.00	100
MENR	4.00	4.00	100
Total	10.94	10.91	100
2.1 Market development and information dissemination			
GEF	0.44	0.50	114
MENR	2.00	2.00	100
Subtotal	2.44	2.50	102
2.2 Policy dialogue and capacity building within MENR			
GEF	0.35	0.20	57
MENR	1.00	1.00	100
Subtotal	1.35	1.20	89
2.3 Project management			
GEF	0.15	0.21	140
FIs	6.00	6.00	100
MENR	1.00	1.00	100
Subtotal	7.15	7.21	101
Grand total	**305.89**	**281.97**	**92**

Table 3.2: Portfolio Overview

	Halk	Vakif	Ziraat	Total
Basic data				
WB credit line (US$)	67,000,000	67,000,000	67,000,000	201,000,000
Total loan amounts (US$)	67,677,333	68,318,437	67,864,929	203,860,699
Total investments (US$)	95,057,022	85,228,494	88,108,215	268,393,731
Avg loan size (US$)	727,713	474,434	771,192	627,264
Avg investment size	1,022,119	591,865	1,001,230	825,827
* Total loan amounts include loans from the FIs.				
** Total investments include equity from the borrowers.				
Number of loans				
SME	89	125	69	283
Mid-Cap excl ESCO/Vendor	4	17	12	33
Mid-Cap ESCO/Vendor	0	2	7	9
Total	93	144	88	325
Loan amounts (US$)				
SME	63,092,324	49,866,039	43,969,858	156,928,221
Mid-Cap excl ESCO/Vendor	4,585,009	17,417,910	18,424,571	40,427,490
Mid-Cap ESCO/Vendor	0	1,034,488	5,470,500	6,504,988
Total	67,677,333	68,318,437	67,864,929	203,860,699
Shares of loan amounts				
SME	93.2%	73.0%	64.8%	77.0%
Mid-Cap excl ESCO/Vendor	6.8%	25.5%	27.1%	19.8%
Mid-Cap ESCO/Vendor	0.0%	1.5%	8.1%	3.2%
Total	100.0%	100.0%	100.0%	100.0%
Number of loans using alternative business models*				
ESCO	9	11	11	31
Leasing	22	18	13	53
Vendor	12	3	11	26
Total	43	32	35	110
*Data include both SMEs and Mid-Caps.				
Loan amounts using alternative business models (US$)				
ESCO	6,262,122	3,698,078	2,867,834	12,828,034
Leasing	12,242,344	12,766,611	11,215,820	36,224,775
Vendor	7,784,075	1,952,358	12,305,548	22,041,981
Total	26,288,541	18,417,046	26,389,202	71,094,790
Shares of loan amounts				
ESCO	24%	20%	11%	18%
Leasing	47%	69%	43%	51%
Vendor	30%	11%	47%	31%
Total	100%	100%	100%	100%

Figure 3.1: Loans by Industrial Sector
(Million US$; data as of June 2019)



ANNEX 4. EFFICIENCY ANALYSIS

1. **Efficiency of the Project is rated Substantial**. The efficiency of the investments was assessed in terms of (i) cost-benefit and (ii) cost-effectiveness. The cost-benefit analysis compares the financial internal rate of return (FIRR) and economic internal rate of return (EIRR) of a sample of representative subproject investments both at the stage of appraisal and at completion. Cost-effectiveness analysis assesses investment cost per unit of energy savings and investment cost per unit of CO_2 emissions reduction. The post-completion assessment applies the same metrics used during Project appraisal. None of the loan proceeds were used for Project management by the three FIs, allowing 100 percent of the loan proceeds to directly invest in EE investments.

(i) Cost-benefit was Substantial

2. **Economic and financial analysis at appraisal.** Given that the Project was an FI operation, the actual subprojects to be financed were not known upfront. At the appraisal stage, the Project team reviewed a sample of eight representative subprojects from different sectors that had been financed by the participating FIs through their other credit lines for financial and economic viability. Considered in the calculation were costs of the EE-related investment and incremental operational expenditures. Benefits considered for the analyses included energy savings and environmental benefits priced at US$10/ton of CO_2 mitigated. The FIRR was calculated using the same methodology but did not include any quantified CO_2 benefits. The simple payback periods were also calculated. The EIRRs ranged from 14.9 to 34.9 percent for sample subprojects that replaced equipment without increasing production capacity, and from 13.3 to 81.1 percent for sample subprojects that increased production capacity. The FIRRs ranged from 13.4 to 30.5 percent for sample subprojects that replaced equipment without increasing production capacity, and from 11.9 and 67.0 percent for subprojects that increased production capacity (see Table 4.1 for details). For the FIRR, the Project had set a target of minimum 8 percent as one of the eligibility criteria for the IBRD credit lines.

Table 4.1 Economic Analysis of a Sample of Representative Projects at Appraisal

Sub-sector	Investment technology/system	Investment Cost (US$)	NPV (US$)	EIRR (%)	EIRR Stress Test	FIRR (%)	Payback (years)*
EE savings only, no increase in capacity							
Textile	Lighting	37,019	32,240	28.8	23.1	24.8	2.5
Textile	Motors	155,393	184,038	34.9	28.4	30.5	2.2
Machinery and equipment	Plastic injection mold machinery	479,821	495,358	14.9	10.9	13.4	2.5
Metal Products	Aluminum press machinery	570,000	990,012	27.7	22.8	26.4	1.8
Increased capacity							
Metal products	Aluminum continuous casting line and furnace	2,600,000	9,698,907	81.1	78.6	67.0	5.8
Food and Beverage	Chocolate and cake production line equipment	1,900,117	929,456	15.4	14.2	14.0	3.3
Machinery and Equipment	Cogeneration and compressors	528,765	484,492	27.9	26.5	23.3	10.1
Metal products	Cooling tower	26,000	2,490	13.3	9.6	11.9	4.1

*Calculated based on the cashflow from energy savings only.

3. **Economic and financial analysis at completion.** During the progress reporting, all three FIs provided data on and financial analyses for each financed subproject, including the loan size, fuel saved, pre- and post-

production levels, FIRR and payback period. Similarly to the appraisal stage, the financial analysis considered costs of the EE investment, changes in operational expenditures, energy savings, and increased sales in the case of a capacity increase. As Table 4.3 shows, the average FIRRs and the range of financed subprojects were largely consistent with those determined in the sample subprojects at the appraisal stage (see also Borrower's ICRs in Annex 5) and all financed subprojects exceeded the minimum FIRR of 8 percent required by the Project. Halkbank reported an average 24 percent FIRR of their EE investments, ranging from 9 to 88 percent, although most projects were around 20 percent. The average payback of the EE investments was just over four years. VakifBank reported a similar average FIRR of 22 percent for their EE investments, with a similar range of 9 to 80 percent, and a similar average FIRR of around 20 percent. The average payback period for VakifBank's project investments was approximately five years. Data provided by Ziraat Bank showed a considerably higher FIRR than the other two FIs, with a very wide range of 9 to over 200 percent, with many projects in the 30-50 percent range. The average payback period for Ziraat Bank's investments was just over two years.

4. For the economic analysis, the ICR team selected three subprojects (one from each FI) representing three different sectors. The economic analysis considers cost of the EE investment and energy savings. Detailed assumptions and results of the economic analysis are provided in Tables 4.2 and 4.3. The results suggest that the EIRRs of the three selected subprojects are in line with those determined at appraisal.

Table 4.2: Assumptions for Economic Analysis of Sample Projects at Completion

	Value	Remarks
General Data		
Exchange rate (USD/TRY)	5.55	As of March 26, 2019
Tax on investment costs	18%	
Project lifetime (years)	15	
Cost of Energy		
Electricity (TRY/kWh)	0.45	Excluding tax/duties
	0.54	Including tax/duties
Cost of Carbon*		
Shadow price of carbon (USD/tCO_2e)	40	Starts at 40 and grows at 2.25% per year

*The Bank guidance on shadow price of carbon in economic analysis (November 2017) recommended a low value of US$40 and a high value of US$80 per tCO2 by 2020, increasing to US$50 and US$100 by 2030 (*http://documents.worldbank.org/curated/en/621721519940107694/pdf/2017-Shadow-Price-of-Carbon-Guidance-Note.pdf*). For the purpose of the economic analysis here, the low values of shadow price of carbon are used.

Table 4.3: Results of Economic Analysis of Sample Projects at Completion

	EE Investment (US$)	Financial analysis (Based on data from FIs)		Economic analysis w/ carbon	Economic analysis w/o carbon
		Payback (years)	FIRR (%)	EIRR (%)	EIRR (%)
Halkbank (mining, no capacity increase)	1,171,013	7.60	10.0	16.2	11.2
VakifBank (metallurgy, capacity increased by 194%)	177,000	1.91	52.3	28.9	21.8
Ziraat Bank (textile, capacity increased by 57%)	3,061,768	1.85	54.0	39.2	30.1

5. It should be noted that the economic analysis captures only the benefits of energy savings (and carbon benefits when included). However, there are other significant benefits from the EE investments that are not quantified, such as the increase in production capacity and sales, improved quality of products, and reduced maintenance cost. Therefore, the economic analysis presented here represents a conservative approach in quantifying the benefits. It should also be noted that for cost of carbon in the economic analysis, the post-project analysis uses a shadow price of carbon starting at US$40/tCO$_2$e as per current Bank guideline, while the analysis at appraisal used a constant carbon price of US$10/tCO$_2$e. However, sensitivity analysis suggests that this factor has a fairly small impact on the EIRRs.

(ii) Cost-effectiveness was Substantial

6. **Cost-effectiveness analysis at completion.** Cost-effectiveness was not assessed at the appraisal stage. At completion, the cost-effectiveness was assessed using two metrics based on data from the FIs: (i) cost of energy saved (total EE investments divided by lifetime energy savings); and (ii) cost of CO_2e reduced (total EE investments divided by total GHG emissions reduction). The assessment was carried out both at the portfolio level for each of the three FIs and at the subproject level using the same sample subprojects for the cost-benefit analysis. Table 4.4 summarizes the results of the cost-effectiveness analysis.

Table 4.4: Cost-Effectiveness of Subproject EE Investments at Completion

	Halk	Vakif	Ziraat	Total
Portfolio				
EE investments (US$) Energy savings (MWh) GHG reduction (tCO$_2$e)	95,057,022 4,734,108 1,527,833	85,228,494 1,551312 716,205	88,108,215 4,445,323 3,722,908	268,393,731 10,730,743 5,966,946
Cost-effectiveness of energy savings (US$/MWh) Cost-effectiveness of GHG reduction (US$/tCO2)	20.1 62.2	54.9 119.0	19.8 23.7	25.0 45.0
Sample Subprojects				
EE investment (US$) Energy savings (MWh) GHG reduction (tCO$_2$e)	1,171,013 23,967 13,980	177,000 6,060 3,540	3,061,768 141,574 83,437	
Cost-effectiveness of energy savings (US$/MWh) Cost-effectiveness of GHG reduction (US$/tCO$_2$)	48.9 83.8	29.2 50.0	21.6 36.7	

Data source: FI tables.

7. The Project's overall cost-effectiveness of the EE investments is quite favorable in terms of energy savings, at US$25/MWh (2.5 US¢/kWh). This is much lower than the cost of electricity supply in Turkey. The cost effectiveness for GHG emissions reduction is also quite favorable, at US$45.0/tCO$_2$e. For the sample subprojects, the cost-effectiveness is fairly consistent with that of the portfolio, ranging from 2.2 to 4.9 US¢/kWh for energy savings and US$36.7 to US$83.8 per ton of CO_2 reduction. These results are also comparable to similar EE projects financed by the Bank, e.g., Ukraine Energy Efficiency Project and Turkey Private Sector Renewable Energy and Energy Efficiency Project. [4]

Leveraging of GEF grant

8. Leveraging of GEF grant. From the GEF point of view, this Project achieved a very high leveraging effect, while the GEF grant also improved the efficiency of project implementation especially for the ESCO market.

[4] Ukraine Energy Efficiency Project (sample subprojects at completion): US$19.2/MWh for energy savings and US$63.4/tCO$_2$e for GHG reduction; Turkey Private Sector RE and EE Project (sample subprojects at completion): US$17.0/MWh and US$26.0/tCO$_2$e.

The US$3.62 million GEF grant (disbursed amount) leveraged more than US$268 million in EE investments, a leveraging ratio of 1:74. Such ratio is rare for the GEF, whose leveraging ratio is typically less than one-tenth of the ratio of this Project. Given the small amount of GEF funding, efficient use of the GEF grant was critical. The Project allocated the GEF grant for several purposes, including TA to the three FIs, policy and TA support to GDRE, and incentive for ESCOs. The US$2.7 million GEF TA and ESCO sub-grants supported more than 30 ESCO subprojects, which were financed by the FIs for a total US$13 million. The GEF sub-grant was also instrumental in raising awareness of the concept of ESCO among the FIs and the customers and paved the way for future replication and scale-up. The decision to reallocate GEF resources as an incentive ESCO grant (as part of the project restructuring) provided an impetus for the FIs to undertake ESCO deals and thereby accelerated project implementation.

ANNEX 5. BORROWER, CO-FINANCIER AND OTHER PARTNER/STAKEHOLDER COMMENTS

BORROWER'S ICR (HALKBANK)

1. INTRODUCTION

1. Increasing energy efficiency is a key priority of the Turkish the government, as it contributes to energy supply security, sustained growth, protection of the environment, and mitigation of climate change. Halkbank adopted an active role in this context by raising awareness among SMEs regarding the benefits of saving energy costs through conservation. This effort was supported by making targeted credit facilities available to SMEs, funded by a credit line provided by the World Bank.

2. Halkbank signed a USD 67 million loan protocol with the World Bank in order to finance the capital needed for energy efficiency investments by SMEs and small midcap companies. With the energy efficiency loan scheme, Halkbank not only provided loans to SMEs to finance their energy efficiency improvements but ultimately also helped these SMEs to increase their strength in the international competitive environment.

3. The overall objective of the initiative was to improve the efficiency of energy use in small and medium sized enterprises in Turkey by scaling up commercial bank lending for energy efficiency investments.

4. The Project was supported by consultancy services that included:

- energy audits including walk-through audits and investment grade audits
- development of special energy efficiency project financing products
- verification and monitoring of energy savings
- training of Halkbank staff for capacity building purposes as well as providing information and presentation support for the awareness raising activities

5. The main industry sectors targeted included machinery and equipment production, metal products, food and beverage, textiles, trade and services, pulp and paper, hotels and other commercial buildings as well as medical and other eligible services.

6. The financing models applied for this project by Halkbank included:

- Conventional loans to SMEs for financing their energy efficiency investment projects
- Equipment leasing, where lease payments are structured to be paid from the estimated energy cost savings
- Energy Service Companies (ESCOs), where a firm can offer a blend of services— from audits to design and implementation—typically with some form of guarantee to ensure the energy cost savings are sufficient to service the loan
- Vendor financing schemes

7. The size criteria for eligible SMEs were:

- SMEs: Private enterprises with less than TL 40 million in turnover and fewer than 250 employees. These companies were eligible for loans up to USD 3.5 million
- Mid-cap Companies: Company with less than TL 150 million equivalent in annual sales and fewer than 1,500 employees. These companies were eligible for loans up to USD 5 million

8. Leasing companies and ESCOs were also eligible for loans up to USD 5 million.

9. Each investment project had to meet the following specific criteria:

- Minimum financial rate of return of 8%
- Energy savings of at least 20% reduction (based on total energy consumption or per unit of output measured for the specific investments which are financed by the subproject), or
- at least 50% of incremental benefits of the project stemming from cost savings in energy consumption.

2. ACHIEVEMENT OF PROJECT OBJECTIVES

10. The overall disbursement of the funds available to Halkbank for Energy Efficiency lending developed slower than anticipated. In total, Halkbank disbursed USD 67,677,333 across all borrower types. In addition to the original loan types listed above, Vendor Financing was added as a mechanism to enable Halkbank to disburse easily standard technologies, which require minimum intervention and which are proven to deliver the desired saving results.

11. Also, GEF sub-grant is used as an incentive to promote ESCO deals. 650.000 USD, the amount allocated from GEF resources as sub-grant, has fully disbursed to 6 companies' 10 ESCO projects.

12. In terms of project numbers, 95 loans were disbursed to 68 individual clients. This includes clients that received loans in several tranches as well as vendor loans.

2.1. Results indicators

13. The following table provides an overview of the Results indicators by main sub-borrower type as well as total results:

Table 2.1 Results Indicators

Indicator	SME	MID-CAP	VENDOR-SME	LEASING-SME	ESCO-SME
Disbursement in USD	36,803,783	4,585,009	7,784,075	12,242,344	6,262,122
Share in total loans	55%	7%	11%	18%	9%
Average loan size	800,082	1,146,252	648,673	556,470	626,212
Technical Results Indicators					
Total Energy Savings (MWh/year)	274,820	2,694	16,340	15,287	5,862
Average Energy Saving Ratio (USD/MWh)	186	185	40	290	178
Total Carbon Savings (tons CO2/year)	100,522	1,570	55,647	4,511	3,184
Share in total energy savings	87%	1%	5%	5%	2%
Average carbon emission reduction ratio USD/tons CO2	315	317	236	498	365
Share in total CO2 emission reduction	61%	1%	34%	3%	2%

14. All borrower categories produced very satisfactory average energy savings ratios, with the exception of Vendor-SMEs. However, it should be noted that energy savings for vendors are calculated based on sample projects and the basic saving is multiplied by the equipment number provided in vendor report. Therefore, this result is artificially low.

15. The average loan tenor was around 64 months, whereas the average loan of tenor of investment loans from Halkbank's own funds was 51 months in the same period. Therefore, WB funds provides longer maturities to our customers compared to Halkbank's own sources.

16. WB EE loans' tenor varies from the lowest of 26 months (vendor loans mostly) up to 120 months. It is important to note that the shortest tenor was not related to the smallest loan but rather to one near the average loan size. On the other hand, all tenors of 120 months were related to loans over USD 1 million.

17. The average payback calculated was just over 50 months. This low payback, compared to loan tenors, is an important lesson to Halkbank and its clients, as it signifies the financial viability of energy efficiency investments even though payback periods calculated with cash flows consisting financial revenues too.

18. The average IRR of investment projects was around 30%, where the average was caused by significant outliers of process machinery investments with IRRs over 80% and one around 180%. Most IRRs were around 20%.

2.2. Contribution of activities to the Project objectives

19. While initiating the Project, Halkbank has already brought its knowledge and experience about energy efficiency to some degree thanks to prior IFI projects on EE. However, other IFI projects have also led a slowdown at the initiation stage of WB SME EE loan because of the overlap of similar programs.

20. In this context, Halkbank focused its promotional activities under this facility on direct sales to clients and on the development of more innovative lending concepts (for green finance in Turkey) such as financing of EE projects with ESCOs and Vendor financing.

21. Vendor financing was the mechanism that was added to the range of potential sub-borrowers in the course of the project. Vendor financing is particularly suitable for basic standard energy efficient equipment, which does not require any additional technical assessments. All technical assessments of the equipment subject to the vendor finance agreement, are checked prior to the loan agreement. Once the loan is in place, the vendor's only obligation is to report on which end-user benefitted from the agreement, i.e. where the (pre-agreed) equipment was installed. Within that context the Vendor financing approach has three main advantages:

- The Vendor can supply the equipment more easily (including finance) to the end-user. The reporting done by the vendor is quite simple and manageable, as the equipment subject to the agreement was already assessed and therefore there is practically no risk of any verification failures.
- Even end-users, who are not deemed creditworthy by banks, can often enter into a purchasing agreement with the vendor for desired energy efficient equipment, because the vendor's approach to credit risk assessment tends to be different from banks and also, because the vendor tends to have easier access to the equipment, which forms the security for the agreement.
- Partner banks can use vendor financing scheme to disburse funds, in smaller loans, to a larger number of end users of energy efficient equipment, without the need to expend their own sales force and with minimal credit risk to the bank.

22. Under this programme, the following equipment types were financed by vendor loans:

- Process machinery (53% of total disbursement values to Vendors)
- HVAC systems (28% of total disbursement values to Vendors)
- Thermal insulation (13% of total disbursement values to Vendors)
- Lighting (6% of total disbursement values to Vendors)

23. Also, ESCO projects were financed via WB SME EE Loan. GEF sub grant with a total amount of 650,000 USD was used as a sweetener for the customers in order to divert them to sign ESCO deals. By the end of September 2019, all sub-grant fund has been fully utilised by 6 customers of Halkbank for 10 different ESCO deals.

Technical Assistance Activities:

24. TA program provided substantial technical support to Halkbank not only in terms of project assessment (technical and financial project eligibility) but also in project identification and loan sales. The initial amount of TA contract was approximately 219,000 USD (including VAT) but an incremental amount of 30,000 USD was added to this amount for the identification and verification of new ESCO projects in order to complete GEF grant before the Project Closing Date.

25. Technical Consultant has performed his tasks in a timely manner and been paid in accordance with the Contract. In total 250,000 USD was allocated as GEF Grant for TA activities, as of the Project Closing Date 22,886.92 USD of 250,000 USD remains unused. The unused amount was projected for Procurement Consultant but it was not required during the course of the Project.

26. TA supported Halkbank staff in project identification, which served disbursement performance on the one hand but also provided the opportunity of on the job training, therefore several capacity workshops were conducted with branches in the various regions. The topics covered included:

- Basics of energy & energy efficiency
- Project identification and processes under the facility (who can benefit, which projects can be financed)
- Case studies (strong focus on case studies, usually more than 20 case studies per session)

27. The timing, location and participant numbers of the capacity building workshops conducted are given in the table below:

Table 2.2 Training activities

Date	Location	Number of Participants
22 March 2016	Bursa	25
24 May 2016	Istanbul	30
11 May 2016	Istanbul	35
2 June 2016	Istanbul	15
20 October 2016	Balikesir	30
25 October 2016	Izmir	35

28. In addition, more than 30 branches were visited individually. During the branch visits, loan officers and client relationship managers were able to ask more detailed questions. In addition, a loan portfolio screening was carried out during these visits, highlighting projects that would potentially be eligible under the facility's criteria and to reiterate the lessons of project identification once more. Consequently, among the branch's customer portfolio, potential clients were selected and together with branch personnel of Halkbank, the Consultants visited more than 50 client visits.

3. KEY FACTORS THAT AFFECTED PERFORMANCE AND OUTCOMES

3.1 Identified Barriers

The main obstacles to the fast disbursement of the facility are mainly related to the volatility observed in economic conditions during the project implementation period.

It should also be noted that Turkey underwent two general elections in 2015. A difficult process that overshadowed the period from June through to December and caused much uncertainty amongst the business community.

In 2016, the coup attempt, the state of emergency and general downturn in the economy have led a

negative effect on disbursement. Some of the main reasons that caused Turkish economy to underperform are given below:

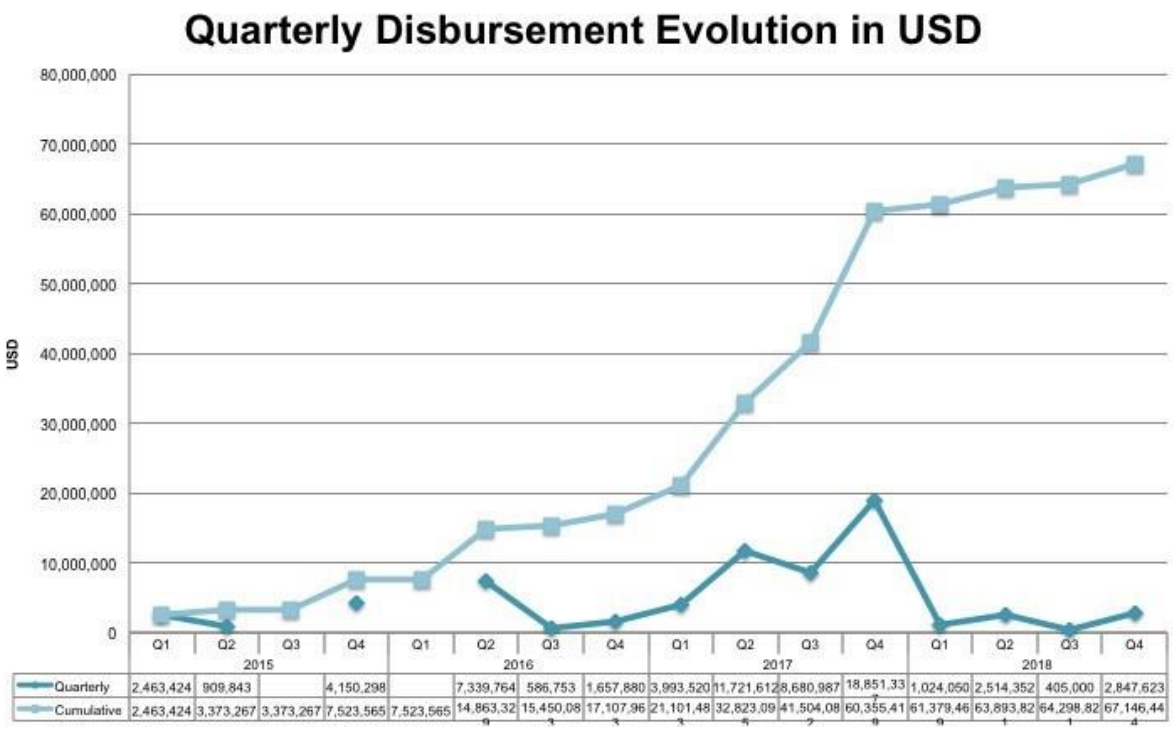
- The slowdown in global growth especially in European Union has affected negatively the Turkish economy since EU is Turkey's major trade partner.
- The slowdown in Turkish growth was also directly related to the regional uncertainties created by the Syrian civil war. The impact on tourism alone was quite significant.
- There were also domestic reasons for Turkey's slowdown deriving from rising current account financing needs, and the need for structural reforms, as well as a depreciation of the Turkish Lira (which became severe in mid-2018).

The lower disbursement in the last year (2018) can be clearly attributed to depleted facility funds.

3.2 Disbursement Performance Evolution

The graph below shows the quarterly disbursement as well as the cumulative disbursement development over the time period of the project.

Graph 3.1 Disbursement Evolution by Quarter



Practically every year shows a dip in disbursement during the summer, which is in part related to the holiday period as well as the fact that Ramadan took place during June-August during the project period.

The lower disbursement during the first year can be attributed to a learning curve that had to be mastered by Halkbank. This included understanding of project processes but also the learning related to project identification.

Overall the most active year in, in terms of disbursement, was 2017. During this period the following factors came together:

- Halkbank staff was fully trained
- The advantages of the credit line were well understood by staff and could be communicated effectively to clients
- Economic uncertainties were reduced temporarily

In 2018 with the deterioration of TL and rise of interest rates, borrowers became more cautious, however, as most funds were utilized by 2018, this had only some small effects on the disbursement performance.

3.3 Overview of the Disbursement Performance

The following subsections provide a more detailed presentation of the disbursement performance.

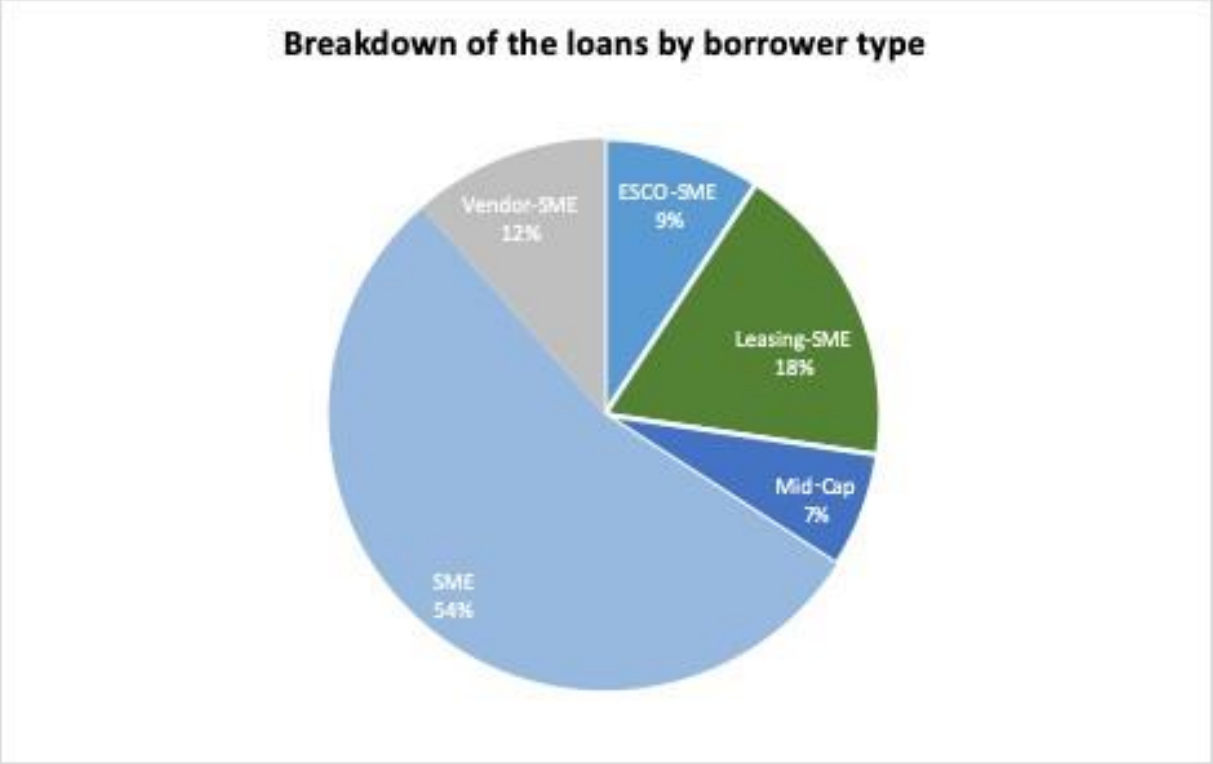
3.3.1 Loan Sizes

The overall average loan size was USD 729,853. However, the range of loan sizes was quite wide, where the smallest loan disbursed was USD 25,167. This was disbursed to a SME project. The largest loan disbursed to one project and client was USD 3,361,200. Around 23 loans were over USD 1 million and only three loans were below USD 100,000. This range highlights the diverse investment needs of SMEs in Turkey and the wide possibilities offered by energy efficiency investments.

3.3.2 Main sub-borrower groups

The lion's share of loans in terms of value was taken directly by SMEs with 55% of loan values. Leasing companies accounted for 18% of loan values, followed by Vendor-SMEs and ESCOs. Mid-Cap companies accounted for the smallest share of the total loan value disbursed.

Graph 3.2 Loan Values by Borrower Type

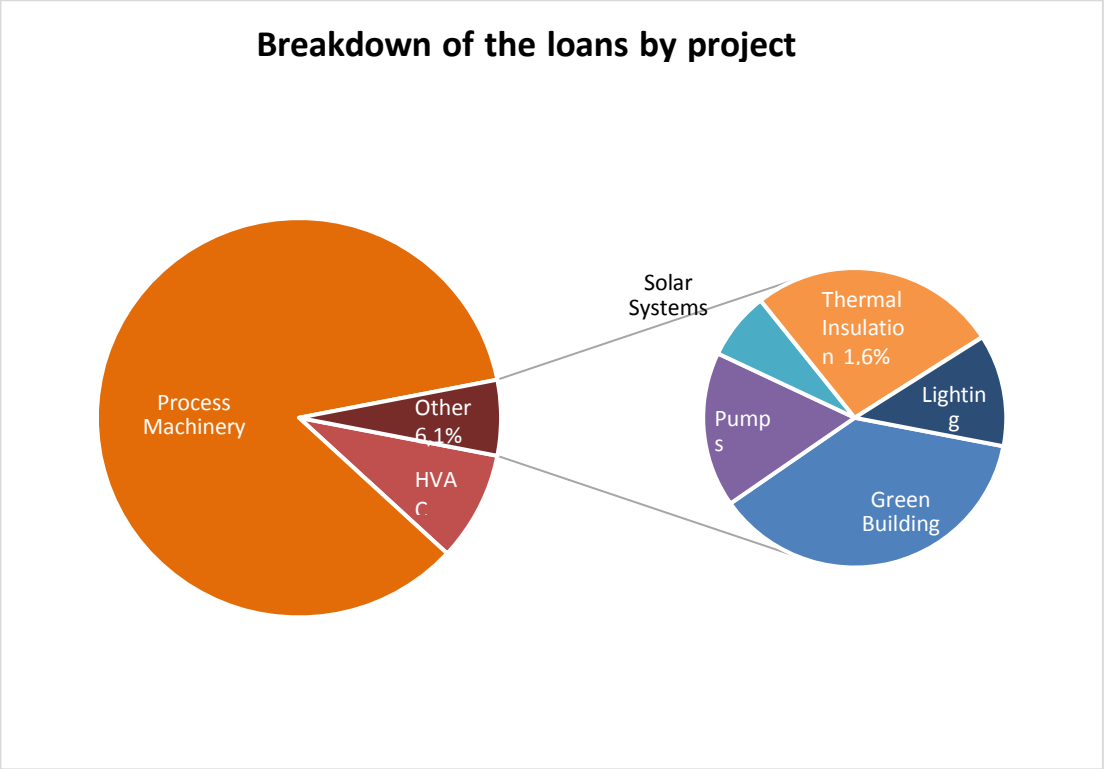


3.3.3 Disbursement by Project Type

The largest loan volumes were disbursed on projects that resulted in upgrades of process machinery (85%) and 9% were invested in energy efficiency improvements of HVAC systems. The graph below shows the breakdown by project type. In the main category, process machinery, between 20-30% of projects consisted of multiple process equipment investments.

It should be noted that process machinery includes also more complex process upgrades, which frequently include systems such as HVAC, electrical motors and pumps. However, these auxiliary systems are only shown as part of process machinery. Around 20-30% of project investments include at least minor auxiliary systems.

Graph 3.3 Loan values by project type



Investments in process upgrades were the most popular choice across all sub-borrowers. The breakdown of the disbursements for each borrower type is given below:

Table 3.1 Loan values by project type and borrower type

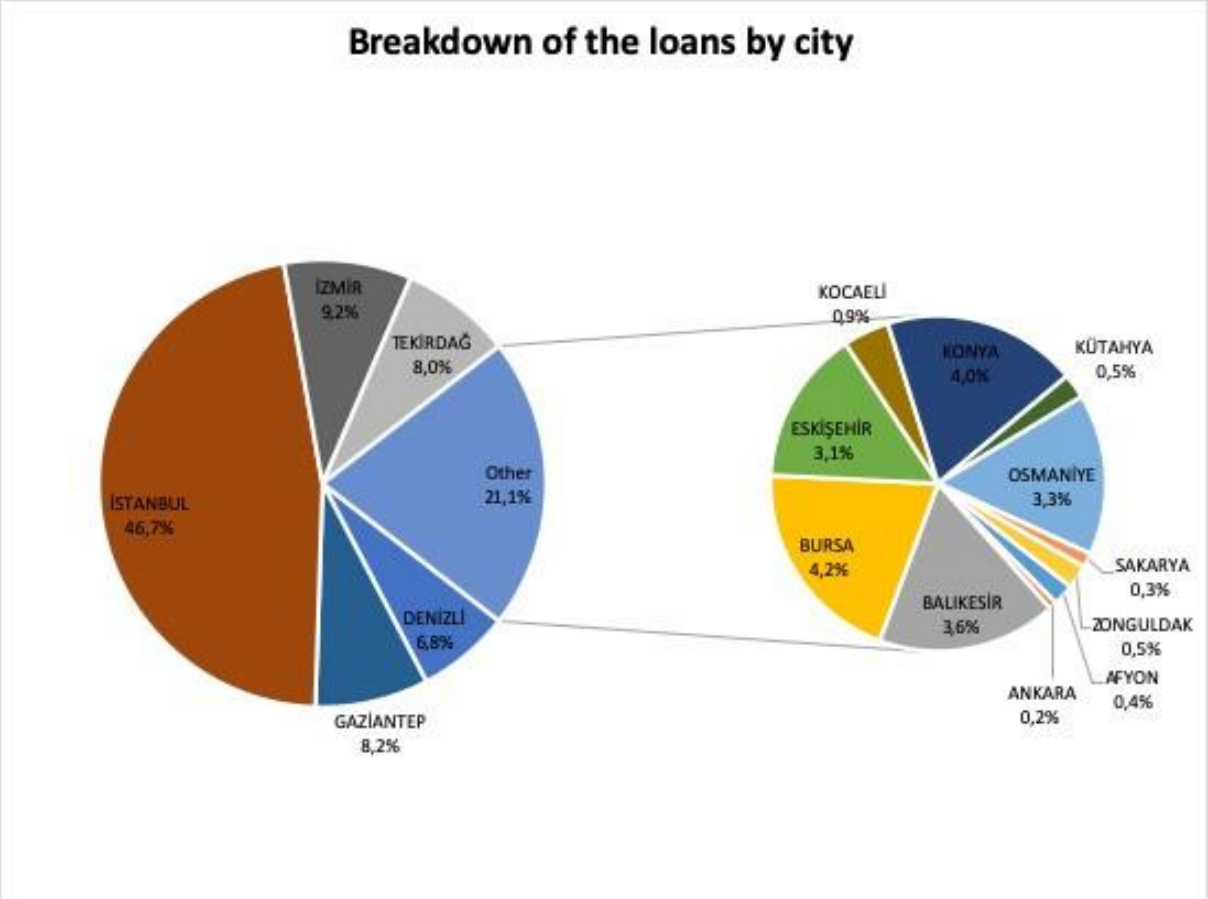
	Green Building	HVAC	Process Machinery	Pumps	Solar Systems	Thermal Insulation	Lighting	Grand Total
ESCO-SME		609,850	4,959,348	692,924				**6,262,122**
		10%	79%	11%				**100%**
Leasing-SME			12,242,344					**12,242,344**
			100%					**100%**
Mid-Cap			4,585,009					**4,585,009**
			100%					**100%**
SME	1,539,675	3,618,898	31,345,210		300,00			**36,803,783**
	4%	10%	85%		1%			**100%**
Vendor-SME		1,757,918	4,425,644			1,100,513	500,000	**7,784,075**
		23%	57%			14%	6%	**100%**
Grand Total	**1,539,675**	**5,986,667**	**57,557,559**	**692,924**	**300,000**	**1,100,513**	**500,000**	**7,677,337**

3.3.4 Disbursement by location

Even though disbursement largely depends on the activity of individual branches, the disbursement by region under this project is, to some extent, representative of the regional distribution of GDP

generated by industries in Turkey, with a strong concentration in Istanbul.

Graph 3.5 Disbursement by City, based on loan values



3.3.5 Disbursement by Industry Sector

Even though companies from a wide variety of industry sectors received loans under this credit line, the three industry sectors that stand out are textiles, metal processing and automotive parts. These are in general also the sectors that tend to have significant energy saving potential.

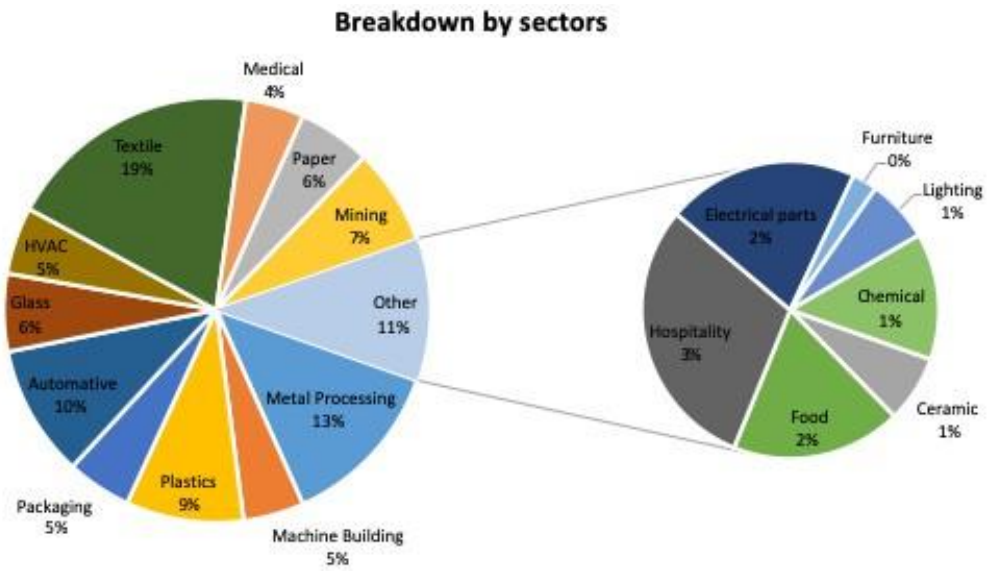
Even though the credit line is too small to be used as a sample reflecting the Turkish economy, these three sectors are amongst the strongest in Turkey's producing sectors (apart from agriculture and tourism, where tourism belongs to service sectors).

Turkey is an important supplier of automotive parts, especially to the European automotive industries. The Turkish textiles sector underwent a difficult period prior to 2010 but picked up again since then and evolved into a supplier of higher value and high-quality products, rather than its previous focus on low price / low cost.

The continuation of the encouraging trend in upgrading production facilities is very positive, as all three sectors are quite important to Turkey's efforts in reducing its foreign trade gap. These three sectors are important exporting industries and investments that help companies in competing more effectively in the international markets are positive sign in an economy that requires much focus on the

expansion of producing sectors.

Graph 3.6 Disbursement by Industry Sector, based on loan values



The breakdown of the disbursement based on sectors for each borrower type is given in below table:

Table 3.2 Loan values by sector and borrower type

	ESCO-SME		Leasing-SME		Mid-Cap		SME		Vendor-SME	
Metal Processing					2,367,309	52%	5,216,377	14%	1,171,013	15%
Machine Building	561,798	9%					315,852	1%	2,254,631	29%
Ceramic	530,889	8%								
Plastics			3,384,906	28%			1,977,307	5%	700,513	9%
Packaging							3,335,589	9%		
Food							1,346,151	4%		
Automotive	1,591,661	25%	1,568,359	13%			3,624,912	10%		
Glass							4,005,447	11%		
Hospitality							2,178,666	6%		
HVAC	1,302,774	21%							2,157,918	28%
Electrical parts							1,517,575	4%		
Textile			4,305,489	35%	2,217,699	48%	6,580,716	18%		
Furniture							198,076	1%		
Medical							3,021,505	8%		
Paper			902,686	7%			2,847,623	8%		
Mining	2,275,000	36%	2,080,904	17%			637,988	2%		
Lighting									500,000	6%
Chemical									1,000,000	13%
TOTAL	**6,262,122**	**100%**	**12,242,344**	**100%**	**4,585,009**	**100%**	**36,803,783**	**100**	**7,784.075**	**21%**

4. EVALUATION OF BORROWER'S PERFORMANCE AND LESSONS LEARNED

Despite a slow start and some barriers stated above against the disbursement, Halkbank has managed to complete the Project by the end of 2018 before the other FIs. Also, with a ratio of portfolio at risk (PAR) below 1%, the quality of the project portfolio developed under this facility may be assessed as very satisfactory. The following factors contributed to the successful implementation of the facility:

- Halkbank's familiarity to the concept of energy efficiency thanks to prior thematic IFI loan programs.
- Intensive training and support to loan officers and client relationship managers; especially the use case studies and examples
- Support in client visits and project identification activities
- Flexibility in the development of alternative business models and/or loan products, such as vendor financing. Vendor financing helped to finance more simple standard technologies without much technical assessment intervention, i.e. it was easy to handle for bankers, thereby reducing obstacles to financing both on the side of the non- technical bankers as well as clients.

On the other hand, given the long period of implementation and three restructurings that the Project have been through advised us that there are lessons to be learned in order to be more "efficient" in the prospective projects.

In our opinion, the main lesson from this Project is the need to be flexible in terms of financing of EE projects. Alternative financing schemes such as vendor, leasing and ESCO transactions have contributed to the acceleration of disbursements. For example, the transfer of GEF LLRF to GEF sub-grant for ESCO transactions has led an awareness raising among customers in terms of making ESCO deals.

The initial LLRF mechanism has not been functional for Halkbank since we select our customers suitable for IFI financing in a vigilant way. Therefore, mostly customers with FX earnings and a sound credit record have been benefited from WB loan which caused lower NPL rates compared to loans allocated from Halkbank's own funds.

One key barrier to up-scaling green lending is always the fact that the 'green loan product tends to be more demanding with regards to technology assessment and that of energy efficiency performance. This loan product normally competes with less demanding financing solutions. But loan officers and client relationship managers also have a desire to reach and exceed their lending targets in order to obtain their bonus. Naturally they will focus on those loan products that help them to achieve these targets in the most efficient manner. With the more complicated technical assessments, green loan products rarely fall into this category. Therefore, an important lesson for the future is to create a separate and attractive bonus scheme that motivates loan officers and client relationship managers to expand the extra effort on green lending products.

5. CONCLUSION

Although the ambiguities have seen in economic and political climate during the project implementation period, Halkbank has succeeded to identify and finance a range of energy

efficiency project with a high performance in terms of energy performance.

This can partly be attributed to Halkbank's customer portfolio, where Halkbank has a strong presence in the SME sector across a wide range of manufacturing and service industries. Also, the increasing awareness among the branch network in terms of energy efficiency has contributed positively to the promotion and marketing efforts within the bank.

Therefore, TA activities within this context such as the branch visits for portfolio screening and on-the-job training and the use of case studies, demonstrating real life examples and their benefits, have been substantial.

As Halkbank, to continue with energy efficiency lending and with its support to clients in embracing green technologies, a stronger in-house knowledge retention capacity has to be created to overcome problems occurring from knowledge loss due to staff turnover. In this regard, Halkbank has enriched its capacity in terms of energy efficiency thanks to WB loan program. TA activities and energy efficiency assessment template have guided our technical staff for measuring energy efficiency of a sample project. Also, ESCO sub-grant supported the awareness of the concept of ESCO deal among the customers with a limited technical capacity.

By using the inputs from the Project, Halkbank may continue to finance energy efficient projects from its own funds. The reasons stated below present that the requirement of financing energy efficiency will increase in the future.

- Turkey is a net importer of energy and energy costs represent a significant cost item for companies, especially those in the manufacturing industries but also those in services sector where a stable indoor climate must be kept (medical, food, etc.) or where a comfortable indoor climate is a success factor to the service but where the company has little or no control over the behavioural aspects of users – such as tourism.
- High energy costs represent a major opportunity for intervention and improvement through investment in efficient technology. A bank like Halkbank, who has recognized this opportunity and who has demonstrated willingness and capacity to develop suitable loan products, will emerge as a winner in the financial market.

In addition, Halkbank expands the green lending activities to renewable energy, such as solar energy, as the demand for alternative energy sources in Turkey is quite high and the awareness of benefits amongst SMEs is very developed. In this context, financing schemes supporting small sized renewable energy investments would probably contribute to increase the share of the green energy in the energy profile of Turkey.

Consequently, we as Halkbank PIU would like to thank World Bank team for their endless support and assistance during the project implementation period to successfully finalise the Project.

BORROWER'S ICR (VAKIFBANK)

1. INTROCDUCTION

The promotion of energy efficiency (EE) is a key priority of the Turkish government, since EE contributes to energy supply security, sustained growth, protection of the environment and mitigation of climate change. Vakıfbank adopted an active role by raising awareness among small and medium-sized enterprises (SMEs) regarding the benefits of saving energy costs. This effort was supported by making targeted credit facilities available to SMEs, funded by a credit line provided by the World Bank.

Vakıfbank signed a USD 67 million loan contract with the World Bank in order to provide lending for SMEs and small midcap companies for EE investments. With this EE loan scheme, Vakıfbank not only provided loans to SMEs to finance their EE improvements, but ultimately also improved the productivity and competitiveness in the international market of the SMEs.

The Project was supported by consultancy services that included:

- Energy audits, including walk-through and investment grade audits;
- Development of special EE project financing products;
- Verification and monitoring of energy savings;
- Training of Vakıfbank staff to build their capacity and provide support in awareness raising activities.

The industry sectors in focus in the Facility included:

- machinery,
- equipment and metal production,
- food, beverages,
- textiles,
- trade,
- services,
- paper production,
- hotels
- investments in commercial and medical

buildings. Eligible under this project were:

- SMEs:

Private enterprises with less than TL 40 million in turnover and less than 250 employees.
Maximum loan size USD 3.5 million

- Mid-cap Companies:

Company with less than TL 150 million equivalent in annual sales and fewer than 1,500 employees.
Maximum loan size USD 5 million.

- Leasing companies and ESCOs
  Maxim USD 5 million.

The financing channels included:

- Conventional loans financing EE investments
- Equipment leasing implying lease payments paid from the estimated energy cost savings;
- Energy Service Companies (ESCOs), which imply a firm can offer a blend of services ranging from audits to design and implementation, typically with some kind of guarantee to ensure that energy cost savings are sufficiently servicing the loan;

- Vendor financing schemes, which imply that eligible vendors may directly offer/on-lend a financing concept for the final beneficiary that is covered by Vakıfbank.

Each investment project had to meet the following specific criteria:

- Minimum financial rate of return of 8%
- Energy savings of at least 20% reduction (based on total energy consumption or per unit of output measured for the specific investments which are financed by the subproject), **or**
- Minimum 50% of incremental benefits of the project stemming from cost savings in energy consumption.

2. ACHIEVEMENT OF PROJECT OBJECTIVES

The overall disbursement of Vakıfbank in EE lending was slower-paced than anticipated. In total, Vakıfbank disbursed USD 68,318,437 to all types of borrowers. In addition to conventional loan funding, vendor financing was introduced in course of the project as a measure to facilitate Vakıfbank's disbursement in terms of standard technologies. These technologies require a minimum intervention and deliver the forecasted saving results.

After 5 years, a total of 158 loans were disbursed to 131 individual clients. This includes clients that received loans in several tranches as well as loans granted by vendors. In this regard, Vakıfbank is the bank that has reached the highest number of clients among the three banks under the World Bank project.

2.1 Key Performance Indicators

The average loan is USD 474,434. The financed projects resulted in a total of 743,836 MWh p.a. energy savings and 49,713 tons of CO_{2eq} reduction in emissions.

The below table provides an overview of the results by main sub-borrower type:

Table 1: Result indicators

Sub-borrower type	SME	Mid-Cap	Vendor-SME	Leasing-SME	ESCO-SME
Disbursement in USD	37,825,536	11,600,338	1,952,358	12,766,611	3,828,171
Share in total loans	55%	17%	3%	19%	6%
Average loan size	363,707	1,327,307	650,786	709,256	382,817
Technical Result Indicators					
Total Energy Savings (MWh/year)	487,160	70,745	4,382	86,403	95,146
Average Energy Saving Ratio (USD/MWh)	355	174	245	247	58
Total Carbon Emission Reductions (tons CO_2/year)	32,589	4,716	292	5,760	6,355
Share in total energy savings	65%	10%	1%	12%	13%
Average carbon emission reduction ratio USD/tons CO_2	1,819	439	419	437	7,539
Share in total CO2 emission reduction	66%	9%	1%	12%	13%

Similar to other banks, Vakıfbank has also disbursed the majority of loans to SMEs. Lending via leasing and to mid-cap clients also played an important role and account for 36% of total investments.

Due to financing mostly production machinery (the reasoning for this will be explained in the following sections), the energy savings and CO_2 emission reductions are considerably high. In fact, the projects focusing on process improvement are costly investments in which energy savings are not always the priority. However, they are beneficial for the competitiveness of an SME, even though less so in terms of EE.

The average loan tenor was around 46 months, varying from the lowest of 2 months up to 96 months. On the one hand, it is important to note that the shortest tenor was originally disbursed under condition of a longer tenor, but the client paid back the loan before its maturity. On the other hand, all tenors of 84 and 96 months were related to loans higher than the average loan size of USD 474,434.

The average payback period was approximately more than 60 months. This comparatively high payback period in relation to the overall loan tenors is another result of financing mostly machinery for the improvement of processes. However, the technical calculations are conservative, particularly regarding financial revenues. In reality, verifications of the project outcomes result in sufficiently high returns to cover loan payments.

The average internal rate of return (IRR) for investment projects is 33%. On the other hand, as stated above and as also confirmed by Vakıfbank, concerning the financial outcomes of the projects, the IRRs are much higher than calculated values. With a conservative approach, most IRRs will be between 10% and 20%.

2.2 Activities undertaken to achieve Project Objectives

Vakıfbank already gained experience in green lending from other similar facilities. In the frame of this project, Vakıfbank focused its promotional activities on direct sales to clients and on the development of more innovative lending concepts for green finance in Turkey such as financing of EE projects via ESCOs and Vendor financing schemes.

Vendor financing schemes were included in the range of services to sub-borrowers in the course of the project. Vendor financing is particularly suitable for standard technologies for EE equipment, which does not require any in-depth technical assessments. The necessary technical assessments of equipment to be included in the vendor finance agreements were first checked by the Project Consultant. However, vendor financing has not really been favored by Vakıfbank, therefore only 1% could be disbursed to vendors.

Another approach implemented under the Facility was to provide grants up to 20% for ESCO based contracts. Vakıfbank utilized grants via ESCOs to projects that had guaranteed savings contracts where annual energy savings have been guaranteed by the ESCO. Loans for ESCOs have a 6% share of the overall loan portfolio.

The Project Consultant provided substantial technical support to Vakıfbank, not only in terms of project assessments (technical and financial project eligibility), but also in project identification and loan sales. Together with Vakıfbank staff, the Project Consultant visited more than 100 potential sub-borrowers, around 70% of which were eventually financed by the Facility.

At the beginning of the project, four classroom trainings were organized for 50 loan officers in individual branches as well as in HQ. The topics included:

- Basics of energy and EE;
- Project identification and processes of the Facility (Who can benefit? Which projects can be financed?);

- Case studies (these had a strong focus; usually more than 20 case studies presented/discussed per session).

These training materials were later compiled into an “online training tool” which was utilized by more than 100 loan officers from Vakıfbank.

In later stages of the project it was agreed to concentrate more on on-the-job trainings instead of classroom trainings. These basically consisted of the Project Consultant visiting the most active branches and presenting the basics of the financing facility, screening of the overall portfolio and visiting clients together with loan officers. During these branch visits, loan officers and client relationship managers were also given the opportunity to ask more detailed questions. In addition, a loan portfolio screening was carried out during these visits, highlighting projects that would potentially be eligible according to the facility’s criteria and also to reiterate the lessons of project identification once more.

During the project duration the Project Consultant visited around 20 branches and trained more than 100 loan officers. All visited branches eventually identified and financed at least one eligible project. This also helped Vakıfbank to finance projects in all regions of Turkey.

3. KEY FACTORS AFFECTING PEFORMANCE AND OUTPUT

3.1 Identification Barriers

The main obstacles to the fast disbursement of the Facility were related to the political and economic situation in Turkey. Especially the duration of this project was subject to more political tension and economic barriers than “normal” for Turkey.

It should also be noted that Turkey underwent two general elections in 2015, a difficult process that overshadowed the period June – December2015 and that caused much uncertainty amongst the business community and the population as a whole. This had a negative impact on the uptake of this credit line.

In 2016, the state of emergency and general downturn in the economy had a negative effect on disbursement. The reasons behind Turkey’s struggle in 2016 include:

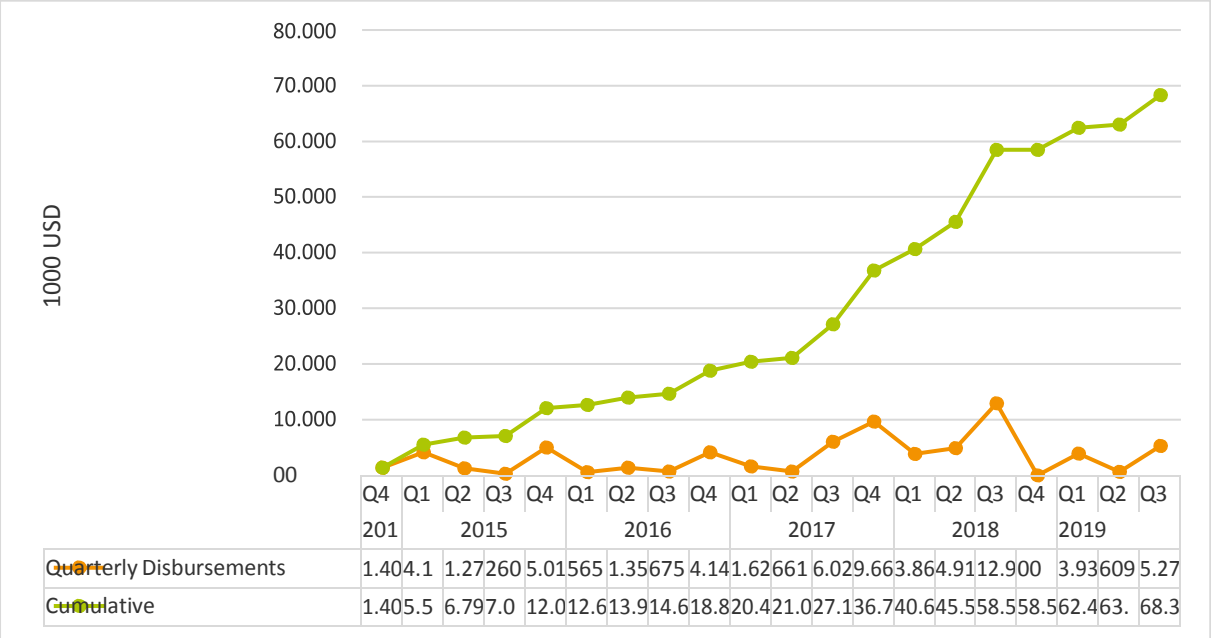
- The slowdown in global growth. The Turkish economy is, at the end of the day, part of the European economy. Half of Turkish export goes to Europe, where the economic situation was difficult in 2016 and remains so still today. 2016 was the ninth consecutive year where the EU’s growth was below the long-term average (1990-2007);
- The slowdown in Turkish growth was also directly related to the regional uncertainties created by the Syrian civil war. Let alone the impact on tourism was quite significant;
- There were also domestic reasons for Turkey’s slowdown, including the lingering “State of Emergency”, rising current account deficits, respective financing needs and the lack of a strong economic reform, as well as a depreciation of the Turkish Lira (which became severe in mid-2018).

Apart from unexpected consecutions, the World Bank criteria related with debt service ratio also created obstacles for rapid disbursements. Removing this criterion for smaller loans unarguably increased the speed.

3.2 Disbursemetn Performance

The graph below shows the quarterly disbursement as well as the cumulative disbursement development over the project’s lifetime.

Figure 1: Disbursement by quarter



The lower disbursement during the first year can be attributed to a steep learning curve for Vakıfbank. This included understanding of the project processes and project identification procedures.

Disbursements started to take off in 2017. Year 2017 would have been the strongest year in case the leasing loans provided in 2018, where Vakifbank combined the Facility with Government incentives were not taken into account.

Overall, the most active year in terms of disbursement was 2018, when the following beneficial factors played a significant role:

- Relevant Vakıfbank staff had been fully trained;
- The advantages of the credit line were well understood by the Vakıfbank's staff and could be communicated effectively to potential sub-borrowers;
- Economic uncertainties were temporarily low;
- Most of the branch visits and on-the-job trainings took place in 2018;
- Most importantly, Vakıfbank finalized a deal with Vakif leasing which led to an immediate disbursement of USD 12,700,000.

Also at the beginning of 2019, disbursements were good as Vakıfbank announced an incentive scheme offering the best performing loan officers a study tour to Hamburg.

3.3 Overview of Disbursement Performance

The following subsections provide a more detailed presentation of the disbursement performance.

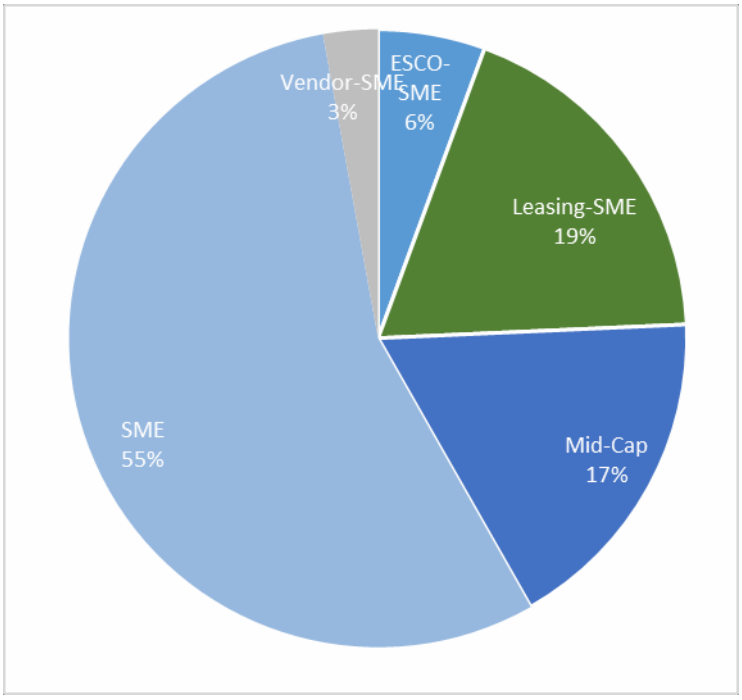
3.3.1 Loan Sizes

The overall average loan size was USD 474,434. However, the range of loan sizes was quite wide, with the smallest loan disbursed amounting to USD 7,655 and the biggest to about USD 4,140,150. Around 14 loans exceeded USD 1 million, whereas 26 loans were below USD 100,000. This shows how Vakıfbank is successful in reaching even

smaller companies which invest into EE. This range highlights the diverse investment needs of SMEs in Turkey and the wide possibilities offered by EE investments. Based on the number of clients financed under the Facility, Vakifbank can be considered as one of the most successful banks.

The majority of loans in terms of volume were taken directly by SMEs, with a 55% share of total loans. Leasing companies accounted for 19% of loan amount, followed by mid-cap and ESCOs with a share of 17% and 6% respectively. Vendor loans accounted for only 3% of total loans disbursed.

Figure 2 Loan Volume by Type of Borrower (in %)

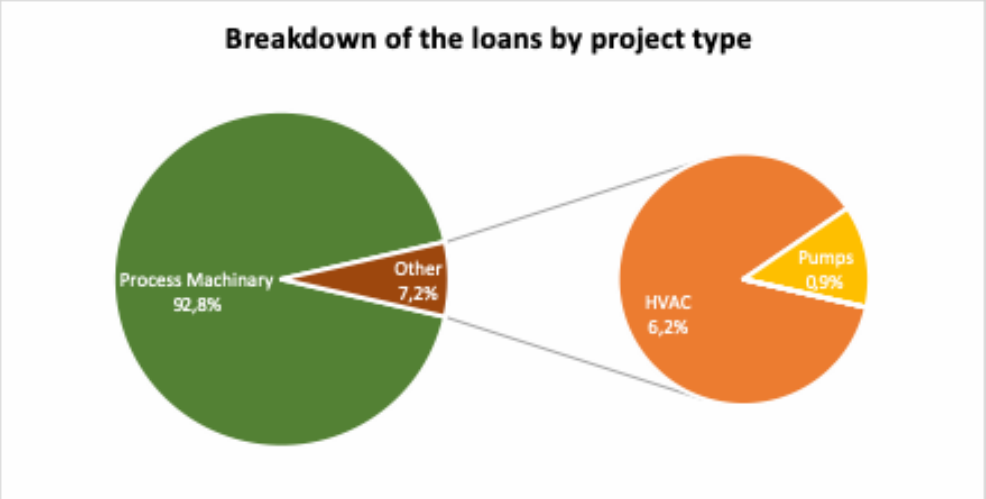


3.3.2 Disbursement by Project Type

Most of the loans were disbursed to projects that resulted in upgrades of process machinery (92.8%); whereas 6.2% were invested in EE improvements of HVAC systems. The graph below shows the breakdown by project type.

Between 20 and 30% of projects under process machinery consisted of multiple process equipment investments. It should be noted that process machinery includes also more complex process upgrades, which frequently include systems such as HVAC, electrical motors and pumps. However, these auxiliary systems are only shown as part of process machinery. Around 20-30% of project investments include at least minor auxiliary systems.

Figure 3 Loan values by project type



Investments in process upgrades were the most popular choice across all sub-borrowers. The breakdown of the disbursements for each borrower type is given below:

Table 2 Loan values by project type and borrower type

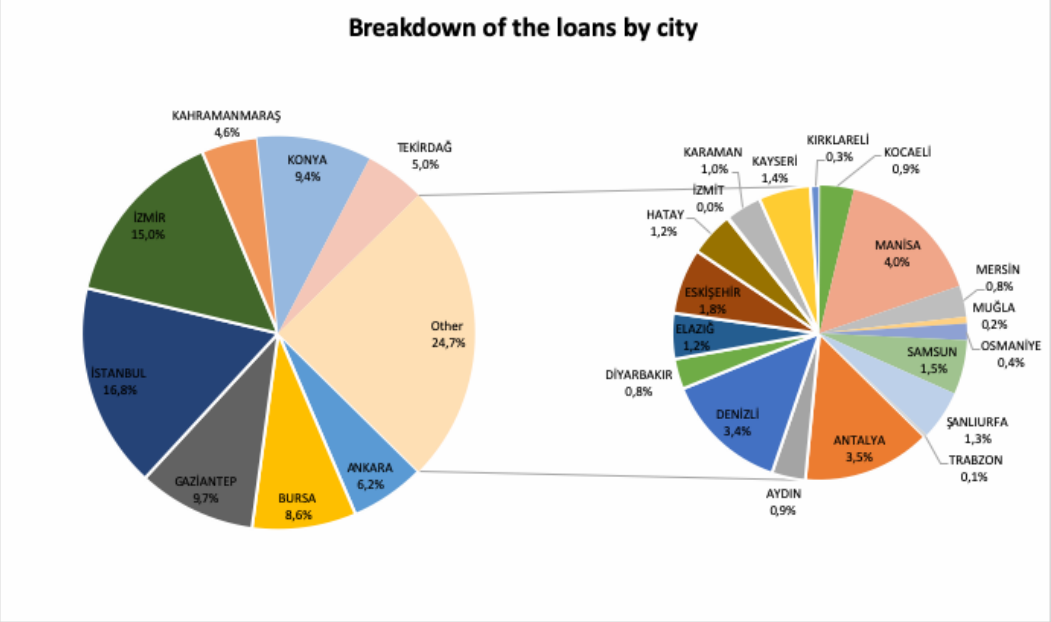
	HVAC	Process Machinery	Pumps	Grand Total
ESCO-SME	2,171,359	1,016,214	640,598	3,828,171
	57%	27%	17%	6%
Leasing - SME		12,766,611		12,766,611
		100%		19%
Mid-Cap	345,423	11,600,338		11,945,761
	3%	97%		17%
SME	1,540,661	36,284,875		37,825,536
	4%	96%		55%
Vendor-SME	189,036	1,763,322		1,952,358
	10%	90%		3%
Grand Total	**4,246,479**	**63,431,360**	**640,598**	**68,318,437**
Percentage	**6.2%**	**92.8%**	**0.9%**	**100%**

3.3.3 Disbursement by Location

Even though disbursement largely depends on the activity of individual branches, the disbursement by region under this project is, to some extent, representative of the regional

distribution of GDP generated by industries in Turkey. Therefore, highest disbursements were in Istanbul. Nevertheless, thanks to high motivation of the branches in İzmir, Konya, Gaziantep and Bursa, these cities are also having a good performance. As can be seen from below graph, loans have been disbursements in 27 cities, which is the proof of the success of Vakıfbank reaching also remote regions of Turkey.

Figure 4 Disbursement by City, based on loan volume

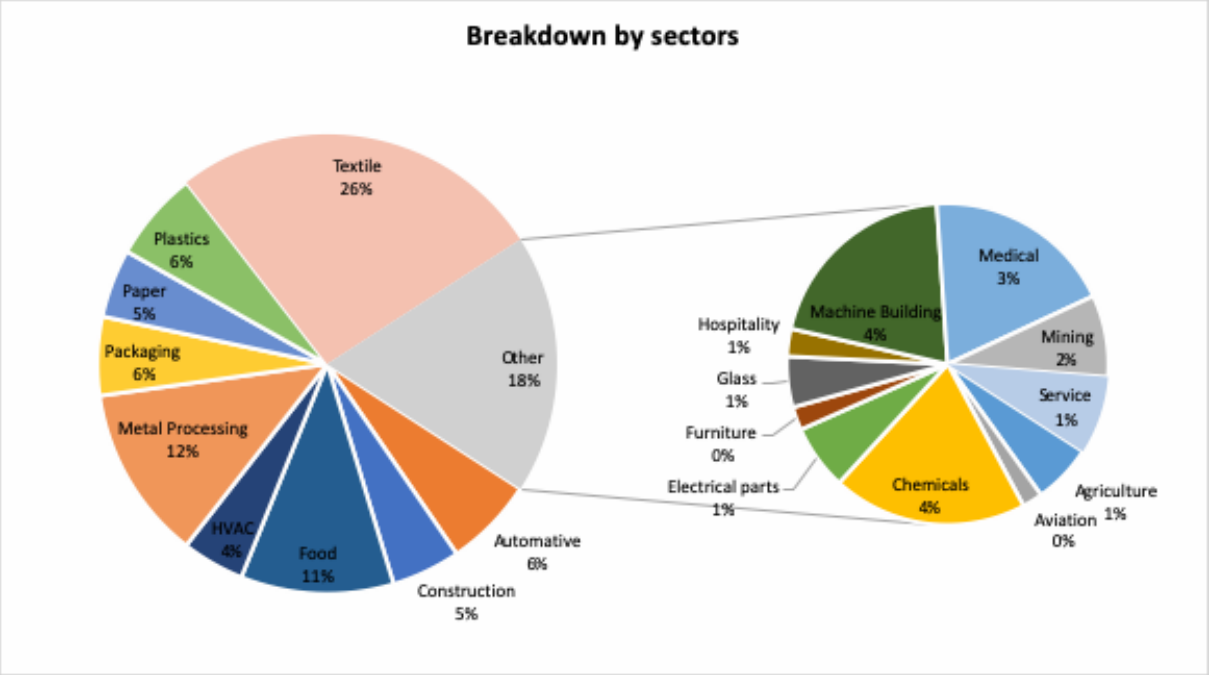


3.3.3 Disbursement by Industry Sector

Even though loans under the credit line were given to a wide variety of industry sectors, the sectors that stand out are metal processing, textiles and food, which are in general also the sectors that tend to have significant energy saving potential. Even though the credit line is too small to be used as a sample reflecting the Turkish economy, these three sectors are also among Turkey's strongest "producing" sectors.
Turkey is an important supplier of metal products, especially to European and US companies. The Turkish textiles sector underwent a difficult period prior to 2010 but picked up again since then and evolved into a supplier of higher value and high-quality products, rather than its previous focus on low price and low cost. The success of the food sector is mainly due to Vakıfbank's important influence on Central Anatolia and İzmir where most of the food processing companies are located.

The continuation of the encouraging trend in upgrading production facilities is very positive, as all three sectors are quite important to Turkey's efforts in reducing its foreign trade gap. These sectors are also important for the export and investments in these sectors help SMEs in competing more effectively in the international markets and are positive signs in an economy that requires much focus on the expansion of producing sectors.

Figure 5 Disbursement by Industry Sector, based on loan values



The breakdown of disbursement based on sectors for each borrower type is shown in the below table:

Table 3 Loan values by sector and borrower type

	ESCO-SME		Leasing-SME		Mid-Cap		SME		Vendor-SME	
Agriculture							750,000	2%		
Automotive					674,534	6%	3,666,111	10%		
Aviation							253,696	1%		
Chemicals			1,000,000	8%			1,443,307	4%		
Construction					1,000,000	8%	2,321,567	6%		
Electrical parts			623,459	5%			190,657	1%		
Food	492,230	13%					6,867,744	18%		
Furniture							291,625	1%		
Glass							636,035	2%		
Hospitality					345,423	3%				
HVAC	2,171,359	57%							847,398	43%
Machine Building	130,094	3%					1,301,268	3%	1,104,960	57%
Medical					675,656	6%	1,707,291	5%		
Metal Processing			2,899,287	23%			5,487,808	15%		
Mining							1,024,842	3%		
Packaging			2,339,097	18%			1,445,563	4%		
Paper			978,829	8%			2,312,780	6%		
Plastics			731,163	6%	977,773	8%	2,625,791	7%		
Service	640,598	17%					335,452	1%		
Textile	393,890	10%	4,194,776	33%	8,272,375	69%	5,164,002	14%		

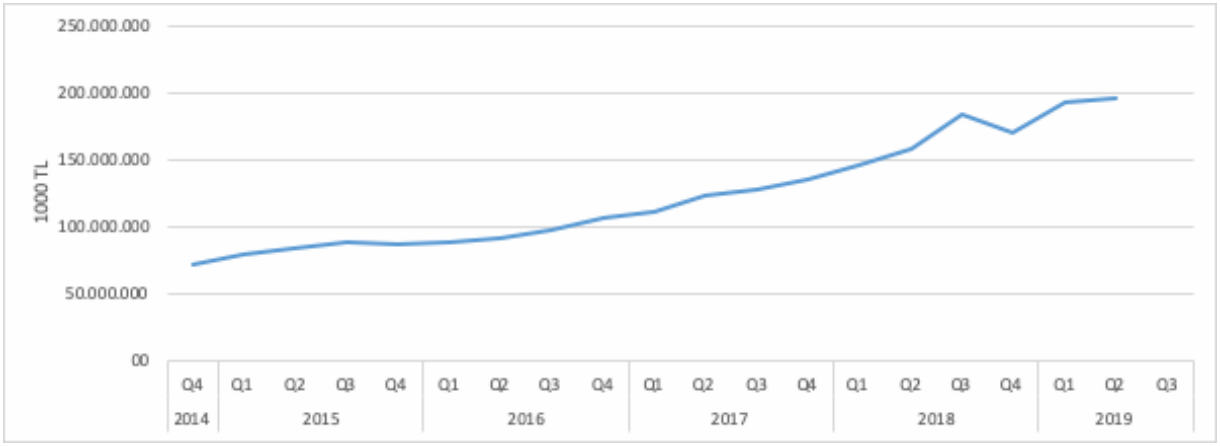
4. EVALUATION OF CLIENT PERFORMANCE AND LESSONS LEARNT

Despite a slow start and barriers to disbursement, which were beyond the control of Vakıfbank, the quality of the project portfolio developed under this facility is very satisfactory. The following factors contributed to the successful implementation of the facility:

- Intensive training and support to loan officers and client relationship managers; especially the use of multiple case studies and examples;
- Support by the Project Consultant in client visits and project identification activities;
- Flexibility in the development of alternative business models and/or loan products, such as vendor financing. Vendor financing helped to finance more standard technologies without much technical assessment intervention, i.e. they were easy to handle for bank staff, thereby reducing obstacles to financing.

Below table shows the quarterly total disbursements of Vakifbank during the project lifetime:

Figure 6 Vakifbank's total disbursement



Above graph shows that, the quarterly disbursements are roughly around 0.005% of Vakıfbank's total disbursements in the same quarter. In addition, the graph shows that regardless of economic and political obstacles, Vakifbank has increased their disbursements as a whole. This proves that the facility disbursements could be much faster; obviously because Vakifbank financed many projects and clients that perhaps would be eligible under the facility.

As the total facility compared to Vakifbank's overall portfolio is very small, the Bank did not prioritize disbursements under the facility. For this reason it was critical to identify key branches with high potential and encourage them to prioritize this EE product against others. As the branch team got to know the Consultant in person, they felt more comfortable to ask questions which helped in the identification of more clients. In fact, the majority of the disbursements came from these key branches. This is a very important lesson learnt, as it is always very important to establish a high motivation in the branches, which can be achieved only by personal relationship.

One key barrier to up-scaling green lending is always the fact that the green loan product tends to be more demanding with regard to technology assessment and related to EE performance. This loan product normally competes with less demanding financing solutions. However, loan officers and client relationship managers also have a desire to reach and exceed their lending targets in order to obtain their bonuses. Naturally, they will focus on those loan products that help them to achieve these targets in the most efficient manner. With the more complicated technical assessments, green loan products rarely fall into this category. Therefore, an important lesson for the future is to create a separate and attractive bonus scheme that motivates loan officers and client relationship managers to make an extra effort for green lending

products.

Another important lesson learnt is that, although the interest rates are critical for the clients and may increase or reduce the speed for disbursements, the amount of required documentation or effort for the required data by the client is also critical. As the competition amongst the banks in Turkey is very high, the clients always have many different options amongst the different banks. Clients typically choose loan products that require less effort from their side, despite the higher interest rate. For this reason, the Consultant worked closely with potential clients and collected the required data without creating any additional burden for the clients. This fact had critical role while convincing the clients to finance their investment needs under the facility.

5. CONCLUSION

Despite obstacles resulting from a downturn in the economy, political uncertainty resulting in the devaluation of the Turkish Lira and rising interest rates, Vakıfbank managed to identify and finance a range of EE projects with a high energetic performance, even though it took longer than expected to disburse the complete credit line.

This can partly be attributed to Vakıfbank's customer portfolio that shows a strong presence in the SME sector across a wide range of manufacturing and service industries. More important however were the efforts of individual loan officers and customer relationship managers who adopted the project's concept and the benefits of green lending and who successfully promoted this concept towards their clients.

Within this context, the branch visits for portfolio screening and on-the-job training and the use of case studies (demonstrating real life examples and their benefits) proved vital.

For the bank to continue with EE lending and supporting clients in embracing green technologies, a stronger in-house knowledge retention capacity has to be created to overcome problems occurring from knowledge loss due to staff turnover. It is not unique to Vakıfbank, but to all commercial banks developing a new green lending business, especially one that demands strict adherence to technical performance criteria of projects to be financed. It can be observed that in house project team has developed important expertise in product management for similar loan products. Nevertheless, as Vakifbank has no in-house engineering department, it will still require for the bank to work with an external consultant especially for the technical matters.

For the future Vakıfbank could benefit from these steps due to the following reasons:

- Turkey is a net importer of energy and energy costs represent a significant cost item for companies. This is especially true for companies in the manufacturing industries, but also in the services sector where a stable indoor climate must be kept (medical, food, etc.) or where a comfortable indoor climate is a success factor to the service but where the company has little or no control over the behavioral aspects of users (such as tourism).
- High energy costs represent a major opportunity for intervention and improvement through investment in efficient technology. A bank like Vakıfbank, which has recognized this opportunity and which has demonstrated willingness and capacity to develop suitable loan products will emerge as a winner in the financial market.

In addition, Vakıfbank would be interested in expanding the green lending activities to renewable energies, such as solar energy, as the demand for alternative energy sources in Turkey is quite high and the awareness of benefits amongst SMEs is very developed.

BORROWER'S ICR (ZIRAAT BANK)

Project background:

On 6 May 2013, Ziraat Bankası, as borrower and the World Bank, as lender, under the guarantee Turkish Ministry of Treasury and Finance, entered into a credit facility agreement in relation to the financing of SME Energy Efficiency projects (SME EE Project). Under the SME EE Project, the World bank provided Ziraat Bankası USD67 million Uto be on-lent to the SMEs (and a portion of it to the MID

s) through direct loans or leasing.

The overall total financing under the SME EE Project is 201 million when the other participating government banks (Halkbank and Vakıfbank) included.

On 6 May 2013, between Ziraat Bankası and the World Bank acting as the implementing agency for the Global Environment Facility (GEF) another agreement for GEF grant was signed for 900.000 USD. Over the period of the implementation of the project, it was mutually agreed that 395,000 USD of the GEF fund would be used for Technical Assistance including the consultancy for the assessment of the projects and procurement of other services including EE training for Ziraat Bankası staff and related logistics while the remaining 505,000 USD was decided to be used as grants for ESCO deals under performance contracts (up to 20% of the eligible costs under the contracts).

To qualify for this credit, an SME must have less than 250 employees and less than 50 million EUR in sales or in total assets and a MIDCAP must have less than 1,500 employees and the loan limit for an SME borrower was 3.5 million USD while it is 5 million for a MIDCAP borrower. There is also a cap for each borrower SME and MIDCAP in terms of total borrowing from the participating three government banks.

Ziraat Bankası, being the biggest stated owned bank with long years of distinguishing responsibility for contribution to the development of the country, with the guidance and cooperation of World Bank, participated in the SME EE Project to support the eligible SMEs in their investments targeting energy efficiency with advantageous funding opportunities in terms of maturity and pricing; lead to diversifying the type of transactions, encourage customers in their new investments and increase their operating conditions with more efficiency and contribute to job creation through increasing investment and sales.

Basic outcomes of the project:

Since the start of the project in 2014 total of 228 projects are submitted Under World Bank SME Energy Efficiency Project.

The table below shows the distribution of project types under the facility,

Table 1 – Number of Projects Submitted

Project Type	Number of Projects
Machine Replacement	207
EPC	14
VENDOR	7
Total	228

As shown in the figure below with 90%, Machine Replacement have the largest share in the submitted project types under the facility.

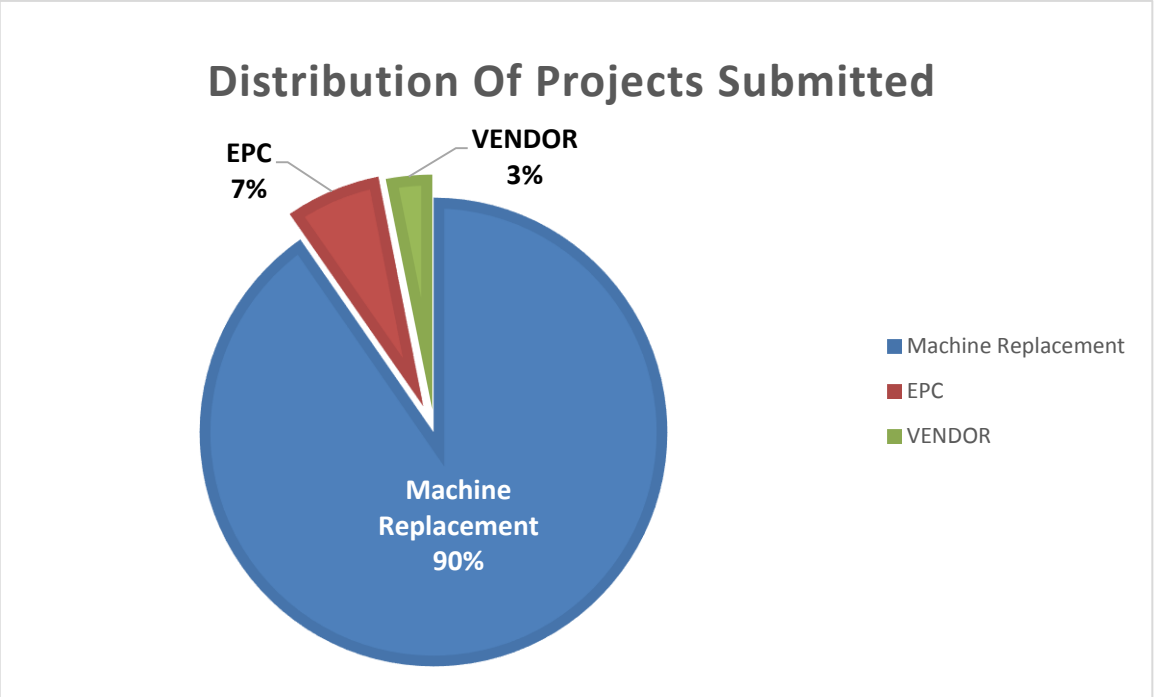


Figure 1 - Distribution of Projects Submitted

All of the submitted projects were underwent technical evaluation by Stantec, as a result of these technical evaluations, projects that are eligible with the project requirements were predominant. The figure below shows the distribution of projects that were Eligible or Ineligible after the technical evaluation.

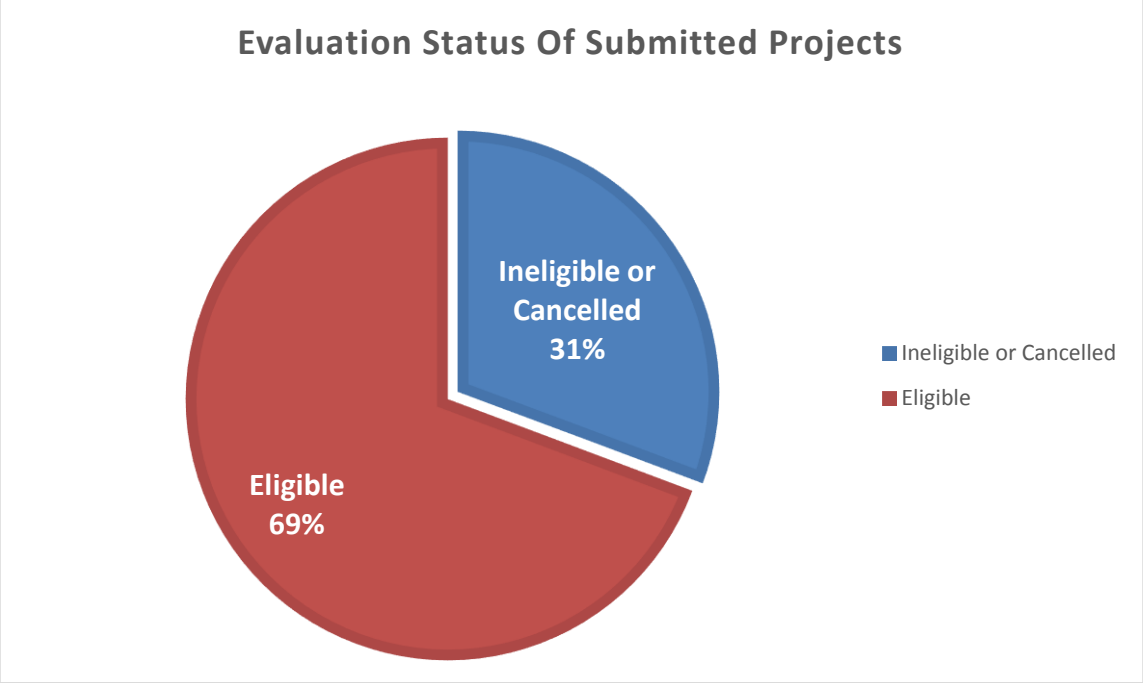


Figure 2 -Evaluation Status of Submitted Projects

Total of 158 projects were evaulated as eligible with the project requirements and eligible projects consist mainly machine replacement with 140 projects.

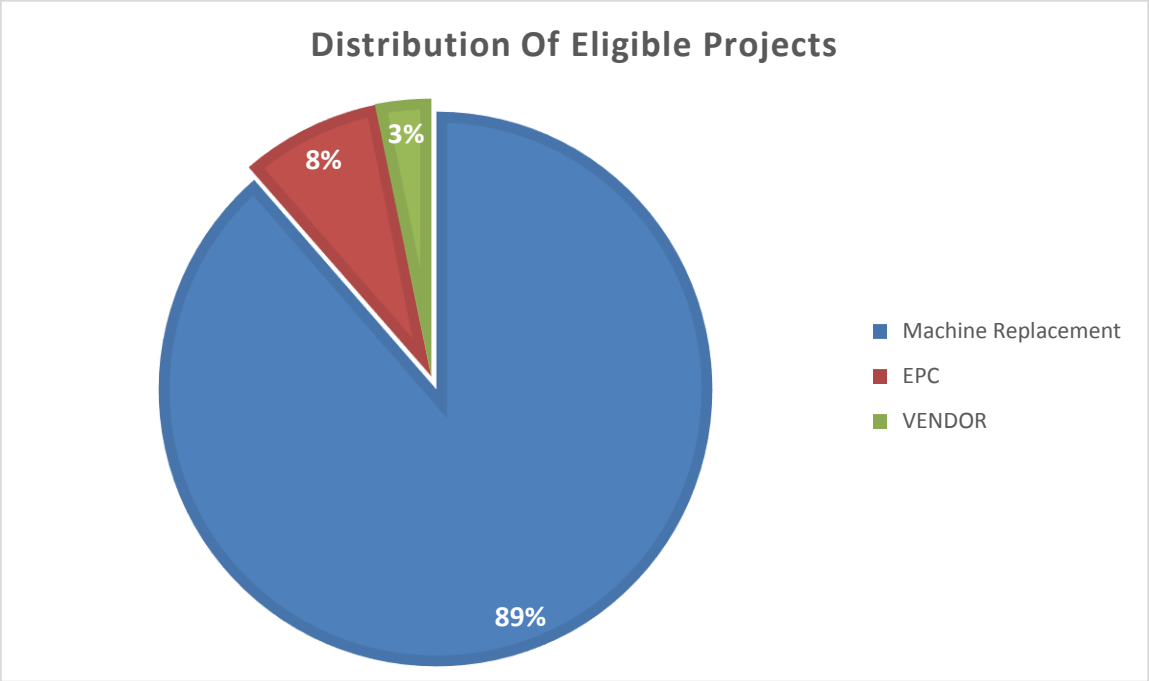


Figure 3 - Distribution Of Eligible Projects

As it can be seen above chart Machine replacement type of projects have the major share under eligible projects.

88 projects were funded in 157 eligible projects, however some of the vendor financing projects included more than one disbursement, we can take this figure as 81 disbursements under the facility (*For details, please see the revised **FI Reporting Table** attached to this ICR*).

The chart below shows the comparison between eligible project numbers and disbursement numbers according to project types. EPC (ESCO) and vendor financing projects have higher rate of completion percentages than the ordinary machine replacement projects when a comparison between number of eligible projects and number of disbursements were made.

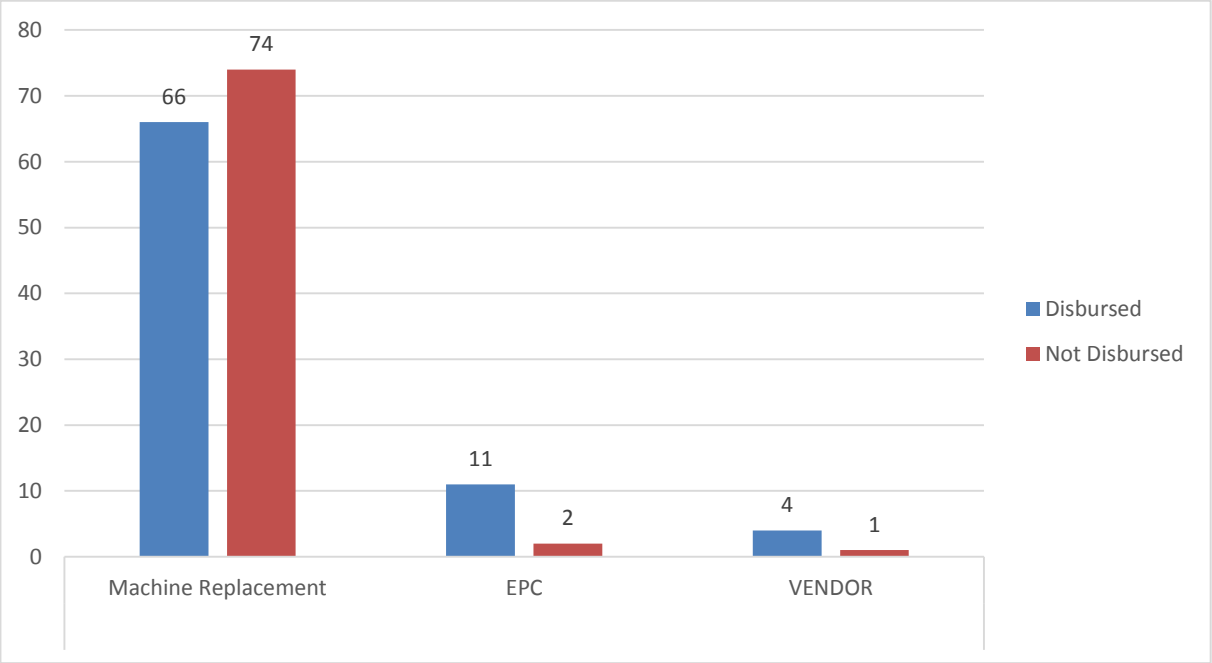


Figure 4 – Comparison between number of projects (eligible and distributed)

In summary, Ziraat Bankası provided a total of 67,9 million USD financing to 88 energy efficiency projects. 56,4 million of the financing was made through the branches of the Bank for 75 SME and MIDCAP projects while the remaining 11,2 million USD was given to 13 SMEs through leasing as three leasing companies benefitted from the project.

All the projects financed through the leasing were SME projects.

The share of MIDCSP projects in the total financing provided is only 18,4 million USD (27,5%) out of 67 million USD total funds provided by the World Bank. of the loans were made to the MIDCAPs for financing. When the vendor financing and ESCO project are included the share of financing for MIDCAPs is 23,9 million USD and the overall SME/MIDCAP distribution is shown in the below graph:

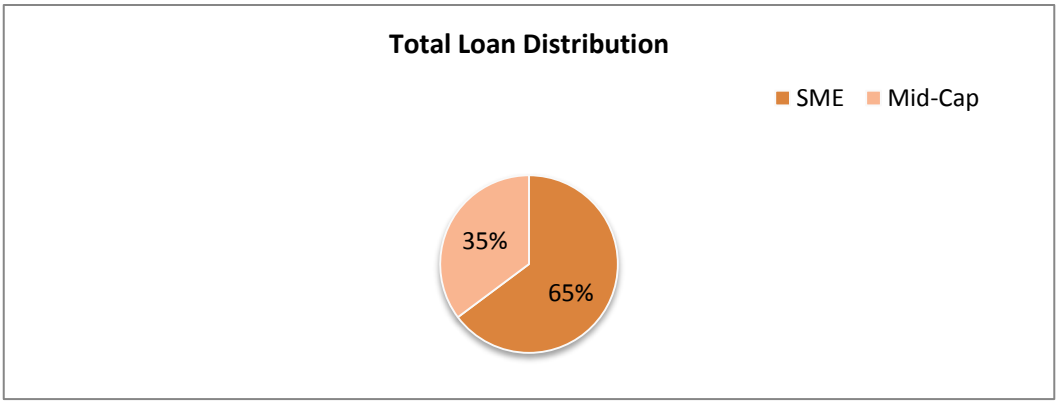


Figure 5 –Loan Distribution by Size of The Beneficiaries

Ziraat Bankası also financed 11 ESCO projects for a total of 2,9 million and 11 vendor financing deals for 12,3 million. The distribution of the alternative financing methods is shown in below table and graph:

Table 2 – Alternative Financing Methods

ESCO	2.867.834,41
Lease	11.215.820,21
Vendor Financing	12.305.547,18
Total (USD)	**26.389.201,80**

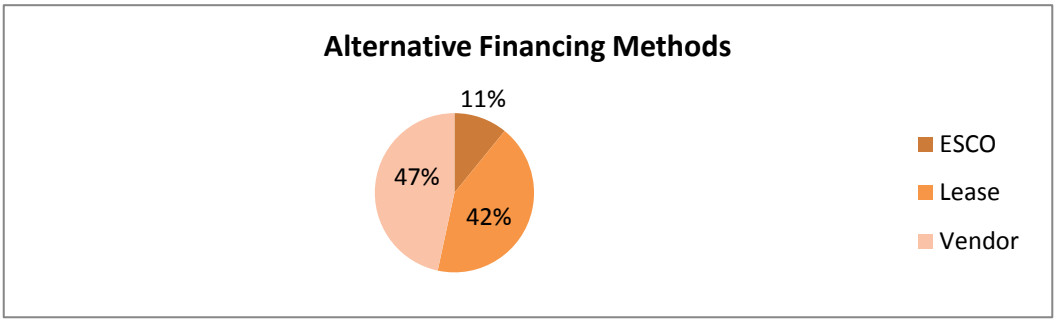


Figure 6 –Alternative Fİnancing Methods

Ziraat Bankası provided loans to 12 different sectors indicating a good distribution by sectors and the share of none of the sectors exceeded 24%. Distribution by sector is shown in the table and graph below where machine industry has the largest share with 24% followed by textile and clothes industry with 23%:

Table 3 – Loans by Sector

Loans by Sector	
	(USD)
Energy industy and electrical industry	6.380.471,77
Construction industry	6.401.637,06
Textile and clothes industry	15.386.334,93
Chemical Industry	7.202.436,28
Metallurgical industry	5.900.713,53
Food industry	5.878.774,60
Health Industry	1.185.915,82
Automotive and aviation industry	396.364,02
Machinery Industry	16.121.094,98
Glass Industry	2.378.338,00
Hospitality Industry	517.362,00
Consulting Services	115.485,75

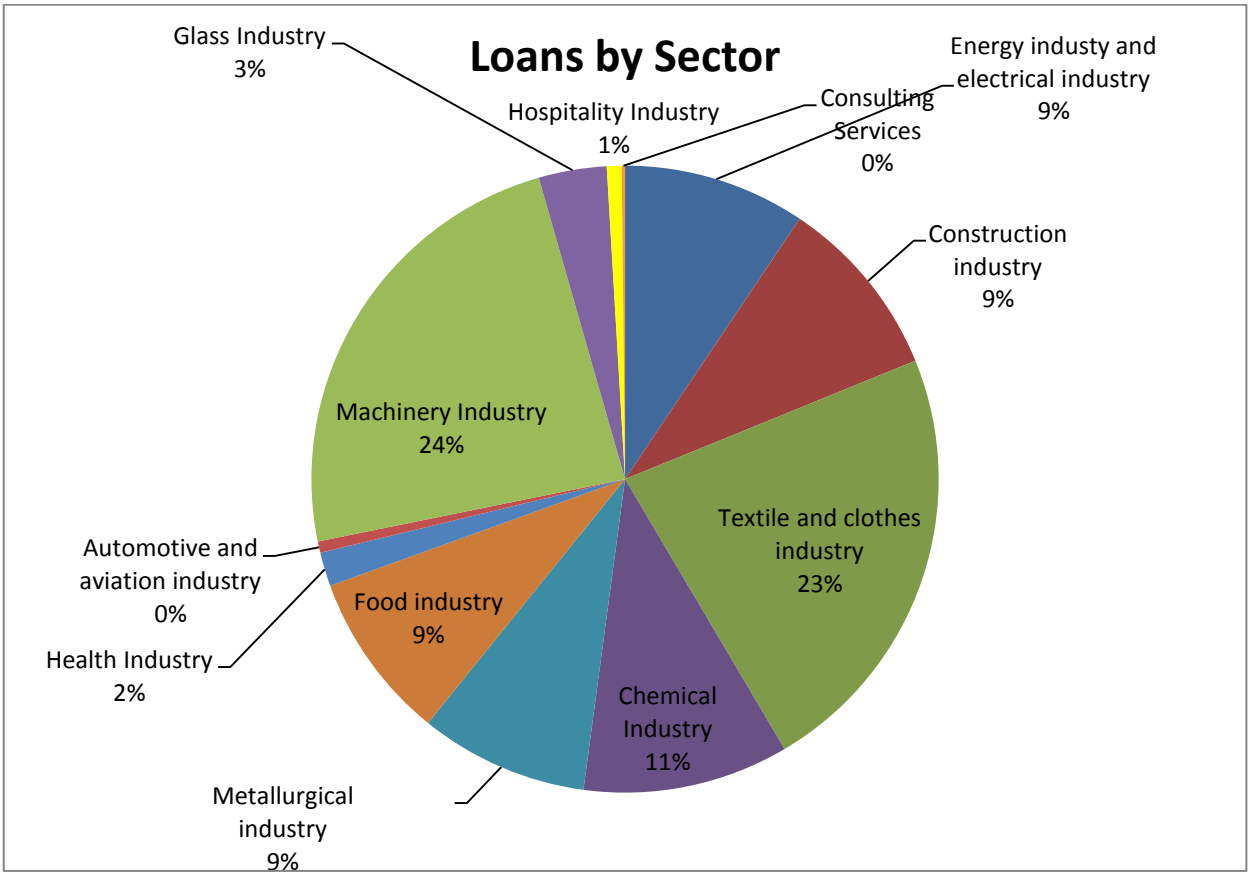


Figure 7-Loan Amounts By Sector

Table 4– Number Of Disbursements According To Sectors

Sector Type	Number of Disbursements
Automotive and aviation industry	3
Chemical Industry	10
Construction industry	9
Consulting Services	1
Energy industy and electrical industry	4
Food industry	10
Glass Industry	1
Health Industry	3
Hospitality Industry	1
Machinery Industry	21
Metallurgical industry	11
Textile and clothes industry	14
Grand Total	**88**

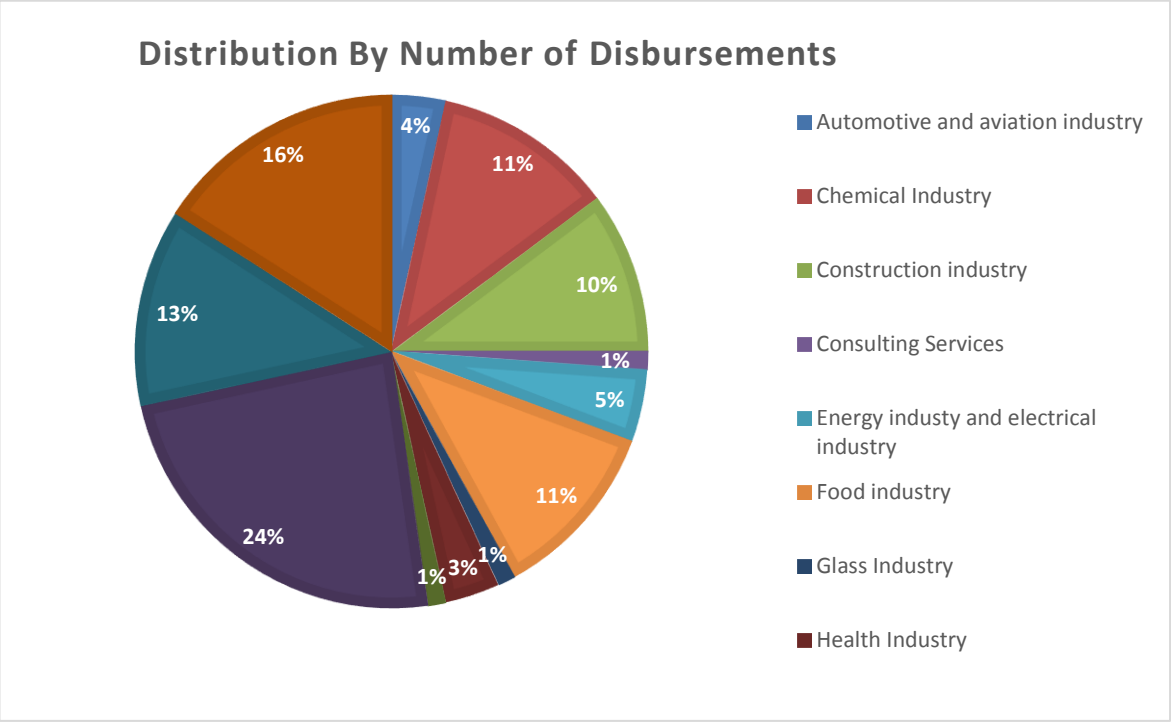


Figure 8 – Distribution of Disbursements According To Sectors

With 88 disbursements that were made in 81 different projects total of 298,268 MWh/year of primary energy was saved, which led to a reduction of 249,817 tons/year of CO2 emissions.

Table 5 – Energy Savings (MWh/year) of Disbursements According To Sectors

Sector Type	Energy Savings (MWh/year)
Automotive and aviation industry	8,180.57
Chemical Industry	14,803.24
Construction industry	29,767.25
Energy industy and electrical industry	7,137.81
Food industry	32,735.73
Glass Industry	42,485.52
Health Industry	1,558.06
Hospitality Industry	1,913.34
Machinery Industry	40,381.53
Metallurgical industry	65,393.08
Textile and clothes industry	53,912.04
Grand Total	**298,268.19**

Table 6 – CO2eq Emission Reductions (tons/year)of Disbursements According To Sectors

Sector Type	CO2eq Emission Reductions (tons/year)
Automotive and aviation industry	4,769
Chemical Industry	8,630
Construction industry	6,364
Energy industy and electrical industry	3,204
Food industry	16,225
Glass Industry	24,769
Health Industry	718
Hospitality Industry	1,623
Machinery Industry	87,158
Metallurgical industry	38,189
Textile and clothes industry	58,166
Grand Total	**249,817**

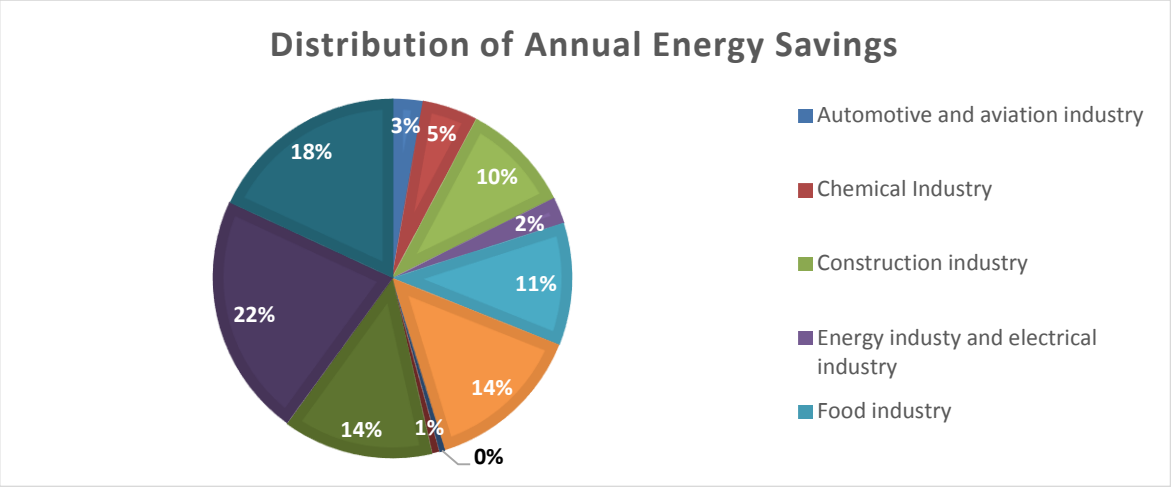


Figure 9 – Distribution of Annual Energy Savings According To Sectors

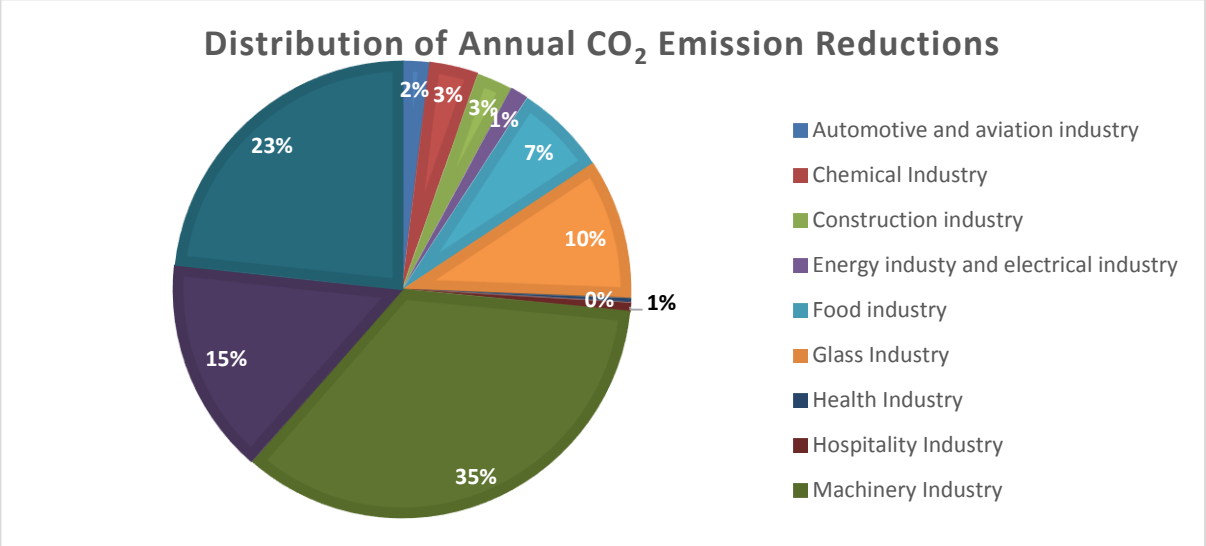


Figure 10 – Distribution of Annual CO2 Emission Reductions According To Sectors

Above Figures shows Metallurgical industry sector has the largest share in energy savings, however in the meanings of CO_2 reductions this sector has only the third biggest, Machine Industry has the largest part in CO_2 reductions with the 35% share.

Projects financed under this facility have been verified for their post-project energy savings with the following principle:

- All subprojects where the loan extended under the Project is US$1,500,000 or higher;
- At least 20% of the total number of subprojects where the loan extended under the Project is less than $1,500,000;
- All the EPC (ESCO) projects financed under the program.

Total of 9 projects with US$1,500,000 or higher loans, 12 selected projects with less than $1,500,000 loans and all the 11 projects under EPC (ESCO) category have been taken into assessment for post-verification. All of these projects proved to be meeting the energy efficiency requirements in the post-verification works.

Project Implementation Period (challenges, advantages, gains, evaluation of results)

Before we started implementing the project, we had already scanned our portfolio for potential investments and shared the pipeline with the World Bank. However, when we tried to turn these potentials into real investment, in the initial period of SME EE project, we realized there was not a ready demand for the loan in the market. Besides, we noticed that Ziraat Bankası had to raise awareness within the Bank and provide information to the marketing and analysis people to enable its own staff create the market for the loan. Therefore, the Bank started with procurement of Technical Assistance by from one of the well-known consultancy companies, Stantec Mühendislik ve Müşavirlik Ltd. Şti. (Stantec or Consultant) through an international tender that was made in accordance with the procurement guideliness of the World Bank. We allocated some 336,5 thousand USD fort he the consultancy services that has been provided by Stantec.

We started receiving services from the Consultant with two training programs, each two full day, in İstanbul and Ankara for over 400 analysis and marketing staff from all over the country and we allocated 58,5 thousand USD for the logistics of the training programs.

While doing that, we made sure that each regional headquarters had at least two and each regional and sectoral analysis group at least one analyst participating these intensive training programs. Our consultant also prepared a online taining material which we shared with our internal system. By doin these, we raised awarenes within the Bank first, and then we provided region and sector specific technical information to our stafs as well as using the participants of the trainings as trainers for the rest of our staff in their own working areas. We also had a summary information document beside the detailed online training document to make it easy to share with the customers during one to one meetings.

Following the training within the Bank, we organized meetings with the potential customers in different regions to promote the SME EE project and raise awarenes in the industry. Participants of these meetings included industry or trade chambers in different cities and regions, ESCOs, vendors of machinery and equipment, and potential end users.

While doing all these, we also used our website for publicity underlying that the financing was provided by the World Bank and during the meetings with the industry representatives we pointed out that this was a project made with the World Bank which created great reception.

Following the training and publicity programs, we started identifying more concrete investments using the pipeline and potential investments. This required one to one meetings with the customers to convince them

use the SME EE financing instead of plain loans which did not require meeting the World Bank eligibility criteria.

Thanks to the Project Implementation Unit (PIU) we had with the world Bank environmental gideliness and procurement rules that we established for the SME II and later for SME II, our Bank staff has been comfortable with adapting for these aspects of the project. However, the SMEs were not always as comfortable as we were with the documentation and reporting requirements of the loan project since they considered that it would bring serious operational burden on their companies.

On the other hand, the SMEs had worries about the financial eligibility requirements while MIDCAPs were more comfortable in these aspects.

However, with the assistance and cooperation of World Bank, we have mitigated the project eligibility requirements and the easy template prepared for project data entry forms by our Consultant and the contribution of our analysis and marketing teams, as part of our PIU, we were able to make the project look less challenging for the SMEs. We also organized many meetings with the end users, leasing companies and vendors to elaborate the simplified project implementation and convince them that the project was in fact very advantageous and easily applicable without significantly disrupting their ordinary course of business.

For the reasons summarized above, lending under the project started slow and we had to keep promoting the project and finding alternative ways to make loans under the project such as vendor financing and leasing as well as direct lending to the end users. The slowdown in the economy during certain times of the project did not also help the implementation of the project but we kept working hard on it. One indicator for the hard work we made is the high number of energy efficiency assessment we made and the number of projects the customers turned into investment with the loans we made under the project, which are 228 and 88 respectively.

One particular difficulty we had to overcome with the SMEs, and we successfully did so eventually, was their confusion between energy efficiency and renewable energy. In the early stages of the project, most of the customers wanted us to finance their solar or wind power investments under the project and the SME EE project was in a sense a good learning process for them. Eventually, the notion of energy efficiency was well understood by the SMEs, but it also indicated that there is a huge potential and need for a dedicated financing project for renewable energy investments.

Another area where we had difficulty until the last year of the project implementation was the ESCO deals as the guarantors of the Performance Contracts were not comfortable with the risks, they were required to take against the grant they were going to receive from the GEF. However, with the proactive approach of Ziraat Bankası and the World Bank, the Performance Contract was simplified and made easier to be understood by the parties of the Contract and the GEF grant was increased to 20% which made it more attractive for the guarantors to enter into Performance Contract based ESCO deals. As a result, in the last calendar year of the project implementation period we were able to have more ESCO deals than we needed for full allocation of the Technical Assistance budget.

The prominent attraction of the project for the PFIs was the long maturity of the loan as well as its pricing which we applied without disrupting the market as underlined by the World Bank.

The World Bank provided with 67 million USD funding to ZiraatBank with an average maturity of 18 years and considering the short maturities of time deposits in Turkey, World Bank fundings are always very important type of source. SME EE project loan made it possible for Ziraat Bankası to diversify its funding base and to lend this benefit in return to the beneficiaries accordingly.

On the other hand, although Ziraat Bankası has provided this loan with a convenient pricing to the customers without distrupting the market, pricing and tenor was still very important not only for its own SME and MIDCAP customers but also very distinguishing for the leasing sector as we have been advised by the leasing companies that theri customers are very sensitive to pricing and maturity options.

All the transactions financed under SME EE project were investment loans. Therefore, we can definitely say that the project significantly contributed to the increase in investments and we can make inference that these investments increased employment and sales, as we have been informed by SME customers (during our site visits) that the investment on new equipment or production line have increased their sales and profit leading to creation of new jobs.

As we also indicated in the quantitative section of this ICR, new machinery purchases significantly decreased energy consumption and carbon emission.

In the beginning of the project, the project was already defined as “low risk” in terms of environmental and social risks and as we applied the World Bank policies and guidelines, the SME EE project transactions where machine/equipment replacement took place there has been no environmental or social risks created. Therefore, when making environmental risk assessment, the SME EE investments fell under category “C” which had minimal or zero environmental impact requiring no further environmental screening.

Since we have successfully completed two other projects with the World Bank and we have been implementing them for the last 9 years, our staff is very familiar with the safeguards requirements and we make sure that these requirements are met. On the other hand, the Turkish environmental legislation is in line with EU standards and puts rules and procedures in front of companies with regards to the environmental risk management when they engage in risky projects. On top of that, we apply the World Bank safeguard requirements to make sure nothing is uncovered. Accordingly, each end user is clearly informed by the marketing people about World Bank policies, guidelines and procedures on procurement, financial management and environment assessment making them more aware of World Bank’s sensitivity about environmental and social matters. In this respect, both the PIU of Ziraat Bankası and the participating leasing companies became familiar with World Bank sensitivity and expectations generally in terms of environmental and social risk management, making them more experienced for future transactions with World Bank and other International Financial Institutions.

Conclusion (lessons learned, expectations, future projections)

Energy efficiency assessment and documentation is successfully made by our consultant and our Bank during the project implementation. However, it was difficult in the beginning to do the marketing of the project as there was the need to raise awareness both within the Bank and among the SMEs. We were very successful at providing the necessary training and information to the Bank staff in an efficient way by organizing training sessions for marketing and analysis staff and especially at training the trainers in the Bank. After that, we carried out an intensive program of visits to the SMEs in their own regions and cities to provide the necessary information on the project.

One particular difficulty we had to overcome with the SMEs, and we successfully did so eventually, was their confusion between energy efficiency and renewable energy. In the early stages of the project, most of the customers wanted us to finance their solar or wind power investments under the project and the SME EE project was in a sense a good learning process for them.

Eventually, the notion of energy efficiency was well understood by the SMEs, but it also indicated that there is a huge potential and need for a dedicated financing project for renewable energy investments. With the new regulations in Turkey, renewable energy investments are expected to increase in the industrial sector and therefore it would be good to have a dedicated project for renewable energy in the industry with incentives similar to the GEF grants.

Similarly, as the success in the CO_2 emission reduction is becoming as important as the energy savings, 20% CO_2 emission reduction can be added as a new criterion for projects in energy intensive sectors and some renewable energy projects where it is difficult to achieve 20% improvement in specific energy consumption.

The SMEs find the project too demanding in terms of data/document collection and it makes the participants less eager as its time consuming in operational terms for them when compared with the ordinary investment loans. Therefore, the investor looks for an incentive to prefer the energy efficiency loan to plain investment loans which can be either better pricing or longer maturity.

Relatively advantageous pricing can be offered to the customers in USD or EUR, but the same is not possible in TL due to the SWAP cost. On the other hand, foreign exchange fluctuations and the new restrictions on foreign exchange denominated lending have narrowed the pool of SMEs that are eligible for foreign exchange loans. As a result, TL denominated loans can be preferable for many of the SMEs if the World Bank can provide TL denominated loans at favorable interest rates.

In conclusion, Ziraat Bankası has completed the disbursement of 67,9 million USD as of 30.09.2019, and this has been a successful operation overall supporting the SMEs in their investments all over the country with relatively favorable funding conditions. During our meetings and site visits, SMEs have shown their appreciation and thanked World Bank and Ziraat Bankası for leading the implementation this project and they are looking forward to cooperating again and continue with new transactions in larger amounts.

Ziraat Bankası also benefited from its experience in working with leasing companies when some of the loans were made through leasing. Working with the ESCOS and parties of the performance contracts have been a new experience for Ziraat Bankası but it was completed successfully.

SME EE Project proved to be one of the three successful projects financed by the World Bank and implemented by Ziraat Bankası, so far. We intend to continue this cooperation with the World Bank in new projects.

BORROWER'S ICR (MENR)

1) Project Success

Small and Medium Enterprises Energy Efficiency Project

Small and Medium Enterprises Energy Efficiency Project was composed of 3 lines of credit for a total amount of US$201 million to three financial intermediaries and US$3.64 million Global Environment Facility (GEF) grant for technical assistance and risk sharing to the three intermediaries and technical assistance (TA) to (former) DG Renewable Energy (DGRE) within MENR. The amount of the policy and technical support dedicated to (former) MENR DGRE was US$0.94 million.

In order to carry out project implementation tasks regarding the TA for MENR DGRE, MENR DG Foreign Relations and EU (DGFREU) was assigned as the Project Implementation Unit. Together with the IPA funded Energy Sector Development – Phase 1 project, the SME Energy Efficiency Project was one of the first two projects jointly managed by the World Bank and MENR DGFREU.

The overall objective of the SME EE project was "to improve the efficiency of energy use in SMEs by scaling-up commercial bank lending for energy efficiency investments". In order to broaden the impact of the credit lines, the TA for MENR DGRE aimed at carrying out awareness raising activities, market assessment studies, legislative and policy gap analyses and improvement of stakeholder dialogue.

In order to fulfil these tasks, the project was split into three main parts (goods, consultancy services and non-consultancy services) and implemented through;

- 2 supply contracts for the procurement of office equipment (Total Amount: US$19,992.23)
- 11 consultancy services contracts (Total Amount: US$866.526,45)
- 3 non consultancy services contracts (Total Amount: US$45.447,27[5])

In terms of the project's relevance to Turkey's strategies, a clear link can be established between national documents and the project components. However, although project outputs contributed to (i) awareness in EE and EE financing in SMEs, (ii) an increase in the technical expertise in EE among DGRE staff and (iii) improvement of the regulatory framework and strategies regarding EE, it is not very easy to measure how much these achievements will translate into the broadening the impact of the credit lines to improve the efficiency of energy use in SMEs.

Out of 11 consultancy services contracts, 4 of the contracts were utilized for the achievement of main project objectives. The details about the implementation of these 4 contracts are reported in detail in the following sections of this report. The other 7 contracts were to hire individual consultants for relatively shorter time periods to support project management since the number of PIU staff was inadequate to fulfil its obligations.

Although the PIU staff were qualified and able to learn the rules of the Bank for tendering and contract management, as it was first of its kind, it took time for settling the World Bank project implementation experience in MENR.

Regarding efficiency, implementation of 16 very small contracts led to a very high level of administrative burden, having a negative impact on the quality of the project implementation. Given the number of the PIU staff was inadequate, this burden also resulted in delays and time extensions during the implementation of

[5] Due to the non-fulfilment of certain services, US$21,812.30 was not paid to the Contractor. Together with the savings (i.e. US$8,034.09) from other non-consultancy service tenders, a total amount of US$29,846.39 was refunded to the World Bank account.

the contracts. However, the project can be considered successful in terms of efficiency since all of the activities are completed within the implementation deadline with limited human resources and considering the fact that 97% of the total budget were disbursed.

In terms of effectiveness, clear links were established between the project objectives and results. These were taken as given and further detailed in the contracts. Although most of the results were attained it should be noted that some results referred to broadening the impact of credit lines to improve the efficiency of energy use in SMEs remains to be seen.

In terms of sustainability, studies conducted offered a wide range of recommendations to cover the legislative and policy gaps. An important portion of these recommendations are taken on board in NEEAP and some specific amendments in the regulatory framework, enabling the implementation of EPC contracts in public buildings. Some of the findings and recommendations paved way to complementary follow-up projects such as the IPA funded project on Enhancement of Institutional Capacity in Energy Efficiency and IBRD and CTF co-funded project on Energy Efficiency in Public Buildings.

Component 1: Consultancy Services on Awareness Raising to Small and Medium Sized Enterprises and Energy Service Companies on Energy Efficiency and Energy Efficiency Financing Project (MENR-CS-01.a)

Relevance of the Project Objectives to Turkey's Energy Sector Needs and Strategies:

The objectives of the project are related to raise awareness of the SME companies on energy saving methods and the advantages of these applications, and to support them via implementation of consultancy programs and national policies along with financial programs. These objectives are in close alignment with Turkey's objectives to increase awareness among private sector participants articulated in the Article 6 of Energy Efficiency Law (No.5627); in NEEAP (2017-2023), in MENR's 2015-2019 Strategic Plan and in 10th and 11th Development Plans.

Efficiency:

The contract was mainly composed of 4 separate tasks. Starting from the Inception Phase, relevant staff were assigned by the former DGRE in order to ensure timely action about the draft project deliverables. The sequential reporting within the tasks was successful in terms of ensuring that each report was reviewed in detail for several rounds to make sure they are in line with the MENR's needs. However, it should be noted that in some cases (e.g. drafting the Communication Strategy) where the approval process took 5 rounds of comments in 5 months, the submission and approval of consecutive reports were also delayed.

In total, 6 deliverables (5 reports and 1 MS Excel tool) under 4 tasks were submitted and approved. In terms of budgetary disbursement, the expenses regarding the reports and public awareness activities were designed to be reimbursed through lump sum payment per approved deliverable. 100 % of the budget allocated to 5 reports was disbursed. Moreover, a budget extension was made in order to cover the task on the modification and the translation of MS Excel tool and another to cover 2 additional events where the drafted communication materials were tested. Hence, it can be said that the budget allocated to these activities was sufficient.

Efficacy:

Objectives of the project were designed to be met through delivery of reports, drafting and revising a communication strategy, developing communication materials and supporting field work on public awareness activities.

Although it is hard to measure capacity building, which was designed to be attained through reports and workshops, the wide attendance to meetings and workshops indicate interest in the project activities.

Furthermore, analysis of the seminar/workshop participation surveys also demonstrated a high level of satisfaction.

The Consultant conducted a literature review and a field work on which the main elements of the Communication Strategy was built. The Communication Strategy was aiming at increasing awareness among the higher management of the SMEs about the realization of EE investments as a cost minimizing factor and about possible sources of funding for such investments. The entry-exit surveys conducted during the test phase of the communication materials and the Communication Strategy demonstrated that 90% of the participants considered themselves more aware than before and ready to take actions for EE investments, which can be considered as a proof of the success of the project in terms of raising awareness among SMEs.

However, the Consultant also concluded that conventional media and awareness raising campaigns in broader terms usually fail to convince the management to make investment decisions. The surveys conducted during the research phase and the testing phase of the Communication Strategy proved that the most effective way of communication in increasing awareness and appetite on EE is direct interviews of the commercial banks with the managers.

Additionally, the Consultant prepared a set of communication materials which were approved by MENR. Alongside with the other deliverables of the project, these communication materials are accessible on the project's website (http://kobiev.enerjiprojeleri.eu/).

Component 2: Consultancy Services on Policy Gap Analysis and Energy Efficiency Program Evaluation (MENR-CS-02)

Relevance of the project objectives to Turkey's energy sector strategies:

This component aims at providing technical assistance to MENR to evaluate the policies and programs in energy efficiency in order to strengthen the policies and activities particularly related to SMEs. As addressed in the Article 4 of Energy Efficiency Law (No.5627), Energy Efficiency Coordination Board is responsible for the development of energy efficiency strategies, plans and programs; evaluation of the effectiveness of these programs and ensure the coordination for the realization of necessary revisions. Moreover, MENR is addressed as the main responsible party in the development of EE supporting programs under MENR's 2015-2019 Strategic Plan. Additionally, the 10th and 11th Development Plans also requires actions to develop energy efficiency programs and financing mechanisms. Lastly, NEEAP also aims at developing different EE programs in a variety of sectors. Therefore, the project is directly relevant to Turkey's energy sector strategies, as the development, evaluation and revision of EE programs are specifically addressed under several legislative or strategic documents.

Efficiency:

The design of this component was mainly built upon four pillars: (i) reviewing existing EE programs, (ii) analyzing the policy gaps, (iii) evaluation of existing EE programs and (iv) drafting recommendations for the implementation of EE strategies in the future. Although the project was addressing the full range of energy efficiency activities, the project team attributed a specific focus on small and medium-sized enterprises in order to ensure efficient use of resources and relevance with the main objective of the component.

The tasks under this component also included policy gap analysis, a study which also needs to be carried out by the NEEAP team. In order to avoid duplications and overlaps, this component focused more on the implementation gaps regarding the existing EE programs, while NEEAP team focused more on legislative gaps.

In total, 5 reports under 4 tasks were submitted and approved. Moreover, a roundtable meeting was held under the fourth task in order to discuss the findings and recommendations with a wide range of stakeholders. In terms of budgetary disbursement, the expenses regarding the reports and public awareness activities were designed to be reimbursed through lump sum payment per approved deliverable. 100 % of the budget allocated to 4 reports was disbursed.

Efficacy:

The objectives of this component are defined in the ToR as:

i. to conduct a policy gaps analysis with respect to energy efficiency in Turkey and develop actions to address policy and institutional shortcomings to improve the framework
ii. to review existing government informational and incentive programs for EE in SMEs, conduct impact and process evaluations and recommend actions to increase their effectiveness

Moreover, this technical assistance is aimed to help the government expand the impacts of the USD201 million credit line for SME EE financing.

As a result of the gap analysis, the Consultants reported that the 2023 energy intensity objective is ambitious and there is the risk of failure as there are both legislative and policy gaps; and the objective should be replaced with a target of quantitative energy savings. On the other hand, the SWOT analysis conducted by the Consultant showed that there is a good combination of regulatory, training, information and financial instruments and the NEEAP is a good indication to expand the policies and programs. The Consultant also recommended that EU Directives on EE should be transposed and policies should be monitored through better utilization of ENVER portal.

In 2018, the government has defined a set of policies in NEEAP to close the implementation and policy gap. The 2023 energy intensity target was replaced with a target of 14% reduction of primary energy consumption. Moreover, the NEEAP includes a variety of new and expanded programs, most of which are in parallel with the EU approach. It can be seen that the adopted policies and actions taken by the government are in line with the recommendations provided under this component, which can be considered as an indication for the accuracy and the effectiveness of the activities carried out.

In terms of institutional capacity, the Consultant reported the need for a strengthened management structure with an adequate capacity and differentiation of responsibilities. In line with this finding, Department of Energy Efficiency and Environment (DEEE) was founded and the energy efficiency and environment related tasks were transferred to this new department. DEEE reports directly to the Deputy Minister, which indicates a strengthened management structure to link the policy analysis, program delivery and co-ordination with other government institutions and international organizations. DEEE is composed of 4 separate units with differentiated responsibilities.

Moreover, with reference to the certification of energy auditors, the Consultants' recommendation regarding the prolongation of the validity period for the certificates was taken into account. The period is defined as 5 years instead of 3 in the recent proposal for the amendment of respective secondary legislation. Public consultation process for the proposed amendment is ongoing. Moreover, according to the proposal, the threshold for mandatory audits is lowered. The new proposal is accessible through MENR's website.

Component 3: Preparation of Guidelines for Energy Performance Contracting for ESCOs and Case Study Development (MENR-CS-10)

Relevance of the Project Objectives to Turkey's Energy Sector Needs and Strategies:

The main objectives of this component are (i) to develop information and recommended actions to help enhance the energy services market in Turkey by reviewing the market, identifying major barriers, recommending measures to address these issues; (ii) to develop sample documents/contracts, which could

facilitate energy services transactions in the EE market and (iii) to assess the public buildings market in Turkey.

According to the Article 5 of the Energy Efficiency Law (No.5627), the authorized companies are responsible for carrying out audits and consultancy activities, preparing the technical documents for the EE projects and implementing the retrofitting works in line with the implementation agreements. Moreover, EE Strategy Document (2010-2023) calls for the rehabilitation of public buildings and facilities through long term energy performance contracts (EPC) through the revision of the regulatory framework. In addition, Section 1.14 of the 10th Development Plan (2014–2018), which was approved in 2013 includes a section for the Energy Efficiency Development Program. Under this program, *Component 2 – Development of Sustainable Financing Mechanisms for EE Studies and Projects* aims at improving the effectiveness of existing financing mechanisms; while *Component 4 – Improvement of Energy Efficiency in Buildings* dissemination of different financing models, including energy performance contracting (EPC) model in buildings, including public buildings. Lastly, the development of guidelines, standard contracts and similar bases containing technical, legal and financial aspects for energy efficiency projects and improvement of energy performance of existing public buildings are addressed in NEEAP as separate areas of action. Therefore, this component is complementary with Turkey's energy sector needs and strategies.

Efficiency:

The contract regarding Preparation of Guidelines for Energy Performance Contracting for ESCOs and Case Study Development was signed for a period of 12 months and it was extended to 20 months through three contract amendments. Together with time extensions, four additional tasks are defined in Amendment 2.

In total, apart from inception and final reports, 12 deliverables were submitted and approved. In terms of budgetary disbursement, all expenses were designed to be reimbursed through lump sum payment per approved deliverable. 100 % of the budget allocated to 7 deliverables was disbursed. Moreover, a budget extension was made in order to cover the 5 deliverables defined in Addendum 2. Therefore, it can be concluded that the budget allocated to these activities was sufficient and used efficiently.

Efficacy:

The contract was composed of two main components, namely (i) Preparation of Guidelines for EPC Contracting for ESCOs and Case Study Development, (ii) Market Assessment for Public Buildings in Turkey. Under Component 1; the consultant carried out a market assessment study and three case studies of successful ESCO transactions in Turkey; alongside the preparation of simplified standard ESCO contracts, draft key changes to legislation and guidelines for industrial customers to select and work with ESCOs. Under Component 2; the consultant developed a methodology for assessing the energy savings potential of public buildings based on the estimation of the energy savings potential in every segment of the public buildings sector and conducted a market assessment. Resultantly, the Consultant presented its recommendations for the public buildings sector in Turkey.

The outputs of Component 1, namely the simplified standard ESCO contracts provided input for the development of national standardized ESCO contracts during the drafting of the respective secondary legislation. Additionally, as a direct outcome of Component 2, calculated savings potentials for public buildings paved the ground for the development of "Energy Efficiency in Public Buildings Project", which aims to reduce energy use in central government buildings and develop sustainable financing mechanisms to support a scaled-up, national program for energy efficiency in public buildings. The project is aimed to be implemented for 6 years, carrying out the retrofit works of nearly 500 public buildings.

In addition to these services, as an extension to the original contract, the Consultant also prepared M&V Methodology Guideline and Templates, Translation of the IPMVP protocol (25 pages) in Turkish, Report on Review and Recommendations for ESCO Certification Process, Report on Pilot ESCO Grant Scheme and Report on Arbitration Mechanism.

Component 4: Training Services on Energy Efficiency Data and Indicators and Demand Projections (MENR-CS-10)

Relevance of the Project Objectives to Turkey's Energy Sector Needs and Strategies:

This component aims at training the MENR staff on (i) developing of energy efficiency indicators; (ii) measurement, monitoring and evaluation of the energy efficiency data and energy statistics; (iii) developing of case studies with demand projection model and (iv) designing an energy efficiency scenario and assessment of the energy saving potentials. As addressed in the Article 4 of Energy Efficiency Law (No.5627), Energy Efficiency Coordination Board is responsible for the evaluation of the effectiveness of energy efficiency policies and programs. In support to the Board, (former) DGRE was the main responsible for the collection and analysis of energy efficiency data and preparing short-medium-long term projections regarding energy savings.

Efficiency:

The contract was signed for a duration of 2 months starting from July 26th, 2018 and ending on September 21st, 2018. The consultant delivered 2 hands-on trainings in 8 days in total. 100% of the budget was disbursed upon the completion of the trainings and approval of the training materials and the training report.

Efficacy:

The first training which was organized between July 31st and August 3rd covered the basics of energy demand projections and the software tool. The second training focused on the monitoring of energy efficiency through indicators, which was delivered between September 11th and 14th.

As a result of these two trainings, DGRE staff who are in charge of the monitoring the energy consumption in different industrial sectors are trained through theoretical instructions and hands on exercises on the modelling tool. In total, 10 trainees from DGRE are trained with a specific focus on (i) developing energy efficiency indicators and data sets, (ii) calculation of sector specific indices for ODEX which is the index used in the ODYSSEE-MURE project to measure the energy efficiency progress by main sector (industry, transport, households) and for the whole economy (all final consumers). The trained staff are still working in charge of collecting and analyzing sector specific data to provide input for the demand and savings forecasts. The experience gained through these trainings established the baseline and provided input for further improvement of the institutional capacity through other technical assistance projects. For example, the IPA funded project "Enhancement of Institutional Capacity in Energy Efficiency" which was programmed under 2015 Annual program can be considered as a complementary action, including the development of a demand forecasting software model capable of building different energy savings scenarios.

Future Recommendations

- One reason for the delays in the implementation period was the shortcomings regarding the coordination between DGFREU and DGRE. In the last years of the project, a strengthened coordination mechanism is established between the two DGs. High level ownership for the project activities significantly improved the effectiveness of the actions. Therefore, a high-level coordination mechanism should be ensured for overcoming the delays and increasing the effectiveness of the project activities in future assignments.

- The contracts should be designed in a way to increase the effectiveness of the activities while decreasing the administrative burdens. In order to ensure resource efficiency in project implementation, the PIU should avoid very high number of contracts with very small budgets, as it canalizes the level of effort from the technical aspects of the project to the administrative issues.

- The payment procedures of the IFI funded projects are more complicated than IPA funded projects due to the fact that there are no VAT or other tax exemptions for IFIs. In the case that the Contractor is not based in Turkey, the taxes to be paid depends on the days that the Consultant spends in Turkey. As a good practice, during the contract negotiation phase, the Consultants who are not based in Turkey should be advised by the PIU to hire a tax consultant to follow the complicated administrative processes in a better way.

- Consultant experts must be held liable for spending more time in the field than home for liaison, data collection, and reporting in the ToR.

2) Administrative Performance and Lessons Learned for PIU and WB

PIU

Staff capacity for design, tendering and implementation

Together with the IPA funded Energy Sector Development – Phase 1 project, the SME Energy Efficiency Project was one of the first two projects jointly managed by the World Bank and MENR DGFREU. In the starting phase of the project, the PIU had just been established and the number of the staff was inadequate. Additionally, the project was implemented through 16 small contracts, which led to a very high level of administrative burden, having a negative impact on the quality of the project implementation. PIU staff were qualified and able to learn the rules of the Bank for tendering and contract management. However, as it was first of its kind, it took time for settling the joint management experience in MENR.

Administrative Measures and Continuity

During tendering, there were some irregularities in the number of personnel dedicated to PIU tasks and change of positions. However, after the accreditation of the PIU as the IPA Support Unit of the MENR by the National Authorizing Officer (Ministry of Treasury and Finance) a more stable and closely monitored personnel organization have been introduced which also indirectly enhanced the regularity in the PIU. Although the intention for the authorization was the programming and monitoring of the IPA funded projects, this administrative measure also contributed to the stability of the staff who are in charge of the management of the projects funded by IFIs.

Delays in tendering and implementation periods

The tendering phase took longer than expected and some of the administrative processes were delayed during the implementation phase since the project was implemented through 16 small contracts by limited number of staff. The delays in the implementation period also stemmed from the shortcomings regarding the coordination between DGFREU and DGRE. In the last years of the project, a strengthened coordination mechanism is established between the two DGs, which significantly improved the effectiveness of the actions.

Monitoring and Review of Outputs

Review of project outputs was an issue partly due to lack of dedicated personnel on part of the end-beneficiary, and partly due to occasional weak enforcement in PIU due to staff changes. Review periods were prolonged for some outputs due to these reasons.

Financial Management and Payments

The payment procedures of the IFI funded projects are more complicated than IPA funded projects due to the fact that there are no VAT or other tax exemptions for IFIs. Another problem was the difficulty to find and recruit competent staff who has a specific experience in World Bank financial management and

procurement rules. Within the scope of the project budget, apart from the project coordinator who worked for 17 months, PIU hired 2 procurement specialists and 3 financial specialists through open tenders, none of which were proved to be competent enough to fulfil the relevant tasks. Therefore, as a lesson learned, it can be concluded that staff recruitment and retention is critical for the financial management and payments.

WB

Guidance and assistance to PIU staff for design, tendering and implementation

Although the World Bank had a positive approach towards the PIU staff, the lack of a coherent and holistic training program prior to the beginning of the tendering and implementation phase obliged the personnel to adapt to the newly introduced contract management modality in a hands-on manner. This increased the prospects for mistakes or delays in the adaptation process. For similar future collaborations with governmental institutions the Bank is suggested to plan trainings on contract management and Bank Guidelines for procurement prior to the tendering and implementation phase.

Enforcement for Administrative Measures and Continuity

The Bank put forth some positive efforts to bring up the issue regarding the irregularities in the number of personnel dedicated to PIU tasks and change of positions at the high-level meetings with the Ministry.

Monitoring and Review of Outputs

The Bank experts' participation in review of outputs was helpful in guiding the Consultants for producing more effective reports. Also, the Bank experts have provided remarkable contribution to the outputs with their international sectoral experience.

Financial Management and Payments

Until the last year of the project the Bank had provided assistance to the PIU for financial issues on an ad hoc basis, which increased the possibility to do mistakes. Starting from the last quarter of 2017, the Bank provided an effective guidance to PIU to prepare financial reports and overcome the ambiguities regarding the complicated financial issues such as tax refunds. The Bank is suggested to provide such assistance starting from the initiation of the project.

ANNEX 6. SUPPORTING DOCUMENTS

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