SEI SUSTAINABLE ENERGY INITIATIVE

CASE STUDY

TURSEFF

TURKISH SUSTAINABLE ENERGY FINANCE FACILITY

European Bank for Reconstruction and Development

This project is funded by the European Union

CLIMATE INVESTMENT FUNDS

TURSEFF

INTRODUCTION

CREATING A MARKET

The launch of the Turkish Sustainable Energy Financing Facility (TurSEFF) Phase I marked the entry of the European Bank for Reconstruction and Development (EBRD) into Turkey's sustainable energy market, laying the foundations for a series of sustainable energy finance operations that continue to grow. The EBRD used its own funding, as well as financing from the Clean Technology Fund (CTF) and the European Union to support five major Turkish banks, Akbank, Denizbank, Garantibank, Isbank, and Vakifbank, as they created lending products for sustainable energy, developed a project pipeline, assessed loan requests, and verified the implementation of projects.

Following a slow start, due to limited experience in Turkey of financing dedicated to sustainable energy, the facility rapidly achieved full disbursement ahead of target. The period from June 2010 to January 2013 saw over US$ 450 million invested in sustainable energy projects through TurSEFF. This avoided almost 650,000 tonnes of CO_2 emissions per year. It also saved almost 1.5 TWh and 1.15 TWh per year respectively through energy efficiency and renewable energy projects. What is more, the participating Turkish banks and the EBRD together created a powerful brand for sustainable energy finance, and built a lasting relationship through which new partnerships were created to finance larger projects.

Growing demand

The success of the facility was underscored by a large oversubscription of the project pipeline. The high demand was covered in part by providing additional finance to Akbank, and also by recycling repaid loan funds, a process that still continues. More importantly, however, the partner banks of the EBRD saw the potential to further expand the market, leading to the approval in 2013 of a large-scale extension. The extension is proceeding without any concessional climate finance, indicating that the transformation of the market to market-based lending has been initiated in the Turkish small to medium-sized enterprise (SME) sector. Furthermore, the EBRD is now working to expand the reach of climate finance in Turkey's financial sector, by developing a facility dedicated to the residential energy efficiency market, was an area that was not thoroughly addressed through TurSEFF. This new facility is expected to become active in 2014.

Considering this extension, as well as the development of parallel facilities for other sectors such as the Mid-size Sustainable Energy Financing Facility (MidSEFF) and private sector investment, it is arguable that the initial provision of US$ 50 million from the CTF, combined with US$ 5 million from the EU for technical assistance, has been the catalyst for up to US$ 2 billion of sustainable energy projects over the course of three years. Compared to business as usual, this has led to reductions of over 3 million tonnes of CO_2 emissions per year for those projects already approved. The facilities will also support the Turkish government's objective to reduce import dependence and cost. Purchasing the oil equivalent of the energy saved or produced from renewables through SEFF projects would cost the Turkish economy well over US$ 500 million per year (about 1 per cent of the country's yearly imports).

The impact of TurSEFF in the Turkish lending market for sustainable energy shows the power of combining Multilateral Development Bank (MDB) finance, climate finance for the private sector, and technical assistance in line with government objectives. The Turkish government aims to increase energy security and environmental performance, and to reduce the impact of energy imports on the current account deficit. TurSEFF also shows that it is possible to achieve changes in energy use, emissions, and fuel mix in middle-income countries, by working through local financial institutions and by using climate finance to address market barriers. More facilities of this type will need to be developed in the years ahead to address the challenges of climate change. MDBs are uniquely positioned to undertake this work in close partnership with donors, governments, civil society, and local financial institutions.

PROJECT BACKGROUND

TURKEY'S ENERGY OUTLOOK

In comparison with many industrialised countries, Turkey's energy intensity remains relatively low – 79 per cent of the Organisation for Economic Co-operation and Development (OECD) average at purchasing power parities. However, with a rapidly expanding economy and a young, increasingly urbanised population, energy consumption is expected to double over the next decade. Electricity demand in particular – which has risen at an average annual rate of 7 per cent for the past eight years – is likely to grow fastest, driven by the use of electronics and air conditioning.

This rising demand will strain the energy infrastructure of Turkey. It will also increase the overall cost of supply due to the investment that will be necessary in order to meet these energy needs. While Turkey has successfully maintained a stable level of energy imports as a share of overall supply – despite rapid growth in demand since 2003 – energy efficiency would be a cost-effective way to meet further increases in demand. In addition, to date Turkey's energy requirements have been satisfied largely by fossil fuels, and consequently the country's CO_2 emissions have more than doubled since the 1990s. An increase in energy efficiency and production of renewable energy would be consistent with the energy strategy targets of the Turkish government. It would also help to mitigate any rise in greenhouse gas (GHG) emissions which might result from using fossil fuels to meet demand.

To satisfy energy needs and avoid bottlenecks in supply, large infrastructure investments are needed. Commendably, Turkey relies on the private sector to take an active role in developing the required infrastructure and has recognised the need for energy market reforms to attract private sector investment. Reforms are underway in the power sector, including a shift towards cost-reflective wholesale tariffs. In addition, the Turkish government has privatised power distribution companies, launched a programme to privatise power generation assets and set a date for full opening of the electricity market.

While these reforms will support the development of an infrastructure appropriate to growing demand, Turkey is also in urgent need of measures to establish energy security. This is particularly important for a nation so dependent on energy imports, which imports almost all of the oil and gas that it uses.

Energy has been a significant burden on the economy. In 2012 Turkey, which runs a current account deficit of US$ 48.5 billion[1], spent US$ 60 billion, or about 7.5 per cent of GDP, on energy imports – a 25 per cent increase on 2008 levels. Reducing the energy bill is a key requirement for addressing the country's current account imbalance.

The government is therefore also considering substantial increases to domestic energy production – including renewable energy – as well as increasing energy efficiency, for which there is great potential across all sectors of the economy.

MARKET BARRIERS TO ENERGY-RELATED INVESTMENTS

Although the Turkish government is taking measures to deal with the growing demand for energy, barriers remain to the development of energy efficiency and renewable energy. Evidence shows that:

- **Investors lack familiarity with energy efficiency projects, and therefore misjudge the benefits and risks of such projects.** Private sector investors often associate energy efficiency projects with high financial and technical risks and poor financial returns. In addition, upfront transaction costs which may arise from energy audits and feasibility studies can discourage investors. These costs can be increased by a lack of experience among the engineering service companies that would develop such projects.
- **Banks are not familiar with sustainable energy projects and have insufficient capacity to evaluate them.** Most local banks have limited capacity and experience in identifying, evaluating, and processing energy efficiency and renewable energy projects. As a result, they offer few, if any, financial products designed specifically to finance sustainable energy projects, and require substantial technical assistance to develop such products.
- **Financial resources and dedicated lending facilities are scarce. Sustainable energy measures require long-term funding.** In recent years financial institutions have had limited access to long-term financing, and in Turkey banks have traditionally relied on short-term financial products.

[1] US dollars (US$) are used throughout this document. Where sums have been converted from euros to US dollars, the rate applied was €1 : US$ 1.35.

THE TURKISH PRIVATE SECTOR SUSTAINABLE ENERGY FINANCING FACILITY (TURSEFF)

Objectives

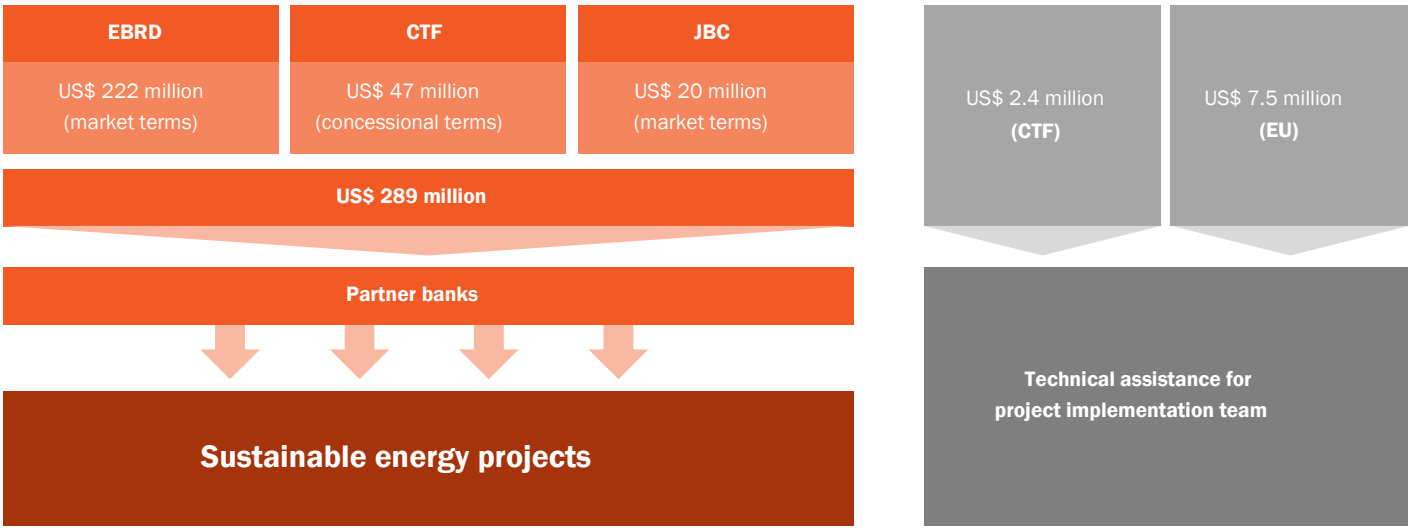
In 2010 the EBRD launched a new financing facility, TurSEFF, to address shortcomings in the Turkish market for sustainable energy. Through this facility the EBRD provided credit lines to local financial institutions for on-lending to small and medium-sized enterprises (SMEs) to finance energy efficiency and renewable energy projects. In the context of Turkey's rising energy demand and associated challenges, TurSEFF was designed to:

- Improve the security of energy supplies and decrease the cost of energy imports by boosting domestic energy production and energy efficiency in Turkey;
- Support a transition to clean energy use by reducing reliance on fossil fuels and meeting energy needs in an environmentally sustainable manner, thereby decreasing emissions; and
- Increase private sector involvement in the development and financing of energy efficiency and renewable energy investments in the country.

Given TurSEFF's objectives and the prevailing market barriers in Turkey, the EBRD applied a new financing model for this facility which differed from similar programmes the Bank had implemented in other countries. The TurSEFF model combined concessional funding from the Clean Technology Fund (CTF), non-concessional funding from the EBRD, and technical assistance to banks and investors that was financed by resources from the European Union and the CTF. In parallel with EBRD efforts, the International Bank for Reconstruction and Development (IBRD) and International Finance Corporation (IFC) implemented similar facilities to create a critical mass in the lending market.

Due to the financial barriers in Turkey, a technical assistance programme alone would have been insufficient to release the country's potential for sustainable energy investments. Similarly, a financing facility on its own – whether using concessional funds or not – would not have removed barriers such as the lack of experience or capacity among those involved in sustainable energy finance.

FIGURE 1: STRUCTURE OF TURSEFF



Financial structure

TurSEFF was originally launched as a US$ 200 million credit facility for disbursement to four local partner banks: Akbank, Garantibank, Vakifbank, and Denizbank. Within four weeks of the project's commencement Japan Bank for International Cooperation (JBIC) provided an additional US$ 20 million, and when Isbank joined as a partner institution in October 2011, another US$ 40 million was added, bringing the total value of TurSEFF to US$ 260 million.

The facility saw a further increase to US$ 284 million when Akbank, which had utilised its funds in early 2012, applied for and received another US$ 24 million in October 2012. Akbank channelled these additional funds to eligible projects remaining in the bank's pipeline after the first tranche of TurSEFF funding had been fully committed, illustrating the extent of demand for the facility.

Furthermore, during a detailed monitoring period for TurSEFF, which ended in May 2013, partner banks recycled repayments of earlier loans into new lending, again demonstrating the volume of demand and their commitment to lending in this new market.

TABLE 1: FINANCING PROVIDED UNDER TURSEFF

Financial institution	EBRD	CTF	JBIC	Total
Akbank	48	12	0	60
Garanti Bank	48	12	0	60
Vakifbank	48	12	0	60
Denizbank	16	4	20	40
Isbank	33	7	0	40
Akbank II	24	0	0	24
Recycled loan funds (up to July 2013)	5	0	0	5
Total	222	47	20	289

Two donors supported TurSEFF: The CTF, which provided US$ 50 million in concessional funding (including a US$ 2.4 million grant component), and the EU Instrument for Pre-accession Assistance (IPA), which supplied US$ 7.7 million through its Technical Assistance Donor Fund at the EBRD.

The CTF concessional funding was combined with EBRD commercial funding to create more attractive pricing and longer maturities for local partner banks. While EBRD loans had a maturity of five years, including a two-year grace period, CTF funds were offered with a maturity of 15 years and a grace period of seven years. These terms were compatible with the typical payback timescale of energy efficiency and renewable energy projects.

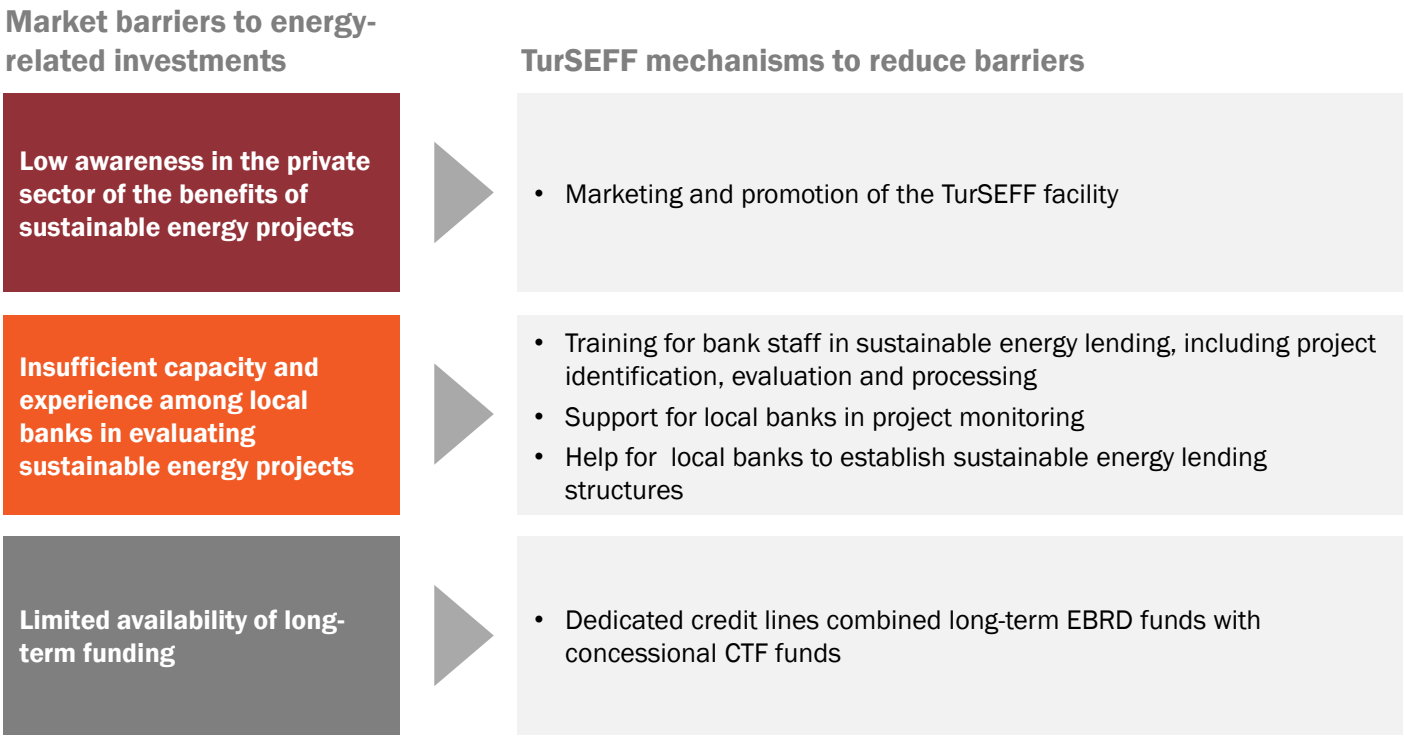
Implementation assistance

CTF funds, and EU funds from the IPA 2009 Crisis Response Package – provided in coordination with the Turkish Treasury – were used to finance a comprehensive technical assistance programme. This programme, which was mainly carried out by a project implementation team consisting of international and national experts, provided support to partner banks and sub-borrowers, and had the following goals:

- **Promotion of TurSEFF.** Targeted marketing campaigns and public awareness-raisings created a recognisable financial brand.
- **Capacity building at local partner banks.** Training enabled bank staff to identify, evaluate, and process sustainable energy projects. In addition, international and local experts were hired to support partner banks with the development and implementation of lending procedures and policies, including the formulation of eligibility criteria for sustainable energy loans. The experts also helped partner banks to monitor their evolving loan portfolios.
- **Capacity building at local businesses.** Advisory support was made available to local businesses and technical experts who received on-the-job-training and support in the preparation of energy audits and feasibility studies.
- **Monitoring and reporting.** Independent experts carried out this component of the programme to avoid any conflict of interest during the assessment and evaluation of completed sub-projects. The experts hired for this task were required to ensure that TurSEFF objectives were met and to confirm the completion of sub-projects in accordance with the investment plans.

Summary: How TurSEFF addressed specific market barriers

FIGURE 2: ADDRESSING MARKET BARRIERS IN TURKEY



Investment categories and assessment methodologies

TurSEFF was designed to offer partner banks a wide range of investment categories, which are summarised below, along with eligibility criteria and maximum sub-loan amounts. Each sub-project had to comply with the EBRD's Environmental and Social Policy requirements in order to receive TurSEFF finance.

TABLE 2: INVESTMENT CATEGORIES AND LOAN VOLUME CEILINGS

Investment categories		Maximum loan amount
Energy efficiency sub-projects in the commercial sector		
Small-scale sub-projects	• Sub-project must consist of equipment specified on a pre-defined list of eligible investments prepared by the project implementation team	US$ 300,000
Complex sub-projects undergoing feasibility assessment	• Sub-projects must either show an energy savings ratio of 20 per cent or a reduction in greenhouse gas (GHG) emissions of 20 per cent • Sub-projects must show a minimum internal rate of return (IRR) of 10 per cent • Sub-projects must focus on retrofitting energy efficiency equipment in existing facilities[2]	US$ 5 million
Renewable energy sub-projects		
Renewable energy sub-projects	• Eligible sub-projects include: small run-of-river hydropower plants with a capacity not exceeding 10 MW; installations of wind turbines with a collective installed capacity not exceeding 10 MW; biomass combustion systems generating heat and/or electricity; solar-thermal water and drying systems; geothermal heat pumps; and biogas engines • Sub-projects must show simple payback periods of 15 years or less and	US$ 5 million

[2] Where sub-projects led to increased production volumes, the potential energy savings were calculated per unit of production, multiplied by the new production volume.

	achieve a minimum of 2.1 kWh per annum of generated electricity per US$ of investment cost. • The financial viability of a sub-project must result in a positive net present value	
Building sector sub-projects		
Residential building sub-projects	• Sub-project must consist of equipment/material specified on a pre-defined list of eligible investments prepared by the consultant	US$ 75,000
Commercial building sub-projects	• Sub-project must consist of equipment/material specified on a pre-defined list of eligible investments prepared by the consultant[3]	US$ 5 million
Energy efficiency supplier sub-projects		
Energy efficiency suppliers sub-projects	• Sub-loans made available for the expansion those business operations of energy efficiency suppliers which related to the manufacture, supply or installation of energy efficiency and renewable energy technologies • These technologies must achieve the minimum performance requirements specified on the list of eligible sub-projects developed for each sub-project category	US$ 1 million
Vendor finance		
Residential building sub-projects	• Vendor loans were disbursed to companies that offered equipment and material specified on the pre-defined list of eligible investments prepared by the consultant	n/a

The sub-project assessment mechanisms shown in Box 1 ensured that sub-projects were implemented in accordance with pre-defined eligibility criteria. The close involvement of both partner banks and clients enabled both sides to build capacity for the technical and financial preparation of sustainable energy projects. The flexible approach of using so-called Rational Energy Utilisation Plans (REUPs), Simplified Energy Audits (SEAs), and lists of eligible equipment and suppliers ensured that assessments were tailored to project types. This approach minimised transaction costs.

BOX 1 THE ASSESSMENT PROCESS

Complex projects

For complex sub-projects and renewable energy projects, clients were asked to present a project proposal to the TurSEFF implementation team. Proposals were submitted in the form of either energy audits or completed feasibility studies. In cases where such information was not available, the project implementation team undertook an energy audit to identify opportunities for project development.

Subsequently, the team made a preliminary compliance assessment in order to give the partner bank an indication of the project's potential eligibility for TurSEFF finance. At the same time, the partner bank performed a preliminary credit screening. Where both screening outcomes were positive, the consultant prepared a REUP. A REUP summarises the structure of the investment, ensuring it is cost effective and meets eligibility criteria. REUPs also help to identify suppliers and installers of recommended technologies and equipment and support the loan application to the partner bank.

Building sector projects

For building sector projects TurSEFF foresaw a simplified approach under which the consultant prepared an SEA to identify areas for improvement, suggested a set of energy efficiency and/or renewable energy measures with their energy savings potential and provided an indicative cost breakdown. In addition, the consultant drew up an Energy Performance Certificate compliant with Turkish legislation.

Small projects

Small-scale sub-projects and residential sector sub-projects followed a simpler approach to eligibility assessment. For these projects the consultant compiled a list of eligible measures and equipment along with a register of equipment suppliers and installers. Based on this information, the partner bank could assess the eligibility of proposed sub-projects.

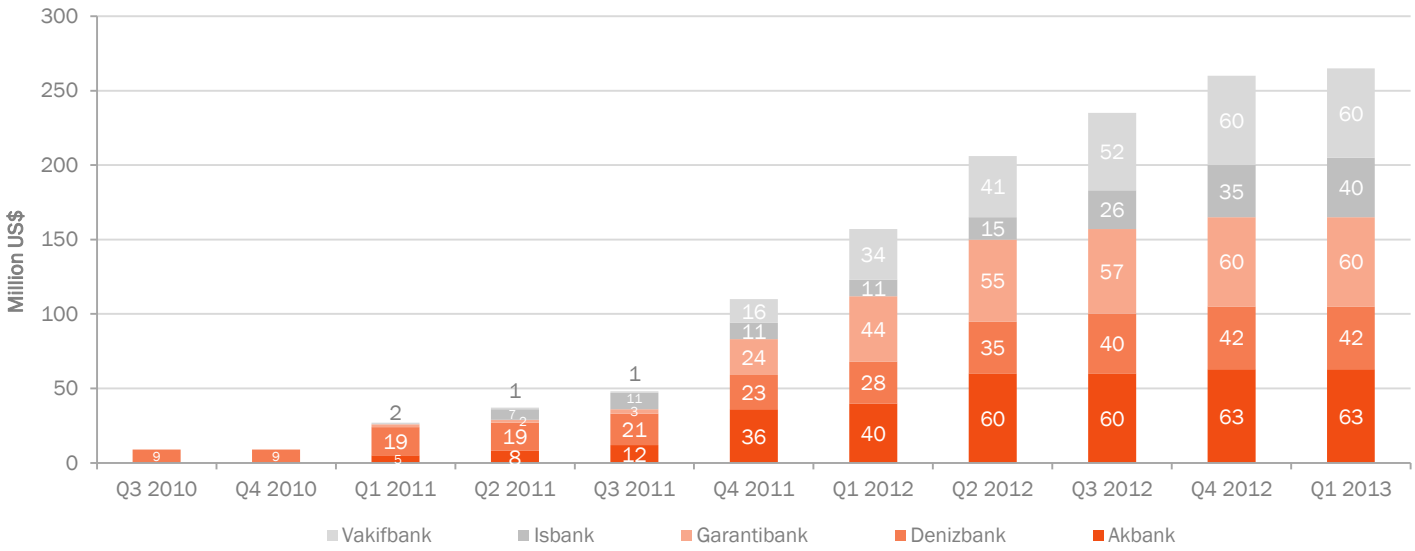
[3] This list included sub-projects which were or could be expected to be subject to the energy certification and minimum performance requirements of the EU Energy Performance of Buildings Directive, the requirements of which will be transposed into Turkish national law as part of the EU accession process.

TURSEFF PERFORMANCE

Disbursement of TurSEFF funds

The TurSEFF partner banks utilised their funds within the original time frame of two and a half years. The diagram below shows the disbursements over time for each partner bank.

FIGURE 3: CUMULATIVE TREND OF FUNDS UTILISED BY EACH PARTNER BANK



Nearly half of the total TurSEFF funds were disbursed during 2012. This was largely due to marketing activities and the resulting awareness of TurSEFF among market participants. Experience of other sustainable energy financing facilities has shown a similar pattern; it suggests that in addition to promoting a new financial product, the introduction of sustainable energy financing facilities requires a learning process for all stakeholders. In the case of TurSEFF, this involved:

Developing dedicated resources: The experience of TurSEFF has highlighted the need for a team of dedicated bank staff who see the market opportunities in sustainable energy finance and who have the capacity to institutionalise this new area of business. This requirement became clear at the start of the TurSEFF facility. In one of the partner banks an exceptionally motivated staff team perceived the market opportunity in sustainable energy, organising regional client workshops to market the facility, and arranging branch visits to promote TurSEFF internally. However, after a few months this team moved to a competitor bank. Without its dedicated team, the first partner bank took a long time to restore sustainable energy lending activities to their previous level. By contrast, the competitor's disbursements in this sector accelerated rapidly.

Capacity building at participating banks took various forms, to address issues that became apparent during the implementation of TurSEFF.

BOX 2 CAPACITY BUILDING AMONG STAFF AT PARTNER BANKS

Initial training of bank staff took the form of 'classroom' sessions. These made use of training materials exploring details and eligibility criteria for the facility, technical aspects of project identification and evaluation, case studies and sales issues.

However, due to the complexity of sustainable energy projects, bank staff – including loan officers and branch managers – needed a period of trial and error to become adept at project identification and evaluation.

Implementation support included on-the-job training, and the project implementation team helped bank branch staff to screen their portfolios for potential projects in sustainable energy. For instance, one partner bank received intensive support in the form of in-branch portfolio screening in September 2011. As a result, disbursements for TurSEFF accelerated substantially in the fourth quarter of 2011 and almost doubled to US$ 44 million in the first quarter of 2012.

In-branch support also enabled the identification and appointment of "TurSEFF ambassadors". This group of bank staff, who received additional on-the-job training from the project implementation team, recognised the opportunities in sustainable energy finance and actively promoted TurSEFF, going as far as to help clients identify potential energy savings.

Integrating TurSEFF into financial product ranges

Loan officers, especially those serving the SME client segment, offer their clients a range of established financial products. These are part of a permanent product portfolio linked to branch performance and growth plans and ultimately tied to the personal performance schemes of bank staff. When TurSEFF was first established, bank staff preferred to offer the permanent financial products that were linked to their performance schemes.[4] Recognising this, one of the partner banks developed an incentive scheme for TurSEFF loans. This measure was developed in close cooperation with the TurSEFF project implementation team, and introduced in September 2011. As a result the bank's disbursements tripled from US$ 12 million in the third quarter of 2011 to US$ 36 million in the final quarter of 2011.

Targeting the residential sector

In the early days of the TurSEFF programme, consumer lending departments – responsible for residential loans at partner banks – hesitated to engage with the facility. They believed that it would be costly to market sustainable energy loans to their client segment.

To circumvent this barrier partner banks decided to intermediate loans to the residential sector through specialised goods vendors, thereby increasing loan volumes to that sector.

Garantibank was the first partner institution to sign a vendor agreement with Alarko-Carrier, a producer of high-efficiency residential heating and cooling equipment. Thereafter, the TurSEFF vendor scheme evolved to tap the residential market for energy efficiency equipment. In consequence, vendor finance is the main mechanism through which TurSEFF supports lending to the residential sector.[5] This does however raise questions about how to monitor and evaluate facility policies, as vendor financing is several steps removed from the EBRD.

Raising awareness of sustainable energy projects amongst market participants

TurSEFF was the first financial product specifically dedicated to projects in sustainable energy. Few clients of partner banks had such projects at the top of their list of investment priorities. Many were unaware of the benefits that sustainable energy projects can bring; they lacked the capacity to identify energy saving opportunities and to turn them into profitable investments. Also, relatively few market participants were aware of financing facilities like TurSEFF.

To overcome these barriers, the TurSEFF project implementation team made extensive efforts to promote the new financial product. The team developed direct marketing material and organised events to raise awareness, including an official TurSEFF launch, supplier events, and TurSEFF finance awards. In addition, they produced two videos and a dedicated TurSEFF web site.

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[4] A similar issue was recognised in the capacity building provided by the UK Energy Saving Trust to electrical goods retailers in the 1990s. Sales staff working on commission promoted to customers those goods that generated the highest commission, even if they were harder to sell than, for example, products offering high energy efficiency. A revamp of commission schemes helped to address this problem.

[5] Only one loan was made directly to the residential sector, compared with several thousand clients reached through vendor loans.

These marketing activities were supported by specific assistance to partner banks. For example, the strong cooperation between the staff of Garantibank and the TurSEFF consultants in promotional activities was seen as a key factor in the successful disbursement rates achieved in 2012. The TurSEFF project implementation team also supported the marketing activities of Akbank's head office, which led to the financing of three renewable energy projects, among them the 7 MW hydro power plan Du Elektrik in March 2011.

TurSEFF –RESULTS AND IMPACTS

TurSEFF partner banks have disbursed US$ 264 million. Akbank is currently disbursing the remaining US$ 24 million that the bank received in October 2012. The amount disbursed was channelled to 370 sustainable energy projects with a total project value of US$ 460 million[6]. The CTF funding has thus supported a sustainable energy investment volume of 1:9.

While the average value of these loans was US$ 700,000, amounts varied between different investment categories, ranging from US$ 1.7 million for complex energy efficiency and renewable energy projects to US$ 0.05 million for the residential sector sub-project. The table below presents a breakdown of investment categories according to the number of projects and the average investment volume.

TABLE 3: TURSEFF LOANS BY RECIPIENT CATEGORY

Loan category	Total number of loans	Average loan size in US$ million (rounded)
Commercial buildings	14	0.92
Large-scale industrial	88	1.72
Residential	1	0.05
Supplier	40	0.56
Small-scale	195	0.13
Vendor finance	32	1.50
TOTAL	**370**	**0.70**

About 65 per cent of the funds financed energy efficiency projects, with process machinery replacement (18 per cent), heating, ventilation and air-conditioning (16 per cent), co-generation (14 per cent), and pumps and motors (12 per cent) accounting for the bulk of investments (60 per cent).

Approximately 35 per cent of the loans were used to support renewable energy projects. Hydropower projects represented by far the biggest share of renewable energy projects under TurSEFF (92 per cent), followed by wind projects (5 per cent).

US$ 700,000 was disbursed for a single geothermal energy project. While Turkey shows great potential for the use of geothermal power, the existing legal framework for geothermal projects discourages many investors.

Solar energy and heat pump projects account for the remaining share of small-scale investments, with loan amounts below US$ 300,000.

TurSEFF has had an appreciable impact on energy demand and related emissions in Turkey. Projects financed by the facility have generated primary energy savings of almost 1.5 TWh per year (0.12 per cent of national energy demand) and 1.15 TWh per year (0.64 per cent of national electricity demand[7]) respectively from energy efficiency and renewable energy projects. This is equivalent to the electricity consumption of almost half a million Turkish households (or 2 to 3 per cent of all Turkish households). CO_2 emission reductions were estimated at 645,211 tonnes per year, or 0.24 per cent of annual emissions – roughly equivalent to the emissions of 3 per cent of cars in the country.

[6] As at 31 December 2012.

[7] All comparison figures International Energy Agency data for 2010.

TURSEFF CASE STUDY 1
CAROUSEL MALL

The Carousel Mall is owned by the Baymer Tourism and Investment company. This shopping mall in Bakirkoy is one of the oldest in Istanbul, which opened for business in 1995 and features around 100 shops, a food court and a cinema complex. The total enclosed area of the mall is approximately 75,500 m^2. The average number of daily visitors is 30,000 during the week and 45,000 on weekends.

The global technology company Johnson Controls conducted an energy efficiency assessment of the mall and recommended the following measures:

- Cooling system optimisation
- Replacement of cooling pumps
- Replacement of air handling units and fans
- Replacement of transformers
- Pipeline insulation
- Automation control system for heating, ventilation and air-conditioning.

Following project implementation the company will save the equivalent of 10,365 MWh of primary energy. These energy savings will reduce annual costs by US$ 484,000. CO_2 emission reductions are estimated at 2,127 tCO_2e annually.

TABLE 4: CAROUSEL MALL KEY PERFORMANCE DATA

Region	Istanbul, Turkey
Energy production	10,365 MWh energy savings per year
Project goals	Energy efficiency
Main investments	Energy efficiency assessment
Investment	US$ 2.6 million (of which 100 per cent financed under TurSEFF)
Payback	Nine years
IRR	14.0 per cent
Project results	**Energy efficiency / Avoidance of 2,127 tonnes of CO_2 emissions**

TURSEFF CASE STUDY 2
TURGUT ANADOLU YATIRIM LTD

Turgut Anadolu Yatirim Ltd. was established in 1999. Its core business activity is the production of olive oil. The company operates an olive oil extraction facility in Yatagan, Mugla, where it is engaged in a TurSEFF project to install a 100 KW wind turbine that will meet most of the electricity demands of the factory.

By installing the wind turbine, the company will supply up to 94 per cent of the extraction facility's electricity base load requirements. This will significantly reduce one of the factory's highest operating costs.

Following implementation of the project, Turgut Anadolu Yatirim will replace 287 MWh of electricity imported from the grid with electricity generated by its own turbine. This will cut energy costs by US$ 28,099 annually. After the deduction of annual maintenance and transmission costs, the net saving will be US$ 27,099.

Once the wind turbine has been installed the Company will save 177 tonnes of CO_2 annually.

TABLE 5: TURGUT ANADOLU YATIRIM KEY PERFORMANCE DATA

Region	Mugla, Turkey
Energy production	287 MWh per year
Project goals	Energy efficiency
Main investments	Installation of wind power plant
Investment	US$ 163,043 (of which 100 per cent financed under TurSEFF)
Payback	Nine years
IRR	14.4 per cent
Project results	**Energy efficiency / Avoidance of 177 tonnes of CO_2 emissions**

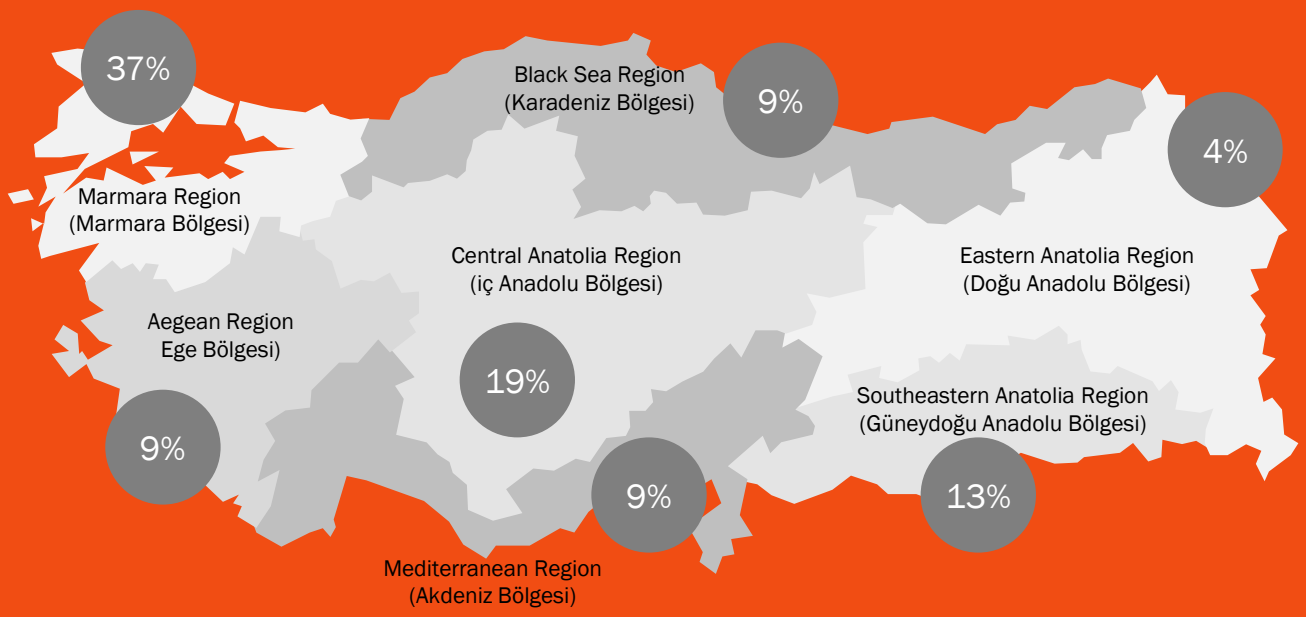
BOX 3 REGIONAL BREAKDOWN OF TURSEFF INVESTMENTS

In line with EBRD's mandate for operations in Turkey, TurSEFF aimed to increase employment and private sector involvement in non-industrialised regions of Turkey. The facility was intended to achieve these benefits by financing the development and upgrading of local production facilities and the establishment of installation and maintenance services for energy efficiency equipment. Therefore, from the start of the project, the EBRD, its partner banks and the consultant team aimed to reach a relatively equal regional distribution of investments so that Turkey's less developed areas would be included in the programme. The map below shows the regional distribution of investments under TurSEFF.

Unsurprisingly, a large share (37 per cent) of investments was channelled into the Marmara region, one of Turkey's economic hubs. Nevertheless, Central Anatolia, the eastern and south-eastern Anatolia Region together received 36 per cent of TurSEFF investments.

Outside of the Marmara region, Garanti Bank has the highest disbursement rates of all TurSEFF partner banks. The largest individual share of its investments was in south-eastern Anatolia, followed by central Anatolia and then the Marmara region. This funding pattern is due to the efforts of individual branch and loan officers in those regions.

FIGURE 4: MAP OF TURSEFF INVESTMENT DISTRIBUTION



MARKET TRANSFORMATION IMPACT

TurSEFF

Two years after the programme launch, TurSEFF has become a nationally-recognised brand, which the market acknowledges as a flexible and attractive financing mechanism for sustainable energy projects. The mix of market-rate EBRD finance with concessional CTF finance has incentivised local partner banks to develop sustainable energy lending as a permanent area of their businesses.

The technical assistance programme linked to TurSEFF was crucial to supporting partner banks in the early stages of the programme. Without this assistance, it is doubtful that partner banks would have been able to attract clients, and identify and evaluate projects that were technically feasible. The technical assistance programme has enabled partner banks to scale up investments and build a solid basis for further development of sustainable energy finance.

Expanding the scope of activity: Launching MidSEFF in 2011

TurSEFF created effective relationships between the EBRD and its Turkish partner institutions. Building on this, the EBRD expanded its scope of activity in April 2011 with the launch of MidSEFF, a financing facility of US$ 1.4 billion, to which the EBRD contributed US$ 945 million and the EIB US$ 405 million. All partner banks which had participated in TurSEFF also received financing under MidSEFF. In addition, MidSEFF attracted two other Turkish financial institutions, Finansbank and Yapi Kredi. This brought the total number of partner banks to seven, which together account for over 60 per cent of banking assets in Turkey.

MidSEFF supplements TurSEFF by targeting medium-sized sustainable energy projects. These include renewable energy projects with a capacity of 5 MW to 50 MW and up to 40 MW for hydropower plants, energy efficiency improvements in industry, and waste-to-energy projects. Loan amounts to sub-borrowers range from US$ 14 million to US$ 54 million. By August 2013,

MidSEFF had generated investments of over US$ 1 billion, which will generate 2 TWh of electricity per year. This is equivalent to over 1 per cent of Turkish annual electricity consumption. These investments will reduce Turkish CO_2 emissions by almost 1.3 Mt of CO_2 per year, close to 0.5 per cent of Turkey's annual emissions.

Pipeline development activities conducted under TurSEFF had demonstrated that a certain level of investments for mid-sized sustainable energy projects existed in Turkey. However, many potential projects had difficulties obtaining finance. This was due to the lack of long-term funds available to Turkish financial institutions, and also because many projects were too small for direct loans from the EBRD.

In addition, the methods used by local banks to appraise mid-sized sustainable energy investments required strengthening technically and in regard to environmental and social due diligence and risk mitigation. MidSEFF was designed to overcome these barriers. The facility provides long-term finance and capacity building support though a US$3.4 million EU-funded technical assistance programme. The programme has a strong focus on harmonising environmental and technical standards for medium-sized sustainable energy projects with those of the EU.

An additional technical assistance component focuses on carbon finance. It aims to assist sub-borrowers with identification of potential carbon finance projects and to support them during the project registration process. The programme also supports partner banks directly by providing advice on developing and offering carbon market-related services to their clients. Technical assistance is also available at a national level to foster the development of carbon markets in Turkey. MidSEFF supports development of a standardised electricity carbon emission factor, establishing a centralised carbon project or Voluntary Emission Reduction registry for Turkey and providing recommendations for a regulated carbon market.

Reinforcing success: Launching the TurSEFF extension in 2013

In 2013, the EBRD launched the US$ 200 million TurSEFF Extension, a programme that directly builds on the first TurSEFF. While TurSEFF aimed to create a market for sustainable energy finance – supported by concessional funding from the CTF to motivate partner financial institutions to engage in this new area – the TurSEFF Extension aims to support further development and long-term sustainability of the nascent market. The facility has no concessional finance element, demonstrating that the sustainable energy lending market has matured sufficiently to sustain the cost of market-based finance.

The potential for further development is enormous. The SME sector accounts for 99.8 per cent of all enterprises in Turkey and, despite the evolving market for sustainable energy, remains less advanced technically and less aware of opportunities for energy efficiency than the corporate sector. Under the TurSEFF Extension the EBRD provides long-term finance to local partner institutions. It is also linked to a technical assistance programme, again financed in part by the CTF, which will further stretch the capacity of participating financial institutions and SME clients.

Expanding the scope of activity: Launching TUREEFF

The current scope of EBRD sustainable energy finance activities in Turkey covers the SME sector as well as larger investments. TurSEFF has shown that the residential sector has enormous potential for sustainable energy investments but also needs a targeted approach. Only one direct loan was signed in the residential sector under TurSEFF, and vendor finance can only address limited needs in the residential sector.

Building on the relationship with its partner institutions in Turkey and on their experience in sustainable energy lending, the EBRD is currently designing a US$ 400 million residential sector energy efficiency financing facility (TUREEFF) with the support of the CTF and the EU IPA programme. This planned facility will also support the urban transformation programme recently launched by the Turkish government to address the vulnerability of urban buildings to natural disasters, and earthquakes in particular.

TuREEFF will help to reduce future energy use in the country by introducing EU energy efficiency building standards for refurbished homes under the urban transformation programme.

The Bank believes that the timing of this facility is appropriate as legislative reforms in Turkey are removing uncertainty about building standards. Residential clients will therefore be more likely to invest in building upgrades.

TuREEFF will be linked with a comprehensive technical assistance programme which will support local financial institutions in promoting and marketing the new loan product. Similar to the initial TurSEFF, TuREEFF will consist of market-rate EBRD funds plus concessional finance from the CTF. The combination of TurEEFF financing, technical assistance and market potential is expected to draw the interest of local financial institutions in the residential energy efficiency sector.

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ABBREVIATIONS

- CTF: Clean Technology Fund
- EBRD: European Bank for Reconstruction and Development
- EU: European Union
- GHG: Greenhouse gas
- IBRD: International Bank for Reconstruction and Development
- IFC: International Finance Corporation
- IPA: EU Instrument for Pre-accession Assistance
- JBIC: Japan Bank for International Cooperation
- MDB: Multilateral Development Bank
- MidSEFF: Mid-size Sustainable Energy Financing Facility
- OECD: Organisation for Economic Co-operation and Development
- SEA: Simplified Energy Audit
- SEFF: Sustainable Energy Finance Facility
- SEI: Sustainable Energy Initiative
- SME: Small to medium-sized enterprise
- REUPs: Rational Energy Utilisation Plans
- TurSEFF: Turkish Sustainable Energy Finance Facility