

Document of
The World Bank

Report No: ICR00001319

IMPLEMENTATION COMPLETION AND RESULTS REPORT
(IBRD-72210)

ON A

LOAN

IN THE AMOUNT OF

US \$ 202.03 MILLION

TO THE

REPUBLIC OF TURKEY

FOR A

RENEWABLE ENERGY PROJECT

March 9, 2010

Sustainable Development Department
Turkey Country Department
Europe and Central Asia Region

CURRENCY EQUIVALENTS
(Exchange Rate Effective 11/16/09)

Currency Unit = Turkish Lira
1.00 = US\$ 0.68
US\$ 1.00 = 1.47

FISCAL YEAR
January 1- December 31

ABBREVIATIONS AND ACRONYMS

BOO	Build Own Operate Agreement
BOT	Build Own Transfer Agreement
BDDK	Banking Regulatory and Supervisory Agency
CTF	Clean Technology Fund
DSI	State Hydraulic Agency (of Turkey)
EA	Environmental Assessment
EMRA	Electricity Market Regulatory Authority (of Turkey)
EÜA□	Electricity Generating Company (of Turkey)
GWh	Gigawatt hour
kWh	kilowatt hour
MENR	Ministry of Energy and Natural Resources
MW	Megawatt
PDO	Project Development Objective
SPDF	Special Purpose Debt Facility
TEDA□	Turkish Electricity Distribution Company
TEIA□	Turkish Electricity Transmission Company
TETA□	Turkish Electricity Trading and Contracting Company
TKB	Turkish Development Bank
TOOR	Transfer of Operating Rights
TSKB	Turkish Industrial Development Bank
TWh	Terawatt hour

Vice President: Philippe Le Houerou
Country Director: Ulrich Zachau
Sector Manager: Ranjit Lamech
Project Team Leader: Gurhan Ozdora
ICR Team Leader: Fan Zhang

TURKEY
Renewable Energy Project

CONTENTS

Data Sheet

- A. Basic Information
- B. Key Dates
- C. Ratings Summary
- D. Sector and Theme Codes
- E. Bank Staff
- F. Results Framework Analysis
- G. Ratings of Project Performance in ISRs
- H. Restructuring
- I. Disbursement Graph

1. Project Context, Development Objectives and Design	1
2. Key Factors Affecting Implementation and Outcomes.....	4
3. Assessment of Outcomes	9
4. Assessment of Risk to Development Outcome	17
5. Assessment of Bank and Borrower Performance.....	18
6. Lessons Learned.....	19
7. Comments on Issues Raised by Borrower/Implementing Agencies/Partners.....	21
Annex 1. Project Costs and Financing	22
Annex 2. Outputs by Component.....	23
Annex 3. Economic and Financial Analysis	24
Annex 4. Bank Lending and Implementation Support/Supervision Processes.....	27
Annex 5. Beneficiary Survey Results	29
Annex 6. Stakeholder Workshop Report and Results.....	33
Annex 7. Summary of Borrower's ICR and/or Comments on Draft ICR	34
Annex 8. Comments of Cofinanciers and Other Partners/Stakeholders	38
Annex 9. List of Supporting Documents.....	39

MAP (TUR33501) to be inserted before the Printshop

A. Basic Information			
Country:	Turkey	Project Name:	Renewable Energy Project
Project ID:	P072480	L/C/TF Number(s):	IBRD-72210
ICR Date:	03/10/2010	ICR Type:	Core ICR
Lending Instrument:	SIL	Borrower:	REPUBLIC OF TURKEY
Original Total Commitment:	USD 202.0M	Disbursed Amount:	USD 201.0M
Revised Amount:	USD 201.0M		
Environmental Category: F			
Implementing Agencies: TSKB Turkiye Kalkinma Bankasi (TKB)			
Cofinanciers and Other External Partners:			

B. Key Dates				
Process	Date	Process	Original Date	Revised / Actual Date(s)
Concept Review:	03/07/2002	Effectiveness:	07/30/2004	07/30/2004
Appraisal:	03/14/2003	Restructuring(s):		
Approval:	03/25/2004	Mid-term Review:	01/14/2008	01/14/2008
		Closing:	06/30/2010	06/30/2010

C. Ratings Summary	
C.1 Performance Rating by ICR	
Outcomes:	Highly Satisfactory
Risk to Development Outcome:	Low or Negligible
Bank Performance:	Satisfactory
Borrower Performance:	Satisfactory

C.2 Detailed Ratings of Bank and Borrower Performance (by ICR)			
Bank	Ratings	Borrower	Ratings
Quality at Entry:	Satisfactory	Government:	Satisfactory
Quality of Supervision:	Satisfactory	Implementing Agency/Agencies:	Satisfactory
Overall Bank Performance:	Satisfactory	Overall Borrower Performance:	Satisfactory

C.3 Quality at Entry and Implementation Performance Indicators			
Implementation Performance	Indicators	QAG Assessments (if any)	Rating
Potential Problem Project at any time (Yes/No):	No	Quality at Entry (QEA):	Satisfactory
Problem Project at any time (Yes/No):	No	Quality of Supervision (QSA):	None
DO rating before Closing/Inactive status:	Highly Satisfactory		

D. Sector and Theme Codes		
	Original	Actual
Sector Code (as % of total Bank financing)		
Central government administration	10	
Micro- and SME finance	40	30
Renewable energy	50	70
Theme Code (as % of total Bank financing)		
Climate change	29	50
Legal institutions for a market economy	28	10
Other financial and private sector development	29	30
Water resource management	14	10

E. Bank Staff		
Positions	At ICR	At Approval
Vice President:	Philippe H. Le Houerou	Shigeo Katsu
Country Director:	Ulrich Zachau	Andrew N. Vorkink
Sector Manager:	Ranjit J. Lamech	Hinderikus Busz
Project Team Leader:	Ahmet Gurhan Ozdora	Ranjit J. Lamech
ICR Team Leader:	Fan Zhang	
ICR Primary Author:	Fan Zhang	

F. Results Framework Analysis

Project Development Objectives (from Project Appraisal Document)

The project objective is to increase privately owned and operated distributed power generation from renewable sources, without the need for government guarantees, within the market-based framework of the new Turkish Electricity Market Law.

Revised Project Development Objectives (as approved by original approving authority)

(a) PDO Indicator(s)

Indicator	Baseline Value	Original Target Values (from approval documents)	Formally Revised Target Values	Actual Value Achieved at Completion or Target Years
Indicator 1 :	Increase in the amount of electricity produced from privately owned renewable generations facilities under normal hydraulic and wind conditions.			
Value quantitative or Qualitative)	1490 Gwh	2006 - 2040 GWh 2007 - 2590 GWh 2008 - 3140 GWh 2009 - 3690 GWh		3810 GWh
Date achieved	12/31/2002	12/31/2009		12/31/2009
Comments (incl. % achievement)	The target for this indicator was exceeded by about 7%. The increase in renewable energy generation is 2356 GWH versus a target of 2200 GWH.			
Indicator 2 :	Increase in Generation Capacity of Privately Owned renewable generation facilities			
Value quantitative or Qualitative)	348 MW	2006 - 473 MW 2007 - 598 MW 2008 - 723 MW 2009 - 848 MW		966.5 MW
Date achieved	12/31/2002	12/31/2009		12/31/2009
Comments (incl. % achievement)	The target for this indicator was exceeded by 23%. The increase in renewable generation capacity is 618.5 MW versus a target of 500 MW.			
Indicator 3 :	Annual decrease in carbon dioxide equivalent emissions in metric tons as a result of increased renewable energy generation resulting from the project.			
Value quantitative or Qualitative)	550,000 tons	932,000 tons		1,690,750
Date achieved	12/31/2002	12/31/2009		12/31/2009
Comments (incl. % achievement)	The target for this indicator was exceeded by 100%.			
Indicator 4 :	Amount of private capital raised for every dollar of World Bank financing through the Special Purpose Debt Facility.			
Value quantitative or Qualitative)	0	1.48		2.65
Date achieved	07/30/2004	12/31/2009		09/07/2009
Comments (incl. % achievement)	The target for this indicator was exceeded by 79%.			

(b) Intermediate Outcome Indicator(s)

Indicator	Baseline Value	Original Target Values (from approval documents)	Formally Revised Target Values	Actual Value Achieved at Completion or Target Years
Indicator 1 :	Commitments of Funds by TKB and TSKB			
Value (quantitative or Qualitative)	0	\$ 200 Million		\$200 Million
Date achieved	07/30/2004	12/31/2008		12/13/2008
Comments (incl. % achievement)	After the procurement issues were resolved in mid 2006, by amending the project agreement, the project moved very fast.			

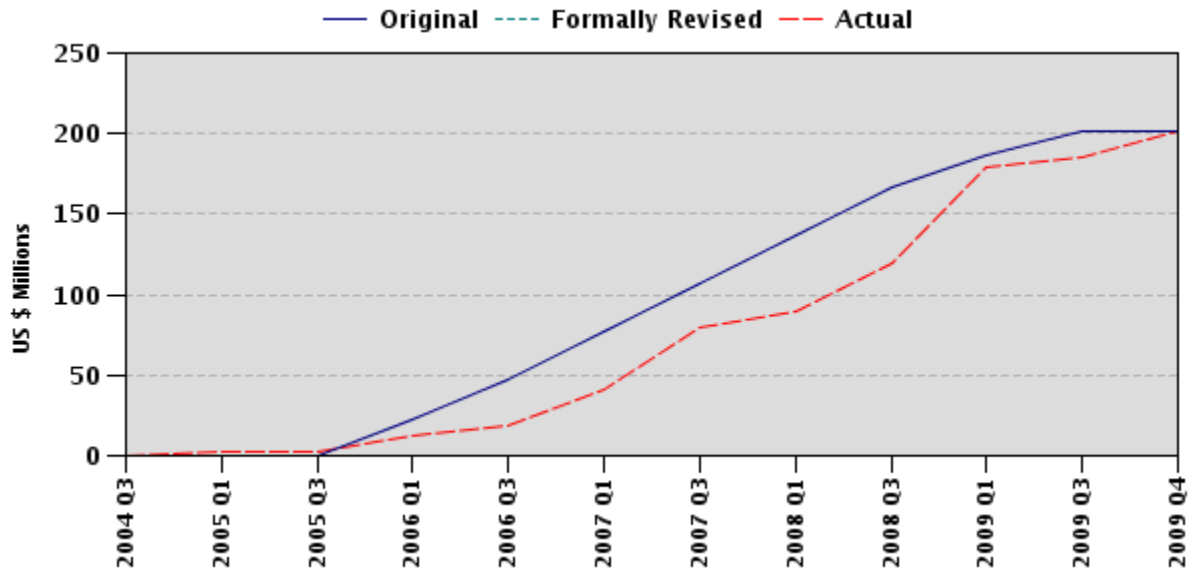
G. Ratings of Project Performance in ISRs

No.	Date ISR Archived	DO	IP	Actual Disbursements (USD millions)
1	06/18/2004	Satisfactory	Satisfactory	0.00
2	12/09/2004	Satisfactory	Satisfactory	1.01
3	05/24/2005	Satisfactory	Satisfactory	3.99
4	01/04/2006	Satisfactory	Moderately Satisfactory	16.35
5	07/25/2006	Satisfactory	Moderately Satisfactory	30.84
6	03/29/2007	Satisfactory	Satisfactory	80.11
7	04/18/2008	Satisfactory	Satisfactory	119.43
8	04/07/2009	Highly Satisfactory	Highly Satisfactory	185.33

H. Restructuring (if any)

Not Applicable

I. Disbursement Profile



1. Project Context, Development Objectives and Design

1.1 Context at Appraisal

(brief summary of country and sector background, rationale for Bank assistance)

Country Background: Until the recent global financial crisis in 2008, Turkey experienced a long period of brisk growth dating back to the recovery from the 2001 banking crisis. During the period of 2002-07, economic growth was nearly 7 percent on average; inflation was brought down to single digit levels, and public debt fell to below 40 percent of GDP. Turkey's impressive economic growth is largely due to the sustained stabilization, strong fiscal discipline, and the Government's ambitious structural reform agenda. The prospect of Turkey's European Union accession has remained a key anchor of the ongoing political and economic reforms.

Sector Background: Since 1996, the Turkish Government has embarked on a comprehensive electricity reform program that aims to establish a competitive electricity market with the goal to increase private investment, improve supply- and demand-side efficiency, and ensure energy supply security in an environmentally sustainable manner.

At project appraisal, important progress had been made in reforming the power sector, with advisory and investment lending support from the Bank, although significant challenges remained. The originally vertically-integrated state owned electricity monopoly (TEK) had been split into two state owned companies: a generation and transmission company (TEAS) and a distribution company (TEDAS). In 2001, the Government passed the Electricity Market Law (Law 4628) which inter alia further split TEAS into three companies: the Turkish Electricity Transmission Company (TEIAS), the Turkish Electricity Trading and Contracting Company (TETAS) and the Electricity Generating Company (EUAS). It also established the Electricity Market Regulatory Agency (EMRA), as an independent regulatory commission which provides generating licenses and sets tariffs. The law also laid the basis for the establishment of a wholesale electricity market and gradual opening of the retail electricity market.

At the same time, the sector faced three major challenges:

The first challenge was to establish a sustainable framework for private investment such that commercial risk for new generation investment was borne by the market. There had been several approaches employed in the past to obtain private investment in generation, including the Build-Operate-Transfer (BOT) Model, the Build-Own-Operate Model (BOO), the Auto-Producer Model and the Transfer of Operating Rights Model (TOOR). The first three models (BOT, BOO, Auto-producer) had been used to obtain private investment in new power plants. The TOOR model was used to transfer existing generating assets and distribution companies to private investors. The BOT and BOO approaches attracted substantial new investment in power plants. However, the energy prices from BOT plants were high. The auto-producer model, which is essentially a form of self-generation employed by industries who also sell surplus energy to the national grid, was in many respects, the most successful as it had created a substantial amount of capacity without any associated liabilities. However, its use was limited in that it was primarily aimed at self-generation and not for supplying the outside market (although after the establishment of the wholesale market in 2006, some of this generation has been sold in the market).

The second challenge was to quickly implement critical reform steps in order to achieve a smooth reform transition. Several critical steps needed to be taken, including:

- Resolving the problems of inadequate tariffs and revenue deficits in the power sector.
- Dealing with the potential stranded costs that arose from the above-market price contracts signed with BOT and BOO project sponsors.
- Achieving regulatory certainty and clarity.
- Coordinating reform implementation across multiple agencies, including the Ministry of Energy and Natural Resources (MENR), Electricity Market Regulatory Authority (EMRA), Treasury, Privatization Agency, TEIAS, TETAS, EUAS and TEDAS.

The third challenge was to ensure that economic renewable energy resources are adequately and safely exploited to meet domestic energy demand. Turkey is well-endowed with renewable energy resources, especially hydropower, in contrast to its general lack of fossil fuels. Potential generation from hydropower is estimated at about 126 TWh of which 112 TWh would be from large hydropower plants and 14.1 TWh in small plants. The Department of State Hydraulic Works (DSI) had made considerable progress in exploiting the larger hydropower sites but relatively little progress had been made in developing the smaller ones. Turkey is also rich in wind, geothermal and solar resources (mostly unexploited at project appraisal). It was estimated that Turkey had the potential for up to 11,000 MW of wind capacity, capable of generating about 25 TWh of electricity per year, and about 2450 MW of geothermal capacity.

Rational for Bank Involvement: The Renewable Energy Project was prepared at the specific request of the Government, to address the first and third challenges identified above. The project would assist the Government in establishing a financial intermediation mechanism that would encourage private investment in electricity generation within the new market structure without requiring government guarantees and to expand the economic utilization of Turkey's abundant renewable energy resources.

By pioneering a new financing mechanism and supporting institutional development activities for the introduction of laws, mechanisms and procedures for private investment in renewable energy, the project would help Turkey in mobilizing additional sources of financing from commercial banks and international financial institutions to provide long-term financing for renewable energy development. In line with the focus of the World Bank's assistance program in Turkey, the project would also support convergence with the EU on environmental and renewable energy targets, and fiscal stabilization by spurring private investment in power generation without government having to take on additional liabilities.

1.2 Original Project Development Objectives (PDO) and Key Indicators (as approved)

The Project Appraisal Document (PAD) stated that the project development objective (PDO) was "to increase privately owned and operated distributed power generation from renewable sources, without the need for government guarantees, and within the market-based framework of the new Turkish Electricity Market Law." The PDO stated in the Loan Agreement was to "expand privately owned and operated distributed power generation from renewable sources within the market-based legal framework."

The project objective would "be achieved by establishing a commercial financing mechanism for renewable energy projects and demonstrating the feasibility of private development of economic and financially viable renewable energy projects within a competitive market framework".

Three key performance indicators were identified at approval. They are:

- (a) Increase in the (i) amount of electricity produced from privately owned renewable generation facilities under normal hydraulic and wind conditions (measured in kWh per year); and (ii) renewable energy generating capacity added to system (measured in MW).
- (b) Reduction in emissions of carbon dioxide (measured in tons per year) as a result of substituting renewable energy produced by the private sector for energy produced from fossil fuels.
- (c) Amount of private capital raised for every dollar of World Bank financing through the Special Purpose Debt Facility (Leverage Ratio).

1.3 Revised PDO (as approved by original approving authority) and Key Indicators, and reasons/justification

Neither the PDO nor the Key Indicators were revised.

1.4 Main Beneficiaries

The main direct beneficiaries of the project are private investors in renewable generation projects in Turkey who benefited from an expanded availability of long-term financing either directly from the loan or as a result of the demonstration effect of the project. The population in Turkey benefited from (i) additional non-polluting energy from domestic resources; and (ii) increased employment opportunity through the construction, operation and maintenance of the new renewable power plants. The two participating financial institutions benefited from increased capacities in renewable energy financing. The Government benefited from reduced fiscal risks due to reduced government guarantees on private investment in the power sector. The Global community benefited from the reduced greenhouse gas emissions.

1.5 Original Components (as approved)

The project has one main component - the Special Purpose Debt Facility (SPDF) for renewable generation financing in the amount of US\$ 202.3 million. The SPDF is a term lending facility established and operated by two financial intermediaries (FIs). The two FIs selected are: (a) the Turkish Industrial Development Bank (TSKB) (privately owned); and (b) the Turkish Development Bank (TKB) (Government owned). The World Bank loan for the SPDF was on-lent from the Turkish Treasury (the Borrower) to the FIs. The FIs would utilize the SPDF to provide long-term debt financing to private sponsors of renewable energy projects. The SPDF was intended to leverage equity investment from local private developers, export credit financing and other financing for the construction and operation of qualified renewable generation projects.

In addition, in order to support the implementation of the Project, the Government agreed to a number of institutional development activities, including (a) improving the collection, evaluation and dissemination of technical data and information about potential renewable project sites to prospective private sector developers; (b) development of renewable energy legislation; and (c) improving public private cooperation in developing hydropower. The Bank provided support and assistance to the Government to pursue these institutional development activities.

1.6 Revised Components

The original component was not revised.

1.7 Other Significant Changes

(in design, scope and scale, implementation arrangements and schedule, and funding allocations)

Amendments to the Loan Agreement. The loan agreement was amended in 2006 at the Borrower's request. The amendment increased the capacity limit of hydro projects from 50 MW to 100 MW (limits on the reservoir size and the volume remained the same), and the maximum loan size for each single subproject from US\$20 million to US\$40 million. The international competitive bidding (ICB) threshold for civil works was raised from US\$ 8 million to US\$ 15 million, and a maximum of US\$15 million was allowed to finance civil works carried out by a sponsor-related construction firm. In the original project design, the procurement guidelines did not allow financing of construction by a renewable project sponsor's affiliated construction subsidiary/firm. Details of these changes are discussed in section 2.2.

Revision to the Operational Manual. The Operational Manual (OM) for the Project was also amended in 2006 to reflect the above changes, and also to clarify safeguards arrangements with regard to the financing of Environment Category A subprojects, and to include procedures for dealing with land acquisition and resettlement acceptable to the Bank. Details of the changes to environmental and social safeguards requirement are discussed in section 2.4.

Schedule. The loan was fully disbursed and closed about ten months ahead of the scheduled closing date.

2. Key Factors Affecting Implementation and Outcomes

2.1 Project Preparation, Design and Quality at Entry

(including whether lessons of earlier operations were taken into account, risks and their mitigations identified, and adequacy of participatory processes, as applicable)

Soundness of Background Analysis. Project background analysis was thorough and focused on identifying issues critical to the scaling up of renewable energy resources. Based on lessons learned from previous Bank operations, the following criteria were identified as being important for project design: (a) moving beyond "one-of-a-kind" demonstration projects and/or pilot projects for grid-connected renewable power generation projects; (b) developing a pipeline of prospective renewable power generation projects to facilitate the implementation efforts by financial intermediaries and to sustain the interest of private investors; (c) requiring private power developers to put up a reasonable amount of equity towards each proposal to be supported by Bank funds; (c) keeping design as flexible as possible, with a minimum number of restrictions on terms and conditions of the loan.

Assessment of Project Design. The project design was simple and focused on utilizing established financial intermediaries to channel funds to private developers. The strategic choice of utilizing local financial institutions (both private and government owned), rather than ministries or quasi government agencies, to implement the project proved to be successful. Moreover, the participant FIs supported the goal of power sector reform, which is to shift as much of the responsibility and decision making as possible to the private sector.

Concurrent institutional development activities aimed at putting in place an appropriate legislature and regulatory framework also contributed to the positive results of the project. For instance, the development of the Renewable Energy Law and revisions to related legislation and the development of procedures for obtaining Water-Use Rights Agreements - ensured that economic and financially viable renewable energy projects would be developed in a competitive market framework.

Adequacy of Government's Commitment. The Government's commitment to, and ownership of, the Project was strong at all times. The Turkish government has made a strong push to bolster the country's power supply from renewable resources in recent years. The Ministry of Energy and Natural Resources (MENR) specifically requested the development of the Project to promote the utilization of renewable energy resources. During project implementation, MENR was responsible for the development of the Renewable Energy Law, as well as revisions to related legislation. Based upon feedback from investors and financial institutions, the Renewable Energy Law was amended in 2007 through the Energy Efficiency Law, to increase the tariff level for renewable generation, which in the original Law was set by EMRA as the previous year's average wholesale electricity in Turkey, to $\text{€}5\text{-}5.5/\text{kWh}$ and to increase the offtake period from 7 to 10 years. As discussed in section 3.2, the Renewable Energy Law and its Amendment provided strong incentives for private sponsors to develop renewable energy. During project implementation, DSI also provided much of the support work on project pipeline development, and conducted tasks associated with review and evaluation of project applications from private sponsors, issuance of water rights, and technical monitoring of implementation.

Assessment of Risks. The risks identified at appraisal include: (a) the inability of EMRA to provide timely and consistent regulation, including efficient processing of project license application, and to ensure that retailers buy from renewable energy suppliers. The risk was mitigated through on-going dialogue with the Government to ensure the regulatory independence of EMRA, continued assistance in developing and implementing the regulatory framework as part of the overall World Bank support to Turkey. (b) Lack of economically and financially attractive renewable energy projects. The risk was reduced by identifying at appraisal a pipeline of potentially viable projects that met the required financial and economic rates of return. (c) Lack of willingness of retailers to purchase energy on long term contracts from small renewable energy generators. The risk was adequately addressed after EMRA issued an amendment to its licensing regulations requiring retailers to purchase electricity from small renewable energy generators as long as it is at or below the market price.

The lack of risk appetite of TKB and TSKB to finance renewable energy projects was correctly identified at appraisal – renewable energy was a complex line of business for most financial institutions, requiring specific sets of project evaluation and engineering skills that most banks did not ordinarily carry – although no specific mitigation measure was undertaken. During project implementation, both TKB and TSKB initially adopted conservative corporate lending criteria which required high levels of sponsor collateral – this approach arose primarily from prudential norms that banks are expected to follow in Turkey. In a later stage, TSKB accepted the new renewable generating plant as collateral with also a pledge of its accounts receivable after the project construction was completed; any additional collateral would usually be dropped after the plant went into operation. TKB followed similar practice to accept as collateral typically 25 percent of the plants future revenue as collateral after the construction of the plant was completed. It should be noted that it is possible that high collateral demands have deterred small firms with low collateral value from obtaining access to the loan especially in the early stage of the project.

Finally, it was not predicted at project appraisal that (i) the enactment of the Renewable Energy Law was delayed and that prospective sponsors held back investment while waiting for the passing of the Law; and (ii) the Bank procurement guidelines limited the utilization of the loan by the private sector. Despite sound project preparation and design, these unforeseen factors contributed to the slow start up of the project, as discussed in section 2.2 below.

QAG Assessment: A Quality-at-Entry assessment was made in July 2005. The assessment rated the quality at entry as *Satisfactory* overall, and on every major quality dimension, namely the Strategic Relevance and Approach, Technical, Financial and Economic aspects, Poverty, Gender and Social Development, Environmental Aspects, Fiduciary Aspects, Policy and Institutional Aspects, Implementation Arrangements, Risk assessment and Bank Inputs and Processes.

2.2 Implementation

(including any project changes/restructuring, mid-term review, Project at Risk status, and actions taken, as applicable)

The project became effective in 2004. Each FI had prepared an operational manual (OM) with the Bank's assistance. A major issue that arose during the preparation of these OMs was with regard to the eligibility of projects on international waterways. The issue was resolved after the Bank and Treasury agreed on a list of basins where the loan would finance hydropower projects.

The project started slowly. As of April 2006, only 10 percent of the loan had been disbursed. The slow progress was due to delays in the approval of the Renewable Energy Law, the difficulties in implementing the arrangements made for the purchase of renewable power (see section 5.2), and also the difficulties in applying Bank procurement practices (mainly designed for government entities) to the private sector. For instance, the original procurement process in the project design did not allow the Bank loan to finance civil works undertaken by a sponsor-related entity. This policy significantly limited the number of project sponsors that TKSB and TKB could work with, because most renewable energy developers in Turkey were also construction companies and would prefer to undertake the civil works themselves.

In addition, the Bank had placed limits on the amount of financing that could be provided to a single project or sponsor, and limits for the use of commercial practices for procurement of equipment (US\$5 million) and civil works (US\$8 million).¹ The comparatively low thresholds, in addition to the restrictions on the type of civil works contracts that the loan could finance, led to the terms being unattractive for potential investors.

In 2006, the Treasury and the Bank agreed to amend the loan agreement to allow for these measures to expedite project implementation:

- Increasing the capacity limit for hydro projects from 50 MW to 100 MW, while retaining the original limits on the reservoir size and the reservoir volume. In parallel with the increased project size and the project condition to finance up to 50 percent of the sub-projects, the maximum loan size for any project was increased from US\$20 million to US\$ 40 million. Accompanying changes in safeguards requirements and Bank review procedures were also made.

¹ These were the highest thresholds allowed for commercial practices under prevailing Bank-wide procurement guidelines.

- The ICB threshold for civil works was increased from US\$8 million to US\$ 15 million.
- Force accounts were introduced thereby enabling FIs' to finance the civil works costs that the project sponsor incurred either on the sponsor's own books or on that of an affiliated construction subsidiary/firm. Force accounts were allowed up to \$ 15 Million.

Following the loan amendments in 2006, the pace of the project accelerated. The project was completed on September 7, 2009 about ten months earlier than the original closing date of June 30, 2010.

2.3 Monitoring and Evaluation (M&E) Design, Implementation and Utilization

Design. The key performance indicators reflected the project development objective. The monitoring system was simple and based on measurable outputs. The baseline data for the selected indicators were prepared and the targets were clearly defined at the beginning of the project.

Implementation. TKB and TKSB monitored the implementation of all subprojects, reported on inputs, outputs, and results. Each individual project was also evaluated by DSI and the Ministry of Environment and monitored as needed.

Utilization. The information regarding project outputs helped the implementing agencies and the Bank team maintain focus on key outstanding issues and their timely resolution. TKB and TKSB had well-established monitoring and evaluation units. Sustainability of M&E arrangements beyond the project implementation period was feasible.

2.4 Safeguard and Fiduciary Compliance

(focusing on issues and their resolution, as applicable)

Environmental and social safeguards: Project design included procedures and implementation arrangements to ensure full consideration of environmental and social safeguards. Specifically, all sub-loans to be financed by the Renewable Energy Loan were subject to an environmental review process. These processes and requirements incorporate Turkey's regulatory requirements for Environmental Review and World Bank safeguards policies on Environmental Assessment (EA) (OP 4.01) and Dam Safety (OP 4.37). Guidance on procedures and arrangements for environmental screening, assessment, consultations, disclosure, and EMP were clearly stated in the OMs.

The Turkish Government's EA policies for the financing of Category A projects were not consistent with the Bank's policy. The Turkish EA regulation requires one public consultation conducted by the Ministry of Environment and Forestry for Annex I projects² while the World Bank EA policy requires a minimum of *two* public consultations. Because of the difference, the FIs were initially not permitted to fund a Category A project under the Renewable Energy Loan. Further review, however, indicated that the Turkish regulation do require several public consultations at various stages of Environmental Impact Assessment (EIA) preparation. A draft EIA is required to be made available to the public comments, which would be considered in

² Projects screened as Annex I would most often be screened as the comparable Category A by the World Bank.

preparing the final EIA report. Making the draft EIA available for public review and comment was deemed to satisfy the World Bank second consultation requirement for Category A projects in most cases. Therefore, the initial prohibition on financing Category A projects was removed. The OM was revised and EA requirements for Category A subprojects were included.

At appraisal, TKB and TSKB assured the Bank that all land acquisition for the sub-projects would be carried out directly between the investors and landowners, without expropriation. During implementation, however, it became clear that some sub-projects had used expropriation, most of which was completed before the investors came to TKB and TSKB for financing. At that point, the OM was revised to include guidance for dealing with expropriation in subsequent projects. The Bank reviewed and approved each land acquisition report on a no-objection basis.

Sub-projects were determined to be generally compliant with environmental and social safeguards requirements. The primary focus of safeguard compliance for the hydropower sub-projects was ensuring dam safety and managing adverse impacts on the water environment.

Financial management: Financial arrangements were satisfactory. Fiduciary Compliance was insured not only by Financial Management staff in the field office in Ankara but also by the banking regulator, the Banking Regulatory and Supervisory Agency (BRSA). The Bank maintained a close working relationship with BRSA which ensured that the Bank was aware of any serious fiduciary issue with either intermediary.

2.5 Post-completion Operation/Next Phase

(including transition arrangement to post-completion operation of investments financed by present operation, Operation & Maintenance arrangements, sustaining reforms and institutional capacity, and next phase/follow-up operation, if applicable)

Sustainability of Sub-projects funded under the Project: Of the 20 subprojects (consisting of 23 power plants) financed under the loan, 16 power plants have already been commissioned, and the remaining seven are expected to be commissioned in 2010. Given the tight supply-demand balance in the Turkish power market, and the resultant high energy prices, it is seen that the financial rates of return from operating these renewable energy facilities would be high. Therefore, the private developers have an adequate incentive to ensure appropriate operations and maintenance of these subprojects. No significant post-completion operational issues are anticipated.

Next Phase/Follow-on Project: By the summer of 2008 all of the funds under this project had been committed or were about to be committed and there were a large number of private investors looking for additional funding. Given the continued strong demand for renewable energy financing, TKB and TSKB requested a new project and the Turkish Government supported their request. It was also agreed that the new project should cover a wider range which includes energy efficiency as well as renewable energy.

The new project - the Private Sector Renewable Energy and Energy Efficiency Project (P112578) - was approved by the Board in May 2009. The financing includes US\$500 million from the International Bank for Reconstruction and Development (IBRD) and US\$100 million from the Clean Technology Fund (CTF). It is the first-ever project to use resources from the newly established CTF. The new project closely follows the current project design and experience, which consists of a term lending facility with the TSKB and TKB, for financing renewable energy (including hydro, wind, biomass and solar), as well as energy efficiency investment. As of the end of 2009, the project funds were about 40 percent committed.

3. Assessment of Outcomes

3.1 Relevance of Objectives, Design and Implementation

(to current country and global priorities, and Bank assistance strategy)

The PDO was highly relevant to government strategies at appraisal. The project supported the Turkish government's national electricity strategy wherein the third pillar is to attract enhanced private sector investment, so as to minimize the need for sovereign-guarantees and significantly enhanced public investments. The objective of the project was fully consistent with Bank's Country Assistance Strategy (FY 2004-07) to increase private sector investment in generation without government guarantees and with low environment impact.

The project objective remains highly relevant to the current national priorities in Turkey. In the Ninth Development Plan, the Turkish Government put a strong emphasis on bolstering the country's power supply from renewable resources. The Government also emphasized mitigating climate change as evident from the ratification of the Kyoto Protocol in February 2009. The Bank's Country Partnership Strategy (FY2008-11) calls for continued support for the development of a sustainable energy sector and envisages substantial Bank Group financing in the energy sector with private sector development playing a central role.

The project design was highly relevant. One of the key barriers to the development of renewable energy in Turkey was the lack of long-term financing. The capital intensive nature of most renewable technologies results in a higher demand for capital, a longer payback period, and therefore a greater exposure to market and regulatory risks. Aspects such as uncertainties regarding hydrology and geology, concerns regarding environmental aspects and so on, further raised the risks related to renewable energy. At project design, commercial banks were unwilling to take on the risks of providing long-term loans especially to small and medium sized enterprises, for renewable projects. To help overcome the barriers, the project used local banks to intermediate long-term financing to the private sector. Under the special loan structure offered by the Bank, the local FIs were able to offer a maximum maturity of 12 years including 4 years grace period on their loans to private sponsors. Project design also requires minimum equity of 25 percent to mobilize Turkish entrepreneurs in leveraging their capital to develop renewable resources.

3.2 Achievement of Project Development Objectives

(including brief discussion of causal linkages between outputs and outcomes, with details on outputs in Annex 2)

The project surpassed the PDO targets for increasing private investment in renewable generation and reducing carbon dioxide emissions as a result of clean energy development even 10 months before the expected closing date. As the first major international assistance project to Turkey aimed at accelerating the development of renewable power generation, the project successfully demonstrated a financial intermediation mechanism and has generated significant interests among other domestic and international financial institutions in providing long-term financing to various renewable energy projects. The specific achievements of the project are described in detail below.

Increase in the generation capacity of and the amount of electricity produced from privately owned renewable generation facilities.

By project completion, the loan has supported 19 private sponsors to develop 23 renewable energy plants, including one wind plant, one landfill gas plant, three geothermal power plants, and 18 hydropower plants. The total generating capacity developed amounted to 618.5 MW as compared to the 500 MW of the original target. As of November 2009, 16 plants financed under the loan were commissioned, one plant (Yesilbas) was in testing stage, and six plants (Enova[Berkman and Oskan HEEPs], Karhes [Cirakdami and Dereli HEPPs], Hidrocontrol-Selimoglu, Ilk) were expected to be in operation in 2010.

The annual electricity generation from these new renewable power plants under normal hydraulic and wind conditions is estimated to be 2320 GWh as compared to the original target of 2200 GWh.

Annex 2 describes details of each individual generation project.

Annual decrease in carbon dioxide equivalent emissions.

The project directly contributes to the reduction in carbon dioxide (CO₂) emissions by substituting renewable energy for fossil fuel based generation plants that would otherwise have been built. The resultant reduction in carbon dioxide emissions is expected to be 1,690,750 tons per year, significantly exceeding the original target of 932,000 tons. The emission factor used to convert renewable generation to emissions reduction is 625 tons of CO₂ equivalent/GWh³, which is different from appraisal estimates, as shown below.

The higher greenhouse gas emissions reduction is attributable to the following factors: (a) higher ex-post renewable generation capacity; (b) a landfill project financed under the loan resulted in the reduction of methane emissions. Methane is 21 times more potent than CO₂ in terms of climate change impact; and (c) The PAD used an emission factor of 421 tons/GWh, assuming that renewable energy would replace highly efficient gas fired combined cycle plants which were the main alternative to renewable energy in 2004. Since then, because of the high price of natural gas and uncertainty about gas supplies, the Turkish Government has decided to limit the number of new gas fired power plants to diversify its energy sources. Therefore, the ICR revised the emission factor, assuming that renewable energy would replace the average generation mix in Turkey (hydro, natural gas, coal, oil and lignite). However, even based on the emission factor used in the PAD, the result would still be 50 percent higher than the target.

Project demonstration and leveraging effect

Another key achievement of the project is that it demonstrated that long-term financing for renewable energy projects could be viable in Turkey – the loan allowed the financial intermediaries, TSKB and TKB, to better match the duration of their loans to private sponsors of renewable energy projects. This financial intermediation mechanism was replicated by other international financial institutions, such as European Investment Bank, Council of Europe Development Bank, Agence Francaise de Development and so on, to channel their funds through TKB, TSKB and other Turkish banks in financing renewable energy in Turkey. Long-term financing dedicated to renewable energy and energy efficiency projects which TSKB and TKB received from other international financial institutions has amounted to around 404 million

³ An emission factor of power generation (based on the average generation mix in Turkey, including hydro, natural gas, coal, oil and lignite) between 625 to 675 tons of CO₂ equivalent/GWh is generally accepted by the industry. For the purpose of this report, the more conservative estimation of 625 tons of CO₂ equivalent/GWh is used.

(TSKB) and 200 million (TKB) since the Project.(see Table 1). No such loans were available from these institutions before the Project.

Table 1 Renewable Energy and Energy Efficiency Loans from other International Financial Institutions

Institution	Loan	Amount (million)	Tenor (yrs)	Signing Date
Loan Agreements between TKB and other International Financial Institutions				
European Investment Bank	Environment and Energy Framework Loan I	50	15	05. 08. 2008
	Environment and Energy Framework Loan II	150	15	12.10. 2009
Loan Agreements between TSKB and other International Financial Institutions				
European Investment Bank	Environment and Energy Framework Loan I	150	15	05. 08. 2008
	Environment and Energy Framework Loan II	150	15	12.10. 2009
Kreditanstalt für Wiederaufbau (KfW)	Climate Protection Facility	US\$ 41	12	09.15. 2008
	Climate Protection Facility	US\$ 34	12	12.30. 2008
Agence Française de Développement	Renewable Energy and Energy Efficiency Facility	50	12	10. 6. 2009

Sources: TSKB, TKB

The successful implementation of the project also verified the economic and financial viability of renewable projects in Turkey and generated significant interests among local commercial banks to enter the sector. Numerous commercial banks, such as Yapı Kredi Bank, GarantiBank, İsbank, VakıfBank, Finansbank, Denizbank and Fortisbank are now active in financing renewable energy and have launched new lending schemes that offer long-term financing.

According to communication with the Ministry of Energy and Natural Resources, as of October 2009, additional new renewable capacity developed outside the project reached 1108 MW, with an estimated annual generation of around 4200 GWh. The associated reduction in greenhouse gas emissions was estimated to be about 2.6 million tons of CO₂ equivalent. Communication with TSKB indicates that following the project, TSKB has started working with a range of other local and international financial institutions for renewable financing. The TSKB renewable portfolio has expanded from 2 to 3 small hydro projects before the Bank project to 80 projects as of December 2009, including 72 hydropower plants, 4 wind plants, 2 geothermal plants and 2 landfill gas plants.

Under the Renewable Energy Project, the US\$201 million Bank loan leveraged additional US\$555.4 million private investment, indicating a leverage ratio of 2.65. This is higher than the target of 1.48 envisaged at project appraisal.

Figures 1(a), 1(b), and 1(c) illustrate (i) the generation capacity of privately owned renewable generation facilities (MW), (ii) annual electricity production from privately owned renewable generation facilities (under normal hydraulic and wind conditions) (GWh), and (iii) annual decrease in CO₂ emissions (tons) as a result of renewable generation in Turkey before and after the Project.

Figure 1(a) Privately Owned Renewable Generation Facilities (2002 and 2009) (MW)

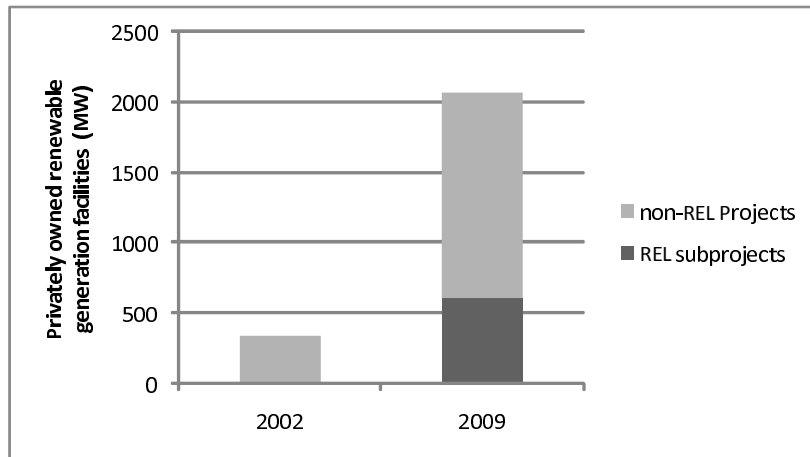


Figure 1(b) Electricity Production from Renewable Energy (2002 and 2009) (GWh)

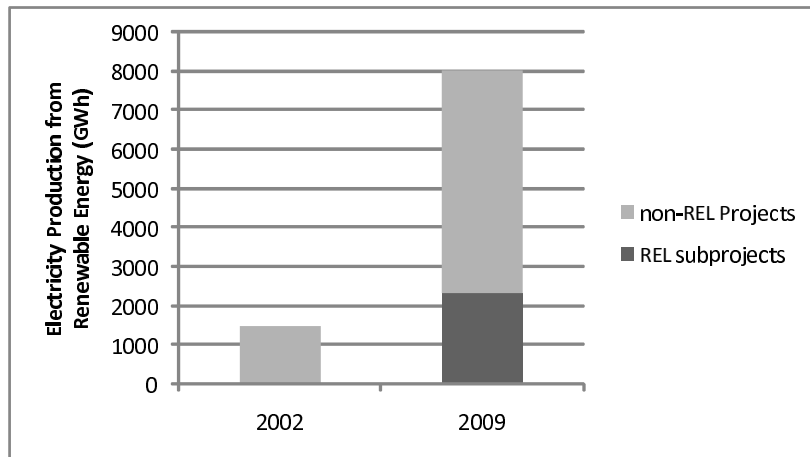
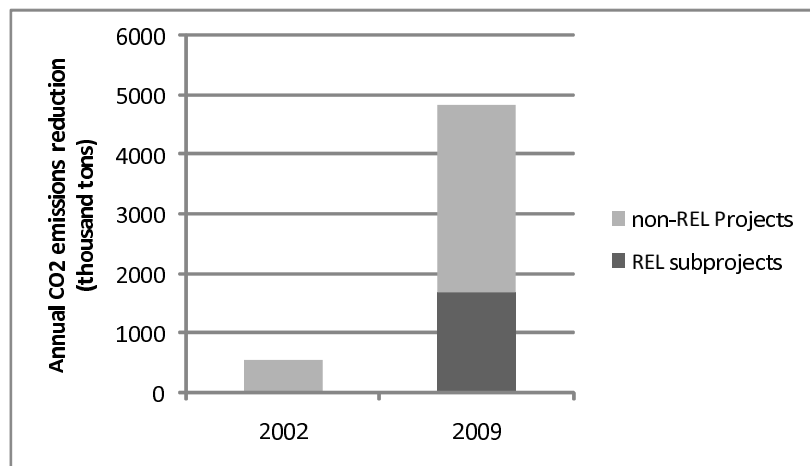


Figure 1(c) Annual CO₂ Emissions Reduction from Renewable Generation (2002 and 2009) (000tons)



Source: PAD, Ministry of Energy and Natural Resources, ICR calculation

Note: "REL" refers to the renewable energy loan provided under the Renewable Energy Project.

Table 2 summarizes project original performance targets and its actual achievements.

Table 2 Project Targets and Actual Achievements

Key Performance Indicators	Appraisal Target	Actual Achievement
Capacity of new renewable energy generation plants (MW)	500	618.5
Generation from new renewable energy generation plants (GWh)	2200	2320
Reduction in greenhouse gas emissions (tons of CO ₂ equivalent)	932,000	1,690,750
Leverage ratio	1.48	2.65

Sources: PAD, TKB and TSKB reports

Note: Data are based on renewable energy subprojects directly funded by the Renewable Energy Loan. Loan leverage ratio is defined as dollars of capital raised from non-World Bank sources for every World Bank dollar.

Other contributing factors

It should be noted that in addition to the long-term financing facilitated by the World Bank loan, several other factors also contributed to the above positive results. Therefore, without a rigorous impact evaluation, it is difficult to quantitatively estimate the Project's demonstration effect. These other contributing factors include:

- (i) **The new Renewable Energy Law**, enacted in May 2005, and further amended through the Energy Efficiency Law enacted in April 2007, provides incentives for renewable energy development. The Amendment of the Law provides a 10-year purchase agreement coupled with a guaranteed feed-in price of □5-5.5 cents/kWh for renewable electricity for all renewable energy certified producers that commence their operation before December 31, 2011. By setting up a floor price and guaranteed purchase agreement, the Government provided financial incentives and reduced uncertainties of investment in renewable power. The Law also grants a 50 percent reduction on the fees for land use permission, and exemptions from regular license fees for renewable generators. Figure 2 indicates the significant jump in renewable energy development after the passage of the Renewable Energy Law in 2005.

The Renewable Energy Law was in draft stage when this project was prepared. After the enactment of the Law in 2005, the project facilitated the implementation of the law by supplying long-term financing at a time when funding from other sources was not readily available.

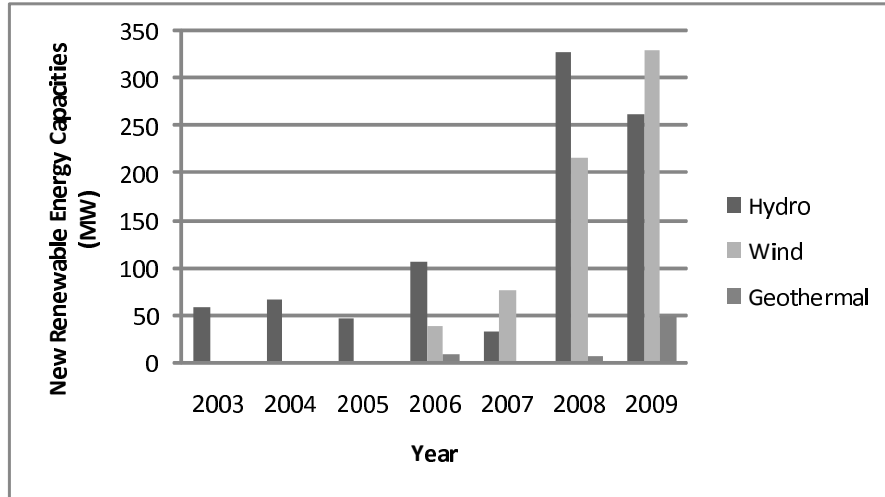
- (ii) **The establishment of a competitive wholesale market** in 2006 created a platform for private investors to trade electricity. The operation of the market came in a time when the compulsory purchase provisions stipulated in the Renewable Energy Law proved to be difficult in practice.⁴ While procedures for supervising retail licensees' compliance

⁴ The Law initially obliges each regional distribution company to purchase all electricity from eligible renewable producers in its service area. However, some distribution companies were not financially capable to fulfill this purchase obligation. The Government responded by amending the law to require each distribution company to purchase renewable electricity based on a mandatory ratio. The ratio equals to the percentage of the sales of the company to the total electricity sales in Turkey in the previous year.

with purchase obligation for renewable energy were being developed, the wholesale market went into operation in 2006. Price formed through balancing and settlement mechanism in the market was higher than the feed-in tariff; therefore, all the renewable projects financed by the loan (and others) chose to sell into this market.

The establishment of a balancing and settlement market was supported by the National Transmission Grid Project financed by the Bank. The Bank also created a panel of experts to advise on market implementation issues.

Figure 2 Year-by-Year New Renewable Energy Capacity in Turkey (MW)



Source: Ministry of Energy and Natural Resources

(iii)With **tight electricity supply-demand balance**, the average electricity price in the newly established wholesale market has been above US\$ 0.1/kWh in recent years. These prices have attracted incremental capacities and generation, including those from renewable power, to be sold into the market, which otherwise may not have been developed.

(iv)The institutional development activities supported under this and other parallel Bank projects helped develop the **necessary legal and regulatory basis for developing renewable energy resources**. For example, the Bank provided policy advisory support for the preparation of Electricity Market Law and Electricity market implementation manual, and the restructuring of the electricity distribution system. In the course of preparing the Renewable Energy Project, the Bank provided considerable technical assistance to the Ministry of Energy in helping set up the approach and procedures for licensing and allocating water-use rights for small hydropower plants.

3.3 Efficiency

(Net Present Value/Economic Rate of Return, cost effectiveness, e.g., unit rate norms, least cost, and comparisons; and Financial Rate of Return)

Economic Analysis: At appraisal, the economic rates of return (ERRs) of three representative small hydropower projects were estimated to be in the range of 19 to 23 percent, with the economic net present value (NPV) ranging between US\$5.5 to 13.2 million. On project

completion, ERRs for the 20 subprojects funded under the loan were calculated to be in the range of 10 to 45 percent. The wide variation in project unit construction costs contributed to the difference in subproject ERRs. The overall project ERR was estimated to be between 18 to 24 percent depending on assumptions on long run electricity market price and the value of greenhouse gas emissions reduction.⁵ With a 10-percent discount rate, the project economic NPV was estimated to be between US\$476 to 866 million.

Financial Analysis: At appraisal, the financial rates of return (FRRs) of three representative small hydropower projects were estimated to be in the range of 16 to 20 percent, with the financial NPV ranging between US\$3.4 to 8.1 million. On project completion, FRRs for the 20 subprojects funded under the loan were calculated to be in the range of 7 to 46 percent. Except for one small hydro projects whose FRR was estimated to be 7 percent, the FRRs of all other subprojects were above 11 percent. The estimated overall FRR is between 16 to 19 percent, and the estimated financial NPV is between US\$304 to 546 million at a 10-percent discount rate, depending on assumptions on long term electricity prices and the value of greenhouse gas emission reduction.

Table 3 summarizes the results of the economic and financial analysis. Details of methodologies used and assumptions employed are outlined in Annex 3.

Table 3 Economic and Financial Rates of Return and Project NPV

		ERR	Economic NPV at 10% discount rate (US\$ million)	FRR	Financial NPV at 10% discount rate (US\$million)
PAD		20%	NA	17%	NA
ICR	Electricity price at US\$0.1/kWh with emission reduction benefits at US\$10/ton of CO ₂ equivalent	24%	866	19%	546
	Electricity price at US\$0.1/kWh without emission reduction benefits	22%	743	19%	517
	Electricity price at Government guaranteed floor price with emission reduction benefits at US\$10/ton of CO ₂ equivalent	20%	599	16%	333
	Electricity price at Government guaranteed floor price without emission reduction benefits	18%	476	16%	304

Sources: PAD and ICR calculation

Notes: Government guaranteed floor price is taken as □5.5 cents/kWh. There is no consensus on the economic value of per ton of CO₂ emissions reduction. We use US\$10/ton of CO₂ equivalent for the purpose of the calculation. US\$0.1/kWh is used to approximate the recent wholesale electricity price. For the calculation of FRRs, emission reduction benefits were included only when the projects sold carbon credits in the voluntary market.

⁵ The FIs' administrative expenses, which were not separately reported, were excluded from the calculation. The overall project ERR would be lower if factoring into the overhead costs. The same caveat applies to the calculation of project overall NPV and FRR.

3.4 Justification of Overall Outcome Rating

(combining relevance, achievement of PDOs, and efficiency)

The project was and remains highly relevant to the Government priorities. It significantly surpassed its development objectives 10 months before the closing date. The project's role in demonstrating the sustainability of financing private sector renewable energy has been important in stimulating the interest of other commercial and international financial institutions to enter the Turkish renewable business. The project efficiency is substantial. **The overall project outcome rating is highly satisfactory.**

3.5 Overarching Themes, Other Outcomes and Impacts

(if any, where not previously covered or to amplify discussion above)

(a) Poverty Impacts, Gender Aspects, and Social Development

Poverty Impacts: Almost all of the subprojects employ workers from neighboring villages. Because these subprojects are located in less developed mountainous parts of the country where fewer avenues for regular employment exist, they offer local people attractive employment opportunities. TKB and TSKB estimated that the SPDF portfolio provided direct permanent employment to about 530 people. In addition, these projects also had a positive impact on local businesses which were called on to deliver more services for construction, logistical support and material for regular operating and maintenance.

Social Development: One of the key examples of the positive benefits from the project is the Mamak landfill project. Apart from generating energy from potentially toxic waste, the subproject has markedly improved the lives of people living around the site. For more than 20 years, the waste of 4 million people living in Ankara was stored in an uncontrolled manner. Beside the climate change effects, the residues caused environmental and social problems including pollution, strong odors, health risks and even potential explosions. One of subprojects financed under the Renewable Energy Loan, the Mamak Landfill Gas Power Projects, addressed these problems by employing a new waste management approach, and using the waste to generate heat and electricity. As a result of the project, the risk of gas explosions is reduced, seepage of explosive methane gas is reduced, local air and water quality is improved, a Waste Water Treatment System that improves soil condition has been installed, and 4,500 trees have been planted around the landfill area. Furthermore, the Mamak project will support the rehabilitation of the district surrounding the landfill site, the construction of a green area on the covered area of the landfill, and an educational café. Additionally, an awareness campaign on the recycling process of solid wastes is being carried out and all the heat coming from the waste treatment process is used to grow tomatoes that are distributed to the Turkish market.⁶

(b) Institutional Change/Strengthening

(particularly with reference to impacts on longer-term capacity and institutional development)

Under the Renewable Energy Project, the Bank provided to EMRA and DSI a range of technical assistance to help the clarification and passage of a number of renewable energy policies and regulations. These include the development of regulatory procedures for the allocation of water-

⁶ A video on Mamak is available at <http://www.worldbank.org/eca/impact/2009/project13/video/index.html>

use rights, procedures for licensing renewable power plants, power purchase obligations of the distribution companies, tariffs for renewable energy and so on.

The World Bank loan also assisted TSKB and TKB in developing their capacities for financing renewable energy projects. Through the implementation of the Project, both of the banks have gathered substantial knowledge and experience with managing complex renewable energy investments and have developed suitable levels of staff with requisite qualifications and experience to market the new facility, appraise and evaluate project proposals, and monitor implementation. In addition, the Bank provided extensive professional training and awareness-building on environmental and social issues which enabled TKB to improve its capacity in safeguards compliance.

(c) Other Unintended Outcomes and Impacts (positive or negative)

The Mamak Landfill Gas Power Project – one of the first large scale landfill-gas utilization projects in Turkey, demonstrated a new approach to convert waste into energy in Turkey. Following the project's success, similar projects are being planned and constructed throughout the country. The Turkish Government now envisions that 5 percent of the country's energy will be produced from garbage in the future.

3.6 Summary of Findings of Beneficiary Survey and/or Stakeholder Workshops

(optional for Core ICR, required for ILI, details in annexes)

A survey with private renewable energy developers was conducted through TKB, TSKB and the Hydropower association as part of this ICR to help identify the extent to which the project contributed to the development of renewable energy in Turkey. After TKB, TSKB and the Hydropower association circulated the structured questionnaire (the survey questionnaire is attached in Annex 5) among clients and association members, 16 firms responded to the survey. Because the 16 firms may have self-selected to complete the survey, their responses may not be generalizable. Nonetheless, the key findings of the survey are summarized below:

- The project was well targeted. The project beneficiaries who have responded to the survey are all small- to medium-sized enterprises (less than 99 employees) that faced more challenges in gaining access to bank financing.
- Lack of long-term financing was no longer considered as a barrier to renewable energy development in Turkey. Many commercial banks have started providing loans with terms and conditions similar to those from TKB and TSKB.
- Among the 14 firms who have received loans from TKB or TSKB, 7 firms stated that they would not have implemented their projects, or would have implemented but with smaller scale or longer period if they had not received the loans from the Project.

4. Assessment of Risk to Development Outcome

The risk to the development outcome is rated low. All subprojects have been successfully implemented. At the plant level, rigorous licensing and project appraisal processes ensured satisfactory technical capacity. For projects involving large dams, the borrower had been required to appoint an independent panel of experts to ensure the safety of operation and maintenance, and would carry out periodic safety inspections of the dam. At the market level, the prospect of electricity supply-demand imbalances in the near future suggests high electricity price and that renewable generation will be financially viable. At the policy level, the Government is

fully committed to its renewable energy development. Therefore, it is expected that all the renewable energy facilities developed under the Project will continue being maintained and operated in a safe and efficient way.

5. Assessment of Bank and Borrower Performance

(relating to design, implementation and outcome issues)

5.1 Bank Performance

(a) Bank Performance in Ensuring Quality at Entry

(i.e., performance through lending phase)

Quality at Entry was assessed by the QAG during July 2005. The QAG rated the project's overall quality at entry as Satisfactory and indicated that the project was soundly prepared, simple, and had taken good account of the prior experience with Bank-financed renewable energy projects, and that the implementation agencies appeared to be competent.

The ICR assessment concurs that **Quality at entry was satisfactory**. A thorough assessment of the market constraints was conducted and strategic choices were appropriately made at the design and preparation stage such as (i) focusing on a financial intermediation mechanism (ii) building up a solid investment pipeline, (iii) considering all major details for effective implementation and preparing a well structured operation manual which created a framework for successful implementation of the Project, (iv) adequately assessing the Borrowers' compliance with Bank's safeguard policies and fiduciary matters, and preparing relevant technical assistance, and (v) working closely with EMRA, DSI and the Ministry of Energy for developing legislation and procedures for developing small hydropower plants, which eased the process for private investment.

(b) Quality of Supervision

(including of fiduciary and safeguards policies)

Quality of supervision was satisfactory. During project implementation, the Bank maintained a sustained dialogue with government and business stakeholders. Several team members were based in the field and carried out close supervision of the project. The team's close monitoring and effective communication with all levels involved was crucial for understanding concerns and contributed to capacity strengthening. The Bank's capacity building efforts to improve the compliance with environmental and social safeguard policies were particularly appreciated by TKB and TSKB. In addition, to ensure efficient implementation, the Bank showed flexibility in adjusting project implementation as discussed in section 2.2.

(c) Justification of Rating for Overall Bank Performance

Given satisfactory ratings for both quality at entry, and quality of supervision, the **overall Bank performance is rated satisfactory**.

5.2 Borrower Performance

(a) Government Performance

The Government's strong commitment to the project's PDO throughout the design and implementation stages was a key factor in the Project's positive outcomes. The conducive Government policies, such as the enactment of market liberalization that allowed the participation

of private investors and the passage of the renewable energy law that reduced risk perceptions associated with renewable investment (as discussed in section 3.2), were crucial for the significant growth of Turkey's renewable energy sector.

In addition, the Government was able to take into account feedbacks from investors and financial institutions and to adapt policies as needed. For example, when sector players argued that setting a maximum price limit of $\square 5.5$ cents/kWh for renewable power until the end of 2010, while there was no price limit for conventional power generation was discouraging renewables, the Government responded by allowing generators to sell renewable electricity in the wholesale market and at a price more than the guaranteed feed-in tariff, if they have such opportunities.

During project implementation, MENR and their related agencies, DSI and EIE, took the lead in executing the institutional development activities and facilitated transparent and timely licensing and water-use rights clearance process. They also had played a critical role in the success of the project.

One issue to be mentioned is that the enactment of the Renewable Energy law was significantly delayed and partially contributed to the slow progress of the project in the first two years, as investors were waiting for the clarification of the regulatory framework before committing to their investment. **Overall, the government performance was satisfactory.**

(b) Implementing Agency or Agencies Performance

The implementing agencies, TSKB and TKB, were responsible for selecting individual projects and made sure that they met the guidelines and were economically attractive. TSKB had developed their unique mix of technical, risk assessment and management, and business marketing skills and had established itself as a leading Turkish institution providing financing for renewable energy projects. TSKB, also has developed, during its long-term working relationship with the Bank, an environmental management system that assesses environmental risks related to all banking activities. TKB had a slow start in terms of loan disbursement but was able to catch up towards the end of the project. On the aspect of safeguards compliance, TKB did not have specific staff to implement safeguard policies (the work was done by engineering staff who did not have safeguard compliance as their primary responsibilities), but did acquire dedicated environmental expertise in the follow-on project for safeguard compliance. Both FIs were able to commit and fully disburse all of the funds to viable projects about a year ahead of schedule and meet the environmental and social safeguards requirements. **The overall performance of both implementing agencies was satisfactory.**

(c) Justification of Rating for Overall Borrower Performance

Given satisfactory ratings for Government and implementing agency performance, **the overall borrower performance was rated satisfactory.**

6. Lessons Learned

(both project-specific and of wide general application)

Lessons emerged from the implementation of the project are:

1. **Long-term financing to renewable energy development can be financially viable.** However, financing renewable energy is a complex line of business and **capacity**

- building support should be provided to financial institutions** in strengthening project evaluation and engineering skills and environmental and social safeguard functions. For renewable energy projects, technical assistance to financial institutions should be considered being incorporated into initial project designs.
2. Success of the project can be linked to the **long-term programmatic approach that Turkey has adopted and the Bank has supported to create the enabling environment, build capacity and catalyze investments**. The Turkish experience suggests that the development of renewable energy often faces an array of barriers, including institutional, capacity and financing challenges. To promote the utilization of renewable resources requires a thorough understanding of the sector background, long-term efforts, and a strategic mix of policy and investment interventions to overcome these barriers.
 3. **The Bank's financing to renewable energy development could be leveraged to achieve greater impact**. First, the project's demonstration effect sparked interest among other financial institutions in investing in the sector. Second, the Bank supported the strengthening of project management and safeguard capacities of the participating FIs. The FIs have rapidly increased their renewable energy portfolio by working with other commercial banks and international financial institutions. Third, the Bank assisted the development of Government administrative capacity in regulating renewable industry. The Government can leverage the strengthened institutional capacities to further promote the development of renewable energy.
 4. **A predictable policy and regulatory environment is a critical precondition for private sector investment in renewable energy development**. Having a supportive policy environment, including predictable feed-in tariffs and transparent rules for electricity trading are critical for attracting private sector investment. Other favorable policies include facilitation of developer access to land and adoption of transparent and streamlined procures for obtaining licenses and water-use rights in the case of hydropower development. For renewable energy projects, it is important to develop a **coherent strategy that integrates the establishment of an enabling policy and regulatory environment within the overall framework of the project design**.
 5. **The Bank's procurement guidelines do not cater to private sector procurement and contracting approaches. When working with the private sector, it is important for the Bank's procurement procedures to be flexible** in order to get the private sector involved. This became apparent in the case of this project, and as a result, the design of the follow-on project introduced increased flexibility. ICB procurement thresholds were removed, so that private developers could use commercial practice for the entire project. In order to ensure that Bank procurement principles are however followed, an independent procurement audit process has been instituted, in addition to the Bank's periodic post-review.
 6. **High levels of sponsor collateral requirement constrained small renewable developers with low collateral value from accessing finance**. It is important to develop more friendly policies for small, first-time renewable developers in the future, such as guarantee fund, to overcome the challenge.
 7. Waste to energy technologies that convert landfill gas to electricity and heat have great potential in climate change mitigation, as well as in economic development and the

improvement of public welfare and safety. **Waste to energy technologies that create win/win opportunities should receive more support from future Bank projects.**

7. Comments on Issues Raised by Borrower/Implementing Agencies/Partners

(a) Borrower/implementing agencies

(b) Cofinanciers

(c) Other partners and stakeholders

(e.g. NGOs/private sector/civil society)

Annex 1. Project Costs and Financing

(a) Project Cost by Component (in USD Million equivalent)

Components	Appraisal Estimate (USD millions)	Actual/Latest Estimate (USD millions)	Percentage of Appraisal
Renewable Generation Financing	500.00	748.8	149.8%
Total Baseline Cost	500.00	748.8	149.8%
Physical Contingencies	0.00	0.00	0.00
Price Contingencies	0.00	0.00	0.00
Total Project Costs	500.00	748.8	149.8%
Front-end fee PPF	0.00	0.00	.00
Front-end fee IBRD	2.03	2.03	.00
Total Financing Required	502.03	750.83	149.6%

(b) Financing

Source of Funds	Appraisal Estimate (USD millions)	Actual/Latest Estimate (USD millions)	Percentage of Appraisal
Borrower	0.00	0.00	0.00
International Bank for Reconstruction and Development*	202.03	223.13	110%
Other international FIs	50.00	130.00	260%
Private equity	150.00	242.00	161%
Export Credits, Commercial banks	100.00	161.27	161%

Sources: TKB and TSKB

* TKB used US\$21.1 million from the follow-up project to finish a project.

Annex 2. Outputs by Component

Individual subprojects financed under the loan⁷:

Project Name	Type	Investment (US\$ million)	Capacity (MW)	Annual Generation (GWh)	Annual Emissions Reduction (tons of CO ₂ equivalent)
TSKB subprojects					
Akkoç	hydro	90.1	99	270	168,750
Bares	wind	37.5	30	110	68,750
Bereket Koyulhisar	hydro	40.6	42	265	187,500
Bereket Jeotermal	geothermal	9.4	6	36	22,500
Caldere	hydro	9.4	8	35	21,875
Enova Enerji (Berkman and Oskan)	hydro	81	63	237	148,125
Gurmat	geothermal	116.5	47.4	270	168,750
ITC- Mamak	landfill	24	11.2	74	265,000
Karhes (Cirakdami and Derele)	hydro	100.9	98	225	140,625
Koni	hydro	17.5	13.4	46	28,750
Molu	hydro	4.5	4	27	16,875
Tektug (Kalealti and Kargilik)	hydro	36.4	39	117	73,125
Yesilbas	hydro	14	14	47.6	29,750
TSKB Total		581.8	475.0	1759.6	1,340,375
TKB subprojects					
Bereket	hydro	32.7	40	178.8	111,750
Hidrokontrol	hydro	25.3	23.1	97.7	61,063
Hidrokontrol (Selimoglu)	hydro	13.1	8.8	30.4	19,000
Kalen Enerji	hydro	25.3	31.3	71.7	44,813
Ilk Elektrik	hydro	48.1	23.7	106.5	66,563
Menderes (Dora 1)	geothermal	12.7	8.5	53.1	33,188
Oztay	hydro	9.8	8.1	22.4	14,000
TKB Total		167.0	143.5	560.6	350,375
SPDF Total		748.8	618.5	2320.2	1,690,750

Sources: TKB and TSKB reports

⁷ Three of the TSKB subprojects have two generating plants.

Annex 3. Economic and Financial Analysis

(including assumptions in the analysis)

Economic Rates of Return

At appraisal, the economic rates of return (ERRs) of three representative small hydropower projects were estimated. These were two projects (Mugla and Aydin projects) presented to TSKB for financing when the renewable energy fund was available, and a composite project presented by TKB. The composite project according to TKB was prepared based on small projects they had financed and the proposals they had received. The estimated ERRs for the three representative projects are 20, 23 and 19 percent, respectively, and the economic net present value (NPV) of these projects are US\$5.5, 6.4 and 13.2 million at 10 percent discount rate.

The assumptions used for the analysis in the PAD were that the electricity produced would be sold at US\$0.05/kWh, which was the long run market price predicted at that time, and that the value of the greenhouse gas emissions reduction was US\$3.25 per ton of carbon dioxide equivalent, following the suggestion of the Prototype Carbon Fund. The emission factor used for estimating the amount of greenhouse gas emissions reduction was 421 tons/GWh, assuming that renewable energy would replace gas fired combined cycle plants which were the main alternative to renewable energy in 2004. It was also assumed that plant investment costs ranged between US\$718 to 1000/kWh and that construction took two years. The cost of operation and maintenance was assumed to be US\$1.4 cents /kWh.

Ex post, the average investment cost of renewable power plants financed under the Renewable Energy Loan was \$ 1311/kW or about 83 percent above the PAD estimation. The average cost of the hydro plants financed under this Project was \$1182/kW, or 65 percent above the estimate. The average construction cost of the geothermal plants was \$2238/kW, which substantially increased the average cost overall.

However, the prevailing market price of electricity, around US\$0.1/kWh, was also higher than the PAD assumption. It is expected that the supply and demand balance will remain tight in the near to medium term, and that the electricity price will remain high. Moreover, the Government of Turkey in 2005 passed a renewable energy law. The law guarantees all producers of renewable energy a minimum price of 5-5.5 cents/kWh, but specifically allows them to sell into the competitive wholesale market if they can get a higher price. In fact, all producers have chosen to sell into the market. In June of this year the government prepared an amendment to this law to provide higher minimum prices for renewable energy with specific prices for each technology.

The price of carbon credits is also much higher than what is estimated in the PAD. The most recent prices under the European Emission Trading Scheme were about US\$20/ton. While there is no consensus on the economic value of CO₂ emissions reduction, US\$

10/ton was used to approximate the benefits of greenhouse gas emissions reduction. In addition, the emission factor used to convert renewable generation to emissions reduction was also higher at 625 tons CO₂ equivalent/GWh. The Turkish Government has decided to limit the number of new gas fired power plants to diversify its energy sources. Therefore, the ICR revised the emission factor, assuming that renewable energy would replace the average generation mix in Turkey (hydro, natural gas, coal, oil and lignite).

All projects are assumed to be in operation for 22 years. The costs of operation and maintenance of various projects were obtained from TSKB and TKB.

Based on the above information, the overall project ERR was estimated to be in the range of 18 to 24 percent, and the economic NPV between US\$476 to 866 million at a 10 percent discount rate, depending on assumptions on the long-term electricity market prices and the economic value of CO₂ emissions reduction.⁸ The results are summarized in the following table.

Economic Rates of Return (ERRs) and Project Economic Net Present Values (NPVs)

	ERR	NPV at 10% discount rate (US\$ million)
PAD	20%	NA
Electricity price at US\$0.1/kWh with emission reduction benefits at US\$10/ton of CO ₂ equivalent	24%	866
Electricity price at US\$0.1/kWh without emission reduction benefits	22%	743
Electricity price at Government guaranteed floor price with emission reduction benefits at US\$10/ton of CO ₂ equivalent	20%	599
Electricity price at Government guaranteed floor price without emission reduction benefits	18%	476

Sources: PAD and ICR calculation

Note: Government guaranteed floor price is taken as 5.5 cents/kWh. There is no consensus on the economic value of per ton of CO₂ emissions reduction. We use US\$10/ton of CO₂ equivalent for the purpose of the calculation. US\$0.1/kWh is used to approximate the recent wholesale electricity price.

Financial Rates of Return

The three projects analyzed in the PAD had financial economic rate of return (FRR) of 17, 20 and 16 percent, and financial NPVs at US\$3.4, 4.0 and 8.1 million.

⁸ The FIs' administrative expenses, which were not separately reported, were excluded from the calculation. The overall project ERR would be lower if factoring into the overhead costs. The same caveat applies to the project overall NPV and FRR calculation.

On project completion, the project overall financial rate of return (FRR) is estimated to be in the range of 16-19 percent. The FRRs for the individual subprojects are between 7 and 46 percent. Except for one small hydro projects whose FRR was estimated to be 7 percent, the FRRs of all other subprojects were above 11 percent. The FRR calculation assumes that the current Turkish tax regulations remain in place with a 20 percent corporate income tax and 20 year depreciation. All subprojects receive revenue from electricity sales. Two subprojects, Bares and ITC-Mamak, also sell carbon credits into the voluntary carbon market under a ten year contract. ITC-Mamak project profits from its produce outputs and recycling waste. The results of financial analysis are summarized in the following table.

**Financial Rates of Return (FRRs) and Project Financial
Net Present Values (NPVs)**

	FRR	NPV at 10% discount rate (US\$ million)
PAD	17%	NA
Electricity price at US\$0.1/kWh with emission reduction benefits at US\$10/ton of CO ₂ equivalent	19%	546
Electricity price at US\$0.1/kWh without emission reduction benefits	19%	517
Electricity price at Government guaranteed floor price with emission reduction benefits at US\$10/ton of CO ₂ equivalent	16%	333
Electricity price at Government guaranteed floor price without emission reduction benefits	16%	304

Sources: PAD and ICR calculation

Notes: Government guaranteed floor price is taken as □5.5 cents/kWh. US\$0.1/kWh is used to approximate the recent wholesale electricity price. Emission reduction benefits were included only when the projects sold carbon credits in the voluntary market. The value of a carbon credit was assumed to be US\$10/ton.

Annex 4. Bank Lending and Implementation Support/Supervision Processes

(a) Task Team members

Names	Title	Unit	Responsibility/ Specialty
Lending			
Supervision/ICR			
Bernard Baratz	Consultant	ECAVP	
Angelica A. Fernandes	Consultant	ECSC2	
Fan Zhang	Young Professional	ECSSD	
Salih Kemal Kalyoncu	Senior Procurement Specialist	ECSC2	
Selma Karaman	Program Assistant	ECCU6	
Iftikhar Khalil	Consultant	QAG	
Devesh Chandra Mishra	Manager	ECSC2	
James Sayle Moose	Consultant	AFTEG	
Shinya Nishimura	Financial Analyst	ECSS2	
Ahmet Gurhan Ozdora	Senior Operations Officer	ECSS2	
Norval Stanley Peabody	Consultant	ECSSD	
Sameer Shukla	Sr Energy Spec.	ECSS2	
Yukari Tsuchiya	Temporary	ECSSD	

(b) Staff Time and Cost

Stage of Project Cycle	Staff Time and Cost (Bank Budget Only)	
	No. of staff weeks	USD Thousands (including travel and consultant costs)
Lending		
FY01		36.41
FY02		71.42
FY03		245.67
FY04		50.40
FY05		0.00
FY06		0.00
FY07		0.00
FY08		0.00
Total:		403.90
Supervision/ICR		
FY01		1.09
FY02		0.00
FY03		0.00

FY04		7.96
FY05		87.73
FY06		127.39
FY07		68.40
FY08		112.05
	Total:	404.62

Annex 5. Beneficiary Survey Results

(if any)

A survey with private renewable energy developers was conducted through TKB, TSKB and the Hydropower association as part of this ICR to help identify the extent to which the project contributed to the development of renewable energy in Turkey. After TKB, TSKB and the Hydropower association circulated the structured questionnaire (the survey questionnaire is attached in Annex 5) among clients and association members, 16 firms responded to the survey. Because the 16 firms may have self-selected to complete the survey, their responses may not be generalizable. Nonetheless, the key findings of the survey are summarized below:

- The project was well targeted. The project beneficiaries who have responded to the survey are all small- to medium-sized enterprises (less than 99 employees) that faced more challenges in gaining access to bank financing.
- Lack of long-term financing was no longer considered as a barrier to renewable energy development in Turkey. Many commercial banks have started providing loans with terms and conditions similar to those from TKB and TSKB.
- Among the 14 firms who have received loans from TKB or TSKB, 7 firms stated that they would not have implemented their projects, or would have implemented but with smaller scale or longer period if they had not received the loans from the Project.

TSKB/TKB Renewable Energy Project Survey

The main objective of the survey is to gather opinions and information on renewable energy projects financed by loans from the TSKB/TKB Renewable Energy Project.

Questionnaire ID:
Name of Firm:
Respondent:
Respondent's Position in Firm:
Address:
City:
Telephone:

1. Location of what, plant or firm?

<input type="checkbox"/> Marmara
<input type="checkbox"/> Aegean
<input type="checkbox"/> Southeastern Anatolia
<input type="checkbox"/> Mediterranean
<input type="checkbox"/> Central Anatolia
<input type="checkbox"/> Black Sea

2. Size

<input type="checkbox"/> Small ≥ 5 and ≤ 19 employees
<input type="checkbox"/> Medium ≥ 20 and ≤ 99
<input type="checkbox"/> Large > 100 and ≤ 249
<input type="checkbox"/> Very Large

3. In what year did your company begin operation?

4. In which year did you apply for a TSKB/TKB loan?

2004 2005 2006 2007 2008 2009

5. In which year was the construction of the facility started?

2004 2005 2006 2007 2008 2009

6. In which year was your facility commissioned?

2004 2005 2006 2007 2008 2009

8. How many full-time employees does this establishment employ?

9. How many full-time temporary employees does this establishment employ?

10. If you had not received a loan supported by the TSKB/TKB Renewable Energy Project, would you still undertake the renewable energy investment?

- No
- Yes, but limited scope and/or longer time
- Yes, in identical scope

11. Did the project supported by the TSKB/TKB Renewable Energy Project receive technical advice for preparation?

- Yes / NO

If yes, what type of technical advice was received?

- Resource Measurement
- Technical Design
- Dam safety
- Environmental management planning
- Loan application
- Others

Who provided the technical advice? Specify _____

12. What is the annual power output of your facility since it was commissioned?

13. What has been the return on your renewable energy investment?

- Exceeded expectation
- About the expectation
- Below the expectation
- Loss/negative benefits
- Too early to tell

14. Have you conducted or are you considering renewable energy projects other than the one financed by the TSKB/TKB Turkey Renewable Energy Project?

- Yes / No

If Yes, please indicate the type of project _____

Approximate size of investment _____

% of self financing _____

15. Have you received bank loans for the renewable energy investment in addition to the loans from TSKB/TKB?

What Bank? _____

Interest rate on this loan _____

Maturity of the loans _____

16. Did this loan require collateral _____

What was the approximate value of the collateral required as a percentage of the loan value? _____

17. If you have not applied for a loan for renewable energy investment, what was the main reason?

- No need for a loan
- Application procedures for loans or lines of credit are complex
- Interest rates are not favorable
- Collateral requirements are too high
- Size of loan and maturity are insufficient
- It is necessary to make informal payments to get bank loans
- Did not think it would be approved
- Others

Annex 6. Stakeholder Workshop Report and Results

(if any)

None

Annex 7. Summary of Borrower's ICR and/or Comments on Draft ICR

Below is the original ICR of TSKB

1. Assessment of the operation's objective, design, implementation and operational experience

1.1 Operation's objective

The loan agreement pertaining to the Renewable Energy Project was signed between the IBRD and the Undersecretariat of the Treasury (borrower) on May 5, 2004. The loan was onlent to the Industrial Development Bank of Turkey (TSKB) and Development Bank of Turkey (TKB). TSKB was allocated 75% of the USD 202.3 million facility. The primary objective of the loan was the provision of investment finance to private enterprises engaged in investments for generation of electricity based on renewable sources. Evaluation of the results show that, despite a slow start due to reasons which will be discussed in the following sections the objectives of the operation were achieved successfully.

1.2 Operation's design

Within the scope of the facility TSKB financed private renewable energy projects directly. The marketing of the facility was carried out by the Corporate Marketing and Project Finance departments of the Bank. The appraisal reports were carried out by the Technical Services Division incorporating departments of financial analysis, economics and engineering. Coordination was carried out by the project coordination unit (PCU) headed by an executive vice president.

1.3 Operation's implementation

Although the loan was disbursed before the original closing date the implementation of the facility at the initial stages was low. A number of reasons contributed to this unfavorable development and 22 months after loan signing only 10% of the facility was disbursed by TSKB. These are discussed below;

a. Size limitation on installed capacity of hydro based projects

The original Loan documentation imposed a maximum size limit of 50 MW on hydro-based projects. The logic behind the size limitation at the time of the loan negotiations was the 50 MW limitation on hydro- based projects in the then prevailing definition of renewable energy in Turkish Legislation. Legislation on Renewable Energy in Turkey was changed in 2005. The new Renewable Energy Loan Legislation in Turkey did not impose any restriction on the installed capacities of hydro- based projects and this gave way to a large number of feasible projects with installed capacities of above 50 MW which were now eligible for financing.

b. Civil work expenditures made by affiliate companies not being financed by the Loan

A substantial number of players in the energy sector in Turkey are large construction companies or have construction affiliates. The provisions of the facility did not allow financing of civil works carried out by the beneficiary of the Loan and/or an affiliate. This resulted in major parts of civil works not being eligible for financing from the proceeds of the REL Facility where the beneficiary and/or its affiliates are the contractors.

c. Thresholds on loan amounts which could be extended to a single project or a group

The loan agreement imposed a maximum limit of USD 20 million of financing from the proceeds of the loan per project, and a limit of USD 40 million financing for the projects of a single group or group of companies. This provision also had a constraining effect.

d. Procurement thresholds for local commercial practices

The loan documentation imposed low thresholds with regards to civil works and machinery and equipment. The thresholds of local commercial practices for machinery and equipment and civil works were US\$ 5 million and USD\$ 8 million respectively. Procurements above these thresholds were to be realized through international competitive bidding (ICB). As promoters were not willing to go for ICB for low thresholds the commitments and disbursements were affected negatively.

e. World Bank financing limited to a maximum 50% of the sub-project total cost

The loan documentation stated that although projects financed with IBRD REL facility could have a minimum equity financing of 25% IBRD facility can be used to finance up to 50% of total cost of sub-projects. This clause also had a restrictive effect on disbursement.

Discussions were held with the World Bank and the Turkish Treasury to initiate changes in the Loan Documentation which would contribute to a speedier disbursement. Upon positive feedback amendments were made in the loan documentation in mid 2006. The changes were;

- Increasing the capacity limits for hydro projects from 50 to 100 MW,
- Increasing the maximum loan amount per project from USD\$ 20 million to USD\$40 million and to affiliates to USD\$ 50 million,
- Increasing the thresholds for ICB (Civil works from USD\$ 8m to USD\$ 15m, threshold for machinery and equipment was not changed),
- Allowance to finance up to USD\$ 15 million of civil works carried out by the sponsor or its affiliates.

The changes in the loan documentation paved the way for speedy allocation and disbursement and the facility was fully disbursed before closure date.

1.5 Contribution Towards Capacity Building

The Renewable Energy Project has made positive contributions to capacity building at TSKB with regards to financing renewable energy projects. With the positive contribution of the REL facility TSKB has become one of the leading banks in financing renewable energy projects in Turkey. The technical know-how of IBRD staff especially with regards to technical analysis of the investments, safeguards and environmental impact assessment has enhanced TSKB'S capacity with regards to handling renewable energy investments. TSKB has further improved its capacity as a sustainable bank by establishing its own environmental management systems (EMS),obtaining an ISO 14001 certificate in EMS, measuring its carbon footprint, becoming the first carbon free bank in Turkey and becoming a member of the UNEP financial initiative.

2. Assessment of the outcome of the operation against the agreed objectives

The Primary objective of REL facility was the provision of investment finance to private enterprises engaged in investments for generation of electricity based on renewable sources. The objective has been successfully achieved. TSKB's portfolio under the REL facility comprised of hydro projects , geothermal projects , wind project and a pioneering landfill project.

3. Evaluation of the borrower's own performance during the preparation and implementation of the operation, with the special emphasis on lessons learned that may be helpful in the future

The disbursement of the facility was slow at the initial years due to numerous reasons outlined above. Along with the changes in the Loan Documentation the pace of disbursements picked-up significantly and full disbursement was realized well before the closing date.

Renewable energy investments especially hydro projects by nature take a considerable amount of time of implementation. The REL facility carried a commitment fee 35 basis points on the undisbursed amounts. This meant that as there was a lag between commitment and disbursement banks had to pay commitment fees due to the nature of the projects. As IBRD policies foresaw the initiation of the commitment fee 60 days after signature regardless of the nature of the loan there was no possibility to address the issue.

TSKB, which had identified generation of electricity from renewable sources as a priority sector and in line with its sustainable banking practices, was willing to take risks in the sector. The REL I facility was timely with these developments . TSKB's risk in the renewable sector has increased throughout the period and as of the mid February 2010 the share of renewable energy projects in loans outstanding stands at 22%. TSKB's flexible collateral policy has contributed to the development. Among the companies financed by the REL I facility bank letters of guarantee was obtained only for two companies. The collateralization of others were realized through pledge on future receivables., pledge on usufruct rights, pledge on shares etc.

4. Evaluation of the performance of the Bank, any co financiers, or of other partners during the preparation and implementation of the operation, including the effectiveness of their relationships, with special emphasis on lessons learned

With the positive contribution of the bank staff issues impeding speedy commitment were eliminated. The Bank's performance during the preparation and implementation stages was very satisfactory. During the preparation and implementation of the project both parties (Bank staff in Washington and IBRD Ankara Office and TSKB PCU had a very cordial relationship and issues relating to the implementation of the project were resolved.

The designing of the facilities should put more emphasis on private sector practices. These are especially valid for procurement and construction. The initial procurement thresholds being too low was a major factor contributing to slow disbursement at the initial years. Additionally civil work expenditures incurred by the sponsor or its affiliates not being eligible for finance by the facility was also a constraint on speedy disbursement. These obstacles were eliminated

approximately two years after signing date. Had they been incorporated in the original loan documentation a speedier disbursement would have been possible.

5. Description of the proposed arrangements or future operation of the project

Despite a slow start the REL facility was successful in achieving its objectives and full disbursement was achieved before closure date. Demand from the private sector to carry out renewable energy projects and for funds to finance these projects increased. TSKB and TKB requested a new project. With the support of the Turkish Government “Private Sector Renewable Energy and Energy Efficiency Project” was designed and became effective in 2009. The two banks were borrowers and the Undersecretariat of the Treasury provided the guarantee. In addition to renewable energy projects the new facility also finances energy efficiency projects. Turkey which has high energy intensity in comparison to EU countries has a large potential in energy efficiency projects. The financing includes US\$ 500 million from IBRD and US\$ 100million from the Clean Technology Fund (CTF).

The loan documentation of the new facility incorporates the changes made to the REL I facility. Issues leading to the initially slow disbursement of the REL I facility have been addressed. The inclusion of energy efficiency projects in addition to projects based on renewable sources will have positive effects on disbursement.

Below is Summary of TKB Comments






The Implementation Completion Report has identified accomplishments, problems and lessons emerged from the implementation of the project, comprehensively. The report has also reviewed the final project outcomes and compared them to the appraisal targets and the project development objectives. The report has also showed clear evidence of the progress, and underscored the considerable scope for further improvement.

Annex 8. Comments of Cofinanciers and Other Partners/Stakeholders

Annex 9. List of Supporting Documents

The files contain supervision reports, aide memoires, the operational manuals, quarterly reports from TSKB and TKB, audited financial statements from both banks, EIAs, environmental management plans and other similar documents.

TURKEY

- PROVINCE CAPITALS*
- ⊕ NATIONAL CAPITAL
-  RIVERS
-  MAIN ROADS
-  RAILROADS
-  PROVINCE BOUNDARIES*
-  INTERNATIONAL BOUNDARIES



This map was produced by the Map Design Unit of The World Bank. The boundaries, colors, denominations and any other information shown on this map do not imply, on the part of The World Bank Group, any judgment on the legal status of any territory, or any endorsement or acceptance of such boundaries.

*Province names are the same as their capitals.

