

Document of
The World Bank

Report No: ICR00001938

IMPLEMENTATION COMPLETION AND RESULTS REPORT
(TF-54398)

ON A

GRANT

FROM THE GLOBAL ENVIRONMENTAL FACILITY

IN THE AMOUNT OF US\$ 8.5 MILLION EQUIVALENT

TO THE

REPUBLIC OF TUNISIA

FOR AN

ENERGY EFFICIENCY PROGRAM/INDUSTRIAL SECTOR

June 28, 2012

Sustainable Development Department, MNSSD
Middle East and North Africa Region

CURRENCY EQUIVALENTS

(Exchange Rate Effective 05/15/2012)

Currency Unit = Tunisian Dinar (TND)

TND 1.00 = US\$ 0.63

US\$ 1.00 = TND 1.58

FISCAL YEAR

January 1 – December 31

ABBREVIATIONS AND ACRONYMS

ANME	Agence Nationale pour la Maitrise de l'Energie (National Energy Management Agency)	ISR	Implementation Status Report
BMN	Bureau de Mise à Niveau (Competitiveness Enhancement Bureau)	Ktoe	Kilotons of oil equivalent
CP	Contrat-Programme (Program Contract)	M&E	Monitoring and Evaluation
CPE	Contrat de Performance Energétique (Energy Performance Contract)	M&V	Measurement and Verification
CPS	Country Partnership Strategy	PAD	Project Appraisal Document
EE	Energy Efficiency	PDO	Project Development Objective
ESCO	Energy Service Company (Entreprise de Service Energétique, ESE)	PEEI	Programme Efficacité Energétique dans le secteur Industriel (Energy Efficiency Program in the Industrial Sector)
EU	European Union	PIU	Project Implementation Unit
FM	Financial Management	PMN	Programme de Mise à Niveau (Competitiveness Enhancement Program)
FNME	Fonds National pour la Maîtrise de l'Energie (National Energy Management Fund)	SOTUGAR	Société Tunisienne de Garantie (Tunisian Guarantee Company)
FODEC	Fonds de Développement de la Compétitivité Industrielle (Industry Competitiveness Fund)	STEG	Société Tunisienne de l'Électricité et du Gaz (Tunisian Electricity and Gas Company)
GDP	Gross Domestic Product	STGE	Société Tunisienne de Gérance de l'Energie (Tunisian Company of Energy Management)
GEF	Global Environment Facility	TND	Tunisian dinar
GEO	Global Environment Objectives	tCO ₂	Tons of carbon dioxide
GOT	Government of Tunisia	Toe	Tons of oil equivalent
ICR	Implementation Completion Report	US\$/USD	United States dollar

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TUNISIA
ENERGY EFFICIENCY PROGRAM/INDUSTRIAL SECTOR

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DATA SHEET

A. Basic Information			
Country:	Tunisia	Project Name:	ENERGY EFFICIENCY PROGRAM/INDUSTRIAL SECTOR
Project ID:	P078131	L/C/TF Number(s):	TF-54398
ICR Date:	06/19/2012	ICR Type:	Core ICR
Lending Instrument:	TAL	Borrower:	GOVERNMENT OF TUNISIA (GOT)
Original Total Commitment:	US\$ 8.50M	Disbursed Amount:	US\$ 8.47M
Revised Amount:	US\$ 8.50M		
Environmental Category: C		Global Focal Area: C	
Implementing Agencies: Agence Nationale pour la Maitrise de l'Energie (ANME), Société Tunisienne de Garantie (SOTUGAR)			
Cofinanciers and Other External Partners: -			

B. Key Dates				
Process	Date	Process	Original Date	Revised / Actual Date(s)
Concept Review:	11/13/2003	Effectiveness:		12/13/2004
Appraisal:	07/12/2004	Restructuring(s):		
Approval:	11/04/2004	Mid-term Review:	06/30/2007	12/07/2007
		Closing:	12/31/2009	11/30/2011

C. Ratings Summary	
C.1 Performance Rating by ICR	
Outcomes:	Moderately Satisfactory
Risk to Global Environment Outcome	Substantial
Bank Performance:	Moderately Unsatisfactory
Borrower Performance:	Moderately Satisfactory

C.2 Detailed Ratings of Bank and Borrower Performance			
Bank	Ratings	Borrower	Ratings
Quality at Entry:	Moderately Unsatisfactory	Government:	Satisfactory
Quality of Supervision:	Moderately Unsatisfactory	Implementing Agency/Agencies:	Moderately Satisfactory
Overall Bank Performance:	Moderately Unsatisfactory	Overall Borrower Performance:	Moderately 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):	Moderately Satisfactory
Problem Project at any time (Yes/No):	No	Quality of Supervision (QSA):	None
GEO rating before Closing/Inactive status	Satisfactory		

D. Sector and Theme Codes		
	Original	Actual
Sector Code (as % of total Bank financing)		
Banking	6	6
Energy efficiency in power sector	65	65
General industry and trade sector	29	29
Theme Code (as % of total Bank financing)		
Climate change	50	50
Other financial and private sector development	50	50

E. Bank Staff		
Positions	At ICR	At Approval
Vice President:	Inger Andersen	Christiaan J. Poortman
Country Director:	Neil Simon M. Gray	Theodore O. Ahlers
Sector Manager:	Patricia Veevers-Carter	Françoise Clottes
Project Team Leader:	Silvia Pariente-David	René G. Mendonca
ICR Team Leader:	Roger Coma-Cunill	
ICR Primary Author:	Roger Coma-Cunill	

F. Results Framework Analysis

Global Environment Objectives (GEO) and Key Indicators(as approved)

The GEO is to achieve a deeper penetration of sustainable commercial energy efficiency investment activities in Tunisia's industrial sector, by removing barriers and lowering transaction costs.

(a) GEO Indicator(s)

Indicator	Baseline Value	Original Target Values (from approval documents)	Formally Revised Target Values	Actual Value Achieved at Completion or Target Years
GEO Indicator 1 : Establishment of a sustainable energy efficiency (EE) market for Tunisian Industry				
Value (Quantitative or Qualitative)	The market for EE technologies is largely underdeveloped	A sustainable EE market is established	-	An average of 78 projects approved per year. From January 2005 to end-April 2011, 550 projects have been approved.
Date achieved	10/05/2004	06/25/2011		11/30/2011
Comments (incl. % achievement)	116 CPs directly linked to the project were approved and a total of 566 CPs were approved to benefit from the FNME subsidy, in large because of support from the project, which is a remarkable achievement.			
GEO Indicator 2 : Long-run greenhouse gas emissions reductions				
Value (Quantitative or Qualitative)	No greenhouse gas emissions reductions	127,284 tons CO ₂ per year and 636,422 tons CO ₂ over the lifetime of the project		101,475 tons CO ₂ per year and 710,331 tons CO ₂ over the lifetime of the project
Date achieved	10/05/2004	06/25/2011		11/30/2011
Comments (incl. % achievement)	While this GEO indicator was stated in the PAD, it was never separately measured. Arguably, there is an overlap with the output indicator A1 below.			

(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	Increased gross investment in energy efficiency in Tunisian industry corresponding to US\$ 25 million for the five-year implementation period of the project			
Value (Quantitative or Qualitative)	No significant investments at the time.	US\$ 25 million equivalent is invested over the five-year implementation period	-	US\$ 26.9 million over the implementation period of the project
Date achieved	10/05/2004	06/25/2011		11/30/2011
Comments (incl. % achievement)	A total of TND 34.1 million have been invested in energy efficiency as a result of the GEF program over the lifetime of the project. This represents US\$ 26.9 million of investments using the exchange rate applicable at the time of the Project's approval			
Indicator 2:	Estimated greenhouse gas emission reductions as resulting from energy efficiency investment. Expected reduction of 127,284 tons of CO₂ annually and 636,422 tons over the project lifetime			
Value (Quantitative or Qualitative)	0 (no investments made)	127,284 tons CO ₂ per year and 636,422 tons CO ₂ over the lifetime of the project	-	101,475 tons CO ₂ per year and 710,331 tons CO ₂ over the lifetime of the project
Date achieved	10/05/2004	06/25/2011		11/30/2011
Comments (incl. % achievement)	The cumulative target corresponds to the sum of CO ₂ emission reductions of all sub-projects. The annual target represents the cumulative value divided by the number of years of the project. Target partially achieved (80% of achieved)			
Indicator 3 :	Quantified energy savings of at least 10 ktoe per year, but on average expected at 33 ktoe per year			
Value (Quantitative or Qualitative)	0	Quantified energy savings of at least 10 ktoe/year, with expected average annual energy savings of 33 ktoe/year	-	Quantified energy savings of 31 ktoe/year, with expected annual energy savings of 51 ktoe/year
Date achieved	10/05/2004	06/25/2011		11/30/2011
Comments (incl. % achievement)	The quantified energy savings correspond to the total actual annual energy savings. The expected annual energy savings target, instead, corresponds to the estimated energy savings as approved in the CPs. Target largely achieved (310 % of achievement)			
Indicator 4	Number of projects generated and reaching financial closure –a minimum of 125 demonstration investments envisaged			
Value (Quantitative or Qualitative)	0	At least 125 projects	-	116 projects have been approved and 81 have reached financial closure

Date achieved	10/05/2004	06/25/2011		11/30/2011
Comments (incl. % achievement)	The target has been partially achieved (65 % of achievement).			
Indicator 5	At least 3 ESCOs are operational			
Value (Quantitative or Qualitative)	0	Three ESCOs are operational	-	Ten ESCOs were licensed at ANME, of which four were fully operational during the project, generating 30 contracts
Date achieved	10/05/2004	06/25/2011		11/30/2011
Comments (incl. % achievement)	The target has been achieved (133% of achievement).			
Indicator 6	Commitment of at least 90 percent of the Partial Guarantee Fund			
Value (Quantitative or Qualitative)	0	At least 90% has been committed	-	100%
Date achieved	10/05/2004	06/25/2011		11/30/2011
Comments (incl. % achievement)	The target has been achieved (111% of achievement).			
Indicator 7	At least 30 companies have ESCO-mediated projects			
Value (Quantitative or Qualitative)	0	At least 30 companies with ESCO-mediated projects	-	30 contracts signed with industrial companies as a result of ESCO mediation
Date achieved	10/05/2004	06/25/2011		11/30/2011
Comments (incl. % achievement)	The target has been achieved (100% of achievement).			
Indicator 8	A minimum of 20 percent of energy efficiency projects in the industrial sector use the Partial Guarantee Facility			
Value (Quantitative or Qualitative)	0	At least 20% of energy efficiency projects in the industrial sector are using the Partial Guarantee Facility	-	37% (30 CPEs signed /81 CPs approved)
Date achieved	10/05/2004	06/25/2011		11/30/2011
Comments (incl. % achievement)	The target has been achieved (185 % of achievement).			
Indicator 9	Adoption of energy efficiency program planning in overall MOIE and/or BMN and/or ANER planning			
Value (Quantitative or Qualitative)	ANER has an incipient energy efficiency program	ANME (ex-ANER) has adopted energy efficiency program planning	-	ANME (ex-ANER) has adopted energy efficiency program planning

Date achieved	10/05/2004	06/25/2011		11/30/2011
Comments (incl. % achievement)	A National Program of Energy Efficiency has been developed and a dedicated Energy Efficiency Fund, the FNME, has been put in place. The target has been achieved (100% of achievement).			
Indicator 10	At least two Technical Centers having a monitoring and verification procedure for energy efficiency investments			
Value (Quantitative or Qualitative)	0	At least two technical centers develop a monitoring and verification procedure for energy efficiency investments	-	The technical center for construction materials, ceramics and glass and the technical center for mechanical and electric industries have been retained by the PIU to monitor the Energy efficiency contracts signed.
Date achieved	10/05/2004	06/25/2011		11/30/2011
Comments (incl. % achievement)	These 2 technical centers were given a consultant contract to monitor the appropriate implementation of energy efficiency investments for a period of time and did not develop a monitoring and verification procedure.			
Indicator 11	Levels of co-financing for ESCOs and industry by commercial banks exceed 5 percent of all energy efficiency investments under the project			
Value (Quantitative or Qualitative)	0	Superior to 5% of all energy efficiency investment under the project	-	42%
Date achieved	10/05/2004	06/25/2011		11/30/2011
Comments (incl. % achievement)	This indicator was not monitored adequately. This indicator aimed to finance 5 percent of all the energy efficiency investments under the project without any collateral" 9PAD, p. 98).			

Revised Global Environment Objectives (as approved by original approving authority) and Key Indicators and reasons/justifications

Not applicable.

G. Ratings of Project Performance in ISRs

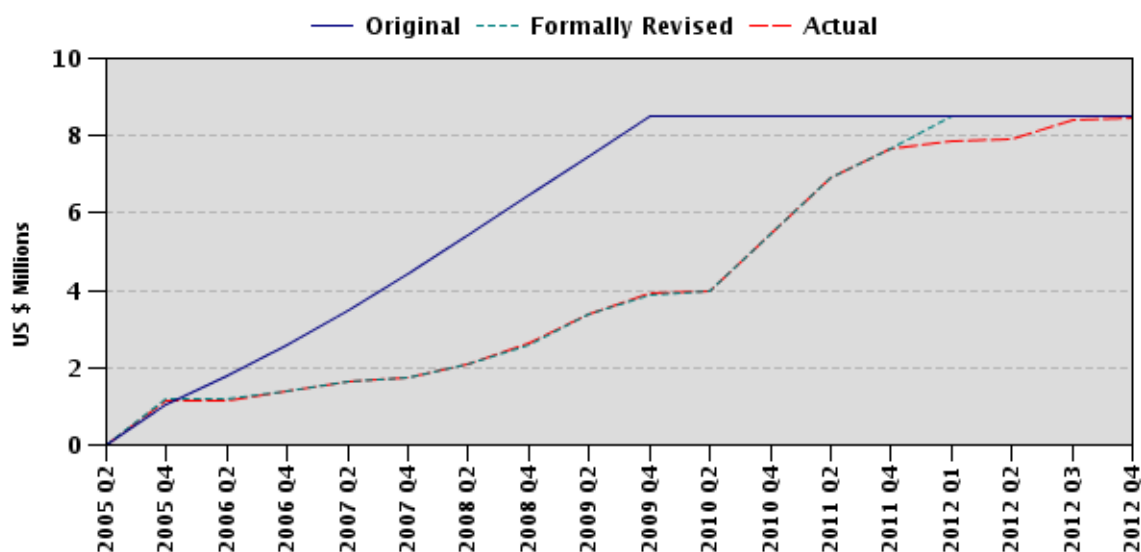
No.	Date ISR Archived	GEO	IP	Actual Disbursements (USD millions)
1	12/20/2004	Satisfactory	Satisfactory	0.00
2	02/16/2005	Satisfactory	Satisfactory	0.00
3	05/17/2005	Satisfactory	Satisfactory	1.10
4	12/01/2005	Satisfactory	Satisfactory	1.16
5	04/28/2006	Satisfactory	Satisfactory	1.23
6	10/26/2006	Satisfactory	Satisfactory	1.64
7	05/24/2007	Moderately Satisfactory	Moderately Satisfactory	1.68

8	11/27/2007	Moderately Satisfactory	Moderately Satisfactory	1.96
9	03/06/2008	Moderately Satisfactory	Moderately Satisfactory	2.10
10	09/05/2008	Moderately Satisfactory	Moderately Satisfactory	2.64
11	12/19/2008	Satisfactory	Satisfactory	3.39
12	06/30/2009	Satisfactory	Moderately Satisfactory	3.93
13	12/29/2009	Satisfactory	Moderately Satisfactory	3.99
14	05/05/2010	Satisfactory	Moderately Satisfactory	5.29
15	12/21/2010	Satisfactory	Moderately Satisfactory	6.77
16	06/25/2011	Satisfactory	Moderately Satisfactory	7.69
17	12/21/2011	Moderately Satisfactory	Moderately Satisfactory	7.94
18	04/02/2012			8.47

H. Restructuring (if any)

Not Applicable.

I. Disbursement Profile



1. Project Context, Global Environment Objectives and Design

1.1 Context at Appraisal

1. The early 2000s were a turning point for Tunisia's economy. The country had become a net importer of energy due to the depletion of its oil reserves and a fast-growing domestic demand. Energy intensity was with almost 0.4 toe/US\$1,000 of GDP significantly higher than European countries or some of its neighbors.¹ Tunisia was also more and more under pressure to improving the competitiveness of its export industries against the background of increasingly lower cost production in Asia. Reinforcing energy efficiency performance in Tunisia's industrial sector seemed key to changing this trend as the sector used 36% of final energy. Reduced energy use in the industrial sector would enable reaping a double dividend: (i) reduced cost of production, thus rendering the industrial sector more competitive; and (ii) enhanced environmental performance of the sector mainly by mitigating climate change.

2. In May 2001, the Government of Tunisia (GoT) adopted an aggressive strategy including twenty presidential decisions aimed at enhancing energy efficiency. To put these activities into action, supplementary institutional reform was pursued: the handing down of the main responsibility for energy efficiency measures from Tunisia's energy efficiency agency, the "Agence Nationale pour la Maîtrise de l'Energie" (ANME) to the Ministry of Industry in the late nineties had not led to sizeable results in energy use patterns. In 1996 Tunisia had instituted a competitiveness enhancement program for its domestic industries, which was based at the Ministry of Industry, the "Programme de Mise-à-Niveau" (PMN). The program did not prove effective in supporting the development of energy efficiency projects in the industrial sector, arguably because the Ministry of Industry did not dispose of in-house technical capacity to guide companies in their investments pertaining to energy efficiency. Meanwhile ANME continued to provide the industry with mandatory energy audits.² While the energy audits indicated significant energy saving potentials, these were not translated into actual investments as ANME lacked the financial backing to assist companies in undertaking these.

3. Following the reforms in 2001, the responsibility for energy efficiency in the industrial sector was transferred back to ANME, as ANME was again placed under the authority of the Ministry of Industry and Energy in 2003. This opened a window of opportunity for ANME to also directly provide financial subsidies to industry. At the same time, a successful GEF financed program to encourage solar water heaters (P005589), that was financed through the World Bank, was about to conclude. The GoT and the World Bank began to exchange on how a follow-up GEF-financed program could support energy efficiency in Tunisia's energy sector. The development of the program drew from recent lessons of experience elsewhere, including from Canada, Hungary, Poland and Romania.

¹ Morocco's energy intensity of GDP was 0.29 toe/US\$1,000, Germany's was 0.18 toe/US\$1,000, and France's was 0.19 toe/US\$1,000.

² In the industrial sector, 320 large industries, out of 6,000, consuming more than 75% of the industrial sector energy consumption are mandated by law to conduct regular energy audits.

4. The result of these discussions was the present project, which aimed at supporting the interrelated goals of enhancing Tunisia’s competitiveness and combating climate change.

1.2 Original Global Environment Objectives (GEO) and Key Indicators

5. The Project Appraisal Document (PAD) states that the project development objective (PDO) was to “overcome barriers to the development of a sustainable market for energy efficiency products. In addition to the removal of institutional and capacity-related barriers, the project aim[ed] to establish energy service companies (ESCOs) as the main vehicle to guarantee a sustainable energy efficiency market.” However, the PDO as expressed in Schedule 2 of the Grant Agreement for the project is different and states that “The objective of the Project is to facilitate the development of a sustainable market of energy sub-projects through: (i) the removal of institutional and capacity-related barriers; and (ii) the establishment of energy service companies.”

6. The project’s global environmental objective (GEO) as expressed in the PAD was “to achieve a deeper penetration of sustainable commercial energy efficiency investment activities in Tunisia’s industrial sector, by removing barriers and lowering transaction costs.”

7. While it is common for the PDO and GEO to be different, especially if the GEO refers to mitigation of greenhouse gas emissions (which is not the case here), the PDOs in both PAD and the Grant Agreement should always be the same. The PDOs of both PAD and Grant Agreement do furthermore not refer to Tunisia’s industrial sector alone and therefore could be interpreted as meaning to cover all energy-using sectors in Tunisia. As such, the GEO appears to be the most precise of the objectives.

8. In addition, the PDO and GEO include side sentences explaining how the objectives are to be met, including a reference to “by” [means of]. These additives should not be part of an objective as they refer to the means by which the objectives are to be met. The matter is further complicated as these “by” [means of] statements are not picked up as part of the outcome indicators, leaving considerable uncertainty about how they are to be measured.

9. The “Outcome/Impact” indicators presented in the PAD against which the Government of Tunisia and the World Bank agreed to measure the project performance included:

1. Establishment of a sustainable energy efficiency market for Tunisia’s industry;
2. Long-run greenhouse gas emissions reductions; and
3. Increased gross investment in energy efficiency in Tunisia’s industry of US\$25 million for the five-year implementation period of the project.

10. It should be noted that the main body of the PAD only refers to outcome/impact indicators 1 and 3, while in Annex 1 of the PAD 1 and 2 are being referred to as GEO indicators, and 3 is a Outcome/Impact indicator. Output indicators, which in mid-2012 are commonly referred to as Intermediate Outcome Indicators, by component and as stated in the results framework of the PAD, are presented in Annex 2.

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

11. The objective and key indicators were not revised.

1.4 Main Beneficiaries

12. The project targeted private Tunisian companies in the industrial sector that spend more than US\$150,000 per year on energy costs.

1.5 Original Components

13. The project was designed to provide incentives to energy investments in Tunisia's industrial sector by (i) providing additional subsidies; (ii) by guaranteeing energy efficiency investments to ensure their bankability; and (iii) by providing technical assistance to improve the understanding of all stakeholders (companies, financial institutions, government ministries and agencies, and technical centers) on how such investments could be made.

Component 1 – GEF Pilot Phase for Energy Efficiency (US\$ 2.5 million)

14. This component aimed at developing energy efficiency projects in the industrial sector by administering an output-based subsidy, which would be paid once energy efficiency measures were implemented. Before the GEF project started off, the Ministry of Industry already administered a subsidy for energy efficiency in the amount of 13% of the underlying investment through its competitiveness fund, the "Fonds de Développement de la Compétitivité Industrielle" (FODEC). Within the Ministry of Industry, this subsidy was administered by a department in charge of enhancing competitiveness of Tunisia's industries, the "Bureau de Mise-à-Niveau (BMN). By 2004, FODEC had received 1,202 applications from industrial companies containing measures to improve their competitiveness, but none of them included energy efficiency projects. This was initially surprising to stakeholders, as FODEC funding had been successful in attracting other types of competitiveness-enhancement projects. The overall assessment was that the BMN at the Ministry of Industry did not have the required technical know-how to support decisions by companies in energy efficiency investments.

15. In order to involve the one institution in Tunisia with the required know-how in energy efficiency investments, the GEF project proposed an additional 10% subsidy to be administered by Tunisia's Energy Efficiency Agency, the Agence Nationale pour la Maîtrise de l'Energie (ANME), bringing the total financial incentive to 23%. The level of the additional incentive was derived from a market analysis³ and targeted efficiency measures for production processes and systems management such as condensate recovery, pipe insulation, and boiler optimization. The subsidy of ANME under this component was implemented by a new Project Implementation Unit (PIU), staffed with ANME employees and located at ANME's premises, in close coordination with the BMN.

³ A higher subsidy level, e.g. 15%, would have brought the total subsidy for energy efficiency projects closer to 30%, i.e. FODEC + PEEL. This level of subsidy was considered too high considering the solar water heater experience, which disbursed a similar level of subsidy one year ahead of schedule (World Bank, Project Appraisal Document (PAD), Report N° 28045-TUN, page 9)

16. As part of the administration process for the eligibility of the 10% subsidy, companies had to sign a framework contract, the "contrat-programme" (CP)⁴ with ANME to benefit from the GEF project's subsidy and the 70% subsidy for energy audits that was also administered by ANME.

17. A framework program (CP) contained an action plan over three years to implement an energy efficiency project. The selected company was given the choice to implement the project alone or with the assistance of an ESCO. In the latter case, the industrial company and the ESCO had to sign a performance contract, the "contrat de performance énergétique" (CPE), in which the ESCO guaranteed the energy savings. A CPE is a turnkey contract providing all the services required to design and implement an energy efficiency project at the client's facility. The idea was that if the guaranteed level of savings was not realized, the ESCO would have to pay for the difference. This risk to ESCOs was mitigated during project implementation as ESCOs revenue structure had a large fixed fee and only a small variable fee subject to actual energy savings.

Component 2 – GEF Partial Guarantee Fund (US\$4 million)

18. This component aimed at promoting the use of energy service companies (ESCOs) by giving them access to guarantees. For any given energy efficiency investment project, the ESCO would receive a 75% guarantee for their bank loans (up to a maximum of US\$200,000). These guarantees were administered through a guarantee fund of US\$4 million hosted by the "Société Tunisienne de Garantie" (SOTUGAR).⁵ The ESCOs were expected to pre-finance the entire project, including the investment costs. This is also otherwise being referred to as the "full-service ESCO model" in Tunisia.

19. During project negotiations the representatives of the Government of Tunisia requested that the guarantee facility also be directly accessible to the eligible companies themselves and the commercial banks. The Government felt that in the context of Tunisia, these entities would be better placed in making the investments for the physical equipment than the ESCOs, which at that point in time did not yet exist. While this was reflected in the grant agreement, it was not reflected in the PAD, introducing thus another inconsistency between the Grant Agreement and the PAD.

Component 3 – GEF Technical Assistance (US\$ 2 million)

20. This component aimed at reinforcing the technical capacity of key stakeholders to encourage energy efficiency investments. Component 3 was intended to support awareness campaigns and training activities for industries, while focusing on improving

⁴ First, industrial companies submitted their energy efficiency project proposals to ANME for review. A technical consultative commission was given the task of evaluating the proposals according to the eligibility criteria of the PEEI and other subsidies managed by ANME. PIU staff had a key role in the technical consultative commission. ANME's Department of Juridical Affairs prepared then a draft CP based on the assessment of the technical consultative commission. After approval by the Ministry of Industry, the CP was signed by ANME and the industrial company. Subsidies were only disbursed after implementation of energy efficiency projects.

⁵ In English, Tunisian Guarantee Company. All private commercial banks are members of SOTUGAR, which facilitated their unique access to them.

the capacity of existing organizations that could become ESCOs, e.g. technical centers and engineering firms. It also financed the establishment of a PIU.

1.6 Revised Components

21. While there was no formal restructuring of the project components, at two points in time significant changes were affected to the overall program: (i) in 2005 the Government of Tunisia changed the FODEC, implicitly affecting Component 1; and (ii) in 2007 at mid-term review the financial intermediation mechanisms of Component 1 and 2 were fine-tuned to respond to the lack of ESCO participation in the actual energy efficiency investments.

22. One of the changes affected during the mid-term review would have required an amendment to the Grant Agreement. However, no such amendment was prepared. The operational manual of the project was also not updated following the above changes.

Component 1 – GEF Pilot Phase for Energy Efficiency

23. *Changes to the FODEC (2005):* The Government of Tunisia realized that it was preferable for subsidies for energy efficiency to be administered by the ANME as the body responsible for energy efficiency rather than the Ministry of Industry, because ANME had the technical energy efficiency know-how. It was therefore decided to replace the 13% FODEC subsidy by a new and augmented 20% subsidy to be administered by a newly created national energy efficiency fund, the Fonds National pour la Maîtrise de l’Energie (FNME), based at the ANME. As previously, ESCOs did not have direct access to this subsidy. This change consolidated ANME as the one-stop shop for energy efficiency projects in the industrial sector. Following the consolidation of the two subsidy schemes within ANME, the approval processes were fully coordinated. For example, the project implementation unit (PIU) for the GEF project at ANME participated in the approval process of the FNME investment subsidy.

24. *Changes at mid-term review (2007):* To facilitate the participation of those ESCOs in the program that would take on the actual investment risk (as opposed to playing only an advisory role), two modifications were introduced: (i) the GEF subsidy available to these types of full service ESCOs was increased from 10% to 20%; and (ii) a dedicated credit line for ESCOs, which offered an interest free loan for 15% of the investment costs was introduced. Measure (i) should have resulted in an amendment of the Grant Agreement (as per Schedule 2, Part A2). None of these measures were actually used. Measure (ii), which was never used, should have been subject to review of compliance with OP.8.30.

Component 2 – GEF Partial Guarantee Fund

25. *Changes at mid-term review (2007):* The three changes to Component 2 were as follows: (i) the guarantee period was extended from 3 to 5 years to bring it in line with Tunisian banking practices; (ii) the cap on the investments that could be guaranteed was increased from US\$200,000 to US\$400,000 reflecting the larger size of potential investment projects as anticipated at project appraisal; and (iii) an additional guarantee was introduced to cover any payments due to the ESCOs from industry. (iii) was again

indirectly trying to support direct investments by ESCOs in equipment, by making them implicitly more credit-worthy.

Despite these additional measures, ESCOs could not obtain credit for financing energy efficiency investments from commercial banks, because they were unable to address the fundamental barrier for ESCOs to obtain commercial bank loans for these investments. This was their small balance sheet with respect to the investments required. Therefore, the "full-service ESCO model" did not emerge.⁶

26. **Component 3 - GEF Technical Assistance - none**

1.7 Other significant changes

27. **Closing Date Extensions:** The closing date of the project was extended three times. The original closing date was December 31, 2009. A first extension was granted until December 31, 2010, a second extension until September 30, 2011 and a third extension until November 30, 2011. The main reason behind these changes was the slow disbursement of the project during the first years of implementation. However, disbursements accelerated in 2010 and 2011 because, due to the output-based nature of the subsidy, Component 1 was slow to disburse.

2. Key Factors Affecting Implementation and Outcomes

2.1 Project Preparation, Design and Quality at Entry

28. The choice of project scope was well aligned with Tunisia's goal in relation to energy efficiency, which was to reduce total energy consumption by 1.25 million toe over the period 2005-2008.⁷ The industrial sector was the appropriate sector to be targeted due to its high potential for energy savings.

29. The Project Appraisal Document (PAD)⁸ adequately identified the main obstacles for increasing energy efficiency investments in Tunisia's industrial sector, namely the lack of: (i) a consistent institutional framework, (ii) available commercial financing, (iii) sufficient information on energy efficiency for industrial companies, and (iv) adequate technical expertise in the country. However, the project design itself was complex and focused on establishing ESCOs as the main drivers for energy efficiency investments without arguably directly targeting all of the identified barriers.

30. *Complex project design:* Rather than focusing on a single new financial intermediation instrument such as for example the successful GEF Romania Energy Efficiency project (P068062), the project proposed two financial intermediation mechanisms through components 1 and 2, which applied differently to different stakeholders (industry and ESCOs), and which linked different institutions (ANME, Ministry of Industry). Given that the notion of comprehensive energy efficiency

⁶ Despite the fact that the PAD did not consider a guarantee for industrial companies, the Trust Fund Grant Agreement dated December 13 2004 includes this possibility.

⁷ Tunisia's Energy Management Triennial Program 2005-2008

⁸ World Bank, Project Appraisal Document, Report No: 28045-TUN, October 5 2004.

investments in the industrial sector was new to Tunisia, the level of complexity of project design must have been confusing for potential beneficiaries. Moreover, no formal mechanism was established as part of the project design to regularly consult with stakeholders. This rendered the comprehension of the project even more difficult.

31. *Use of “full service” ESCOs:* ESCOs were supposed to engage in investing in energy efficiency measures as a major vehicle for meeting the project’s development objective (PDO), corresponding to the notion of “full service ESCOs.” The project design was based on a feasibility study undertaken by a Canadian consulting firm during project preparation. This consulting firm owned the only existing ESCO in Tunisia at appraisal and therefore arguably had an inherent potential conflict of interest of recommending the use of ESCOs as a major vehicle for project implementation. Interestingly, this ESCO ceased its activities shortly after the GEF project started up, as a result of high transaction costs and difficulties in developing a strong pipeline of sufficiently large energy efficiency projects in Tunisia.

32. Clearly, the complexity of setting up a suitable framework for the development of the “full-service ESCO” model⁹ was underestimated. Despite Tunisia’s Presidential Decision No. 8 of May 3 2001, which mandated the development of an ESCO market, and the Ministerial Order of December 4, 2004 regulating ESCO activities, there was no legislation regulating the transfer of equipment ownership from ESCOs to industrial companies and none was foreseen as part of project preparation. This was, however, key for the proposed ESCO model under the GEF project. Furthermore, the project design could have benefited from a more in-depth analysis of previous experiences in implementing similar projects. In light of the past experience as reviewed by the World Bank (2004)¹⁰ the focus on the “full-service ESCO” model would have arguably not sufficiently been justified.

33. **Assessment of risks:** The PAD identified most of the critical risks. However, it underestimated the behavior and business practices of some key stakeholders, e.g. local banks and industrial companies. Also, the PAD did not anticipate some of the important risks that did materialize such as the lack of initial confidence from industrial companies in ESCOs due the fear of intrusion of ESCOs into their core business. The acceptance of the use of ESCOs required a trust-building process between Tunisian industrial companies and ESCOs engineering professionals, who had to get involved in the industry’s highly-sensitive production processes. ESCOs, with PIU support, therefore had the challenge of demonstrating the value of their new services to industrial companies

⁹ The model described in the PAD corresponds to the “full-service ESCO” model. However, the ESCOs that were developed by the project followed another business model with lower risks. A “guaranteed savings” model approach, where the industrial company provided the financing for the energy efficiency project was prioritized. In this model, the ESCO generally guarantees that energy savings are sufficient to cover debt service payments. In Tunisia, though, ESCOs guaranteed energy savings were disconnected from the industrial company's debt service payments. Hence, ESCOs worked as technical consultants with performance-based payments.

¹⁰ A review of GEF projects published at the time of appraisal states for example that “ESCOs have been widely accepted by the Bank as an attractive business model for bridging the gap between end-users and financing [...].Despite these promising attributes, creating strong and credible ESCOs, not to mention full ESCO markets, has proven very challenging. Client countries often lack the legal and financial infrastructure to adapt to and support such business models.” World Bank, *GEF Energy Efficiency Portfolio Review and Practitioners’ Handbook*, January 21 2004

and banks.¹¹ This process inevitably had to take time and was partially responsible for the disbursement delays during implementation.

2.2 Implementation

34. The challenges in implementing the GEF program rested with (i) getting the program sufficiently quickly underway by adding energy efficiency sub-projects; and (ii) making the ESCO model work.

35. *Creating and implementing the energy efficiency sub-project pipeline:* while new energy efficiency sub-projects were continuously added to the GEF program, the project's implementation was characterized by slow disbursements during its original five years (Dec. 2004-Dec 2009). Disbursements of Component 1 ("Pilot phase") were only at 22% by mid-2009, while 55% were committed. A significant acceleration of disbursements took place in the last two supplementary years (Dec 2009-Nov 2011), following three extensions. This disbursement pattern was due to the initial lead time necessary for implementing the energy efficiency sub-projects¹² and for allowing stakeholders to get more familiar with the ESCO concept.

36. Moreover, there was a lag of between two to three years from framework program (CP) approval at the level of ANME until the effective disbursement of the GEF subsidy under component 1 happened. As a reminder, the GEF subsidy was only disbursed once the energy efficiency equipment was put in place.

37. The main reason for the acceleration of the disbursements in 2010 and 2011 was the successful implementation of an action plan by ANME in 2009 that provided support to accelerate disbursements of Component 1. This plan consisted mostly in using available funds under Component 3 ("Technical Assistance") to assist participating industrial companies in implementing their energy conservation plans more rapidly and in preparing their application to collect subsidies under Component 1. This plan was successfully implemented through 2010 and 2011, even during the Tunisian Revolution which only caused a limited slowdown of the project.

38. *Making the ESCO model work:* despite all efforts, including those during the mid-term review described above, the "full-service ESCO" model never worked. Instead, ANME focused on enlisting engineering consulting companies to provide the necessary "know-how" for defining the energy efficiency sub-project in industry. ANME was able to accredit 10 consulting companies as ESCOs whose business model was based on providing industries with technical assistance in return for performance-based payments. Of these 10, 4 were able to sign performance-based contracts.

¹¹ This has been confirmed through selected interviews with stakeholders in February and March 2012.

¹² Several barriers had to be overcome, e.g. industrial companies' lack of information on energy efficiency, industrial companies' preference to replace their outdated manufacturing process rather than invest in energy efficiency, lack of project financing, etc.

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

39. **M&E design:** An appropriate Monitoring & Evaluation framework was designed as described in Annex 14 of the PAD.¹³ The framework described the functions required to collect sub-project level indicators and aggregate them into project-level indicators to track progress towards outcome indicators.

40. **M&E implementation:** The PIU at ANME used its own engineers to undertake M&E, not a consultant as described in the PAD for Monitoring & Evaluation. The PIU only hired a consultant to perform an evaluation of the performance of a sample of twenty-six framework contracts with industry (CPs). The Monitoring & Evaluation framework was implemented satisfactorily by the PIU during the project. The PIU effectively verified each energy efficiency investment¹⁴ through on-site visits to companies before releasing the claimed project subsidy. However, the PIU did not use the International Measurement and Verification Protocol¹⁵ for verifying the energy savings. The energy savings data are therefore not verified in accordance with such a protocol but can be considered reliable because of the high technical expertise of ESCOs and PIU engineers as well as the PIU's proactive monitoring of each energy efficiency sub-project benefiting from the project's subsidies. The data on CO₂ emissions reductions was calculated using the following the formula: $\sum (\text{energy savings by fuel type}) \times (\text{carbon content of fuel (tCO}_2/\text{toe)})$ ¹⁶.

41. **M&E utilization:** During project implementation, available information was used appropriately to track progress towards achievement of project's objectives. Available data was used for drafting a high-quality mid-term review report,¹⁷ which made several recommendations to improve the project performance. Most of these were adopted by the PIU at ANME. Available information from sub-projects was also correctly used to report data for the project's performance indicators monitoring in the twelve Aide Memoires and in the seventeen implementation status and results report filed by the Bank's team from December 2004 until December 2011.

¹³ See Annex 14:

http://imagebank.worldbank.org/servlet/WDSContentServer/IW3P/IB/2004/10/19/000012009_20041019102136/Rendered/PDF/28045.pdf

¹⁴ The energy efficiency actions identified in Tunisian industry are divided in four types: a) adoption of more efficient heating equipment, i.e. boilers, furnaces, heat exchangers, b) recovery and use of gas, heat and residual pressure, c) installation of high performance mechanical and electrical equipment, i.e. motors, pumps, ventilation and heating equipment, d) optimization of production systems to reduce energy consumptions

¹⁵ The PIU held several workshops with stakeholders to discuss this issue. Annex 14 of the PAD stated that "savings would be recorded in accordance with the standards set by the International Measurement and Verification Protocol". The PIU plans to develop the measurement protocol in future projects with the participation of key stakeholders.

¹⁶ Formula used by Project Implementation Unit. Conversion factor source: Enerdata.

¹⁷ ALCOR, *Evaluation à mi-parcours - Projet d'efficacité énergétique dans l'industrie - PEEI*, Novembre 2007.

2.4 Safeguard and Fiduciary Compliance

42. There were no deviations or waivers from the Bank safeguards and fiduciary policies and procedures during project implementation. ANME regularly prepared the required reports.

43. **Environment:** The environmental category of the project at the time of appraisal was C. Thus, the project did not require an environmental and social assessment. The PAD nevertheless mentioned that some non-significant impacts could be expected, such as temporary dust and noise emissions due to replacement of materials and equipments during construction, as well as disposal and de-contamination issues. The PIU monitored energy efficiency sub-projects after construction only, but did not report any significant impacts in this regard.

44. **Financial Management:** The financial management system in place was satisfactory and in accordance with Bank procedures. The action plan for financial management as reflected in the Operations Manual (2004) was implemented satisfactorily by the PIU/ANME and SOTUGAR by January 2005.¹⁸ By then, the PIU was staffed with one financial management specialist. The accounting software was adequate. For example, in 2005 ANME purchased Oracle 9i to ensure high accounting standards were maintained. The PIU/ANME also produced the regular financial monitoring reports required by the Bank for the PEEI project in a timely manner.¹⁹

45. **Disbursement:** The estimated project cost at appraisal was US\$ 31.8 (US\$ 8.5 million from the GEF). The actual project cost totaled US\$ 36.1, of which US\$8.4 was from the GEF (*see Table 3, Annex 3*). The total disbursement for the project as of April 9 2012 was 99.7% of the GEF grant (0.3% of undisbursed funds under the technical assistance component).

46. **Procurement:** The PIU at ANME was staffed with one procurement specialist knowledgeable with Bank's procedures. After each supervision mission, the procurement plan was updated by the PIU. The performance of the PIU on procurement was satisfactory during project implementation.²⁰

2.5 Post-completion Operation/Next Phase

47. The project was conceived to provide support to the Government's efforts to reduce energy intensity, contribute to climate change mitigation and increase the competitiveness of the industrial sector. The project mobilized around 40% of the total potential of investments in energy efficiency in the industrial sector estimated in 2002. Hence, the project was able to realize a significant share of Tunisia's market potential. The ANME and the PIU had succeeded in signing 566 framework contracts (CPs)²¹ with

¹⁹ Aide Mémoire, *Mission de supervision du Projet d'Efficacité Energétique dans le Secteur Industriel*, 19-27 janvier 2005.

²⁰ Aide Mémoire, *Mission de supervision du Projet d'Efficacité Energétique dans le Secteur Industriel*, 4-7 décembre 2007

²¹ Contract-Programs (CPs) had increased from 550 by November 2011 to 566 by March 2012. The signature of a CP is a condition for industrial companies for accessing to EE subsidies from the PEEI

companies (up from 0 CPs in existence in 2003) and in attracting around US\$164 million²² worth of investments in energy efficiency projects from 2005 to April 2011. 70 percent of the signed framework contracts were realized. The project contributed to about one-fifth of these contract-programs (116 contract-programs signed) and around one-fourth of these investments through Components 1 and 2 (US\$ 36.1 million). The technical assistance (Component 3) was critical in building the necessary local capacity and providing support to industrial companies for signing the remaining framework programs (CP).

48. Following project closing, ANME has a pipeline of 240 energy efficiency projects of which 40 have signed a framework contract (CP). These projects will benefit from the FNME subsidy. This suggests that despite the decrease in overall subsidy, there remains a strong interest by industry in undertaking energy efficiency investments.

49. The GEF Partial Guarantee Fund (Component 2) could not cover ESCOs loans as planned due to their impossibility of obtaining credit from local commercial banks. Instead, the guarantee was used to cover the loans from industrial companies for implementing energy efficiency projects. The use of an ESCO was a condition for benefiting of the guarantee. Therefore, the guarantee fund succeeded in incentivizing thirty industrial companies to use the services of four ESCO companies accredited at the ANME.²³ The loans were not backed by the energy savings of the project, but by the assets of the industrial company. Commercial banks still requested substantial collateral from industrial companies, but the guarantee provided them with a supplementary assurance.

50. *Key issues for the development and sustainability of energy efficiency projects* following the closure of the project include the following:

- The future of the *financial intermediation mechanisms* to be used needs to be reviewed to enable a sustainable pipeline of energy efficiency projects in the industrial sector going forward. A priori, the 10% GEF subsidy is depleted, and going forward the 20% subsidy of the FNME is presumed to be sufficient to generate interest in more projects. The strength of the existing project pipeline at ANME, which is at 200 projects, would suggest that the reduction in subsidy has not had a negative impact on the development of future energy efficiency investments in the industrial sector.
- The future use of the *guarantee fund* is still to be decided. Commonly a decision on the use of the guarantee funds should have been made with concurrence by the Bank before project closure, especially as the existing funds could be used to help sustain the results obtained under the project. It is estimated that six loans from industrial companies benefiting from the guarantee under the Partial Guarantee Fund to implement energy efficiency sub-projects through ESCOs have been

project or the government (FNME), i.e. 70% subsidy on non-tangible investments with ceiling at 70,000 TND and 20% of tangible investments with ceiling at 250,000 TND.

²² TD 208 million (exchange rate: TD1 = US\$ 0.79). Source: World Bank, Aide mémoire, May 2011.

²³ Ten companies, mostly consulting companies, were previously accredited by the ANME as ESCOs as defined by Tunisia law. However, only four have been active in the market and signed energy performance contracts with industrial companies: CRA2E, Partners, 3E and BCE.

repaid at project closing. The total amount covered by the guarantee of the six loans has been around US\$ 653,327. Put differently, it is estimated that the Partial Guarantee Fund had around US\$ 653,327 of uncommitted funds at closing. It is unclear why no provisions for the future of the fund were finalized before project closing.

- A measurement and verification protocol was developed by project closing, which ANME plans to use in future energy efficiency projects. This should enhance the confidence between industry, ESCOs and commercial banks. Moreover, ANME's management intends to transform its "energy efficiency in the industrial sector" unit, including the PIU, into a higher-level direction in its organization chart. In conclusion, the outcomes of the PEEI project represent a first step in the right direction for the development of energy efficiency projects in Tunisia, but a strategic plan for sustaining its results is needed.

3. Assessment of Outcomes

3.1 Relevance of Objectives, Design and Implementation

51. Relevance is rated as **substantial** because: (i) the objective of the GEF project continues to be highly relevant to the country's current development priorities and the Country Partnership Strategy (CPS)²⁴; and (ii) the design and implementation could have been improved by simplifying the design of the project and focusing less on "full service" ESCOs. The project supported activities were relevant to two of the three pillars of the CPS 2010-2013, i.e. (i) employment, growth and competitiveness, and (ii) sustainable development and climate change. The project allowed participating companies to improve their competitiveness by reducing their energy bill by 20-30%.²⁵ The project also contributed to the CPS objective of promoting energy efficiency and renewable energy²⁶ by increasing local investments in energy efficiency by US\$ 27.6 million (from a baseline close to zero) and avoiding 710,333 tons of CO₂ emissions over 2005-2011.

52. The project had a significant impact in improving local technical capacities to undertake energy efficiency projects, especially of ESCOs. However, the project fell short in developing the type of ESCO described in the PAD, i.e. "full service ESCO", which assumes that ESCO finances the energy efficiency project. ESCOs could not develop this function due to their inability to borrow. Tunisian banks did not lend to ESCOs due to their uncertain credit-worthiness, the absence of adequate regulation and their lack of knowledge on EE projects.

53. During mid-term review, several measures were introduced to overcome these barriers and improve ESCO's credit-worthiness. But these measures were ineffective and insufficient to encourage commercial banks to lend to ESCOs. Instead, ESCOs provided technical consulting services to industrial companies, worth 7% of the total investments

²⁴ International Bank for Reconstruction and Development, *Country Partnership Strategy for the Republic of Tunisia for the period FY10-13*, Nov. 23 2009, Report No. 50223-TUN

²⁵ These values are real data reported from two companies interviewed during mission of February 2012.

²⁶ CPS Results Area 4, page 33: International Bank for Reconstruction and Development, *Country Partnership Strategy for the Republic of Tunisia for the period FY10-13*, Nov. 23 2009, Report No. 50223-TUN

of ESCO-mediated projects, i.e. US\$ 32,523²⁷ on average per contract. The four active ESCOs in Tunisia, i.e. CRA2E, Partners, 3E and BCE, succeeded in guaranteeing the energy savings of 30 projects through CPEs. ESCOs performance risk was low due to the fact that only a small part of ESCOs revenues, as established in the CPE, were dependent on the actual energy savings.

3.2 Achievement of Global Environmental Objectives

54. Since 1987, Tunisia's industrial companies have been implementing energy efficiency projects with Government support through framework programs (CPs). From a modest start, the number of energy efficiency projects stalled from 1998 to 2003 for institutional reasons. However, energy efficiency projects increased dramatically since the start of the PEEI project (*see Figure 1, Annex 2*). Considering the country's inactivity in the energy efficiency sector before the project start, the efficacy in achieving the Global Environmental Objectives is rated **Moderately Satisfactory**. From a baseline close to zero, 116 framework programs (CPs) directly linked to the project were approved to benefit from the GEF grant, and a total of 566 framework programs (CPs)²⁸ were approved to benefit from the FNME subsidy, in large because of support from the project.

55. Due to the strong integration of the PIU in ANME's organizational structure, the project's technical assistance (Component 3) contributed also to the adoption process of CPs only eligible to the FNME subsidy and not to the PEEI subsidy (Component 1). Among the 116 CPs that were eligible for PEEI's project subsidy, only 81 effectively implemented energy efficiency measures²⁹.

56. The 10% additional subsidy offered by the PEEI project for physical investments (Component 1) complemented the 20% subsidy of the government's FNME. The PEEI subsidy has been a useful complement of the larger Government's incentive scheme for energy efficiency activities. The leveraging effect of the PEEI subsidy has been 13:1, i.e. for every dollar disbursed under this component 13 dollars have been mobilized from the private sector and Government (*see Table 2, Annex 3*). Moreover, the cost of reducing one ton of CO₂ was US\$ 11.9 (*see Table 4, Annex 3*).

57. The GEF Partial Guarantee Fund (Component 2) has achieved its performance indicators, e.g. at least three ESCOs operational, commitment of at least ninety percent of the funds and at least 30 companies with ESCO-mediated projects, but it has not fulfilled the purpose stated in the PAD.³⁰ ESCOs were paid by industrial companies on a

²⁷ 51,625 Tunisian Dinars on average. Exchange rate TND1 = US\$0.63 as in PAD.

²⁸ 550 CPs were approved by closing date, November 30 2011. By March 2012, this number increased to 566. The contract-programs signed are composed of: 455 contract-programs related to energy-efficiency measures, 106 contract-programs related to substitution to natural gas, and 5 related to co-generation. According to a 70% completion rate, confirmed by the PIU, the number of industrial companies that have implemented projects as signed in their contract-programs is around 396.

²⁹ The difference between 116 contract-programs signed and 81 contract-programs effectively implemented is mainly due financial reasons, e.g. company closing or difficult financial position, encountered by the industrial company since signature of the contract-program.

³⁰ "To support efforts of the ESCOs to arrange for the financing of energy efficiency investments and to enhance the development of ESCOs in Tunisia [...] In order to minimize risk of default, only ESCOs or other intermediaries would be eligible for such guarantees", Project Appraisal Document, Report No:

contractual basis with a large fixed fee and a small variable fee proportional to the achieved energy savings. Industrial companies paid for the physical investments, e.g. equipment and machinery, of their energy efficiency projects (US\$ 575,953³¹ on average). Two thirds of their investments were paid through credits guaranteed by the Partial Guarantee Fund. Despite the guarantee, commercial banks still required traditional collateral to industrial companies. The guarantee only provided a supplementary insurance to commercial banks for providing credit to energy efficiency projects, which were rather new to banks' business portfolio.

58. The Partial Guarantee Fund, therefore, did not act as a catalyst for ESCOs to participate in the financing of energy efficiency investments, but as a double guarantee, on top of the traditional collateral, for industrial companies' loans. The partial guarantee fund reassured commercial banks and incentivized lending to industrial companies using ESCO's consulting services, i.e. from auditing to equipment installation. The guarantee might have slightly reduced the amount of collateral required by risk-averse commercial banks to industrial companies for energy efficiency projects. More importantly, the Partial Guarantee Fund had a positive impact on the licensed ESCOs technical capabilities by encouraging ESCO-mediated projects. Energy audits carried out by local consulting firms before the start of the project were often below international standards of quality.³² But performance contracts (CPEs) signed between ESCOs and industrial companies dramatically improved the quality of the audit reports because it introduced the necessary professional rigor in monitoring the implementation of energy efficiency measures to guarantee energy savings.

59. However, the main driver of energy efficiency investments has been the technical assistance component of the project (Component 3). This component has allowed the PIU to launch the necessary energy efficiency awareness campaigns, support industrial companies throughout the application process of Government subsidies³³ and enhance confidence among operators in the energy efficiency market. The activities financed by this component leveraged parallel initiatives that were critical for market development, e.g. 2005 high energy-consuming industries' "task force".³⁴ The technical assistance also financed a total of 120 days of training for 400 stakeholders, including Technical Centers, ESCOs, SOTUGAR, industries and Banks.

28045-TUN, p.38. The Trust Fund Grant Agreement TF054398-TUN, however, allowed commercial loans of industrial companies for energy efficiency projects to be covered by the guarantee.

³¹ 729,042 Tunisian Dinars on average. Please, note the wide range of investments from 32,800 TD (US\$25,912) to 1,758,000 TD (US\$ 1,388,820).

³² Selected interviews with stakeholders in February and March 2012.

³³ Around 53% of the budget allocated to this component was used for training of local stakeholders (ESCOs, Banks, Technical Centers, SOTUGAR), 17% for training the Project Implementation Unit, 15% for awareness and dissemination, 10% for implementing project procedures, and 5% for IT and vehicle purchases.

³⁴ Following the recommendations of the National Conference on Energy Management (April 2005), the Ministry of Industry, Energy and SMEs created a working group "High energy-consuming industries Task Force" in June 2005 (Decision n°319 of June 3 2005) to implement energy efficiency programs to reduce energy consumption in such industries. The working group was formed by four experts, including M. Néji Amaimia, former PIU Director.

3.3 Efficiency

60. Efficiency is rated as **substantial**. As shown in Annex 3, the project significantly attracted public and private local investment. For every dollar of the GEF grant disbursed from components 1 and 2, US\$ 4.2 were attracted from local sources (*see Table 2, Annex 3*)³⁵. Moreover, project achieved its goals efficiently based on outcome per GEF dollar invested. Thus, the cost of reducing one tone of CO₂ was US\$ 11.9.

3.4 Justification of Overall Outcome Rating

Rating: **Moderately Satisfactory**

61. Due to the close integration of the project in the existing Tunisian institutions and policies, it is not possible to clearly evaluate its impact on the expected outcomes. However, it can be acknowledged that the approval of 566 CPs³⁶ on energy efficiency in the country from 2005-2011 would have been difficult to achieve without Components 1 (“Pilot phase”) and Component 3 (“Technical Assistance”) of the project. The significant pipeline of over 200 energy efficiency projects developed by ANME at project closing³⁷ confirms the sustainability of the project's outcomes despite the lower pipeline of the World Bank-financed line of credit.³⁸ The project provided the necessary elements for scaling-up energy efficiency in the country, but the next steps are uncertain, in particular the future role of ESCOs as stated in the PAD.

62. The Partial Guarantee Fund did not fulfill its intended purpose at appraisal, but incentivized a significant number of industrial companies (30) to use ESCOs for the implementation of their projects. The improvement in ESCOs’ accountability and technical competences was underpinned by the project’s technical assistance component. The transformation of existing local engineering firms into ANME-licensed ESCOs offering a wider array of consulting services with guaranteed performance built the required local technical capacity to develop complex projects in the future, such as co-generation. The development of co-generation, with average investments far larger than energy efficiency projects, is the main future target of ANME. However, several obstacles still remain for further developing a sustainable energy efficiency market in Tunisia, namely regulatory and monitoring and verification.

63. Thus, the overall outcome rating is **moderately satisfactory**, based on *substantial* relevance of objectives, *moderately satisfactory* achievement of development objectives and *satisfactory* efficiency.

³⁵ Only component 1 and 2 are accounted because the technical assistance (component 3) did not contributed directly to the financing.

³⁶ 550 CPs by closing date and 566 by March 2012.

³⁷ Interview with ANME, June 2012.

³⁸ World Bank-financed line of credit (on-going) to three local banks to scale-up industrial energy efficiency and co-generation (P104266).

3.5 Overarching Themes, Other Outcomes and Impacts

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

64. The project has increased the ESCOs annual turnover by 30% in some cases,³⁹ but has not translated in significant additional jobs due to the small size of the projects. However, the project has created the necessary conditions for the development of larger projects, where further high-value jobs are likely to be created. With respect to gender issues, they were not assessed in the PAD nor in the ICR because the design of the project was considered gender-neutral, i.e. the enabling environment to participate in the project was equal for men and women.

(b) Institutional Change/Strengthening

65. The project's implementation arrangements were simplified because of a change in the institutional structure after project effectiveness, i.e. the Government's creation of a dedicated energy efficiency fund, FNME, in 2005 managed by ANME. From an original complex project design where an industrial company could request the project subsidy from two different entities, the Ministry of Industry and ANME, the latter finally became the only interface with industries on energy efficiency projects.

66. The ESCOs created by the project guaranteed the estimated energy savings by the performance contract (CPE), but did not participate in the financing of the project as stated in the PAD. Ten ESCOs were licensed by ANME as per Tunisian law,⁴⁰ but only four were operational. The PEEI project contributed to diversify and moderately increase the business of the four ESCOs, which were small engineering firms before obtaining the ESCO license. The ESCOs operated as technical consultants with performance-based payments. If the "full-service ESCO" had to be developed in Tunisia as stated in the PAD, i.e. ESCO financing the EE project, several changes would have been required, including:

- *Regulatory*: mechanisms and legal provisions regulating the ownership transfer of equipment from ESCOs to beneficiary and tax advantages for the beneficiary after asset transfer.
- *Monitoring and Verification*: establishing of a commonly-agreed monitoring and verification protocol, clarification of accounting period of energy efficiency measures, clarification of liabilities of the parties in case of disputes.

(c) Other Unintended Outcomes and Impacts

67. There are no unintended outcomes and impacts that are measured.

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

68. On June 16 2011, ANME organized, together with all international donors active in the country, the conference "Towards a competitive energy efficient-industry, key

³⁹ Interview with one of the four operating ESCOs in Tunisia, February 2012.

⁴⁰ ESCOs TOR established by "Arrêté du Ministre de l'Industrie, de l'énergie et des petites et moyennes entreprises du 4 décembre 2004"

instrument of a green energy economy.” The conference was attended by more than 150 participants from a wide variety of sectors who discussed the perspectives of energy efficiency in Tunisia. The PIU at ANME presented its estimated impacts of the project as well as its experience in promoting energy service companies.

4. Assessment of Risk to Development Outcome

Rating: **Significant**

69. During implementation, several changes were introduced in the project to strengthen the sustainability of its outcomes, such as additional subsidies for ESCOs, extension of the guarantee to industrial companies' payments to ESCOs, etc. However, only some of these measures proved to be effective. The creation of a dedicated fund for energy efficiency projects in 2005, the FNME, and the implementation of an action plan by the PIU in 2009 contributed to increase energy efficiency investments. The Tunisian Revolution of January 2011 had only minor effects in the project's disbursements, which had reached 84% on April 30, 2011⁴¹.

70. Despite these mitigation measures, the risk to development outcome is **significant** due to the following:

- *Technical risk:* Before the project, the four active ESCOs were small engineering consulting companies. During project implementation, these companies could obtain an ESCO license from ANME as stated by law. The project supported the transformation of small engineering consulting companies focusing on auditing services in ESCOs guaranteeing energy savings and specializing in a wider array of services. After the project, though, it is uncertain that ESCOs, as described in the PAD, will succeed in becoming the main vehicle for a sustainable energy efficiency market in Tunisia. The ESCOs financial fragility precludes them from mobilizing large investments for energy efficiency projects and they are likely to continue providing services as auditors/consulting companies. The Tunisian market is likely to force ESCOs to either specialize on highly technical issues, e.g. compressed air systems, and/or merge with local or international companies to strengthen their balance sheet. The future role of ESCOs is therefore unclear.
- *Institutional risk:* The on-going World Bank energy efficiency line of credit project (2009) has not shown signs of progress so far, with less than 5% disbursed by February 2012. However, the energy efficiency market is growing with the support of the competing line of credit financed by the Agence Française de Développement, which has financed a total of 25MW worth of co-generation projects. A World Bank reassessment of the market confirmed that the potential for investment in energy efficiency/co-generation remains significant⁴². The PIU is expected to implement an action plan to remove the obstacles for project progress. Technical assistance support would

⁴¹ Aide mémoire, *Supervision du projet d'efficacité énergétique dans le secteur industriel (PEEI)*, Mai 2011.

⁴² Implementation Status Report, Project “Energy Efficiency and Renewable Investment (P104266)”, February 23, 2012

be required to continue the positive experience from the PEEI project in terms of marketing, awareness campaign and informational visits to industries and banks. This technical assistance is currently not provided by the on-going World Bank project⁴³, but there are other potential sources of TA available. Moreover, ANME's administrative procedures for the approval and disbursement of subsidies could be more simple and transparent. ANME's "energy efficiency in the industrial sector" unit is already working on this issue. The planned energy efficiency database is a step in the right direction.

5. Assessment of Bank and Borrower Performance

5.1 Bank

(a) Bank Performance in Ensuring Quality at Entry

Rating: **Moderately Unsatisfactory**

71. The Bank team identified most of the obstacles for increasing investments in energy efficiency, but significantly overestimated the capacity for transposing the innovative ESCO model to Tunisia. The Bank team did not justify appropriately the reasons for using a model of European and North American inspiration in Tunisia, which had less experience in energy efficiency projects. In early 2000s, the ESCO concept and the assessment of energy efficiency projects were largely unknown among industries and banks. Tunisia was, and still is, a society where personal contacts are paramount to build the trust necessary for business development. Therefore, ESCOs could not have emerged before a period of solidifying this trust, with the support of the PIU and ANME to develop the energy efficiency market.

72. The project was designed based on a study⁴⁴ carried out by the same company who owned the only ESCO at the time, STGE⁴⁵. This company went bankrupt a few years later because of the high transaction costs of developing a pipeline of energy efficiency projects. Some Tunisian operators also affirm that this failure was predictable because of the immaturity of the market that made a "foreign-company not to be trusted by Tunisian industrial companies"⁴⁶. With benefit of hindsight, the "full-service ESCO" model developed by the project was probably not the most appropriate for the Tunisian context taking into account other experiences around the world⁴⁷, especially given that this model has not worked well for scaling-up EE in industry anywhere except in few countries⁴⁸.

73. Finally, the formulation of the project in the PAD and in the Grant Agreement is not consistent: (i) there is a discrepancy between the PDO in the PAD and the Grant

⁴³ Project "Energy Efficiency and Renewable Investment (P104266)"

⁴⁴ Econoler International, *Energy Efficiency Program for the Industrial Sector in Tunisia – "Program EESI"*, March 31 2003.

⁴⁵ Société Tunisienne de Gérance de l'Énergie (STGE) created in 1998 by Econoler International (51%) , Société Tunisienne de l'Électricité et du Gaz (STEG) and other minor shareholders. For details : <http://www.commercemonde.com/archives/mars99/profils/p1.html>

⁴⁶ Interviews during mission to Tunisia in February 2012.

⁴⁷ World Bank, *GEF Energy Efficiency Portfolio Review and Practitioners' Handbook*, January 21 2004

⁴⁸ See lessons from workshop held in Tunis on experience with ESCOs around the world "Atelier sur l'expérience internationale des entreprises de services énergétiques », Tunis, April 22, 2009

Agreement. Moreover, the objective(s) of the project are arguably not well defined; (ii) the PAD only allows access to the guarantee fund through the ESCOs, while the Grant Agreement also allows industrial companies to access the guarantee fund. As a rule, the PAD and the Grant Agreement need to be fully consistent. These inconsistencies created some confusion to the implementing agency and to the Bank supervision team, whose staffing changed over the lifetime of the project. As the lack of consistency is considered a failure on the part of the Bank team to adhere to basic principles of Bank project design together with the above findings, a rating of overall moderately unsatisfactory is suggested.

(b) Quality of Supervision

Rating: **Moderately Unsatisfactory**

74. The Bank team was generally proactive during project supervision. The team's composition during missions was balanced and reporting by Aide Memoires and Implementation Status Report was done regularly. Moreover, the Bank team reacted timely during key milestones to accelerate the lagging disbursements, e.g. mid-term review and after first extension. During the mid-term review, the Bank team agreed to introduce further incentives to industrial companies to increase the use of ESCOs when implementing energy efficiency projects. The result of these measures was uneven. While some contributed to accelerate disbursements, e.g. raise the ceiling of guarantee coverage in industrial companies' credits using ESCOs, others were largely ineffective, e.g. supplementary 10% subsidy to ESCOs when carrying out "material" investment. After the first extension of the project (from December 31 2009 to December 31 2010), the Bank worked intensively with the PIU to implement an action plan. The key element was the use of capacity building funding under Component 3 to facilitate the industrial companies' application process of the subsidy under Component 1. This measure was critical in accelerating disbursements.

75. However, some significant shortcomings were noticed in the following areas: a) Measurement and Verification protocol for energy efficiency; b) exit strategy for the GEF Partial Guarantee Fund, which was not agreed with the PIU; and c) at mid-term, a review on the applicability of OP.30 to introduce an interest-free loan on investment costs was not carried out. A moderate shortcoming was oversight in adequately monitoring the indicator "Level of lending to ESCOs and industry by commercial banks as compared to all energy efficiency investment under the project exceeds 5%". The rating on quality of supervision could have been improved if the team had restructured the project in order to clarify the objectives and setting the targets according to the evolving context.

(c) Justification of Rating for Overall Bank Performance

Rating: **Moderately Unsatisfactory**

76. The Bank's team tested a theoretically appealing model, ESCOs, to a weak and underdeveloped market. The introduction of a new concept largely developed in Europe and North America was risky, and the "full service" ESCO did not materialize. The slow disbursement during project implementation could have been anticipated because an initial period for getting familiar with the new ESCO concept was necessary, but it was not planned. Therefore, the overall bank performance is rated *moderately unsatisfactory*.

5.2 Borrower

(a) Government Performance

Rating: **Satisfactory**

77. The Tunisian Government was the major advocate for enhancing energy efficiency in the country. In 2005, the spike in international oil prices severely constrained the government's budget. The government took then two decisions that enhanced the project's impact: a) created a working group to raise awareness and propose an action plan to reduce energy intensity among the country's highest energy consumers in the industrial sector, and b) created a specialized energy efficiency fund, the FNME in 2005. The existing FODEC fund had not had much success in attracting proposals on energy efficiency. The new FNME, financed by a tax on vehicle registration and managed by the ANME, significantly raised the grants available for energy investments from 13 to 20%. The enhancement of ANME's institutional role on energy efficiency was critical for the success of the project.

(b) Implementing Agency Performance

Rating: **Moderately Satisfactory**

78. The PIU hosted at the ANME was key in the success of the project. The PIU launched a proactive awareness and personalized campaign to support industrial companies in the process of applying for the 20% FNME subsidy and the supplementary 10% PEEI subsidy. After three years, 50 companies had already benefited from the direct and permanent support of the PIU⁴⁹. In February 2007, the PIU launched a professionally-designed website to enhance its communications and to foster trust among key stakeholders⁵⁰. A new PIU Director took office on November 1st 2008, whose efforts contributed to the improvement of project implementation. By then, one year before the project's original closing date, only 18% of the subsidy under Component 1 had been disbursed⁵¹. The newly appointed PIU Director, with the support of the Bank's team, swiftly implemented an efficient action plan which improved disbursements in the following three years (after three project extensions).

79. However, during the project lifetime (2004-2011) the following moderate shortcomings were also noticed: a) inadequate PIU staffing after two years⁵²; b) late development of a measurement and verification protocol, which is key to the establishment of any performance contract, and therefore the ESCO market; and d) lack of a comprehensive sustainability plan after the project. Despite these shortcomings, the engagement and professionalism of the PIU was key for the success of the project.

(c) Justification of Rating for Overall Borrower Performance

Rating: **Moderately Satisfactory**

⁴⁹ Aide Memoire, Mid-term review, December 2007

⁵⁰ www.peei-industrie.net

⁵¹ Aide mémoire, *Supervision du projet d'efficacité énergétique dans le secteur industriel (PEEI)*, 24-28 novembre 2008

⁵² Three engineers were planned to be staffed at the PIU. A process engineer was still not recruited in November 2006: Aide mémoire, *Supervision du projet d'efficacité énergétique dans le secteur industriel (PEEI)*, 20-23 novembre 2006.

80. The overall borrower's performance was rated satisfactory due to the reasons explained above.

6. Lessons Learned

81. **Grants and guarantees are not sufficient to develop an energy efficiency market, whereas capacity building (awareness, coordination, and training) is critical.** The Tunisian experience showed that incentives were not immediately effective because there were serious obstacles to overcome: awareness about energy efficiency, low technical capacity, and lack of trust among key stakeholders (ESCOs, banks, industrial companies and ANME). The role of a pro-active PIU as a driver for market development was important at an early stage.

82. **The "full-service" ESCO model is not a viable instrument to leverage energy efficiency market development.** The establishment of alternative ESCO models, which do not take the investment risk, on the other hand, appears feasible as the case of Tunisia shows. The four active ESCOs in Tunisia were small engineering firms at project start which could diversify their original auditing business because of the project⁵³. Based on eligibility criteria set by law⁵⁴, they obtained an ESCO license at ANME. The only large ESCO at the time of project preparation, STGE, left the Tunisian market due to the high transactions cost. The four active ESCOs (CRA2E, Partners, 3E, BCE) did not finance any energy efficiency project because their balance sheet was too low and commercial banks did not accept to lend them funding for EE projects despite the project's guarantee. Hence, the "full-service" ESCO model could not emerge. The four active ESCOs, however, could guarantee the sub-project's energy savings while taking limited risk. Only a minor fraction of their performance contract depended on the energy savings achieved. After project closing, the likelihood of survival of the existing ESCOs may be increased if they merge with partners with strong balance sheets and/or specialize on highly-technical areas, e.g. compressed air, to offer the best value-added to industrial companies.

83. **Subsidies that are administered on an output basis do not address the barrier of lack of "upfront capital" that is typical for energy efficiency investments.** The 10% GEF subsidy was *de facto* provided as an output-based subsidy, because the strict approval processes under which ANME required the effective implementation of energy efficiency sub-project before disbursement of the subsidy. The time-span between approval in principle of the subsidy until disbursement (effectively until after installation of equipment) would last around two years on average due to the time required for the implementation of energy efficiency sub-projects (industry). This administration arrangement did not address the barrier of up-front capital costs for energy efficiency projects, and may have inherently reduced the number of energy efficiency sub-projects. This process also led to delays in the project's disbursement.

⁵³ Some ESCOs reported 20-30% turnover increase since the start of the project because of new services, e.g. monitoring of energy efficiency savings, offered in ESCO-mediated sub-projects. Source: Interviews during mission to Tunisia in February 2012.

⁵⁴ Article 6 of law n° 2004-72 of August 2 2004 considers an ESCO to be an organization preparing "a project that produces energy savings and ensuring its implementation, management, monitoring and possibly its funding" and that "ensures the effectiveness of the project in the area of energy savings".

84. **Keep project design simple.** This project provided two financial intermediation instruments, a subsidy and a guarantee, instead of one as in other similar operations. It allowed different stakeholders access to different support mechanisms, which led to a very complex administration model. The governance structure and eligibility criteria of both instruments were complex, which created more difficulties to the implementing agency managing the project. A simple structure should be sought in future projects to enhance development impacts.

85. **A guarantee fund is not sufficient to provide comfort to commercial banks and change the financing culture in a traditional system.** Commercial banks in Tunisia kept requesting large collaterals for ESCOs credits despite the project's guarantee fund. While commercial banks were used to provide credit to regular industrial clients with adequate assets, ESCOs with small balance-sheets and "unconventional" energy efficiency projects were barred from credit. The cash-flow from energy savings is not a familiar form of revenue or collateral to back lending. The familiarization process by the banking sector on the evaluation of energy efficiency projects must not be underestimated.

86. **The appropriate selection of the project implementation unit is key for project success.** The project was well anchored in the government policy and the institutional structures. The decision to host the PIU at ANME was highly positive. The ANME managed the newly created FNME, which provided the main incentive (20% subsidy) for energy efficiency projects. Hence, the 10% subsidy provided by the PEEI project complemented it. The administrative coordination between the PIU and ANME to approve and disburse the subsidies was therefore easier.

87. **A sustainability plan should be drafted.** The PIU and the Bank's team made considerable efforts to introduce measures to accelerate lagging disbursements, such as an action plan. ANME confirmed the development of a significant pipeline of energy efficiency projects, but a formal strategy to support the implementation of such projects is missing. Presence of such a plan would reduce the existing uncertainties on the future energy efficiency market in the country. Despite some in-depth analysis⁵⁵, the strategy should confirm the expected future role of ESCOs in Tunisia. The average investment under the project was US\$ 423,000, while larger co-generation projects are recently being explored more intensively. To build upon the project's achievements, the ANME could consider developing the audit system and CP system into an integrated audit system with guaranteed energy savings (both systems are currently disconnected). Due to the high risk-aversion of commercial banks to project financing, i.e. asset-backed, combined with ESCOs financial weaknesses, efforts to make the "full-service" ESCO model emerge might be abandoned. However, existing ESCOs might still be able to guarantee energy savings and offer highly-technical consulting services to industrial companies, according to other ESCO models.

88. **Direct lending to industrial companies not through ESCOs.** Building on the outcomes of the project, the World Bank approved the Energy Efficiency & Renewable Investment project (P104266) on June 30 2009 to further support energy efficiency investments in Tunisia. The new project consists in a US\$55 million line of credit to

⁵⁵ ALCOR, APEX, *Evaluation de l'activité des ESE en Tunisie et proposition d'un plan d'actions*, ANME, Project PEEI, Novembre 2011.

industrial companies through commercial banks. Taking into account the lessons learned from the project, the new operation was designed to provide loans directly to the industrial companies, while avoiding any ESCO intervention.

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

(a) Borrower/implementing agencies

Not applicable.

(b) Cofinanciers

Not applicable.

(c) Other partners and stakeholders

89. An ICR mission met with several project stakeholders in February 2012, such as ESCOs and industrial companies. Two interviews were conducted with two of the four active ESCOs. The main issues raised by their representatives were the following:

- In 2004, at the beginning of the project, industrial companies were reluctant to rely on ESCOs for advice on EE. But an intensive two-year door-to-door awareness campaign led by the PIU and supported by ANME contributed to increase the popularity of ESCOs. The awareness campaign offered a 1-day audit and an energy efficiency action plan carried out by ESCOs to a random sample of 20 industrial companies. The campaign was successful and allowed ESCOs to be more visible and build trust in their relationships with industrial companies.
- Most energy efficiency improvements financed by the PEEI project correspond to simple actions of less than US\$ 63,000 (TND 100,000)
- The PEEI project allowed ESCOs to enhance their technical skills through learning by doing during their assessment and advisory process to industrial companies. Thus, before the project, one of the ESCOs was not knowledgeable in compressed air systems. But by the end of the project, the ESCO itself trained other technical experts on the subject.
- Industrial companies had to know personally the ESCO representatives before establishing any business relationship.

90. Likewise, two interviews were also carried out with industrial companies, which benefited from the PEEI project. The main issues raised by their representatives were the following:

- The main motivations to implement energy efficiency measures were to reduce costs and to comply with existing regulation, which mandated high energy-consuming industries to conduct energy audits regularly. The PEEI subsidy was interesting, but it was not the main incentive.
- The energy efficiency measures implemented with PEEI assistance substantially reduced the companies' annual energy costs.

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
Component 1 – Pilot phase for Energy Efficiency	2.5	2.07	83
Component 2 – Partial Guarantee Fund	4.0	4.4	110
Component 3 – Technical Assistance	2.0	1.9	95
Total Project Costs	8.5	8.4	99

(b) Financing

Source of Funds	Type of Cofinancing	Appraisal Estimate (USD millions)	Actual/Latest Estimate (USD millions)	Percentage of Appraisal
Borrower		4.90	5.8	118
Global Environment Facility (GEF)		8.50	8.47	99
Local Sources of Borrowing Country		18.40	21.8	118
Total		31.80	36.1	113

Annex 2. Outputs by Component

Component 1 – GEF Pilot Phase for Energy Efficiency

(Budget initial: US\$ 2.5 million – Budget revised: US\$ 2.09 – Actual: US\$ 2.07 million)

91. Component 1 was rated moderately satisfactory because of its slow disbursement. Component 1 succeeded in attracting 116 projects (see Figure 1 below) by providing 10% subsidy to industrial companies on top of the 20% subsidy of investment costs that they received from the FNME. However, out of the 116 approved projects, only 81 (44 below target) were finally implemented due to the financial difficulties of 35 industrial companies after framework contract (CP) approval. A majority of projects were implemented by industrial companies in the Construction Materials, Ceramics and Glass sector (see Table 1 below). The PEEI subsidy was an appropriate complement of ANME's subsidy mechanism, i.e. FNME, but it would not have attracted this number of EE project requests without the persistent door-to-door awareness campaign led by the PIU vis-à-vis the industrial companies, which was supported by component 3.

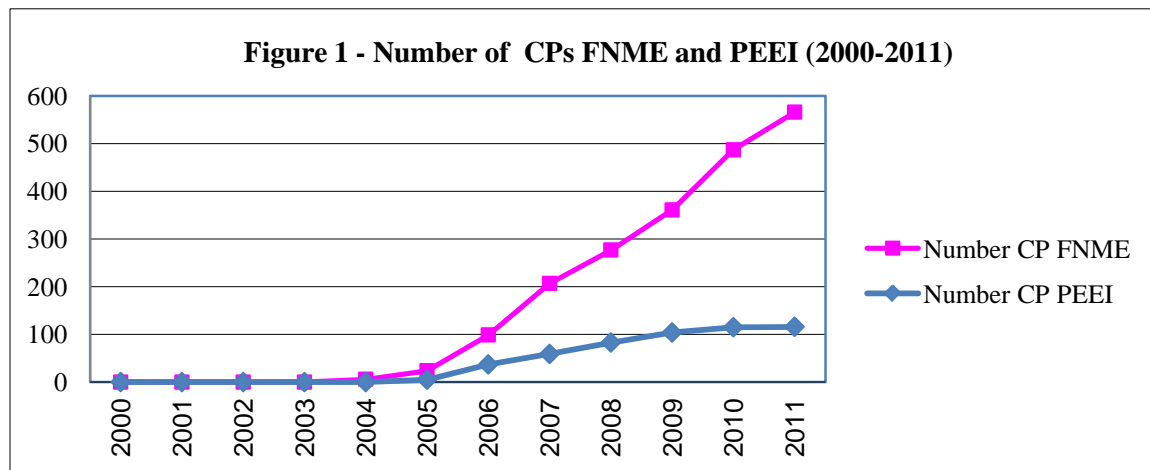


Table 1 – Number of CPs implemented by industrial sector

Industrial Sector	Number of CPs implemented	% of total EE investment	% of total CO ₂ emission reductions
Agriculture and Food	24	16	7
Chemicals	7	4	6
Construction Materials, Ceramics and Glass	34	68	78
Mechanical and Electric	6	2	1
Textile and Apparel	3	2	1
Various	7	8	7
Total	81	100	100

92. At mid-term review, it was agreed to introduce an additional 10% subsidy for ESCOs if they financed energy efficiency projects. This measure was meant to encourage industrial companies to use ESCOs when implementing energy efficiency projects. ESCOs would therefore receive a total 20% subsidy on their investments. However, ESCOs did not benefit from this additional subsidy because commercial banks could not lend them. Also, they could not finance energy efficiency projects with own resources due to their financial weakness. Component 1 has achieved one of its three targets:

- **Estimated greenhouse gas emission reductions as resulting from energy efficiency investment. Expected reduction of 127,284 tons of CO₂ annually and 636,422 tons over the project lifetime:** The sub-projects benefiting from this component implemented energy efficiency investments resulting in 710,333 tons of CO₂ avoided emissions during the life-time of the project 2004-2011 and 101,476 tons of CO₂ emissions annually (compared to the target of 636,422 tons over the project life-time and 127,284 tons of CO₂ annually). The cumulative target corresponds to the sum of CO₂ emission reductions of all sub-projects implemented from 2004-2011. It has been assumed that each sub-project reduces emissions for a period of five years. However, sub-projects implemented after 2007 have been reducing emissions beyond 2011 –end of project lifetime-, but have not been accounted for. The cumulative target of avoided CO₂ emissions over the lifetime of the project has been exceeded. The annual target has been calculated by dividing the cumulative value by the number of years of the project. The target has been partially achieved (80% of achievement).
- **Quantified energy savings of at least 10 ktoe per year, but on average expected at 33 ktoe per year:** The sub-projects benefiting from this component contributed to quantified, i.e. actual, energy savings of at least 31 ktoe/year and expected energy savings of 51 ktoe per year (compared to the target of actual energy savings of at least 10 ktoe per year, but expected 33 ktoe per year). The expected energy savings correspond to the sub-projects' annual average expected at the time of signing the CP. The difference between actual and expected energy savings is mainly due to financial problems of industrial companies that had a CP approved by ANME, but could not implement the energy efficiency project. The target was largely achieved (310 % of achievement).
- **Number of projects generated and reaching financial closure –a minimum of 125 demonstration investments envisaged:** The PEEI and FNME subsidies attracted 116 companies to sign a CP with ANME. However, only 81 projects reached financial closure, or 65% of the target established at 125 projects. Despite this performance, the funds allocated to this component were disbursed satisfactorily. The types of energy efficiency measures more frequently used were: Energy management systems, HVAC and steam system optimization (*see Table 2 below*).

Table 2 – Type of energy efficiency interventions

Type of EE interventions	% of total EE measures
Steam recovery/steam system optimization	13
Boiler optimization	2
HVAC	15
Lighting	3
Pipe insulation	12
Energy Management System	22
Compressed air systems	10
Variable speed-drives	3
Voltage optimization	7
Co-generation	2
Energy substitution	7
Other	4

Component 2 – GEF Partial Guarantee Fund

(Budget initial: US\$ 3.725 million-Guarantee fund + US\$ 0.275 million-Management fee; Budget revised: US\$ 4.135 + US\$ 0.275 million; Actual: US\$ 4.164 + US\$ 0.275 million)

93. Component 2 was consistently rated satisfactory but was not used for the main objective stated in the PAD, which was to “support efforts of ESCOs to arrange for the financing of energy efficiency investments”⁵⁶. The main cause was the fact that commercial banks requested traditional collateral to ESCOs despite the 75% guarantee provided by the GEF Partial Guarantee Fund. Instead, the guarantee was mainly used for industrial companies working through an ESCO under a CPE contract so that they could obtain loans from commercial banks for their EE investments. To a lesser extent, the guarantee was also used to cover payments by industrial companies to ESCOs for their EE services, but this measure was not sufficient to incentivize commercial banks to lend to ESCOs. At mid-term, an interest-free loan to ESCOs equivalent to 15% of project cost was introduced to support ESCOs capacity of financing EE projects. However, this measure was not implemented because of the persistent inability of ESCOs to borrow from commercial banks.

94. The disbursement of funds was consistently slow along the project. The use of the guarantee not only to cover loans contracted by ESCOs, as stated in the PAD, but also to cover loans from industrial companies using ESCOs to implement EE projects facilitated the engagement of the funds. By the end of the original five-years of the project, this component had disbursed only 32% of its funds. However, disbursements quickly accelerated by April 2010 to reach 60% due to an effective action plan implemented by

⁵⁶ World Bank, *Project Appraisal Document for Energy Efficiency Program/Industrial Sector*, Report N°: 28045-TUN, October 5, 2004, p.38

the PIU. The variable management fee received by the Guarantee Fund manager⁵⁷, SOTUGAR, did not have a significant impact on the number of contracts signed by ESCOs and industrial companies.

95. Nevertheless, Component 2 performed well as an incentive for industrial companies to sign CPEs with ESCOs, as defined by Tunisian law⁵⁸. CPEs became a major opportunity for ESCOs, small consulting firms, to learn-on-the-job and substantially improve their technical skills. Component 2 allowed ESCOs to evolve from carrying out occasional energy efficiency audits to provide a comprehensive service package to industrial companies with guaranteed energy savings. In this context, Component 2 has achieved all four key performance indicators:

- **At least 3 ESCOs are operational:** Ten ESCOs were licensed at ANME, of which four were fully operational during the project, generating 30 contracts.
- **At least 30 companies have ESCO-mediated projects:** 30 contracts signed with industrial companies as a result of ESCO-mediation.
- **Commitment of at least 90 percent of the Partial Guarantee Fund:** 100%. The target has been achieved.
- **A minimum of 20 percent of energy efficiency projects in the industrial sector use the Partial Guarantee Facility:** 37% or 30 CPEs/81 projects implemented with project subsidy. The target has been achieved.

Component 3 – GEF Technical Assistance

(Budget initial: US\$ 2 million; Budget revised: US\$ 2 million; Actual: US\$ 1.95 million)

96. Despite its slow disbursement (56% by the original closing date, i.e. December 2009⁵⁹) this component provided the necessary resources to the PIU, e.g. vehicles, training, for developing energy efficiency projects in the industrial sector. This component provided critical resources for raising awareness, enhancing technical skills and empowering market operators, e.g. ESCOs and industrial companies, to invest in energy efficiency projects. In 2005, for example, the PIU had a leading role in one of the national initiatives to raise awareness on energy efficiency, the "task force"⁶⁰ on high energy-consuming industries.

97. As shown in Table 3 below, Component 3 has benefited around than 400 professionals among technical centers, ESCOs, commercial banks, industries and others, in 120 days. Hence, 17 training days per year were organized by the PIU. On the other hand, PIU staff benefited from 138 days of training, or 19 days per year, on different

⁵⁷ The Guarantee Fund manager perceived a fixed and a variable management fee. The latter was conditioned to the number of contracts signed with ESCOs and industrial companies.

⁵⁸ Article 6 of Loi n° 2004-72 du 2 août 2004

⁵⁹ Aide mémoire, *Supervision du projet d'efficacité énergétique dans le secteur industriel (PEEI)*, 11-17 décembre 2009

⁶⁰ Following the recommendations of the National Conference on Energy Management (April 2005), the Ministry of Industry, Energy and SMEs created a working group "High energy-consuming industries Task Force" in June 2005 (Decision n°319 of June 3 2005) to implement energy efficiency programs to reduce energy consumption in such industries. The working group was formed by four experts, including former PIU Director.

areas ranging from World Bank procurement procedures to new technologies for energy efficiency.

Table 3 – PEEI training plan

Year	Action	Number of participants	Number of days
2006	Training of Technical Centers	29	8 days (2 sessions)
2006	Technical training on general issues of EE projects	80	20 days (5 sessions)
2006	Training of commercial banks and SOTUGAR	36	12 days (3 sessions)
2006	Specialized training on ESEs	38	12 days (3 sessions)
2008	Training of energy auditors and EE experts	45	40 days
2011	Assistance to the development of a measurement and verification protocol for EE projects	38	6 days (2 sessions)
2011	Training of commercial banks on evaluation techniques of EE projects	31	6 days (2 sessions)
2011	Training and publication of practical guide on compressed air	30	6 days (2 sessions)
2011	Training and publication of practical guide on cooling installations	27	3 days
2011	Training and publication of practical guide on steam processes	24	3 days
2011	Training on environmental assessment of EE projects	18	4 days
Total		396	120 days

98. Component 3 achieved one of its three output indicators:

- **Adoption of energy efficiency program planning in overall Ministry of Industry and Energy and/or BMN and/or ANME planning:** A National Program of Energy Efficiency has been developed and a dedicated Energy Efficiency Fund, the FNME, has been put in place. The target has been achieved.
- **At least two Technical Centers develop a monitoring and verification procedure for energy efficiency investments:** Two technical centers have been hired to monitor the implementation of PCs in the construction materials, ceramics and glass industries as well as the mechanical and electric industries. Both technical centers have ensured that the equipment required to implement the EE measures included in the PCs is properly installed and that it generated the expected energy savings. However, these technical centers did not develop a monitoring and verification procedure which would have allowed them to develop a business case to become independent monitoring and verification certifiers for a performance contract-based ESCO market. Hence, this target has not been achieved
- **Levels of co-financing by commercial banks to ESCOs and industry exceed 5 percent of all energy efficiency investments:** Around 42% of energy efficiency investments are undertaken through loans from commercial banks to industry. However, this target does not correspond to the original indicator. As stated in the PAD, page 98, “this indicator is aiming to finance 5 percent of all the energy

efficiency investments under the project without any collateral”. Data on collateral are not available, as usually they are not disclosed.

Annex 3. Economic and Financial Analysis

99. The project appraisal document (PAD) dated October 5 2004 shows the following sources and allocation of funds:

Table 1 – PAD sources and allocation of funds

	GEF (US\$)	Local source (US\$)	Total (US\$)
Component 1 – Pilot phase	2,500,000	22,500,000	25,000,000
Component 2 - Guarantee	4,000,000	0	4,000,000
Component 3 - Technical assistance	2,000,000	800,000	2,800,000
Total	8,500,000	23,300,000	31,800,000

100. The leveraging of the GEF subsidy under Component 1 was expected to be 9:1. In other words, the GEF subsidy was expected to leverage US\$ 9 from local sources for every dollar it disbursed assuming that local sources, i.e. private sector and government, would not have been mobilized in the absence of the subsidy. In reality, the leveraging effect was 13:1 (*see table 2 below*). The difference between the estimated leveraging effect in the PAD and the actual leveraging effect is due to more participation from private sector than expected and the different exchange rate used. The leveraging effects of Component 2 partial guarantee and technical assistance are difficult to estimate, but some ratios are provided in the following table.

Table 2 - Comparison of leveraging effects between PAD and ICR

	PAD	ICR
Ratio between local investment (private & public sector) and GEF grant for energy efficiency projects – Component 1	9.0	13
Ratio between local investment (private & public sector) and GEF grant for energy efficiency projects + GEF partial guarantee	3.5	4.2

101. As can be observed in Table 3 below, total investment in the project increased by about 14% between the time of appraisal (2004) and closing date (2011) mostly due to a larger participation of the private sector than expected. Based on PIU's data, Table 3 compares actual investments by financing source and project component with PAD figures.

Table 3 - Comparison of initial allocation and actual disbursement of funds⁶¹

	GEF (1)		Local source (2)				Total (1+2)	
	Actual (US\$)	% change from PAD	Private Sector (US\$)	Government (US\$)	Total (2) (US\$)	% change from PAD	Actual (US\$)	% change from PAD
Component 1 - Pilot phase	2,075,188	-20.5	21,845,447	5,814,554	27,660,001	23	29,735,189	19
Component 2 - Guarantee	4,440,014	11	-	-	-	-	4,440,114	11
Component 3 -Technical assistance	1,958,927	-2	-	-	-	-	1,958,927	-2
Total	8,474,129	-0.3	21,845,447	5,814,554	27,660,001	23	36,134,230	13.6

102. The global environmental benefits of this project arise from the reduction of greenhouse gas emissions through savings in energy consumption. The PAD estimated that the total emissions reductions generated by the project over its original five-year period were 636,422 tons of CO₂ equivalent. In reality, the project achieved larger CO₂ emission reductions, 710,333 tons of CO₂, during the 2005-2011 period. The unit costs of CO₂ emission reductions are presented in the following table.

Table 4 – Unit costs of CO₂ reductions

	PAD (expected)	ICR (actual)
PEEI project lifetime (years)	5	7
Number of EE projects	125	81
Cumulative Tons of CO₂ equivalent during project lifetime	636,422	710,331
Total GEF Costs (US\$)	8,500,000	8,474,129
Cost US\$/ton of CO₂ equivalent reduced	13.35	11.9

⁶¹ Actual data is extracted from “PEEI, *Financial monitoring report – project completion*, March 2012” and PIU’s monitoring spreadsheet.

Annex 4. Bank Lending and Implementation Support/Supervision Processes

(a) Task Team members

Names	Title	Unit	Responsibility/ Specialty
Lending			
Reinaldo Goncalves Mendonca	Senior Energy Specialist	MNSIF	Co-task team leader
Nourredine Bouzaher	Senior Energy Economist	MNSIF	Co-task team leader
Fanny Missfeldt-Ringius	Environmental Economist	MNSIF	
Afef Khaleil	Financial Management		
Meryem Benchemsi	Financial Management		
Hocine Chalal	Environmental Safeguards		
Radia Lalouani	Procurement Analyst		
Umar Kamarah	Social Safeguards		
Hakim Zahar	Energy Efficiency specialist		
Supervision/ICR			
Silvia Pariente-David	Senior Energy Specialist	MNSEG	Task team leader after May 2008
Nourredine Bouzaher	Senior Energy Economist	MNSEG	Task team leader until May 2008
Philippe R. Roos	Consultant	MNSEG	
Ferhat Esen	Energy Specialist	MNSEG	
Anas Abou El Mikias	Senior Financial Management Specialist	MNAFM	
Khalid Boukantar	Program Assistant	MNSSD	
Moez Makhoulf	Consultant	MNAFM	
Angeline Mani	Language Program Assistant	MNSSD	
Roger Coma-Cunill	Energy Specialist	MNARS	ICR lead
Govinda Timilsina	Senior Research Economist	DEC	ICR

(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		
FY03		38.94
FY04		74.09
FY05		35.47
FY06		0.00
FY07		0.00
FY08		0.00
Total:		148.50
Supervision/ICR		
FY03		0.00
FY04		0.00
FY05		30.11
FY06		47.98
FY07		43.75
FY08		57.07
Total:		178.91

Annex 5. Beneficiary Survey Results

Not applicable.

Annex 6. Stakeholder Workshop Report and Results

Not applicable.

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

I. Summary of Borrower's ICR

Brief Description of the Project

Three components were implemented with the support of the GEF (8.5 million USD) managed by the World Bank and with co-financing of over 30 million USD, 5 million of which were financed by public funds:

- 1) Component 1: Investment assistance intended to encourage energy efficiency actions by medium-sized and large enterprises through ESCOs.
- 2) Component 2: Implementation of a partial credit guarantee fund to facilitate project financing.
- 3) Component 3: Technical assistance and training for stakeholders (public institutions, industries, financial institutions, energy service providers, ESCOs, etc.)

The project timeframe was set at over a period of 5 years (2005-2009) but, for reasons associated with delays in project delivery and disbursements, the ANME requested two project extensions, which led to it ending on November 30, 2011.

Project Performance

Generally speaking, the *project performance has been rated very satisfactory* even if activity start-up delays, a number of project design weaknesses and, most importantly, the fact that two project deadline extensions were requested significantly undermined the Evaluators' rating insofar as the efficiency of project delivery was concerned. That being said, it should be noted that the project was adjusted over time to deal with the various constraints, all required improvements were put in place and the project finally met its defined objectives with flying colours. This is a reflection of the high quality management of the project during the period following the Mid-Term Evaluation, both on the part of the World Bank and the ANME.

Lessons Learned

- Design weaknesses can be overcome if decision makers demonstrate the needed flexibility and project managers are able to face reality without any double talk.
- The importance of the start-up phase must never be underestimated, especially when a project's design includes significant weaknesses (which are often the case). The contribution of international experts becomes crucial at this point.
- In spite of efforts to raise the awareness and train the financial sector, the conservative nature of these institutions must never be underestimated when it comes to their analysis of credit files, even when a first quality guarantee is available.
- Introducing the ESCO concept is always difficult in all countries. It probably would have been wise to include a special component (or sub-component) to support the overall implementation of this business model through a number of demonstration projects.

- A poorly adapted regulatory and incentive framework is often another barrier to the development of the ESCO business model. The regulatory framework must be examined at the earliest stage of the project implementation and, if need be, adjusted to facilitate and encourage the development of the ESCO business model and the use of a contract performance scheme. These issues should be studied in the very first year of a project.

Recommendations for Increased Sustainability

Transfer of Assets and Future Use

As a rule, the transfer of assets stipulates, among other things and generally speaking, that the assets of a project be used in accordance with the objectives of the projects financed by the GEF. This project's main asset is without a doubt the value of the guarantee fund to date totalling 4,135 million USD. The Evaluation Team recommends that the ANME revise certain fund management rules to better meet the needs of businesses and especially ESCOs that have not benefited from the guarantee to finance investments according to the Energy Performance Contract scheme.

Develop a Regulatory and Taxation Framework Adapted to Performance Contracts Financed by ESCOs

An appropriate and incentive regulatory framework is key to moving forward with the CPE scheme. The tax treatment of investments according to the CPE scheme should be analyzed and adjustments should be recommended to the tax authorities.

Monitoring and Verification Plan

Develop and implement a plan adapted to the Tunisian context for the monitoring and verification of EE project results.

Promote Synergy with the Existing and Future Financial Tools

The intensive use of the line of credit established by the World Bank in 2010 is an important element to ensure the sustainability of the PEEI and future actions.

Resource Mobilization Plan: Financial Resources

Given the success of the PEEI in recent years and the transfer of assets (4 million USD), the ANME is well positioned to conduct a campaign towards the mobilization of resources from the funding agency community. The objective will then be to develop a specific and complementary project, for example an ESCO project.

Review the Implementation Conditions of the Contracts-Programmes

This is to allow the payment of subsidies (FNME and PEEI additional premium) after the implementation of each measure and to report a completed CP (closed file) at the request of the beneficiary, when 50% of the objectives have been reached, or upon the decision of the ANME, or after 3 years following the signature of the contract-programme. The maximum duration of a CP should never exceed 5 years.

II. Borrower's comments on draft ICR

The following comments were received from the Borrower on June 18 2012:

Importance of the project for Tunisia

The PEEI project is part of a broader program (2005-2007 three-year program and 2008-2011 four-year program), initiated by the Tunisian government since 2004 to accelerate the change of scale in the volume of investments dedicated to energy conservation. This program aimed to reinforce the energy efficiency component, which already was one of the most important national priorities (Presidential decisions of May 3 2001).

At the time of project design, Tunisia faced several challenges at the international level: facing an increase in international energy prices as the country became a net importer in this sector since 2000, ensuring the competitiveness of its industry particularly with the entry into force in 2008 of the free Trade agreement with the European Union (EU) and honor its commitments to international agreements related to the environment.

More specifically, the project aimed to improve the competitiveness of Tunisian companies by reducing production costs related to energy and at the same time emissions of greenhouse gases. It also aimed to encourage the emergence and use of ESCOs. The PEEI project aimed to develop the Tunisian market of energy efficiency in the industrial sector on a sustainable manner through ESCOs. In particular, the project set a target to mobilize a total investment equal to US\$ 25 in the field of energy efficiency, in a pilot phase of 5 years and, through the implementation of 125 energy efficiency projects.

The institutional stakeholders are mainly:

- National Energy Management Agency (ANME) that hosts the project implementation unit (PIU) and also administers the National Energy Management Fund (FNME).
- The Tunisian Guarantee Company (SOTUGAR), a company with public participation and with financial autonomy, created in 2003 to administer the guarantee fund.
- The Competitiveness Enhancement Bureau (BMN) that is in charge of the Industry Competitiveness Fund (FODEC).

The project beneficiaries were industrial companies, engineering consultants, the newly created ESCOs and financial institutions (banks, leasing companies). During the project implementation period, all stakeholders were directly or indirectly involved in the project.

The PEEI project has had the following results:

- Establish a sustainable market for energy efficiency in the industrial sector in Tunisia.
- Increase overall investment in energy efficiency in the industrial sector of US\$ 32 million during the project implementation period.

An ex-post evaluation of the country's energy efficiency programs conducted during the period 2005-2011 has estimated the accumulated energy savings in 3,500 ktoe. Of this amount, the program targeting the industrial sector (CPs and cogeneration) contributed to 42%, hence the importance of this sector in the Tunisian energy efficiency strategy.

In the future, Tunisia plans to further strengthen its energy efficiency policy by setting more ambitious targets for energy efficiency and renewable energy, under the Tunisian Solar Plan. The latter sets a target primary energy savings of about 24% in 2016 and 40% in 2030, compared to business as usual scenario. The industrial sector should contribute significantly to these energy savings, particularly through cogeneration and innovative energy efficiency measures directly affecting the improvement of industrial processes.

Performance of World Bank and Borrower during period 2004-2011

The PEEI project was designed in its pilot phase to (i) to support the development of an energy efficiency market in the industrial sector in accordance with the priorities of the country in energy efficiency and (ii) test and adapt the innovative concept of ESCOs to the Tunisian context as a driver for the development of this market.

The project with its components 1 and 3 has created a true market dynamics and has been a real catalyst for the development of the energy efficiency program in the industrial sector, which earned him to be a flagship program at ANME as its energy and economic benefits were substantial.

Component 2 was used primarily for the emergence of ESCOs and to develop and improve services related to energy efficiency and also raise the financing barriers for energy efficiency activities. Taking into account its pilot nature, the "full-service" ESCO model has encountered in its implementation several problems:

- Immaturity of the energy efficiency market
- Ignorance of the ESCO concept by different key stakeholders

The challenge of the project was to gradually introduce the new concept taking into account the reality on the ground and take steps to make it more attractive and accepted by the different stakeholders. In this respect the project has worked very well even if the "full-service" ESCO model has been only partially developed.

Indeed, the project promoted the expansion of the market for ESCO activities to complementary services, which allowed them to provide a full range of integrated services to the industrial company. These services, as part of energy performance contracting, have also integrated: identification of energy efficiency measures, support during implementation, advise on financial issues, monitoring of implemented measures, and performance guarantee.

The ESCO network created during the lifetime of the project is an important asset of the PEEI project in terms of sustainability of its impacts. The objective was to create three ESCOS, while the PEEI has prompted the creation of 10 ESCOs. Most of these ESCOs, though, existed already on the market as consulting firms. These firms have either created a subsidiary or simply converted themselves into ESCOs to meet the changing market.

The ESCO network and development of these new profitable services is a very positive outcome of the PEEI project. Although only four ESCOs were active under the PEEI, the project has largely achieved its objective to create three ESCOS and to complete thirty energy efficiency projects through energy performance contracts (CPE).

The role of the PIU/ANME was instrumental in achieving the targets. The PIU/ ANME adopted a pragmatic approach by mobilizing the various operators when necessary (outreach and ongoing coaching, use of high-quality external experts, involvement of all stakeholders, support to ANME, etc.).

The team from the World Bank has been proactive and has worked effectively with the Tunisian side to implement corrective measures, given the difficulties encountered related to the Tunisian context, without deviating from the original purpose of the project and procedures, while respecting those of Tunisia and the World Bank.

Sustainability of project impacts

Based on these achievements and to capitalize on past experience, the ANME is launching new programs and actions to mobilize the potential of energy savings in the industrial sector. Among them:

- Exploration of new areas of energy efficiency in industrial companies by developing specific techniques to improve processes (program launched with the support of the EU)
- Improved the quality of energy savings by implementing a systematic protocol for measuring and monitoring EE actions, built-in the audit process and the new generation of CPs.
- Launched a program to promote the progressive integration of energy efficiency into the industries' management system (ISO50001 standard) (Program launched with the support of UNIDO)
- Establish an information system on energy efficiency in industrial sector, based on appropriate indicators to enable ongoing evaluation of the energy efficiency policy in this sector.
- Continue implementation of co-generation development program by strengthening the regulatory framework for co-generation and increasing awareness of industrial companies
- Preparation and implementation of an action plan to better position ESCOs in the future energy efficiency and co-generation market.

Borrower's conclusions

Because of the above, I invite the World Bank team that led the final evaluation of the project to revise the suggested rating for the World Bank team and the borrower as follows:

- Overall performance of the Borrower: "very satisfactory" instead of "satisfactory"
- Overall performance of the Bank: "satisfactory" instead of "moderately satisfactory"

Moreover, as has been stated, this project was designed as a pilot, and as any satisfactory pilot operation, it is recommended that the evaluation report makes a recommendation to donors, the GEF in particular, to continue their financial support to energy efficiency in the Tunisian industrial sector, particularly to help ensure the sustainability of such operation.

Annex 8. Comments of Cofinanciers and Other Partners/Stakeholders

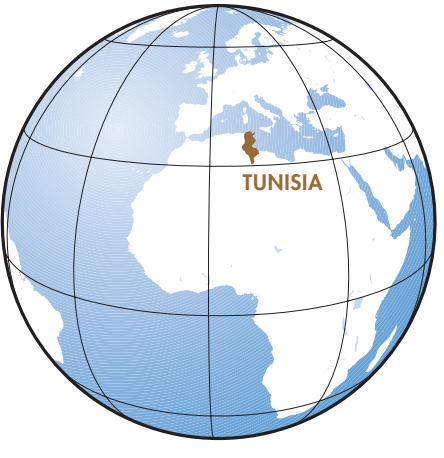
Not applicable.

Annex 9. List of Supporting Documents

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- International Bank for Reconstruction and Development, *Country Partnership Strategy for the Republic of Tunisia for the period FY10-13*, Nov. 23 2009, Report No. 50223-TUN
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- PEEI, *Financial monitoring report – project completion*, March 2012
- World Bank, *Aide Mémoires - Supervision missions : January 19-27 2005, March 26-31 2006, November 20-23 2006, December 4-7 2007, November 24-28 2008, December 11-17 2009, May 2011*.
- World Bank, *GEF Energy Efficiency Portfolio Review and Practitioners' Handbook*, January 21 2004
- World Bank, OPCS, *Guidelines – Implementation completion and results reports*, updated May 10 2011.
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TUNISIA TUNISIE

- ELEVATIONS IN METERS:
ALTITUDES EN METRES:
- 1000
 - 600
 - 200
 - 0
- CHOTTS
CHOTTS
 - RIVERS
OUED A ECOULEMENT PERENNE
 - SEASONAL RIVERS
OUED A ECOULEMENT INTERMITTENT
 - 200 ANNUAL AVERAGE RAINFALL IN MM.
PRECIPITATION ANNUELLE EN MM.
 - EXPRESSWAYS
AUTOROUTES
 - MAIN ROADS
ROUTES PRINCIPALES
 - SECONDARY ROADS
ROUTES SECONDAIRES
 - RAILROADS
CHEMINS DE FER
 - INTERNATIONAL AIRPORTS
AEROPORTS INTERNATIONAUX
 - PORTS
PORTS
 - GOVERNORATE CAPITALS
CAPITALES GOUVERNORATS
 - NATIONAL CAPITAL
CAPITALE NATIONALE
 - GOVERNORATE BOUNDARIES
FRONTIERES DES GOUVERNORATS
 - INTERNATIONAL BOUNDARIES
FRONTIERES INTERNATIONALES



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