



## 1. Project Data

<b>Project ID</b> P104266	<b>Project Name</b> TN-Energy Efficiency	
<b>Country</b> Tunisia	<b>Practice Area(Lead)</b> Energy & Extractives	
<b>L/C/TF Number(s)</b> IBRD-77430,IBRD-77440,IBRD-77450	<b>Closing Date (Original)</b> 28-Feb-2014	<b>Total Project Cost (USD)</b> 55,000,000.00
<b>Bank Approval Date</b> 30-Jun-2009	<b>Closing Date (Actual)</b> 31-Jan-2016	
	<b>IBRD/IDA (USD)</b>	<b>Grants (USD)</b>
Original Commitment	55,000,000.00	0.00
Revised Commitment	40,062,500.00	0.00
Actual	33,994,937.79	0.00

<b>Prepared by</b> Natsuko Toba	<b>Reviewed by</b> George T. K. Pitman	<b>ICR Review Coordinator</b> Christopher David Nelson	<b>Group</b> IEGSD (Unit 4)
------------------------------------	---	---	--------------------------------

## 2. Project Objectives and Components

### a. Objectives

The Loan Agreement (LA) Project Development Objective (PDO) is to scale up industrial energy efficiency and cogeneration investments, and thereby contribute to the Program.

### b. Were the project objectives/key associated outcome targets revised during implementation?

Yes



**Did the Board approve the revised objectives/key associated outcome targets?**

No

**c. Will a split evaluation be undertaken?**

Yes

**d. Components**

Establishment and operation of a credit facility for the financing, through the provision of Sub-loans to Beneficiaries, enabling such Beneficiaries to finance the costs related to the carrying out of Sub-projects for industrial energy efficiency and cogeneration.

**e. Comments on Project Cost, Financing, Borrower Contribution, and Dates**

Project Cost, Financing and Borrower Contribution

Total project costs, fully financed by IBRD loan, was estimated to amount to Euro 42.4 million or \$ 55 million equivalent at appraisal. The first project restructuring in November 2012 entailed a \$ 15 million partial cancellation of the IBRD loan amount from \$ 55 million to \$ 40 million due to lack of interest and readiness of investors and commercial banks in energy efficiency (EE) projects. The actual project cost at the completion was estimated to be \$ 33.9 million, which was 62 percent of the original project cost or 85 percent of the revised project cost. The project cost neither involved borrower contribution nor other co-financers.

Dates and Project Restructuring

The board approval of the project was June 30, 2009. This project was undergone three Level II restructurings as summarized below. The original project closing date of February 28, 2014 was extended twice, i.e., to June 30, 2015 (extension by 16 months) at the second Level II project restructuring on February 26, 2014 and the third Level II project restructuring to January 31, 2016 (extension by 7 months), total of 23 months extension.

The first project restructuring on November 17, 2012 was mainly due to significant delays in disbursements and implementation. As two of the three participating financial intermediaries (PFIs) requested cancellation of total of allocated \$ 15 million loans, the IBRD loan was partially cancelled by \$15 million. To incorporate these loan cancellations, the target values of the PDO-level and intermediate-level results indicators in the Results Framework and the disbursement plan were revised. At that time, the project had \$2.55 million disbursement or 4.6 percent of the total original project cost of \$55 million.

The second project restructuring occurred on February 26, 2014. It entailed (i) extending the original project closing date from February 28, 2014 to June 30, 2015 (16 months), (ii) increasing the designated account (DA) ceilings set in the original disbursement letters, (iii) revising the project disbursement projections and (iv) revising the results framework PDO and intermediate indicators linked to the disbursements projections, shifting the year of the target values from 2014 to 2015. Disbursement slightly improved between the first and second restructuring, reaching \$7.45 million in February 2014 (22 percent disbursement rate), and the closing date was extended to make up for slower disbursement during the first years of implementation.

The third and last project restructuring occurred on July 8, 2015. It entailed another extension of the project closing date by seven months from June 30, 2015, to January 31, 2016. The main reason for this



change was to allow further time for project implementation as disbursements accelerated between 2014 and 2015, reaching \$ 25.6 million in May 2015 (75.2 percent disbursement rate). The restructuring also entailed revision of the target values of the PDO-level results indicators in the results framework due to a change in the estimation methodology for energy savings and emissions reduction as proposed by the Bank. At that time, the project had \$ 25.7 million disbursement or 75.6 percent of the total actual project cost or disbursement of \$ 33.99 million.

### 3. Relevance of Objectives & Design

#### a. Relevance of Objectives

The PDO remained highly relevant. The World Bank's country partnership framework (CPF) for the period FY 2016-2020 highlighted energy efficiency as part of (i) the partnership and donor coordination in the CPF Pillar 1: Restoring an Environment Conducive to Sustainable Economic Growth and Private Sector-Led Job Creation and (ii) the Bank's support to Tunisia's climate change mitigation agenda. In its Intended Nationally Determined Contribution (INDC) which Tunisia presented at the 21st Conference of the Parties (COP) of the 2015 United Nations Climate Change Conference, Tunisia proposed reducing its greenhouse gas (GHG) emissions across all sectors (energy; industrial processes; agriculture, forestry and other land use; waste) in order to lower its carbon intensity by 41 per cent in 2030, relative to the base year 2010. The CPF noted that Tunisia's mitigation efforts would particularly center on the energy sector, which would reduce its carbon intensity in 2030 by 46 percent compared with 2010 by promoting efficiency measures which should allow primary energy demand to decrease by some 30 percent by 2030 compared to the baseline. The Tunisian Government's "Note d'Orientation Stratégique" which outlined Tunisia's development vision for 2016-2020, highlighted energy efficiency in its Pillar 5: Promoting green growth for sustainable development, which aimed to ensure the sound utilization of natural resources, with emphasis on rationalizing water and energy consumption while promoting modern agricultural systems that guarantee food security.

Promoting EE was facilitated by energy subsidy reforms, which the Government of Tunisia (GoT) was addressing through a dialogue with the International Monetary Fund (IMF) and the World Bank, in addition to complementary investments. Tunisia continued to stand out with the most comprehensive policy framework for EE improvements among peer countries in Middle East and North Africa[1], including its adoption of the third national energy efficiency plan for the period 2016 – 2020, and the Tunisian Solar Plan, which included specific measures to further promote energy efficiency. The industrial sector still represented close to 50 percent of expected energy savings from EE projects, including promotion of cogeneration, with the objective to reach 440 MW by 2020. In January 2016, PFIs (Amen Bank and *Banque de l'Habitat* (Housing Credit Bank, BH) addressed letters to the Bank to seek its support, through a line of credit (LOC) (additional financing), to support a subproject pipeline of 27 new EE/cogeneration subprojects requiring about \$ 50 million of financing. Other institutions and donors continued supporting the GoT in implementing its EE programs, including the LOC. *Agence Française de Développement* (French Development Agency, AFD), for example, announced in April 2016 a new LOC for EE for about €100 million or almost three times the revised amount of this project.



Regarding the framing of the PDO, “industrial energy efficiency and cogeneration investments” was clear and specific but “the Program” was unclear and “scaling up” was a bit ambitious for a \$ 55 million loan 4.7 year project for a nascent EE industry sector.

[1] Arab Future Energy Index (AFEX) Energy Efficiency 2015. Regional Center for Renewable Energy and Energy Efficiency (RCREEE).

**Rating**

High

**Revised Rating**

High

**b. Relevance of Design**

The component was logically linked to the PDO but key technical assistance (TA) activities on the capacity building on EE investment and implementation support were absent (e.g., train and support PFIs, the project management unit [PMU], developers of EE subprojects, etc.). During the project preparation, concept note review, quality enhancement review and decision meetings, the importance of the TA was emphasized as the previous experiences showed as crucial, such as in Brazil, China, India and other countries. However, the Bank team decided to separate it from this project and include it as a component of a contemplated \$ 2.5 million Global Environmental Facility (GEF) grant project (Tunisia-GEF Energy Efficiency and Biomass Project [P121364]), which was dropped following GEF recommendation and the GoT’s request because of lack of interest in biomass component by the potential agri-business investors due to the Tunisian revolution. If a certain activity (in this case TA) is indispensable for the project to succeed, such an activity should not be included in a separate project because there is always a possibility that the separate project may encounter problems and the project’s success would be at the mercy of the separate project.

Furthermore, the PAD never mentioned about the GEF Energy Efficiency and Biomass Project under preparation and rather ascertained “Agence Nationale pour la Maitrise de l’Énergie (National Agency for Energy Conservation) (ANME) already has very strong capabilities and resources allowing it to provide the support required to PFIs in the area of business planning and sub-project evaluation. It also already benefits from technical assistance from various sources that aim at supporting skill enhancement or capacity building in matters related to financing of EE activities. Finally, a strong pipeline of identified sub-projects already exists” (page 16-17, PAD). Unfortunately, this optimism turned to be key bottlenecks during the implementation for the project to achieve the PDO. Most of the identified pipeline of sub-projects did not materialize into bankable projects for PFIs (only two subproject were funded by the LOC and a new subproject pipeline was built up during the project life) and PFIs and investors were not ready for EE investments.

In addition, the project design could have further improved by including other capacity building and support for energy subsidy reform to induce demand management, and a better incentive framework for the PFIs and EE investors (e.g., preference for a fixed interest rate, etc.).

Exogenous factors such as the impacts on macroeconomic slow down, inflation, the risk that the GEF project might not materialize, the energy prices, regulations and reforms, interest rate volatility and other unintended effects were not identified. As a result, the project implementation suffered from significant delays during the



first three years (more than two thirds of the original project life) due to several endogenous factors (e.g., PFIs/investors readiness for EE investments, absence of TA, features of the Bank LOC, etc.) compounded by exogenous factors (e.g., economic slowdown in Eurozone, Tunisian revolution). Some of the endogenous factors could have been mitigated/avoided if there was a stronger assessment of PFIs/investors' readiness during project preparation, in addition to including an adequate support through a TA. The increases in energy prices, i.e., gas prices, positively influenced the project performance. The national utility *Société Tunisienne de l'Electricité et du Gaz* (Tunisian Company of Gas and Electricity, STEG)'s purchase tariff for excess electricity from cogenerators was lower than the cost of production, thus forcing them to find alternative uses for the excess electricity generated. Even selling to the grid at a lower cost than the cost of production experienced bureaucratic delays in signing the power purchase agreement and in paying for the excess electricity sold.

The clarity of PDO was mixed as discussed in the framing of the PDO in section 3.a above. The PDO was linked to intermediate and final outcomes. With regard to the causal chain between funding and outcomes, the intermediate outcome was the increased amount of EE lending and the PDO was scale up industrial energy efficiency and cogeneration investments, and thereby contribute to the Program, i.e., Four-year Energy Conservation Program (4ECP). The link between the increased lending amount and the scaling up investment was clear but the use of "scaling up" may be ambitious and less convincing for a \$ 55 million loan, and furthermore, the last part of the PDO's contribution to the program would require clear robust methodologies, monitoring, reporting and verification to ensure the attribution. The choice of lending instrument was adequate.

**Rating**  
Modest

**Revised Rating**  
Modest

#### 4. Achievement of Objectives (Efficacy)

##### **Objective 1**

##### **Objective**

To scale up industrial energy efficiency and cogeneration investments, and thereby contribute to the Program.

##### **Rationale**

The following endogenous and exogenous factors contributed to (i) underutilization of the IBRD loan and (ii) no EE investments other than co-generations, which affected the efficacy of this project. At the time of the first restructuring (November 2012), only 6.5 percent of the revised project amount had been disbursed, against an original expectation of about 64 percent of the original amount.

##### Endogenous factors

**Tunisian events and traditions.** While the project was approved in 2009, it only became effective 8 months later as the Tunisian Parliament's approval of the loan guarantee was delayed due to slower activity during



the month of fasting (Ramadan) and the preparation of the October 2009 general elections. The Bank team could have factored in these national events and traditions in the project planning.

**PFI's/investors' readiness for EE investments.** As mentioned earlier, though there was a pipeline of potential subprojects identified by ANME during project appraisal, most of these leads did not materialize into bankable projects for the PFIs. The selected PFIs did not fully appreciate EE investments to properly market them to potential and existing clients and lacked aggressiveness to identify new projects. As they assumed the credit risk, the PFIs were more inclined to invest in productive assets with their existing client base rather than funding new EE investors and projects whose economics, based on energy savings, seemed less tangible/credible, in addition to higher transaction costs for EE subprojects (as compared to cogeneration) given smaller investments. The PFIs also had limited capacity to manage EE projects. Investors were also less keen to undertake these EE investments given the same bias toward productive revenue-generating investments, low (subsidized) energy prices leading to challenging subprojects with lower returns, and poor appreciation of energy savings generated by these subprojects. The lack of readiness for PFIs and investors was further exacerbated by the absence of a TA component in the project. Later, the situations have changed to be more positive due to both exogenously (e.g., recovery from economic and Tunisian revolution, etc.) and endogenously (etc. the management change, etc.). For example, while BH requested that its loan reduction during the first project restructuring in 2012, a change in the management unit in charge of EE financing in 2013 turned around the situation. By the project closure, BH disbursed more than 99 percent of its (reduced) credit line and was interested in further borrowing from the World Bank as its new project pipeline was nearly the cancelled loan amount.

**Absence of TA.** While ANME had the proper technical expertise and some funding from other donors, more support was needed for (a) capacity building of the commercial banks on EE and cogeneration; (b) assistance for potential project developers with preparatory studies and business development, including technical and financial feasibility studies; and (c) targeted support to pipeline development efforts. The TA need could not be met through a project restructuring either as the funds lent to commercial banks could not be reallocated for other purposes during project implementation. The Government only guaranteed the World Bank loan to the commercial banks that bore the ultimate responsibility for repaying the loans to the World Bank. A new project would have been necessary to fund a TA component. As a result, ANME used its in-house capacity and funds for necessary audits and subproject preparation to support PFIs. In the absence of the TA, the World Bank team intensified its supervision and worked closely with ANME and the PFIs to organize and attend marketing events to promote EE investments. The intensive collaboration benefitted ANME and the PFIs as they improved their strategies to market and develop EE projects. In January 2016, nine subprojects were fully implemented while three were being completed.

**Interest rate volatility.** The PFIs and EE investors were concerned about the volatility of the Libor-based variable spread of the World Bank LOC, which reduced its attractiveness compared to other funding sources. The PFIs therefore requested the World Bank to change the terms of the loans accordingly. While initially World Bank rules prevented such a change, the fixed interest rate request was finally accommodated in July 2012, which further facilitated disbursements from the LOC.

**High inflation.** The high inflation in Tunisia made repayment of credits more onerous.

#### Exogenous Factors

**Economic slowdown and improvement.** By the time the project became effective in February 2010, there was already a slowdown in the Eurozone (Tunisia's main trading partner), which affected the Tunisian economy and prevented potential investors from contemplated EE investments. This resulted in limited subproject materialization by PFIs and ANME during the implementation phase. The improvement of



economic situations contributed to the catching up of disbursement rate during the latter part of the project life.

**The Tunisian revolution and terrorism and recovery** The Tunisian revolution started on December 18, 2010 (just 10 months after project effectiveness). It introduced a further element of uncertainty to the business environment in Tunisia. This uncertainty was compounded by various terrorist acts that added to the fragility of the Tunisian economy, and investment decisions, particularly in EE, were either postponed or taken only timidly. The recovery from the revolution and terrorism contributed to the catching up of disbursement rate during the latter part of the project life.

**Unfavorable Tunisian banking sector's environment.** During this early implementation period, the Tunisian banking sector was facing a difficult environment: political instability, high inflation, increasing interest rates, and weak penetration of the financial sector.

**Increases in electricity tariffs and natural gas prices with the gradual removal of energy subsidies in the framework of the energy sector reform.** These rebalancing of energy tariff and prices contributed to increase in EE investments. The reform of natural gas in 2013 and 2014 that prompted the investments in cogeneration as the gas price increased by 10 percent in each of those years and the financial benefits of cogeneration became more apparent.

Thus, there were considerable delays and little progress at the time of the first restructure. There were also changes to the composition of the project and the associated loans. Given the considerable shortcomings, the rating is Modest.

## Rating

Modest

## Objective 1 Revision 1

### Revised Objective

The PDO did not change and the detailed overview here applies equally to both the second and third restructure. The PDO continues to be: "To scale up industrial energy efficiency and cogeneration investments, and thereby contribute to the Program."

### Revised Rationale

#### Outputs

The implementation of nine cogeneration subprojects (28 MW installed capacity). Three cogeneration projects were under construction and completion was expected by October 2016 (additional 10 MW). Most of the industries covered by the project were in the agro-industrial or construction materials (bricks, sanitary, tiles, and so on) sectors. The size of the firms varied from 150 to more than 300 employees, and the firms were basically medium-scale enterprises. The technology used by almost all industries was a natural gas-fired engine. About 84 percent of the cost of the cogeneration projects was financed through the World Bank's credit line and 16 percent through equity.

No other type of EE project was financed under the credit line, mainly because they were relatively small projects that were mostly financed by investors' equity, and the PFIs were unable to handle them, given their limited capacity in appraising small EE projects, their high transaction costs (e.g., review of applications,



credit worthiness assessment, follow-up, etc.), and limited creditworthiness of these investors.

#### Intermediate Outcomes

1. Cumulative funds disbursed under the credit line reached \$ 33.99 million, achieved 62 percent of the original target of \$ 55 million, from the original baseline of \$ 1.2 million. Some projects were still under review by the closing date of the project.
2. Total associated investments (IBRD loan and equity) were \$ 42.71 million, achieved 39 percent of the original target of \$ 110 million, from the original baseline of \$ 2.5 million. To attract investors, the commercial banks required a minimum equity funding of 20 percent. However, the difficulty investors had in mobilizing internal financing resources was partly the reason for the underachievement of this indicator.

#### Outcomes

1. Cumulative energy savings achieved 87.63 thousands of tons of oil equivalent (ktoe), achieved 91 percent of the original target of 96 ktoe, from the original baseline of two ktoe. The achieved energy saving represented a contribution of 9.2 percent to the Government's 4ECP.
2. Cumulative reductions in greenhouse gas (GHG) emissions achieved 205.84 thousand tons of CO<sub>2</sub> (ktCO<sub>2</sub>), achieved 86 percent of the original target of 239 ktCO<sub>2</sub>, from the original baseline of five ktCO<sub>2</sub>. This achieved GHG emission reduction corresponded to 9.7 percent contribution to the 4ECP.
3. The cogeneration projects substituted for electricity supplied by STEG and produced efficiently heat/steam needed for their processes, thereby reducing their energy bill—electricity and natural gas. (this outcome was not in the result framework and M&E system, and hence no baseline and target indicators). For example, one of the project beneficiaries, the company Somocer, expected to save energy costs close to \$ 1 million per year and become more competitive. It was targeting export markets that had not been considered previously in the Middle East and North Africa Region and Sub-Saharan Africa. It was expanding into other lines of business (e.g., wooden pallets and packaging, with high energy intensity) as spare energy from cogeneration was put to more productive use instead of selling it to the national utility, STEG due to STEG's lower power purchase tariff than Somocer' electricity generation cost. (this outcome was not in the result framework and monitoring and evaluation (M&E) system, and hence no baseline and target indicators).
4. The subprojects generated about estimated 250 temporary jobs during their construction period and about 50 permanent jobs. (this outcome was not in the result framework and M&E system, and hence no baseline and target indicators).

There was no indicator to track the project's contribution to the Government's 4ECP investment program.

#### Attributions and Counterfactual

The project's achievements would be partly attributed to the above positive exogenous factors, especially the increases in gas prices, the recovery from the economic slowdown, revolution and terrorisms. In the counterfactual scenario in the absence of the IBRD loan, those other development partners such as AFD could have taken some of the EE investment activities with the IBRD loan.

#### **Revised Rating**



Substantial

## 5. Efficiency

### Economic Analysis

An ex-ante analysis was conducted for four sample projects with and without energy efficiency investments. The total investment costs of these four projects was \$ 5.8 million, an equivalent to 11 percent of the original amount IBRD loan of \$ 55 million or 17 percent of the revised amount IBRD loan of \$ 33.99 million. The IBRD loan portions of the total investment costs of these four projects was \$ 3.4 million, an equivalent to 6 percent of the original amount IBRD loan of \$ 55 million or 10 percent of the revised amount IBRD loan of \$ 33.99 million. The analysis took into account the overall costs of the project over its life: investment, operation and maintenance (including major maintenance and repair) and no salvage or residual value. In terms of benefits, it considered carbon credits, value of energy saved, and avoided investment of STEG, value of energy saved as perceived by the society. Economic internal rate of returns (EIRRs) of the four companies were 43 percent (brick, Briqueterie Mazdour), 65 percent (paper, SoTuPapier), 57 percent (ceramic, Somocer) and 59 percent (food, Warda) with an average of 56 percent.

An ex-post analysis adopted the same methodology used by the ex-ante analysis and made some adjustments. However, among the four companies chosen for the ex-ante analysis, only two reached financial closure: Somocer and Nejma Huiles (Slama Frères, food in the PAD). In addition to Somocer, which was a comparatively large subproject (> 5 MW), a comparatively small cogeneration investment (about 1 MW) Nejma Huiles S.A. was added to the ex-post analysis. The total investment costs of these two companies was \$ 9 million, an equivalent to 16 percent of the original amount IBRD loan of \$ 55 million or 26 percent of the revised amount IBRD loan of \$ 33.99 million. The IBRD loan portions of the total investment costs of these two projects was \$ 6.8 million[1], an equivalent to 12 percent of the original amount IBRD loan of \$ 55 million or 20 percent of the revised amount IBRD loan of \$ 33.99 million. EIRRs of the two projects were 57 percent (Somocer) and 82 percent (Nejma Huiles) with an average of 83.5 percent. These higher EIRRs than those at ex-ante analysis was partly due to the ex-post analysis use of carbon value at \$ 30 compared to \$ 10 used in the ex-ante analysis.

### Financial Analysis

An ex-ante and ex-post analysis was conducted in the same scope with the economic analysis above and differed from the economic analysis that the financial analysis used financial values whereas the economic analysis used economic values, and that the financial analysis considered the costs and benefits of the project from the investors' point of view only unlike the economic analysis considered the national or society's view.

The ex-ante analysis of financial internal rate of returns (FIRRs) of the four companies were 38 percent (brick, Briqueterie Mazdour), 55 percent (paper, SoTuPapier), 41 percent (ceramic, Somocer) and 39 percent (food, Warda) with an average of 43 percent. An ex-post analysis' FIRRs of the two companies were 56 percent (Somocer) and 22 percent (Nejma Huiles) with an average of 39 percent.

### Administrative Efficiency

This project was extended from the original 4.7 years to 6.6 years. Until the first three years, which was 71 percent of the original project life, this project had almost no disbursement or no utilization of funds. Although there were exogenous factors such as economic slowdown and the Tunisian revolution, the lack of the TA on



capacity building and the non-bankable EE project pipelines were mainly due to the optimistic project design and should have addressed during the preparation, which were endogenous and controllable. Hence, the resources were used inefficiently.

[1] Annex 3, economic and financial analysis Page 40, reported IBRD loan to Somocer was TND 8,530 thousands but Annex 2 outputs by component, page 35, reported TND 8,350 thousands in the ICR. The ICR task team leader (TTL) clarified the correct value was TND 8,350 thousands.

## Efficiency Rating

Modest

a. If available, enter the Economic Rate of Return (ERR) and/or Financial Rate of Return (FRR) at appraisal and the re-estimated value at evaluation:

	Rate Available?	Point value (%)	*Coverage/Scope (%)
Appraisal	✓	56.00	6.00 <input type="checkbox"/> Not Applicable
ICR Estimate	✓	83.50	20.00 <input type="checkbox"/> Not Applicable

\* Refers to percent of total project cost for which ERR/FRR was calculated.

## 6. Outcome

The PDO remained highly relevant and the relevance of project design was modest. The efficacy rating up to the first restructure was modest and substantial thereafter. The efficiency rating was modest due to administrative inefficiencies.

The assessment of the overall Development Outcome is Moderately Satisfactory as presented in the following table.

	Against Original Project Indicators	Against First Revised Project Indicators (2012)	Against Second Revised Project Indicators (2015)	Overall
Rating	Moderately Unsatisfactory	Moderately Satisfactory	Moderately Satisfactory	Moderately Satisfactory
Rating value	3	4	4	
Weight ( percent disbursed)	6.5 percent	56.0 percent	37.5 percent	
Weighted value (2x3)	0.195	2.24	1.5	3.935

### a. Outcome Rating



Moderately Satisfactory

## 7. Rationale for Risk to Development Outcome Rating

Technical risk is low because innovative or complex technology and systems were not involved and the workforce in the banking and industrial sectors in Tunisia was relatively well trained.

Financial risk to the IBRD financed companies is low because the EE investments of the IBRD financed companies were completed. In terms of wording of “scaling up” as included in the PDO, the financial risk to the future EE investments is still high because of the relatively high transaction costs and lack of capacity in EE industry as well as vulnerability to the energy prices, regulation and reform as well as exogenous macroeconomic, political and other factors. However, at the project closing saw a stronger interest from the PFIs in lending in the EE sector (27 potential cogeneration subprojects from 2016 to 2020) and the relatively well trained workforce in the banking and industrial sectors in Tunisia.

Economic risk both at country and global level is high due to a challenging macroeconomic situation, tighter or more volatile global financial conditions and a further erosion of oil prices reducing the incentive to reform or to engage in EE investments. If this risk materializes, scaling up of EE investment would not be achieved, resulting in worsening of EE performance and increasing costs and volume of energy production.

Social risk in terms of the strength of stakeholder support and/or mitigation of any negative social impacts is low. The project contributed to small employment opportunities. But public awareness campaign, consultations and education of benefits of energy efficiency and conservation could help secure stakeholder supports and identify and mitigate any negative social impacts.

Political risk is high. A deteriorating security situation, political instability and high social tensions due to intensified terrorist activity, spillovers from the crisis in Libya, slow consensus-building, and/or push-back from vested interests, could undermine economic activity and affect the government’s ability to undertake pressing reforms. If this risk materializes, the impacts on EE investment and ensuing results would be similar as discussed in the economic risk above.

Environmental risk is modest and the companies financed by IBRD loan need to ensure their continued compliance of environmental safeguards practices.

The government ownership/commitment risk is low. The Government has shown interest and commitment in reforming the Tunisian economy as fleshed out in the National Strategy for Energy Conservation (please see also below on risk to institutional support).

Other stakeholder ownership risk from private sector/civil society is substantial and requires more public awareness campaign, consultations and education as discussed in the social risk above.

Risk to institutional support from the project entity ANME and related to legal/legislative framework are modest. ANME was not proactive in marketing and facilitating disbursements from the credit line, especially during the early implementation period due to lack of the TA of this project. The energy reform is still in progress.

However, the Government provided a legal, institutional, and regulatory framework to promote EE investments. It announced publicly its commitment to reducing the energy intensity of the Tunisian economy (including openly encouraging the banking sector to support the initiative) under its 4ECP for 2008–2011. The 4ECP set targets to reduce energy intensity by 3 percent per year and reach cumulative energy savings of 3.2 millions of tons of oil equivalent (Mtoe), of which the industrial sector’s contribution represented 20 percent. The GoT set up a comprehensive system to implement and monitor its goal of reducing energy intensity under its Energy Management Program and empowered ANME to implement its policies.



Governance risk is modest because no significant fiduciary issues were found during the project implementation. However, in general, the governance is weak in Tunisia and the lack of progress in the governance reform could undermine EE investor confidence.

Natural disasters exposure risk is modest, which would not be significantly different between companies with or without EE investment, *ceteris paribus*.

**a. Risk to Development Outcome Rating**

Substantial

## **8. Assessment of Bank Performance**

**a. Quality-at-Entry**

The Bank's strategic relevance was high. This project was included in the World Bank Country Assistance Strategy for FY2010-2013 and the Pillar 2. Sustainable Development and Climate Change had a Results Area 4: Promoting Energy Efficiency and Renewable Energy. Tunisia's eleventh National Development Plan (NDP) for 2007-2011 also addressed energy efficiency in its five axes, and this project was expected to contribute to the 4ECP (2008–2011).

However, the Bank's approach was weak due to lack of TA (an inherent risk to separate TA from the project, which materialized) and failure to ensure the bankable EE investment pipelines and proper mix of cogeneration and other smaller EE investments that would add value of the IBRD loan because these small EE investments were normally less attractive. PFI selection criteria was inadequate because those criteria weighted much more over those relating specifically to PFI EE experience and appetite. Given the importance of a robust subproject pipeline from the onset, there could have been room to devise more robust 'EE readiness criteria' for PFI selection, separate from prudential and financial criteria. For example, BH showed the importance of having a dedicated and proactive EE investment team to improve project identification, implementation, and evaluation; marketing of financial and environmental benefits; and ensuring fluid monitoring of disbursements. BH significantly increased its disbursement rate and even fully consumed its LOC owing to staff change made within its project team.

Technical aspects were ensured by including industry specialists and energy audit experts in the subproject due diligence teams. Financial and economic analyses were limited to only four sample projects, covering only 11 percent of the total IBRD loan or IBRD loan portion covering only 6 percent of the total IBRD loan.

Poverty and gender aspects were not discussed in the PAD. However the PAD noted that the project would not likely to produce negative social outcomes. Environmental aspects were adequately prepared.

Risk assessment was inadequate. The risks of the slow disbursement and the lack of interests of PFIs were underestimated as these risks materialized and had the major impacts of the project. The political and macroeconomic risks were not identified but affected. Fiduciary aspects were prepared adequately. Policy



and institutional aspects were adequately assessed but the capacity was overestimated. Implementation arrangements were adequate.

Result framework, monitoring and evaluation (M&E) arrangements had some shortcomings. The PDO formulation could have been better articulated, and additional indicators could have been added to track PFI performance in identifying and implementing subprojects, ensure a proper mix of EE and cogeneration subprojects, and measure the “scaling up” and the project’s contribution to the Government’s 4ECP.

Bank inputs and processes were adequate. The composition and balance of the World Bank team at appraisal was adequate (PAD, page 99, annex 11). It took 14.6 months from the project concept note review to the World Bank Board approval, which was longer than the average 12 months of World Bank projects in Tunisia.

### **Quality-at-Entry Rating** Moderately Satisfactory

#### **b. Quality of supervision**

The Bank’s supervision focused on development impacts. The Bank allocated sufficient budgets and staff, and the project was adequately supervised, including intensive missions every three months to make up the absence of TA. The supervision reporting was generally good and the intensity was adequate with an average of two supervision missions per year. The team’s proactive supervision allowed disbursements to pick up slowly at first and then rapidly during the last two years of implementation (2014 and 2015). The intervention of the World Bank was appropriate and concentrated almost solely on finding solutions to problems that slowed disbursement. Acknowledging the absence of TA, the supervision team departed from traditional approaches to supervision and was proactive in reaching out to the PFIs, industries, and private investors through site visits and face-to-face meetings to market the credit line directly and thus broke a major information barrier between EE investors and the PFIs.

Disbursements followed thereafter but took a sustained ascending path after the Government started increasing energy prices in 2013 and 2014 with a 10 percent increase each year. The overall learning of the project was substantial and future credit lines would have much less difficulty in disbursing. The team had the support of management and the comments on the Implementation Status and Results Reports (ISRs) were generally very supportive. The support of the World Bank Country Management Unit (CMU) and the Tunisia country office of the World Bank were particularly important and decisive. The International Finance Corporation (IFC) office in Tunisia was consulted and informed about the project implementation progress, given their plans to develop similar LOCs in the country. The World Bank’s financial management and procurement staff worked closely with ANME and the PFI staff to explain the rules and procedures to be applied based on the Loan Agreements (LAs). The financial management aspects of the project were carefully reviewed, and specific recommendations to strengthen the financial management systems of PFIs were made. Environmental and social specialists were often associated with supervision missions to monitor the quality of environmental and social compliance. The World Bank also provided guidance and oversight in the preparation of the operational manual of ANME, which was an effectiveness condition. The last ISR, archived on January 25, 2016 (Sequence 12), rated the project’s progress toward the achievement of the project’s



development objectives and overall implementation progress as Moderately Satisfactory. Candor and quality of performance reporting were optimistic until the first restructuring in November 2012 but later on were adequate.

The Bank's role in ensuring adequate transition arrangements for regular operation of supported activities after loan closing was not available in the ICR. The last task team leader (TTL) clarified that he had coordinated with IFC to take over. The World Bank missions had observed the setting up of energy management systems within the beneficiary industries and the monitoring of energy consumption following the implementation of EE and cogeneration investments.

### **Quality of Supervision Rating**

Highly Satisfactory

### **Overall Bank Performance Rating**

Moderately Satisfactory

## **9. Assessment of Borrower Performance**

### **a. Government Performance**

The commitment of the GoT, which provided a sovereign guarantee for the loans to the PFIs, to the ownership of the project and to the achievement of the PDOs, was strong throughout the project, and provided enabling environment (as discussed in section 7 above). A long list of covenants were included in the PAD but no information was provided in the ICR and all ISRs except the first and second ISRs which were not available in the World Bank internal system. The last task team leader (TTL) confirmed that all covenants were complied with. The GoT's relationships and coordination with donors/partners/stakeholders such as AFD was not available in the ICR.

### **Government Performance Rating**

Satisfactory

### **b. Implementing Agency Performance**

The implementing agency ANME's commitment to achieving PDO was strong but due to lack of the TA of this project, they were less active in promoting LOCs during the early project implementation as noted in the section 7 above. However, all ISR ratings were satisfactory including project management, procurement, M&E, and compliance with environmental and social safeguards. The role of ANME was crucial in the project design. It supported the participating banks and industry in a variety of ways, in particular through vetting the eligibility of potential investors for financing, supporting them with the application process, including investment subsidies from the *Fonds National de Maitrise de l'Énergie* (National Fund for Energy Conservation, FNME). The project pipeline was identified by the ANME, which was found to be non-bankable except two of them. To fill the gap of the absence of the TA, ANME used its in-house capacity and funds to support PFIs. On behalf of PFIs, ANME was also responsible for overall monitoring and evaluation (M&E) of project implementation progress, including the collection of project



performance information and reporting on the impact and results of the project, implementation of safeguards policies, and so on. ANME represented the GoT.

Therefore, ANME's adequacy of beneficiary/stakeholder consultations and involvement is be modest. ANME's readiness for implementation and implementation arrangements is modest. Timely resolution of implementation issues is also modest. The ICR did not report their relationships and coordination with partners/stakeholders such as AFD nor transition arrangements for regular operation of project supported activities after the loan closing.

### **Implementing Agency Performance Rating**

Moderately Satisfactory

### **Overall Borrower Performance Rating**

Moderately Satisfactory

## **10. M&E Design, Implementation, & Utilization**

### **a. M&E Design**

The PDO clearly specified as energy efficiency and cogeneration in the industry sector but the "program", which meant to be 4ECP, was unclear. The indicators reflected those objectives but unless the clear methodology, measurements, monitoring, verification and reporting system were used, the PDO indicators' full attribution to the project might be difficult. The project could have included additional indicators to track its contribution to EE investment scale-up (first part of the PDO), its contribution to the Government's 4ECP (second part of the PDO), and the split between EE and cogeneration investments. There was no direct indicator to measure the scale-up of EE investments per se, but rather indicators were available to measure energy and emission savings generated by these EE investments funded through the LOC. The indicator for cumulative energy savings (in tons of oil equivalent) was the same used by the GoT to track performance of the 4ECP, which would help the M&E design to be embedded institutionally and have sufficient stakeholder ownership. The indicators were measurable in terms of numbers, timing, and location. Data were to be collected annually from the PFIs' reports and ANME's calculations. The proposed data collection and sampling methods and analysis, and handling of comparators to understand attribution along the logical results chain were not available in the PAD and ICR. The format, content, and frequency of reporting were agreed upon and included in the Operations Manual. The baselines were set in the PAD.

### **b. M&E Implementation**

The M&E framework was monitored and updated in a systematic manner and was made available in progress reports and supervision documents. The project management unit (PMU) within ANME was responsible for overall M&E of implementation progress, including the collection of project performance information and reporting on the impact and results of the project. The M&E framework was implemented satisfactorily by the PMU during the project, and the M&E rating was Satisfactory throughout the project life. A member of the



PMU was assigned to collect information from the PFIs and maintain a database to monitor the implementation performance of the LOC. Performance monitoring of the project included the monitoring of performance indicators, as included in annex 3 of the PAD and periodic progress reports comprising detailed reporting on disbursements, EE sub-projects under review or approved and submitted to commercial banks for review with the view of their financing, and financial and environmental and social compliance. In November 2012, the project was restructured and the results indicators (PDO level and intermediate) targets were changed to reflect an overall smaller loan amount and the units of measurement of the PDO outcome indicators of the PAD were corrected. In February 2014 at the second project restructuring, the target dates were shifted to reflect the closing date extension. In July 2015 at the third project restructuring, the results indicators (PDO-level) were further modified to reflect a change in estimation methodology for energy savings and emissions reduction.

The ICR did not report any evidence of the sound methodology, independence of analysts, and quality control to ensure the data reliable and of good quality. Since these indicators contribute to the 4ECP, the M&E system could be sustained but the companies financed by the IBRD loan may require additional funding to continue M&E.

### **c. M&E Utilization**

The data collected were evaluated and used to inform decision making. For example, the verification of cumulative funds disbursed under the credit line enabled ANME and the PFIs to devise action plans to speed up disbursements. The sustainability of the M&E arrangements beyond the project implementation period would be likely because several funding agencies, such as AFD, European Investment Bank, and others have shown a keen interest in fostering EE in Tunisia, and the experience accumulated under the previous the Global Environment Facility (GEF)-Tunisia Energy Efficiency Program/Industrial Sector Project (EEISP) (P078131) and the Energy Efficiency Project would be valuable in the M&E of future World Bank and non-World Bank interventions in Tunisia. The M&E did not focus on assessing whether the theory of change within the project causality logic was sound and did this lead to any reframing of strategy. The findings of M&E measured outcomes as opposed to simply input application or outputs.

### **M&E Quality Rating**

Substantial

## **11. Other Issues**

### **a. Safeguards**

#### Environmental Safeguards

The World Bank's safeguards policy Environmental Assessment (EA) (OP/BP 4.01) was applicable to the project. The project was assigned a category FI because individual subprojects to be financed by the PFIs were to be identified during project implementation. The compliances with overall safeguards and EA were both rated Satisfactory throughout the project life.

Overall, the project had beneficial environmental effects, with reduction of GHG emissions as a



consequence of reduced energy consumption (energy savings). No negative environmental impact was reported as caused by the project. As required for category F projects, ANME prepared a Framework Environmental Impact Assessment Document ('Framework Document'). The Framework Document described procedures to be followed by any sub-borrower and ANME to satisfy both Tunisian and World Bank environmental regulations and policies. The PFIs delegated to ANME the responsibility to assess and review compliance with the World Bank's applicable safeguards policies according to the procedures described in the Framework Document. An assessment of the capacity of ANME to implement the required safeguards due diligence was carried out and led to an agreement with ANME to assign a competent staff to this function. The World Bank periodically fielded supervision missions to ensure that the M&E arrangements were correctly implemented.

All subprojects and each specific environmental assessment were subject to a screening and appraisal process. The following subprojects were however excluded from consideration for financing from the LOC: subprojects requiring a full environmental impact assessment as identified during screening (equivalent to World Bank category A), or subprojects located in protected areas such as forest reserves, national parks or sanctuaries, as well as subprojects that would trigger OP/BP 4.30 (Involuntary Resettlement), in particular projects involving land acquisition or displacement (even temporary). An analysis of implemented subprojects shows that these criteria did not limit the subprojects' pipeline. All subprojects subject to an Environmental Management Plan were reviewed and cleared by the Bank.

The World Bank environmental specialist reviewed and approved all subprojects, although the requirement was only to review the first two subprojects for each PFI. The World Bank specialist made various site visits to completed subprojects in the Tunis metropolitan area and Sousse (Nejma Huiles and Maklada), to compare environmental and social safeguards measures before and after the projects' implementation and to ascertain compliance with World Bank rules and procedures in this area. The environmental specialist also noted that the environmental form and the environmental and social screening checklist were completed as required. The Environmental Management Plans were prepared and implemented according to the findings of the screening checklist. The field visits also revealed that the companies that benefited from financing had qualified environment, health, and safety staff and had expertise in environment, health, and safety practices.

The ICR neither provided an evidence that the project completed the planned mitigation activities nor findings of any independent review of safeguards implementation or monitoring reports.

#### Social Safeguards

The EE and cogeneration subprojects financed under the LOC were within the existing premises of EE investors and did not require land acquisition. The projects did not therefore trigger OP 4.12 on Involuntary Resettlement. In addition, there was no negative social impact.

## **b. Fiduciary Compliance**

### Financial management

The project was implemented by three PFIs and then two after the project restructuring in November 2012. It was coordinated and monitored by ANME. Each PFI signed a Loan Agreement with the World Bank. At appraisal, an assessment of the PFIs' financial management systems capacity was conducted, confirming they



had in place reliable systems for project implementation. However, the newly created BFPME had limited experience in managing LOCs compared to the other PFIs. It dropped off the project following the project restructuring. The financial reporting system at each of the PFIs, was used to follow up project expenditures and generate project reports.

The Operations Manual included clear procedures and guidelines defining the flow of information and documentation between the various entities and ANME. Each PFI was to remit to the World Bank two sets of audited financial statements. The first audit report was for the financial statements of the activities financed through the loan and the Government (FNME subsidy) under the project. The second audit provided an opinion on the overall financial statements of the PFI. The auditor also reported any weaknesses of the internal control system, as observed in the course of its mandate. Such audits were conducted by external independent auditors acceptable to the World Bank. The ICR did not report what measures were taken to address them but the ICR TTL confirmed that all audit qualified opinions were corrected and no issues were pending at the closing of the project. Given the slow disbursement experienced by the project and the delays in preparing and transmitting audit reports and interim financial statements to the World Bank, the financial management of the project was downgraded from Satisfactory to Moderately Satisfactory in April 2013. The financial management rating remained at that level until the project closing date in January 2016.

Financial covenants were included in the PAD but no information was provided in the ICR and all ISRs except the first and second ISRs which were not available in the World Bank internal system. The last TTL confirmed that all covenants were complied with. Sixty two percent of the original IBRD loan or 85 percent of the revised IBRD loan resources were accounted for by project closure. The project cost did not have borrower contribution or other co-financers. The ICR did not report corruption or misuse of funds.

#### Procurement

Because the core and only component of the project was an LOC that was used by private beneficiaries with established private sector and commercial practices, the procurement procedures that were used by the implementing entities were defined in paragraph 3.12 “Procurement in Loans to Financial Intermediaries” of the World Bank Procurement Guidelines and concisely described in the Operations Manual. ANME provided guidance and support to the PFIs and EE investors. ANME, which gained procurement experience under World Bank guidelines in the implementation of the GEF-funded EEISP, had a team of procurement officers and lawyers to rely on. Nonetheless, an ex-post review of contracts procured by private sector beneficiaries according to the ‘established commercial practices’ method described in paragraph 3.12 of the Procurement Guidelines was undertaken initially (for a period of 18 months) through technical audits, including procurement aspects, performed by technical auditors appointed by ANME. In addition, the World Bank reviewed the findings of the audits. The arrangements were found satisfactory over the life of the project. Procurement was rated Satisfactory over the life of the project.

#### Disbursement

The ICR did not report IBRD loan found to be disbursed for ineligible expenditures.

### **c. Unintended impacts (Positive or Negative)**

Not applicable

### **d. Other**



Not applicable

## 12. Ratings

Ratings	ICR	IEG	Reason for Disagreements/Comment
Outcome	Moderately Satisfactory	Moderately Satisfactory	---
Risk to Development Outcome	Substantial	Substantial	---
Bank Performance	Moderately Satisfactory	Moderately Satisfactory	---
Borrower Performance	Moderately Satisfactory	Moderately Satisfactory	---
Quality of ICR		Substantial	---

### Note

When insufficient information is provided by the Bank for IEG to arrive at a clear rating, IEG will downgrade the relevant ratings as warranted beginning July 1, 2006.

The "Reason for Disagreement/Comments" column could cross-reference other sections of the ICR Review, as appropriate.

## 13. Lessons

The following first three except the last one were drawn from the lessons learned from the ICR.

**1. TA is indispensable to the success of EE projects and the indispensable activity for the project's success should not be included in a separate project.** The project overestimated the EE stakeholders' capacity. The TA from a separate project did not materialize. According to ANME and the PFIs, the provision of TA would have facilitated and accelerated the implementation of the project, such as support to the PFIs (credit appraisals and technical due diligence, risk assessment, EE marketing, monitoring, and so on) and investors (feasibility studies, capacity building, operational training, and so on) to lift off some of the knowledge capacity barriers more efficiently and faster.

**2. Energy tariff rebalancing and other reform measures can induce energy efficiency investment.** In 2013 and 2014, the GoT increased the energy prices, which helped increase the investors' interest in cogeneration. This trend might continue in the future if the Government maintains its commitment to a gradual but sustained increase in energy prices. There are also barriers and regulatory impediments to be removed in the electricity sector to encourage the development of cogeneration, including an attractive purchase tariff of excess electricity, power connection to the grid, and so on.

**3. Robust readiness criteria for PFI selection and bankable pipeline development can help avoid slow implementation.** The selection criteria used were more skewed toward ensuring compliance with prudential rules and regulations and good financial performance and much less on those relating specifically to PFI's EE experience and appetite, which misled their EE readiness. A two-stage approach could be employed: preselect banks that meet the prudential/financial requirements and then drill further into EE readiness to select the right



candidates (management team in place, pipeline of projects, management commitment to EE investments, resources available for support, and so on, as illustrated by the case of BH in section 8.a. above ).

**4. Small non-productive EE activities with high transactions would require strengthening of the capacity for the PFIs appraise and handle them.** This project was able to finance only relatively larger co-generation energy efficiency but could not finance the originally planned other smaller EE projects due to the lack of capacity of PFIs to handle to appraise, their high transaction costs (e.g., review of applications, credit worthiness assessment, follow-up, etc.), and limited creditworthiness of these investors.

#### 14. Assessment Recommended?

No

#### 15. Comments on Quality of ICR

This ICR is detailed and candid with good analysis. Some of the lessons were not based on evidence and analysis discussed in the ICR (paragraphs, 106, 107, 109, and 112). This ICR had some internal and external inconsistencies (e.g., amount of IBRD loan to Somocer, paragraph number of Procurement Guidelines, project code of the GEF project, etc.). The ICR also had some inconsistency with the World Bank Operations Policy and Country Services (OPCS) ICR guidelines (Last updated on July 22, 2014) on split rating, which would be used for the outcome rating, but this ICR used for the efficacy.

##### a. Quality of ICR Rating

Substantial