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**United Nations Development Programme  
United Nations Industrial Development Organization**

**Government of Turkey**

**Evaluation of GEF Project:  
Improving Energy Efficiency in Industry in Turkey  
(IEEI)  
(PIMS No: 4113)**

**Mid-Term Evaluation Report**

**Mission Members:**

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## ABBREVIATIONS

APR-PIR	Annual Project Review / Project Implementation Report
BTOR	Back-to-Office Report
CEO	Chief Executive Officer
CO	UNDP Country Office
CO <sub>2</sub>	carbon dioxide
CPAP	Country Program Action Plan
EE	energy efficiency
EECB	Energy Efficiency Coordination Board
EIE	General Directorate of Electrical Power Resources Survey and Development Administration
EMS	Environment Management Standard
EMU	Energy Management Unit
EnMS	Energy Management Standard
ESCO	energy service company
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
GDP	gross domestic product
GEF	Global Environment Facility
GHG	greenhouse gases
GoT	Government of Turkey
IEEI	Improving Energy Efficiency in Industry
ISO	International Organization for Standardization
ISP	integrated steel plant
ITC	International Technical Consultant
KOSGEB	Small and Medium Enterprises Development Organization
kW	kilowatt
kWh	kilowatt-hour
MENR	Ministry of Energy and Natural Resources
MIT	Ministry of Industry and Trade
MoEF	Ministry of Environment and Forestry
MoEU	Ministry of Environment and Urbanization
MWh	megawatt-hour (million watt-hours)
MTE	Mid-Term Evaluation
NGO	non governmental organization
NPD	National Project Director
OECD	Organization for Economic Cooperation and Development
OIZ	Organized Industrial Zone
PM	Project Manager
PMC	Project Management Cell
PMR	Partnership for Market Readiness – Project supported by the World Bank
PMU	Project Management Unit
ProDoc	Project document
QPR	Quarterly Project Review

R&D	research and development
RCU	UNDP/GEF Regional Coordination Unit
SMEs	small and medium-sized enterprises
SPO	State Planning Organization
ToR	Terms of Reference
TUBITAK	Turkish Scientific and Technical Research Council
tCO <sub>2</sub>	tonne of carbon dioxide
TSE	Turkish Standards Institute
TUIK	Turkish Board of Statistics
toe	tons of oil equivalent
TRY	Turkish lira (= USD 1.95, October 2013)
TTGV	Technology Development Foundation of Turkey
UNDAF	United Nations Development Assistance Framework
UNIDO	United Nations Industrial Development Organization
UNDP	United Nations Development Program
YEGM	General Directorate of Renewable Energy (under MENR)

## EXECUTIVE SUMMARY

### Brief Description of the Project

This report summarizes the findings of the Mid-Term Evaluation (MTE) Mission conducted during October 21-25, 2013 for the UNDP-UNIDO-GEF project entitled “Improving Energy Efficiency in Industry in Turkey” (herein referred to as the “Project” or IEEI) implemented by the United Nations Development Programme (UNDP) and the United Nations Industrial Development Organization (UNIDO) with financing support provided by the Global Environment Facility (GEF).

The IEEI Project is a Project that assists the Government of Turkey (GoT) on its various efforts to reduce energy intensities and GHG emissions in its industrial sector through the demonstration of energy efficient practices and technologies to industrial stakeholders, and the subsequent adoption of these practices and technologies by industry. Project activities include: a) strengthening of the institutional and regulatory framework for EE and energy management standards for industry; b) enhancing the capacity and awareness of Turkish industry and energy service providers; c) improving energy audit programmes for large industry and SMEs; and d) the demonstration of state-of-the-art energy management practices and EE measures as well as business and financial models.

The IEEI Project is being implemented under UNDP guidelines for nationally executed projects (with UNDP being one of the GEF Implementing Agency). IEEI is implemented with four implementing partners:

- YEGM or the General Directorate of Renewable Energy under the Ministry of Energy and Natural Resources (MENR);
- KOSGEB, an agency affiliated with Ministry of Industry and Trade or MIT that manages funds to support EE for SME industries;
- TTGV or the Technology Development Foundation of Turkey, an NGO under a PPP operating modality with funds to support EE in industry; and
- TSE or the Turkish Standards Institute (TSE), the agency responsible for certification of industrial and service provider entities to ISO and other standards adopted by the GoT.

While both UNDP and UNIDO are both GEF implementing partners on IEEI, UNDP assumes the overall management of the Project under the direction of the NPD from YEGM.

The ProDoc for IEEI was signed in April 2010; the Inception Phase of the Project, however, did not commence until May 2011. This MTE evaluates the 30 months of the Project operations since May 2011, providing recommendations on resource utilization for the remaining period of the Project that is scheduled to end on August 31, 2015.

### Context and Purpose of the Evaluation

The purpose of the mid-term evaluation (MTE) for this Project was to evaluate the progress towards attainment of global environmental objectives, project objectives and outcomes, capture lessons learned and suggest recommendations on major improvements. The MTE is to serve as an agent of change, play a critical role in supporting accountability, and serve to:

- Strengthen the adaptive management and monitoring functions of the Project;
- Enhance the likelihood of achievement of Project and GEF objectives through analyzing project strengths and weaknesses and suggesting measures for improvement;
- Enhance organizational and development learning;
- Enable informed decision-making;
- Create the basis for replication of successful project outcomes achieved to date;
- Identify and validate proposed changes to the project document to ensure achievement of all project objectives; and
- Assess whether it is possible to achieve the objectives in the given timeframe, taking into consideration the speed at which the project is proceeding.

## Evaluation of Project

*The overall rating of the Project is Moderately Unsatisfactory (MU), based mainly on:*

- Relevance of IEEI: moderately unsatisfactory. While the objectives of the Project are strongly in-line with GoT goals for EE, the continued lack of progress will increase the risk that IEEI becomes less relevant to the GoT's efforts to improve industrial EE, notwithstanding the high level of interest of all stakeholders to support the Project;
- Impacts of IEEI: moderately unsatisfactory:
  - Accelerated adoption of ISO 50001 by Government of Turkey where Project resources were used to translate the ISO standards into Turkish;
  - No efforts have been initiated towards raising awareness amongst industrial stakeholders, technical personnel and energy service providers;
  - Only the methodologies for WTEA and the “detailed” energy audit have been identified in 2013 and near the mid-point of the Project, with only YEGM personnel exposed to the new methodologies;
  - No EE projects have yet been conceptualized for demonstration;
  - Various financing mechanisms have been studied with the intention of integrating available EE financing sources from the various Project implementing partners into a “harmonized” financing mechanism;
- Outcomes of IEEI: moderately unsatisfactory:
  - Institutional and regulatory framework has not been strengthened as there has been no substantial efforts to collect industrial energy use data, setting benchmarks, setting up of regional energy management units as a means to assist industry with compliance to the 2007 EE Law;
  - Activities to enhance the awareness of industry managers, technical personnel and energy service providers has not been achieved as planned;
  - The Project has only started activities towards implementing an energy audit program that includes 3 out of 4 “training of trainers” (ToT) workshops completed to date;
  - Efforts towards implementing demo projects and financing mechanisms on EE measures has not even been scoped.



- Effectiveness of IEEI: moderately unsatisfactory:
  - Project expenditures to date has been ~USD 1.2 million over 30 months that has produced three studies (energy audit methodology, financing mechanisms, and energy portal design) + three ToT ISO 50001 training workshops;
  - The previous heads of the Project Management Cell (i.e. ex-Project Coordinator and Chief Technical Advisor) were not effective in establishing a collaborative working relationship with implementing partners and advance progress of a number of important Project activities.
- View of direct beneficiaries and project participants of IEEI:
  - Implementing partners are frustrated over the lack of progress;
  - Some implementing partners have reported on the lack of follow-up and execution on decisions made during PSC meetings;
  - Implementing partners claim that the past Chief Technical Advisor and Project Coordinator did not interact well with implementing partners;
  - Implementing partners have complemented the work of all the specialist foreign consultants recruited to date as having provided useful outputs for project beneficiaries.

**Table A: Summary Evaluation of Project<sup>1</sup>**

Project Strategy	Relevance	Efficiency	Effective-ness	Overall Rating
<b>Outcome 1:</b> Strengthened institutional-regulatory framework and a national Energy Management Standard contributing to the implementation of the EE Law	3	2	3	2.7
<b>Outcome 2:</b> Enhanced capacity and awareness of Turkish industry and energy service providers	2	2	2	2
<b>Outcome 3:</b> Energy audit program for large industry and SMEs implemented	2	2	1	1.7
<b>Outcome 4:</b> State-of-the-art energy management practices and EE measures, business and financing models are demonstrated	Unable to rate	Unable to rate	Unable to rate	Unable to rate
<b>Monitoring and Evaluation</b>	4	4	4	4
<b>Overall Rating</b>	2.8	2.5	2.5	<b>2.6</b>

*Project sustainability rating is Likely (L), notwithstanding the poor progress to date, with the following rationale:*

- The strong engagement of all Government stakeholders interviewed on the IEEI Project to support energy audits, improve the availability of energy consumptive information from

<sup>1</sup> The Project outputs were rated based on the following scale: 6: Highly satisfactory (no shortcomings), 5: Satisfactory (minor shortcomings), 4: Moderately satisfactory, 3: Moderately unsatisfactory (significant shortcoming), 2: Unsatisfactory (major problems); and 1: Highly unsatisfactory (severe shortcomings)

industrial stakeholders, capacity building and awareness raising activities, and EE demonstration projects;

- A strong commitment of YEGM and TSE to improve EE adoption by industrial entities:
  - ⇒ Industrial EE is a high government priority;
  - ⇒ The adoption of ISO 50001 (Energy Management Systems) by the Turkish Government and the translation of the standard into Turkish;
  - ⇒ The provision of ToT workshops to YEGM for ISO 50001 energy audit framework;
  - ⇒ Regulations in place obligating industrial SMEs to report their energy consumption to YEGM if it exceeds 1,000 toe annually;
- Strong incentives for industrial SMEs to adopt EE measures as a means to reduce their operational costs and improve their competitiveness, in light of the doubling of electricity costs over the past 4 years.

## Conclusions

- Project progress has been poor with virtually no impact from Project activities implemented thus far;
- Poor progress notwithstanding, there are a number of Project achievements and indicators that serve as solid building blocks for the Project to advance its industrial EE agenda with remaining GEF resources including:
  - Adoption of ISO 50001 for Energy Management Systems, and the subsequent translation of this standard to Turkish and the dissemination of the standard at 3 ToT workshops;
  - A review of energy audit mechanisms for Turkey with recommendations on future directions for the industrial sector to reduce their energy intensities;
  - A review of financial mechanisms available to industrial entities to implement EE measures with recommendations on improving access and sustainability of financing to industrial entities for EE measures; and
  - The eagerness of all Project implementing partners to see substantial progress of all Project activities, noting the importance of EE in the industrial sector to Turkey's economy.
- There are sufficient Project resources (USD 4.76 million) remaining that can be utilized “re-start” the Project (in addition to Project activities already initiated) to achieve its objectives, most important being the EE demonstration projects from Outcome 4. However, the current remaining time of IEEI (assuming the current Project terminal date of August 30, 2015) of 21 months, is likely insufficient time to expend these funds and to achieve Project objectives. As such, an extension of the Project from its terminal date of August 2015 will be necessary;
- For the Project to succeed, the effectiveness of the new Project Coordinator and CTA will be crucial. The new PC will need to utilize lessons learned from the execution of IEEI over the past 30 months and raise the level of confidence of implementing partners that the PMC can deliver the intended outputs and outcomes of the Project. This will be a challenging task notably the coordination and facilitating consensus amongst Project's 4 implementing

partners, 2 executing agencies and industrial stakeholders. The CTA will need to be effective in transferring EE knowledge to both public and private sector stakeholders, and leading industrial stakeholders towards EE investment commitments and reducing their energy intensities;

- The Project planning matrix (PPM) needs to be re-written and clarified with new targets that will improve management of the Project.

## Recommendations

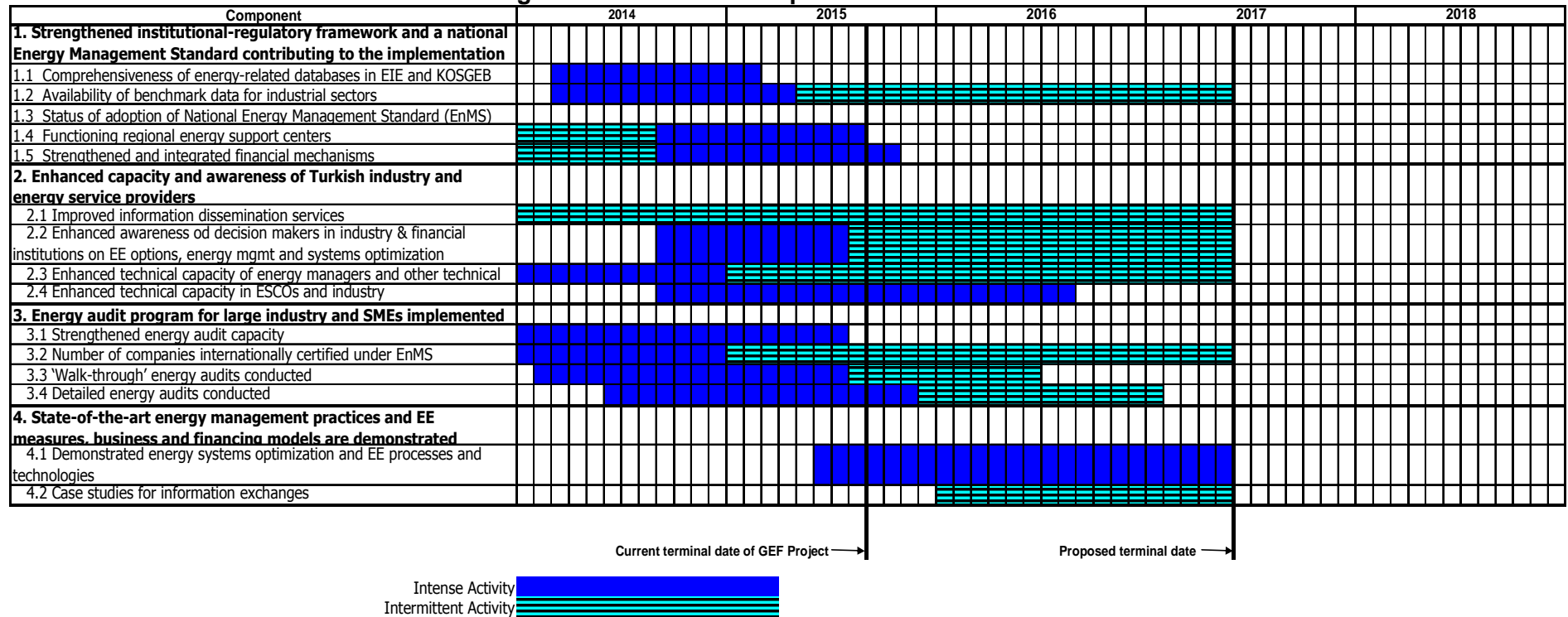
To improve the likelihood of the IEEI Project achieving its intended outcomes with remaining GEF resources, the following recommendations are provided:

**Recommendation 1: Extend the Project for another 21 months to a new terminal date of May 31, 2017 to allow the Project to undertake all planned activities with the following rough order of priority:**

- Strengthening energy auditor capacity for “walk-through”, detailed energy audits and investment grade energy audits (Outcome 3). This would be a top priority given that it is the pre-cursor to any activity on implementing demonstration EE measures, business models and EE financing mechanisms (outcome 4). To meet the targets for energy audit capacity for the industrial sector, activities within Outcome 3 should commence as soon as the new PC and CTA are on the Project, for a minimum period of 18 months;
- Enhancing technical capacity for industrial energy managers (Output 2.3). This is important to ensure that the new National Energy Management Standards (EnMS) will be promoted and setup in industrial entities. This activity should commence immediately for a period of 12 months or more as appropriate;
- Finalizing decisions on which industrial sector to focus on for the collection of energy usage data, the specific type of energy data to collect, and the use of the energy data (as a part of Output 1.1). These decisions will have the purpose of assisting SMEs as well as larger enterprises to comply with the EE law of 2007 and related secondary legislation requiring these industrial entities to disclose their energy usage data to YEGM. This activity should commence during Q1 of 2014 for a period of 12 months (or more if appropriate) as there is much preparatory work to agree on the type of data to collect, engaging the industrial entity to disclose energy information to YEGM, and to collect sufficient information to meet the project target of 1,500 industries;
- Setting of benchmarks for targeted industries (Output 1.2) using collected and analyzed data from Output 1.1. This can commence within Q1 of 2014 with the provision that there is sufficient data collected from Output 1.1 on a specific industrial activity;
- Enhancing EE awareness of industrial decision makers and energy service providers (Output 2.3). This activity can commence within Q3 or Q4 of 2014;
- Setting up of EMUs in ten OIZs (Output 1.4) and EE financing mechanisms (Output 1.5). These setups should be substantially completed by Q2 of 2015, and in advance of implementing the demonstration EE measures (Outcome 4);
- Implementing demonstration EE investments (Outcome 4) after achieving the aforementioned priorities. Development of demo EE investments could commence as early as mid-2015 and continue to the proposed terminal date of February 28, 2017;

A draft Project schedule bar chart is provided on Figure A.

**Figure A: Revised IEEI Implementation Schedule**



**Recommendation 2: The new Project Coordinator and Chief Technical Advisor will need to provide strong coordination functions between the 4 implementing partners, 2 execution agencies and industrial stakeholders on the Project.** The new PC and CTA will need to develop collaborative and trusting relationships with YEGM and the other implementing partners of the Project. They should have personal attributes that demonstrate flexibility and strive to seek consensus in their roles of augmenting Government efforts to promote industrial EE.

**Recommendation 3: UNDP and UNIDO will need to closely monitor Project progress and adaptively manage the Project according to what has been achieved by the Project.** This will require close and thorough monitoring of the performance of the new PC and CTA, and more frequent consultations with the NPD and other key personnel from the other implementing partners. The Evaluator suggests that initially, UNDP and UNIDO should have monthly meetings on progress that could be less frequent if there is confidence that the Project is progressing satisfactorily. If certain Project interim targets have not been met, the PMC should closely consult with the NPD as well as UNDP and UNIDO monitors to prepare actions to mitigate any delays or risks that may include scaling back of certain targets (e.g. reducing the number of energy audits conducted). These adaptive management actions are proposed since (with the remaining proposed 39 months) the risk of Project delays are high if the new PC and CTA are unable to bring consensus and execute the AWP and PSC decisions in a timely manner.

**Recommendation 4: The Project should promote a range of financing options to implement demo EE measures instead of an emphasis on ESCOs.** For example, SMEs may opt to finance their EE measures in other ways. As such, the Project should promote a range of financing options to suit SMEs that are available from some of the Project's implementing partners including soft loans, commercial loans, grants, loan guarantee funds as well as ESCOs. It is also understood that the legal framework for ESCOs in Turkey is still under development<sup>2</sup>; hence, there is a high risk of not achieving the target of closing 10 new ESCO performance contracts under Outcome 2. The PSC should review and revise this to an achievable target.

**Recommendation 5: The Project should report on its linkages and collaboration with the World Bank's PMR Project in Turkey as a means to improve the quality of industrial MRV and ultimately, enhance EE investment returns through proposed carbon pricing instruments.** The Project does provide support for the generation of industrial energy use data which would be developed under the demonstration projects on Outcome 4. The Project's outputs should be closely linked with the PMR Project that should have the impact of augmenting the system under which industrial entities collect data and information on baseline conditions within an MRV structure, and provide energy usage and emission reports to YEGM and other regulatory institutions such as MoEU.

Similar to the 2007 EE Law requiring disclosure of energy usage data, there is a Turkish MRV by-law based on the MRV regulation in the EU ETS, that requires the establishment of an installation-level monitoring, reporting, and verification system for all major sources of GHG emissions from the industrial sector (e.g. coke production, metals, cement, glass, ceramic

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<sup>2</sup> ESCO deals to date in Turkey have only involved large companies. As such, considerable efforts may be required to reduce the perceived risks (by financial institutions) and boost the confidence in these ESCOs in providing services to smaller industrial SMEs

products, paper and pulp, chemicals over specific threshold sizes/production levels). Under MRV legislation, operators are required to monitor their emissions in accordance with approved monitoring plans and submit their verified emissions reports annually. The MRV by-law, however, does not establish any emission limitation or reduction mandate on the operators. Rather, each industrial entity needs to submit the monitoring plans for its installations first to an accredited verifier for review, and then to MoEU by June 2014. The first reporting period is set as 1 January – 31 December 2015, and the reports for that period must first be independently verified by one of the accredited verifiers. The verified monitoring reports are to be sent to the Ministry in April 2016.

Through reporting the Project's collaboration with the PMR project, UNDP, UNIDO and GEF can receive assurances that there is work towards the consolidation of MRV procedures for energy usage data and GHG emissions in collaboration with MoEU, accreditation bodies and verifiers. Such assistance can pilot an energy usage and GHG emission system that will inform policy choices for YEGM or MoEU with regards to market-based mechanisms and enhance incentives for industrial entities to invest in EE measures. The MoEU is currently working with the industrial associations to identify the relevant industrial facilities eligible for this assistance. The key outcome of an improved and robust MRV system will provide Turkey with accurate information on GHG emissions in the industrial sector, as well as on the technologies, fuels, and emission factors at the various installations. This will also assist the Government of Turkey in developing a solid basis for designing and implementing climate change mitigation policies and measures as well as other energy efficiency and environmental policies, and the deployment of results based finance instruments.

***Recommendation 6: Simplify the PPM and reset realistic EOP targets.*** A draft revised PPM is provided in Appendix D. All Project stakeholders should review the targets set in the PPM to ensure their comfort in achieving these targets with a new terminal date of February 28, 2017. For example, can the Project achieve the target of enhanced energy information from 1,500 industrial entities within a 39-month period? In the edited version, Outcome 5 was dropped from the PPM as it does not have any direct developmental relevance and forms the M&E plan for the Project.

# 1. INTRODUCTION

This report summarizes the findings of the Mid-Term Evaluation (MTE) Mission conducted during October 21-25, 2013 for the UNDP-GEF project entitled “Improving Energy Efficiency in Industry in Turkey” (herein referred to as the “Project” or IEEI) implemented by the United Nations Development Programme (UNDP) and the United Nations Industrial Development Organization (UNIDO) with financing support provided by the Global Environment Facility (GEF).

The IEEI Project Document (ProDoc) provides details on the various efforts by the Government of Turkey (GoT) to reduce energy intensities and GHG emissions in its industrial sector, and the Project interventions to augment these efforts through the demonstration of energy efficient practices and technologies to industrial stakeholders, and the subsequent adoption of these practices and technologies by industry. IEEI Project activities include: a) strengthening of the institutional and regulatory framework for EE and energy management standards for industry; b) enhancing the capacity and awareness of Turkish industry and energy service providers; c) improving energy audit programmes for large industry and SMEs; and d) the demonstration of state-of-the-art energy management practices and EE measures as well as business and financial models.

The ProDoc for IEEI was signed in April 2010; the Inception Phase of the Project, however, did not commence until May 2011. This MTE evaluates the 30 months of the Project operations since May 2011, providing recommendations on resource utilization for the remaining period of the Project that is scheduled to end on August 31, 2015.

## 1.1 Background

The improvements in the standards of living in Turkey over 10 years have increased the country’s energy consumption and GHG emissions. Energy consumption in Turkey has been continuously increasing with an average 4.4% annual increase since 1970 and an annual 5.7% annual increase is expected between 2006 and 2020. The total energy consumption of Turkey reached 106 million tonnes of oil equivalent (mTOE) in 2007 and is estimated to reach 222 mTOE in 2020<sup>3</sup>. Turkey’s GHG emissions have increased from 22 million tonnes (mt) CO<sub>2eq</sub> in 2000 to over 299 mt CO<sub>2eq</sub> in 2009, an increase of 33%<sup>4</sup>. Growth of GHG emissions in Turkey is illustrated on Figure 1.

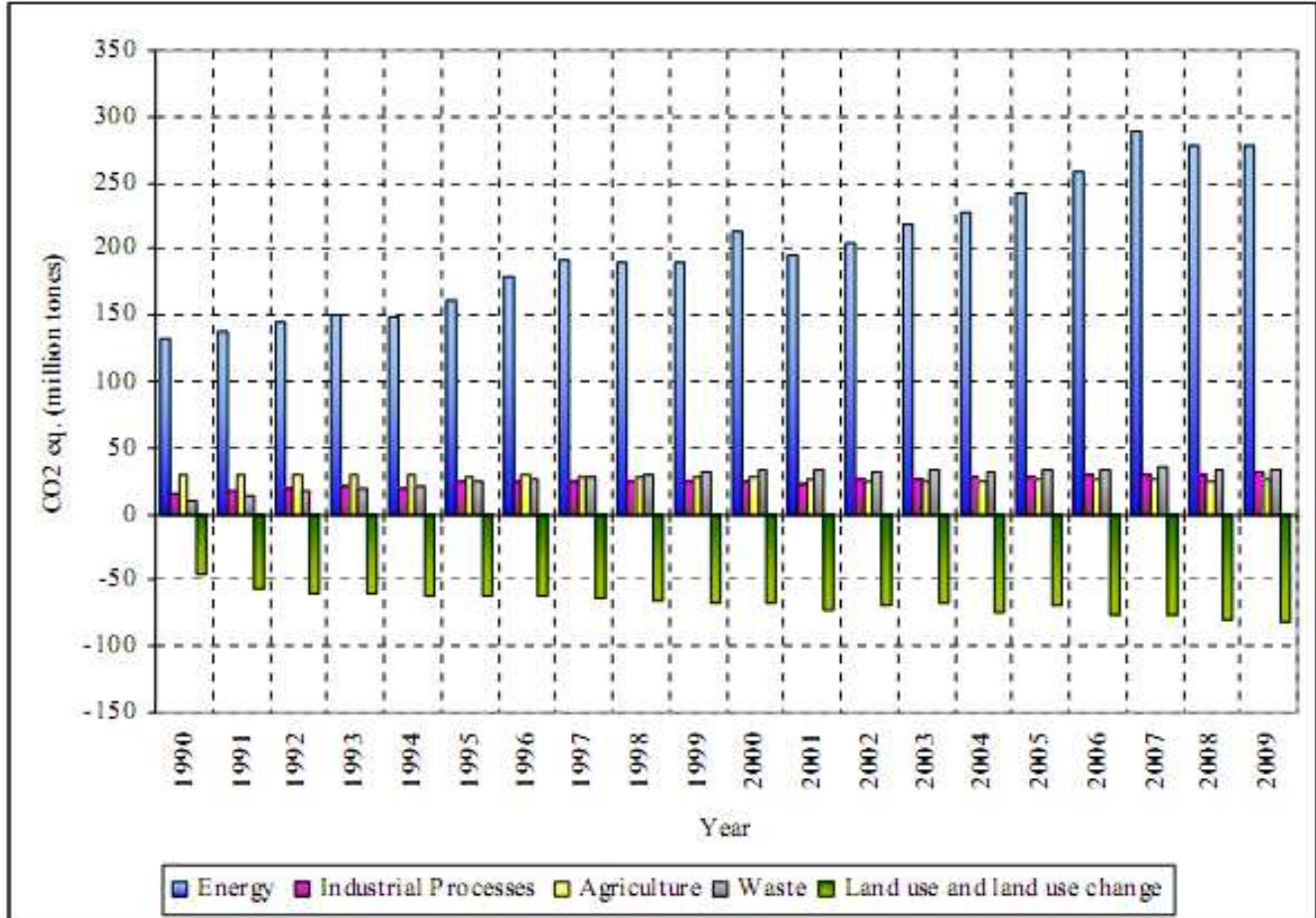
The industrial sector in Turkey is a key driver of economic development and the largest consumer of energy in the country. Turkey’s industrial sector is diversified with the food subsector having the largest share in manufacturing production with 18.8%, followed by textiles and clothing with 16.3%, petroleum products with 8.8%, iron-steel with 6.2%, automotive with 5.8% and chemistry industry with 5.0%. Small to medium-sized enterprises<sup>5</sup> (SMEs) comprise a considerable share of the sector<sup>6</sup>. The share of these enterprises in manufacturing is 99% in total number of establishments, 56% in total employment and 24% in value added. Turkish industry is mainly owned by the private sector. In manufacturing industry, more than 80% of production and about 95% of gross fixed investment is realized by private sector.

<sup>3</sup> According to the State Planning Organization and MENR

<sup>4</sup> [http://unfccc.int/files/ghg\\_emissions\\_data/application/pdf/tur\\_ghg\\_profile.pdf](http://unfccc.int/files/ghg_emissions_data/application/pdf/tur_ghg_profile.pdf)

<sup>5</sup> SMEs are defined in Turkey as follows. Micro: 1-9 employees, annual turnover of < 1 million TRY. Small: 10-49 employees, annual turnover < 5 million TRY. Medium: 50-250 employees, annual turnover < 25 million TRY

<sup>6</sup> According to KOSGEB statistics there are about 272,000 companies in the manufacturing sector, employing about 2.18 million employees. About 240,000 employ about 1-9 people per company.

Figure 1: GHG Emissions Inventory<sup>7</sup>

In comparison with other economies, the Turkish economy can be considered energy intensive. Although total primary energy supply (TPES) per capita in Turkey is among the lowest, 1.2 tons of oil equivalent (toe) per capita in 2005 compared to the OECD average of 4.7 toe per capita, the Turkish economy is more energy intensive at 0.27 toe in energy to generate USD 1,000 of GDP (in 2000 USD), compared to the OECD average of 0.18 toe per USD 1,000 GDP<sup>8</sup>. Moreover, the electricity consumption of the Turkish industrial sector grew at a rate between 9 and 12.5% between 2005 and 2011 (with the exception of the period between 2007 and 2009 that experienced negative growth in electricity consumption)<sup>9</sup>. The growth rate of 2012 is expected to be in the order of 10%. While energy intensity is substantially affected by economic and industrial structures, the fact that Turkey is 2.5 times more energy intensive than that of the EU-15 countries indicates the potential for energy efficiency improvements.

GHG emissions data also provides indicators of the growth of the industrial sector. Table 1 provides GHG emissions from the industrial sector and other major economic sectors in Turkey.

<sup>7</sup> TUIK 2011

<sup>8</sup> IEA, Key world energy statistics, 2009

<sup>9</sup> Turkish Statistical Institute: [http://www.turkstat.gov.tr/PreTablo.do?alt\\_id=1029](http://www.turkstat.gov.tr/PreTablo.do?alt_id=1029)



**Table 1: Sectoral GHG Emissions (million tonnes CO<sub>2eq</sub>)<sup>10</sup>**

	1990	1995	2000	2005	2009
Energy	132.13	160.79	212.55	241.75	278.33
Industrial Processes	15.44	24.21	24.37	28.75	31.69
Agriculture	29.78	28.68	27.37	25.84	25.70
Waste	9.68	23.83	32.72	33.52	33.93
<b>Total</b>	<b>187.03</b>	<b>237.51</b>	<b>297.01</b>	<b>329.87</b>	<b>369.65</b>

## 1.2 Rationale for Project

Energy efficiency (EE) is a high priority for the Government of Turkey as a means for security of energy supply to service a fast growing economy, and to reduce pollution and energy loads. The 2004 Energy Efficiency Strategy and 2008 promulgation of the Energy Efficiency Law are indicators of the importance of EE to the Government of Turkey. They serve as a basis for the legal and institutional framework that supports the transformation of the industrial sector towards energy efficiency.

As of 2010, the industrial sector was the largest consumer of energy in Turkey with 37% of total final consumption of energy. This is followed by the building and services sector (35%), transport (18%) and others (10%), which includes the agriculture sector. Turkey's sustained economic growth can be largely attributed to its industrial sector that has grown in the order of 20% over the past 10 years. Growth in industrial production has increased the energy demand over this period with primary energy consumption growing from 82.1 million toe in 2003 to 109.3 million toe in 2010. Looking forward, growth in energy consumption in the industrial sector is expected to be high in the near future, both in volume and proportion.

Industrial energy intensity in Turkey is also high compared to EU averages, suggesting that further efficiency savings can be made. For example, almost 50% of the energy consumed in steel and glass manufacturing is in raw material processing. However, most importantly, the industrial sector has experienced a steady rise in energy prices, notably electricity prices which have doubled since 2009 from US\$0.076/kWh<sup>11</sup> to the current price of US\$0.145/kWh<sup>12</sup>. The impact of rising energy prices has been increased operational costs and increased threat of reduced competitiveness of Turkey's industrial sector. As such, there is significant potential for energy efficiency and a related reduction of GHG emissions from the industrial sector of Turkey.

<sup>10</sup> Turkey GHG Inventory 1990-2009, annual submission to UNFCCC:  
[http://web.ogm.gov.tr/diger/iklim/Dokumanlar/RAPORLAR/TURKEY%20NIR%20Part%20I%20\(wo%20LULUCF\).pdf](http://web.ogm.gov.tr/diger/iklim/Dokumanlar/RAPORLAR/TURKEY%20NIR%20Part%20I%20(wo%20LULUCF).pdf)

<sup>11</sup> [http://epp.eurostat.ec.europa.eu/statistics\\_explained/index.php?title=File:Half-yearly\\_electricity\\_and\\_gas\\_prices\\_second\\_half\\_of\\_year\\_2009-2011\\_\(EUR\\_per\\_kWh\).png&filetimestamp=20130116115243](http://epp.eurostat.ec.europa.eu/statistics_explained/index.php?title=File:Half-yearly_electricity_and_gas_prices_second_half_of_year_2009-2011_(EUR_per_kWh).png&filetimestamp=20130116115243)

<sup>12</sup> <http://www.tedas.gov.tr/BilgiBankasi/Sayfalar/ElektrikTarifeleri.aspx>

Notwithstanding these sound reasons for implementing EE, the adoption of EE particularly amongst SME industries, has been slow for a myriad of reasons. Though the Government has promulgated a number of strategies and support schemes within the EE Law and related secondary regulations to promote industrial energy efficiency, there are still issues related to the capacity and EE awareness of industrial sector decision makers, energy managers and technical personnel as well as setting up energy efficiency service providers, formalizing and standardizing energy management and energy audit systems, demonstrating EE investments for industrial entities, and streamlining financial support for industrial energy efficiency.

### 1.3 Project Goals, Objectives and Expected Results

The project development **goal** is to improve energy efficiency of the Turkish industry by enabling and encouraging companies in the industrial sector for efficient management of energy use by different energy conservation measures and energy efficient technologies.

To achieve this goal, the Project was designed to achieve a number of outcomes<sup>13</sup>:

- Strengthened institutional-regulatory framework and a national Energy Management Standard contributing to the implementation of the EE Law. This was to be achieved through the activities to provide updated information on energy use of 1,500 industries and placed into YEGM (formerly EIE) and KOSGEB databases, enhanced availability of benchmark data for all industrial sectors, guidelines for the implementation of a National Energy Management Standard (EnMS), setup of 10 operational regional energy support centers, and the strengthening of 3 existing financial mechanisms for large industry (YEGM and TTGV) and SMEs (KOSGEB);
- Enhanced capacity and awareness of Turkish industry and energy service providers. This was to be achieved through the provision of improved information services on websites and the formulation of knowledge products (i.e. information brochures and case studies, enhancing awareness industry decision-makers on EE options and optimized energy management, and enhancing technical capacity of ESCOs and industry personnel on energy management and systems optimization;
- Energy audit program for large industry and SMEs implemented. This was to be achieved through the dissemination of energy audit methodologies tailored for industrial entities, both SMEs and large industries, and formalized training and certification of energy auditors;
- Support for the demonstration of industrial EE measures, best practices for energy management and business and financing models for EE investments. This was to be achieved through the actual financing and development of EE measures in more than 40 SMEs and 25 large industrial entities.

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<sup>13</sup> Based on the Project's Inception Report of May 2011

## 2. MID-TERM EVALUATION

### 2.1 Purpose of the Evaluation

The purpose of the mid-term evaluation (MTE) for this Project was to evaluate the progress towards attainment of global environmental objectives, project objectives and outcomes, capture lessons learned and suggest recommendations on major improvements. The MTE serves as an agent of change and plays a critical role in supporting accountability. As such, the MTE serves to:

- Strengthen the adaptive management and monitoring functions of the Project;
- Enhance the likelihood of achievement of Project and GEF objectives through analyzing project strengths and weaknesses and suggesting measures for improvement;
- Enhance organizational and development learning;
- Enable informed decision-making;
- Create the basis for replication of successful project outcomes achieved to date;
- Identify and validate proposed changes to the ProDoc to ensure achievement of all project objectives; and
- Assess whether it is possible to achieve the objectives in the given timeframe, taking into consideration the speed, at which the project is proceeding.

In accordance with UNDP/GEF monitoring and evaluation (M&E) policies and procedures, all projects with long implementation periods (e.g. over 3 or 4 years) are strongly encouraged to conduct MTEs. In addition to providing an independent in-depth review of implementation progress, the MTE is intended to be responsive to GEF Council decisions on transparency and better access to information during implementation. MTEs are intended to identify potential project design problems, assess progress towards the achievement of objectives, identify and document lessons learned (including lessons that might improve design and implementation of other UNDP/GEF projects), and to make recommendations regarding specific actions that might be taken to improve the project. It is expected to serve as a means of validating or filling the gaps in the initial assessment of relevance, effectiveness and efficiency obtained from monitoring. The MTE provides the opportunity to assess early signs of project success or failure and prompt necessary adjustments.

For these reasons, an evaluation mission was fielded to Ankara from October 21-25, 2013 for the MTE of this UNDP/UNIDO-GEF full-sized Project.

### 2.2 Key Issues to be Addressed

Key issues to be addressed by this MTE include:

- The appropriateness of the project concept and design in the context of current events in Turkey;
- Implementation of the Project in the context of effectiveness and efficiency in the delivery of its activities; and
- Project impacts based on current outputs and outcomes and the likelihood of sustaining project results.

Outputs from this MTE will be used as guidance to chart future directions for this Project.

## 2.3 Evaluation Methodology and Structure of the Evaluation

The methodology adopted for this evaluation includes:

- Review of project documentation (i.e. project documents, APRs/PIRs, inception meeting minutes) and other pertinent background information;
- Interviews with key project personnel including the Project Manager, past project personnel, project consultants, and relevant UNDP and UNIDO staff;
- Interview with relevant stakeholders from Government (e.g. YEGM, KOSGEB, TTGV, TSE, GEF focal point); and
- Field visits to selected project sites and interviews with beneficiaries.

A detailed itinerary of the Mission is shown in Appendix B. A full list of documents reviewed and people interviewed is given in Annex C. The Evaluation Mission for this GEF project comprised one International Consultant.

This evaluation report is presented as follows:

- An overview of project implementation from the commencement of operations in March 2010;
- Review of project results based on project design and execution;
- Conclusions and recommendations that can increase the probabilities of a successful conclusion; and
- Lessons learned from implementation of the project to date.

This evaluation has taken into consideration the GEF Monitoring and Evaluation policy available from:

<http://thegef.org/MonitoringandEvaluation/MEPoliciesProcedures/mepoliciesprocedures.html>

as well as the UNDP-GEF Monitoring and Evaluation policy that can be downloaded from:

<http://www.undp.org/gef/05/monitoring/policies.html>

The Evaluation also meets conditions set by the UNDP Document entitled “Handbook on Planning, Monitoring and Evaluating for Development Results”, 2009:

<http://www.undp.org/evaluation/handbook/documents/english/pme-handbook.pdf>

and the “Addendum June 2011 Evaluation”:

<http://www.undp.org/evaluation/documents/HandBook/addendum/Evaluation-Addendum-June-2011.pdf>

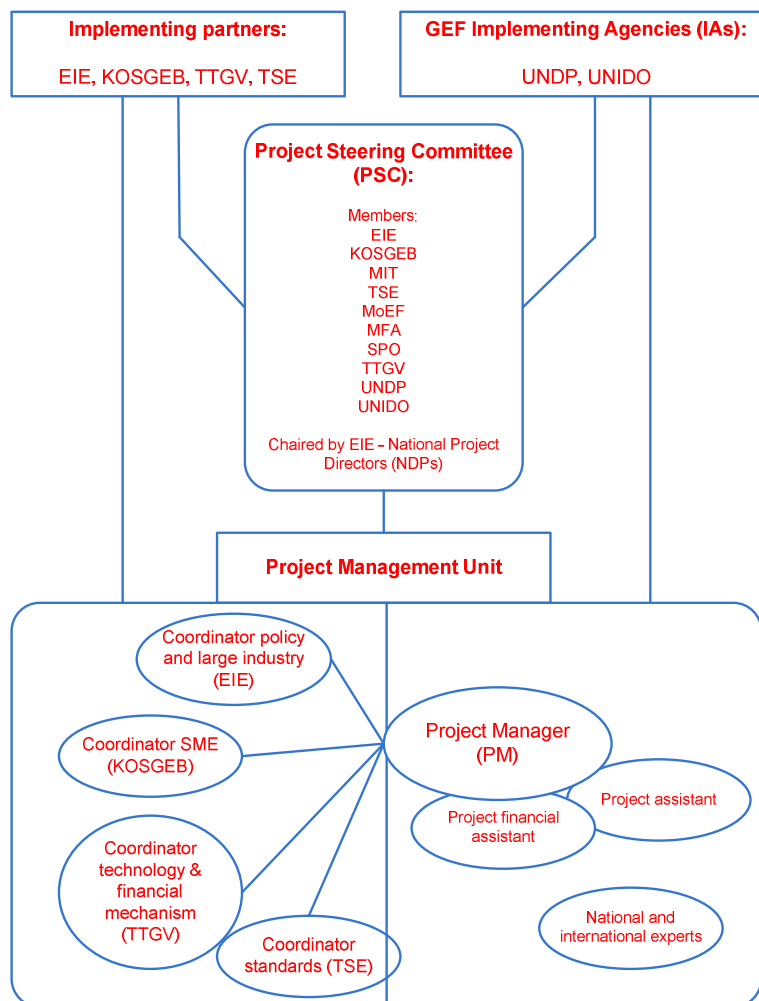
## 2.4 Project Implementation Arrangements

The IEEI Project is being implemented under UNDP guidelines for nationally executed projects (with UNDP being one of the GEF Implementing Agency). IEEI is implemented with four implementing partners:

- YEGM or the General Directorate of Renewable Energy under the Ministry of Energy and Natural Resources (MENR);
- KOSGEB, an agency affiliated with Ministry of Industry and Trade that manages funds to support EE for SME industries;
- TTGV or the Technology Development Foundation of Turkey, an NGO under a PPP operating modality with funds to support EE in industry; and
- TSE or the Turkish Standards Institute (TSE), the agency responsible for certification of industrial and service provider entities to ISO and other standards adopted by the GoT.

While both UNDP and UNIDO are both GEF implementing partners on IEEI, UNDP assumes the overall management of the Project under the direction of the NPD from YEGM. The day-to-day management of the Project has been carried out by a Project Management Unit (PMU) under the overall guidance of the Project Steering Committee (PSC). The PMU is established within the premises of the YEGM and reports to the YEGM, the executing agency and the PSC. The Project organogram from the ProDoc is provided on Figure 2. The organogram is still valid with the only changes being that EIE is now called YEGM and SPO is called Ministry of Development.

**Figure 2: Project Management Organogram**



## 3. KEY FINDINGS

### 3.1 Project Concept

#### 3.1.1 Project Relevance and Strategy

As of 2012, Turkey is highly dependent on fossil fuel imports, i.e. %98 of natural gas consumption and %90 of crude oil demand are met by external resources whereas the amount of imported coal is relatively lower because of domestic lignite production. In 2012, the cost of Turkey's total import was USD 236.5 billion of which 25% is the import of primary energy (consisting of USD 60.1 billion of fuel energy import, USD 7.7 billion of energy export, and USD 52.4 billion of net energy import). As such, the promotion of energy efficiency and domestic energy production remain economic imperatives for Turkey. Given the importance of Turkey's large and thriving industrial sector, energy efficiency in the industrial sector is now more important than ever to reduce the country's primary fuel imports and to improve the competitiveness of Turkish industry. The relevance of this Project to the development priorities of Turkey remains significant.

During the course of the Project in February 2012, the High Planning Council, which is such a mini-cabinet primarily responsible for economic policies, approved and announced the Energy Efficiency Strategy Document (EESD) that basically aims to decrease energy intensity by at least 20% by the Year 2023. One of the strategic priorities of the measures declared in EESD was reducing energy intensities and losses from the industrial sector, the sector with the largest consumption of energy in Turkey.

As previously mentioned, SMEs comprise a considerable share of the industrial sector: SMEs in manufacturing are 99% in total number of establishments, 56% in total employment and 24.2% in value added. In 2007, as a part of the EE Law, industrial energy users that consume more than 1,000 toe were obligated to report their energy consumption to YEGM. According to KOSGEB, a large proportion of industrial SMEs still do not have the resources or capacity to comply with this aspect of the EE Law<sup>14</sup>. The IEEI Project is designed to address this issue and to facilitate the migration of SMEs towards formal energy management and energy audits; this will enable SMEs to report their energy consumption in a more credible and consistent manner, and to more seriously consider undertaking EE measures for their facilities.

Development of IEEI Project strategies was conducted during the Project preparation phase in 2008 and 2009, and in close collaboration with YEGM, KOSGEB, TTGV and other industrial stakeholders, both public and private stakeholders. The IEEI Project concept was originally two projects, one with UNIDO for industrial EE with KOSGEB, and the other with UNDP for industrial EE with TTGV and YEGM. At the request of GEF, the two project concepts were combined to form the current design of the IEEI Project with the 4 implementing partners and two executing agencies. The overall goal of the Project was to enable industrial entities, from SMEs to large enterprises, to implement energy efficiency initiatives. The general strategy of the IEEI Project to achieve this goal has been to strengthen the institutional and regulatory framework within YEGM, enhance the knowledge and capacity of industrial entities on EE issues, support energy audits to

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<sup>14</sup> SMEs do not pay enough attention towards energy efficiency audits and studies. In addition, audit costs are usually too high for these plants and therefore they are not likely to do energy audits within their premises. Furthermore, they do not have the capacity and/or know-how to collect data accurately, and thus cannot benefit from various sources of Government support for EE such from KOSGEB.

determine the nature of energy consumption and evaluate EE investment opportunities, and to support financing and implementation of EE demonstrations within industrial entities.

The Project organized the Inception workshop which was held on 2-3 May 2011 to bolster and adjust if necessary, the 2009 ProDoc plans. The first day of the workshop on May 2, involved the participation of UNIDO, UNDP, and the four implementing partners of the Project, YEGM, TSE, KOSGEB and TTGV. On the second day on May 3, industrial institutions, industrial sector representatives and financial institutions participated in discussions of the Project. The outcome of the workshop resulted in general agreement across a broad spectrum of stakeholders on the Project strategy as presented in the ProDoc with more substantive details including:

- Details on the coordination functions of the PMU that was renamed the Project Management Cell (PMC). This included the PMC's role in structuring and managing various processes and products, and using evaluations for performance improvement, accountability and learning. Staffing of the PMC was to include a Project Coordinator (PC) to head the PMC with support from a technical Project associate, and administrative Project Associate and a Project Assistant;
- For the outputs on the review of financial mechanisms, agreement was reached to strengthen existing subsidy systems and develop financial mechanisms based on the intermediate project results, the experience of past and ongoing subsidy programmes (such as EIE, TTGV and KOSGEB) and lessons learnt from international experiences that use public financial incentive and other support or enforcement mechanisms (including a macro-level impact and cost-benefit analysis);
- Specific activities to achieve the intended outcomes of the Project including up to 5 activities to support the delivery of each output. These activities were adjusted according to industrial stakeholder feedback during the workshop, but within the frame of the 2009 plans described in the ProDoc.

The Project's Inception Report provides an extensive listing of planned activities required to achieve the intended Project outcomes. The general strategy as presented in the ProDoc and the Inception Report is still considered by all (including the Evaluator) to be the best strategy for achieving the Project objectives.

One issue with the strategy, however, is the lack of clarity between the energy audits (Outcome 3) and the demonstrations (Outcome 4). One could assume that the energy audits from Outcome 3 would be developed to the extent that they become *investment grade energy audits* that would be used to justify investment for the demonstrations in Outcome 4. With the addition of the EnMS and ISO 50001 to the IEEI Project design, the promotion of EnMS (ISO 50001) seems logical with specific energy audit activities including the WTEAs and DEAs followed by implementation of the demonstrations<sup>15</sup>. This linkage, however, has not been properly clarified in the Project Document or the Inception Report.

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<sup>15</sup> This could entail assistance to interested industrial enterprises to setup ISO 50001 EnMS on a pilot basis. Assistance would be technical training, energy audits and demo support driven by demand of the enterprises. As such, the capacity building and energy audit assistance could then be directly tied to the demonstration and actual energy efficiency gains and GHG reductions that are primary GEF project objectives.

### 3.1.2 Preparation and Readiness

While most end-of-project (EOP) targets appear reasonable within the Project's 4-year period, there are issues with the Project Planning Matrix (PPM) that do not meet the measurable aspect of SMART indicators. Examples include:

- Output 1.1: Strengthened databases on industry and energy use. This is an outcome statement, and not a measurable indicator;
- Output 2.1: Improved information dissemination services. This is an outcome statement, and not a measurable indicator;
- Outcome 5: Monitoring and evaluation, knowledge sharing and info dissemination. This is not an outcome nor does this state any developmental outcomes of the Project.

The lack of a measurable indicator leads to the lack of a defined EOP target for the Project leaving the PMC in an uncertain position as to how to allocate resources without knowing the nature of the output target.

With regards to the capacities of the nominated implementing partners of IEEI, the skill sets and agency mandates were properly considered for their inclusion on this Project:

- YEGM (formerly known as EIE) is the agency under administration of MENR with a mandate to research and promote EE in Turkey as well as in providing advice on EE-related secondary legislation and regulations. YEGM also manages EE financial incentives and coordinates with other donor-funded EE projects that include the EU, JICA and GIZ and other bilateral cooperation). YEGM is also mandated to provide training, and facilitate dialogue and awareness raising with customer groups;
- KOSGEB was established in 1990 by a special law in order to increase the share and effectiveness of small and medium sized industrial enterprises, raise their competitive powers and levels, and to realize integration in industry in line with economic developments. KOSGEB is a public agency affiliated with the Ministry of Industry and Trade (MIT) with responsibilities for all SMEs in Turkey. According to the Turkish Energy Efficiency Law, KOSGEB is mandated to provide services to SMEs on energy topics;
- TTGV is a non-profit organization, having been established by law in 1991, as a public-private partnership for enhancing the competitiveness of Turkish producers, by supporting technological innovation activities in Turkey. TTGV has the mandate to act as an intermediary for public funded programmes, and provides the private sector with financial support (grant and soft loan) for their technology development projects. TTGV supports energy efficiency and renewable energy through their won funds for environmentally sound projects;
- TSE is the designated Government agency responsible for certification and developing standards. TSE has been an affiliate member of CEN (European Committee for Standardization) and CENELEC (European Committee for Electro-technical Standardization) since 1991 and more than 90% of the existing CEN and GENELEC standards have already been adopted as Turkish standards. To ISO (International Organization for Standardization), TSE was enrolled in 1955 and to IEC (International Electro-technical Commission) in 1956. TSE will be involved in product and process certification, such as the Energy Management Standard.



During Project preparations, lessons were taken from:

- The EU-supported “*Twinning Project*”, carried out between 2005 and 2007 with support from the French Agency for Environment and Energy Management (ADEME) and the Dutch agency Senter NOVEM. Under the Twinning Project, studies were undertaken in the field of energy savings in Turkey (in industry, transport and other sectors). This project was a first important attempt to estimate energy savings potential and organize the relevant data into databases. The lesson learned from this project was the need for more substantive efforts to obtain relevant and accurate data and indicators that would be useful to industrial entities, the targeted beneficiaries of such information;
- Technical assistance cooperation from the Japan International Technical Assistance (JICA) between 1995-2005 in the areas of energy measurements and surveys, energy audits and EE feasibility studies. A number of Government engineers were trained in EE designs and investment costing using new skills and existing measuring equipment that has improved accuracies of energy audits. These training activities for surveys and feasibility studies, however, were confined to large industrial facilities with high energy consumption and cooperative plant staff that had the appropriate training in data collection and measurement.

The Project preparations also closely considered the available stakeholder capacities and resources that were underutilized, and formulated a number of appropriate Project activities that would enable these resources to be used towards EE in the industrial sector in Turkey. Most importantly, the Project design recognized the significance of industrial SMEs and their limitations to implement EE measures. The inclusion of KOSGEB and TTGV as co-financing and implementing partners was intended to strengthen the Project’s impact to address EE measures throughout the entire spectra of the industrial sector.

### **3.1.3 Stakeholder Participation during Project Preparation**

Project preparations included several consultations through workshops and interviews with the Project implementing partners as well as a wide cross section of industrial entities, industrial associations and financial institutions who are involved with the management of subsidy and loan funds dedicated to energy efficiency in the industrial sector.

### **3.1.4 Underlying Factors and Assumptions**

One factor beyond the control of the Project that could influence the outcome and results of the Project would be a downturn in the global economy which would affect industrial output. While Turkish industrial output has continued to grow since 2009 at a rate of 10%, a sharp downturn would increase the risk that industrial SMEs may no longer have the resources or incentives to adopt EE measures. The Project should be able to withstand such an event as its intentions are to increase the adoption of EE measures by industrial entities which would have the impact of reducing their operational costs and improve their market competitiveness.

Project risks and assumptions as listed on the PPM appear to be complete and include:

- Willingness of industries to provide operational data (which sometimes can be considered confidential);
- Sufficient sectoral and technology data can be gathered to be able to define benchmarks;

- YEGM (EIE) top management approves the establishment of regional energy support centers;
- Top management of financial institutions involved with the Project approve proposed changes in the existing financial mechanisms;
- Implementing agencies coordinate the content of their websites on EE aspects;
- Willingness of the targeted public to benefit from the training and supporting materials;
- Selected companies are willing to permit a walk-through audit;
- Selected companies are willing to investment in EE improvements, based on the feasibility analysis.

### **3.1.5 Project Organization and Management Arrangements**

The management arrangements of the Project involve 4 implementing partners and two executing agencies. Under this management arrangement, there is a need for the Project to have a strong Project Coordinator to reach the required consensus at PSC meetings and advance the Project activities. A comparable project to IEEI is another UNDP-GEF project, the Market Transformation of Energy Efficient Appliances in Turkey (EVÜdp) where YEGM acts as the lead agency and clearing house for all project decisions. This Project also has other government agencies whose capacities are being strengthened to undertake standards & labeling activities for energy efficiency under the direction of YEGM and UNDP. The project received a satisfactory rating in its mid-term review in 2012.

### **3.1.6 Project Budget and Duration**

The 5-year Project period and budget are adequate for an EE market transformation project for the industrial sector in Turkey. UNDP experience on other successful market transformation projects indicates a minimum of 5 years is required.

### **3.1.7 Design of Project Monitoring and Evaluation System**

The ProDoc contains an M&E design that is standard in all UNDP-GEF projects. These activities are executed to monitor the progress and quality of outputs from the Project Planning Matrix (PPM). As mentioned in Section 2.1.2, there is an issue with the quality of the PPM with some indicators not meeting the measurable aspect of SMART indicators. For example, Output 1.1: Strengthened databases on industry and energy use, and Output 2.1: Improved information dissemination services do not have measurable indicators. The lack of a measurable indicator may lead to the lack of a defined EOP target for the Project leaving the PMC in an uncertain position as to how to allocate resources.

While the PPM does convey the objectives, outcomes, outputs and targets of the Project, the language within the PPM can be improved and consolidated to the extent that it would meet the quality of PPMs on GEF projects being designed in 2011 and later. The Evaluator has provided suggested edits that can be found in Appendix D of this report.

### **3.1.8 Sustainability and Replication Strategy**

The strategy to improve the sustainability of the Project includes “web-based guidance and information system” (Output 2.1), the posting of “energy benchmarks as a policy tool” (Output 1.2), “energy management standards” (Output 1.3) and “the formulation of a post-project action plan” (Part of the M&E plan of the Project that was formerly Output 5.2). Moreover, the implementing

partners of the Project, YEGM, KOSGEB, TTGV and TSE, are established entities within the Government of Turkey that have been and are currently actively involved with promoting and mainstreaming energy efficiency in Turkey. This only serves to enhance sustainability of Project results after the EOP.

The replication strategy of the Project involves the improved availability of EE-based information to all industrial stakeholders in the public and private sectors as well as the financial sectors and technical service providers, the implementation of demonstration EE projects at selected industrial facilities and the sharing of relevant information on the benefits of these EE demonstrations. The results and lessons learnt on these demonstration projects will be of direct interest to industry in Turkey as well as outside Turkey (e.g., other EU applicant countries). In addition to close monitoring and evaluation of these demonstrations and the preparatory activities for the demonstrations, the Project is designed to facilitate contacts and sustained co-operation between the different stakeholder groups at the national and international level through seminars, workshops and other public events. This should have an intended impact of bringing together project proponents, policy makers and the potential investors to replicate the EE measures demonstrated on this Project.

One other aspect of the replication strategy of IEEI is the technical assistance to industrial entities towards energy audits; previous audits were of inadequate quality due to limited equipment of the ESCOs, lack of experienced engineers and very low demand of audits by the market. To improve the demand for energy audits, the Project is endeavoring to provide a step-wise approach that involves conducting WTEAs to detailed energy audits.

### **3.1.9 Gender Perspective**

This Project does incorporate activities to mainstream gender through: (1) incorporating components of gender analysis at all levels of assessment, consultation and baseline studies; (2) including gender disaggregated data in all the reporting mechanism, as a principle; (3) promoting the inclusiveness of women at the local level in all the awareness campaigns making the information accessible to women; and (4) by promoting the equal participation of men and women in all the conferences, trainings and workshops to empower women through capacity building and technical training and therefore increase women's capacity to effectively participate in policy-making and decision-making bodies.

Despite these efforts, the impact of this Project on gender issues will not be as pronounced given the focus is on targeted business entities to adopt measures to improve industrial energy efficiency.

## **3.2 Project Implementation**

### **3.2.1 Project Adaptive Management**

Unfortunately, due to the poor progress of the Project, there are only 2 PIRs on which to evaluate the adaptive management of IEEI. The 2012 PIR does not provide much information on the Project due to few accomplishments and the absence of the Project Coordinator who resigned in mid-2012. The 2013 PIR provides more analytics on the poor progress achieved to June 30, 2013 as well as immediate needs for the Project. The section on "Progress Towards Meeting Development Objectives (DO)" provides details on risk identification, delay descriptions, adaptive management changes and necessary work plans to get the Project back on track. Much of the

information fed into the preparation of the PIRs comes from the PMC meetings (which are held on a monthly or more frequent basis), and “Annual Advisory Meetings” of which 4 meetings have been completed.

Notwithstanding the regular PSC and PMC meetings held during 2012 and 2013, a number of critical Project activities have not been implemented including obtaining updated and expanded energy use information from industrial entities (Output 1.1), ISO 50001 training to stakeholders external to the Government (Output 1.3), setup of EMUs within OIZs (Output 1.4), and approaches to the setup of energy audit program for large industry and SMEs (Outcome 3). The failure of the Project to advance these outputs and outcomes during the past 30 months of Project implementation is an indicator of the existence of problems between the implementing partners and the former Project Coordinator (2011-12) and the former CTA (2012-13). Moreover, some of the implementing partners (TTGV in particular) are discouraged by the lack of follow-up on decisions made during PSC and PMC meetings, and have stated they are considering removal of their participation from the Project.

Since early August 2013, the PMC has not had a Project Coordinator or a CTA that has forged a collaborative relationship with the implementing partners of IEEI, notably YEGM. The recruitment of a strong Project Coordinator and CTA to work with YEGM and the other implementing partners is vital to the successful management and coordination of Project activities. In addition, the Project will require hands-on support from the Country Office to ensure the advancement of critical outputs, the continued engagement of all Project stakeholders, and adaptively managing the Project's activities that will meet the objectives and ambitions of all implementing partners utilizing remaining Project resources.

### **3.2.2 Contribution of Implementing and Executing Agencies**

Overall, the poor progress of the Project is an unfortunate reflection on the performance of the IEEI Project implementing partners and executing agencies.

For both UNDP and UNIDO, the inability of the former Project Coordinator (2011-12) and the Chief Technical Advisor (2012-13) to develop collaborative working relationships with all implementing partners has had an adverse impact on their contributions to the Project. Both positions had significant roles in delaying the progress of IEEI. The Project Coordinator did not appear to have the technical skills to advance the Project, and the CTA was unable to reach consensus with the Implementing Partners on a number of Project issues, particularly YEGM. These issues are further discussed in Section 2.3.

The Project continues to be operational mainly through the admirable efforts of the staff of the PMC, namely the Project Administrator and Project Assistant as well as UNIDO personnel from Austria. For obvious reasons, this arrangement is not sustainable. A new Project Coordinator has commenced work on IEEI in early December 2013, and efforts are now underway to recruit a part-time international technical consultant (ITC) who is expected commence work in the first quarter of 2014.

### **3.2.3 Stakeholder Participation and Partnership Strategy**

Implementing partners have reported the lack of follow-up on action items from the PMC meetings, and the lack of communication between the implementing partners outside of the PMC meetings and Annual Advisory Meetings. These issues only contribute to the lack of Project

progress and increasing frustration of TTGV, KOSGEB and YEGM, and underscore the need and importance of a collaborative relationship between senior personnel from the PMC and the implementing partners, particularly the NPD from YEGM. With the recruitment of a new PC and the ITC now in the advanced stages, there is optimism that these elusive collaborative relationships will be forged between industrial entities and government stakeholders during the remaining period on this Project. This should result in stronger partnership opportunities, notably with the activities on the energy audits (Outcome 3) and the demonstration projects (Outcome 4) which would provide opportunities for sustained adoption of EE measures by various industrial SMEs and larger entities.

### 3.2.4 Implementation of Replication Approach

During 2013, there has been the completion of some substantive activities to support the Project's replication strategy including:

- An overview of financial mechanisms to support industrial energy efficiency with a view to remove financing barriers to SMEs (who comprise 99% of all enterprises, 78% of employment, 65% of domestic sales, 59% of exports but only receive 23% of the total industrial investment loans)<sup>16</sup>. The Project is in the process of re-hiring the consultant of this study to recommend appropriate financing mechanisms for IEEI including improved Government M&E functions to assess the market impact of different financing programmes and to adaptively manage the programme, and improve the Project's prospects for replication; and
- The development of the walk-through energy audit approach which will build the knowledge of industrial entities on possible EE measures, and serve as a precursor to the detailed energy audits and implementation of the demonstration EE measures.

While these are recent achievements that assist the Project in moving towards its objectives of GHG reductions in the industrial sector, there is still much developmental and preparatory work to be done before industrial entities commence the replication of demonstration projects from Outcome 4 (details of this work are provided in Section 2.3). This is a reflection of the poor progress of this Project after 30 months of operations.

## 3.3 Project Results (Outputs, Outcomes and Impacts)

### 3.3.1 Project Outputs and Outcomes

Assessment of the IEEI Project achievements and shortcomings are provided in this section against the *suggested edited version of the 2010 Project planning matrix* (the full suggested edited version of the PPM is provided in Appendix D). Each outcome was evaluated against individual criterion of:

- *Relevance* – the extent to which the outcome is suited to local and national development priorities and organizational policies, including changes over time;
- *Effectiveness* – the extent to which an objective was achieved or how likely it is to be achieved;
- *Efficiency* – the extent to which results were delivered with the least costly resources possible.

<sup>16</sup> UNDP June 2013: "Improving Financial Mechanisms for EE in Industry in Turkey, Econoler.

The Project outcomes were rated based on the following scale:

- 6: *Highly Satisfactory (HS)*: The project has no shortcomings in the achievement of its objectives;
- 5: *Satisfactory (S)*: The project has minor shortcomings in the achievement of its objectives;
- 4: *Moderately Satisfactory (MS)*: The project has moderate shortcomings in the achievement of its objectives;
- 3: *Moderately Unsatisfactory (MU)*: The project has significant shortcomings in the achievement of its objectives;
- 2: *Unsatisfactory (U)*: The project has major shortcomings in the achievement of its objectives;
- 1: *Highly Unsatisfactory (HU)*: The project has severe shortcomings in the achievement of its objectives.

### 3.3.2 Overall Outcome

**Project Objective:** To improve energy efficiency of Turkish industry by enabling and encouraging companies in the industrial sector for efficient management of energy use by different energy conservation measures and energy efficient technologies.

#### Intended EOP Outcome:

- ⇒ Energy savings from EE investments of at least 190 GWh per year (energy and fuel);
- ⇒ Direct emission reduction (associated with demo projects) of 60.9 ktCO<sub>2</sub> p.a. and (assuming an average 10-year lifetime of energy investment) 609 ktCO<sub>2</sub> cumulatively
- ⇒ Cumulative indirect emission reduction due to project's capacity building activities ranging from 1.8 MtCO<sub>2</sub> (bottom-up approach) to 32.7 MtCO<sub>2</sub> (top-down)

#### Actual EOP Outcome:

- ⇒ *An unsatisfactory outcome has been achieved since there are no EE investments in place at the time of this Evaluation to generate energy and fuel savings ;*
- ⇒ *An unsatisfactory outcome has been achieved as there have been no direct emission reductions from this Project;*
- ⇒ *Unable to rate. This outcome should be removed as it cannot be measured or even extrapolated during the course of the Project*

Rating:    *relevance: 2*  
               *effectiveness: 2*  
               *efficiency: 2*  
               *overall rating: 2*

No energy savings or GHG emission reductions have yet been generated by this Project due to poor progress during Year 1, and slow progress on all project components during Year 2 to the extent that no energy audits have yet to be completed and no EE measures have been contemplated or adopted for demonstration and investment.

### 3.3.3 Outcome 1: Strengthened institutional-regulatory framework and a national energy management standard

#### Intended Outcome 1:

- ⇒ 1,500 industries with updated and expanded information on ~~Strengthened databases on industry and~~ energy use on a harmonized database<sup>17</sup> (related to Output 1.1)
- ⇒ 25 energy consumption benchmarks disseminated and linked with 10<sup>th</sup> NDP (related to Output 1.2)
- ⇒ Promulgated and ISO harmonized EnMS with guidelines issued for EnMS implementation (related to Output 1.3)
- ⇒ 10 functioning regional Energy Management Units (EMUs) in OIZs or energy support centers
- ⇒ 34 strengthened and integrated financial mechanisms

#### Actual Outcome 1:

- ⇒ *There has been unsatisfactory progress in obtaining updated and expanded information required on energy use by industry (related to Output 1.1). No progress has been made in identifying what sector data should be collected from, what specific data should be collected, and how the information will be used (although the largest industrial sectors will be initial targets). A specific example includes the KOSGEB's desire to evaluate SME energy usage in an effort to assist them with EE measures; their website that has over 350,000 SMEs listed on their web portal for the purposes of obtaining grants, and the Project has not yet determined which SMEs to approach for data collection, and what data should be collected. Work on the harmonized database (Output 2.1) has only progressed to a needs assessment;*
- ⇒ *There has been unsatisfactory progress in the dissemination of energy consumption benchmarks (related to Outcome 1.2); this is related to the lack of progress on Output 1.1 where no energy consumption information has not been collected and no final decision on which industrial sectors to collect information from;*
- ⇒ *A satisfactory outcome has been achieved in the adoption of ISO 50001 Energy Management Standard (EnMS) (related to Output 1.3). No changes were recommended by TSE (Turkish Standards Institute), and with Project support, these ISO standards were translated into Turkish. The revised "Regulation Regarding the Increase of Efficiency in the Use of Energy Resources and Energy" was published in the Turkish Government Gazette on 21 October 2011. This has resulted in Project resources being used to work with YEGM to update the old energy management and energy audit training modules (that use energy audits methods from Japan and the USA for a limited number of industries) to support the new regulations for a wider range of industries. To date, 3 training workshops involving 87 participants and two international trainers was held for implementing partners on ISO 50001 EnMS; however, no external training has yet been authorized by implementing partners for industry. External training will commence after completion of training-of-trainers (ToT) on ISO 50001 in 2014;*
- ⇒ *There has been unsatisfactory progress in the setup of EMUs within OIZs (related to Output 1.4). Similar to EnMS training, the establishment of EMUs within OIZs has not been authorized by the implementing partners and 2 OIZ associations. Plans are in place for a workshop in November 2013 to complete the selection of 10 OIZs where the EMUs will be located. The setup of EMUs within OIZs are planned for February 2014;*

<sup>17</sup> These databases will be able to update sectoral energy assessments

⇒ *There has been moderately satisfactory progress achieved on the development of strengthened and integrated financial mechanisms for EE investments for industrial entities. A report completed in June 2013 has compiled a number of financing options available to industrial entities in Turkey for EE measures. Preparations are underway to extend this consultancy to provide recommendations on the most appropriate financing mechanisms to be adopted for industrial SMEs.*

Rating:   relevance:    3  
           effectiveness: 3  
           efficiency:    2  
           overall rating: 2.7

Notwithstanding the EE Law, accompanying regulations, the EESD and the various EE financing schemes in place, the challenge for the Project on this component will be to meet the target of collecting energy consumptive information from 1,500 industries, many of them SMEs. Without such data, there will be difficulties in the establishment of energy benchmarks for various industrial processes. In addition, the accuracy of the SME data needs to be established with enforced penalties for non-compliant companies.

These challenges could be overcome if the Project can develop trusting relationships with SMEs to pilot WTEAs, collect accurate energy consumptive information, build their confidence and capacities in energy management (as provided under Output 2.3), and link information collection activities to disclosure obligations under the EE Law and Regulation as well as EE financial assistance from YEGM, KOSGEB and TTGV. With the rising electricity and energy costs, SMEs should have the incentives to implement EE investments.

### 3.3.4 Outcome 2: Enhanced capacity and awareness of Turkish industry and energy service providers

#### Intended Outcome 2:

- ⇒ 200 additional EE investment projects made by industrial companies per year;
- ⇒ >10 new ESCO Expanded business opportunities for ESCOs performance contracts closed
- ⇒ 10,000 hits after harmonized websites of YEGM, KOSGEB, TTGV and TSE have been improved and upgraded (related to Output 2.1)
- ⇒ 900 decision makers in industrial and financial institutions with enhanced awareness who are represented on EE options, energy management and systems optimization (related to Output 2.2)
- ⇒ 50 energy managers and other technical personnel in industry with enhanced technical capacity of energy managers and other technical staff knowledge on EE in industry (related to Output 2.3)
- ⇒ 1,200 persons with enhanced technical capacity in ESCOs and industry (related to Output 2.4)

#### Actual Outcome 2:

- ⇒ *There has been unsatisfactory progress with the development of 200 EE investment projects per year. This is in part due to the lack of progress on other outputs in this component, energy audit TA (Outcome 3), and ongoing discussions on which OIZs to engage on the Project*
- ⇒ *There has been unsatisfactory progress towards the development of ESCO*



*performance contracts with industrial entities. While this is due in part to the lack of progress on other outputs in this component as well as Outcomes 1 and 3, there may not be good business rationale for SMEs to use ESCOs*

- ⇒ *Moderately unsatisfactory progress has been achieved in the development of an EE portal that harmonizes information from all implementing partner websites (related to Output 2.1). In early 2013, a needs assessment study for the EE portal was completed. While this study has allowed the Project does provide some guidance on the upgrading of the intranet and extranet EE web portals of YEGM and KOSGEB in 2014, the study is still incomplete given that there has been no decision made on the nature of the energy information to be posted on the websites (this is related to the lack of progress on Output 1.1);*
- ⇒ *There has been unsatisfactory progress with the delivery of workshops and materials to deliver Outputs 2.2, 2.3 and 2.4 due to the lack of clearance for external training by the PSC. Preparations to deliver these technical capacity building events will commence in 2014 with the new Project Coordinator*

Rating:   relevance:    2  
           effectiveness: 2  
           efficiency:    2  
           overall rating: 2

There has been no progress on this component. Though the Project does have a strategy to target the largest industrial sectors for energy consumption data, there have been no outreach efforts to the SMEs and other industrial entities. As such, there have been no activities to prepare or deliver any targeted messaging or technical assistance towards industrial stakeholders or service providers. This will be a priority for the new Project Coordinator.

Though a report on a needs assessment for the “Energy Efficiency Portal” was completed in mid-2013, decisions on the type of data to be collected from industrial entities has not been finalized or implemented (Output 1.1). As such, additional needs might be identified once these datasets and their sources are identified.

### 3.3.5 Outcome 3: Energy audit program for large industry and SMEs implemented

#### Intended Outcome 3:

- ⇒ 50% Share of energy audits in Turkey that leading to actual investments in EE in industry
- ⇒ 190 GWh per year of identified additional energy saving investment opportunities as part of from energy audits
- ⇒ 40 trained Strengthened energy auditors capacity (related to Output 3.1)
- ⇒ 20 companies internationally certified under EnMS (related to Output 3.2)
- ⇒ ‘walk-through’ energy audits conducted for 170 MEs and 130 medium-large industry (related to Output 3.3)
- ⇒ detailed energy audits conducted for 200 MEs and 20 medium-large industry (related to Output 3.4)

#### Actual Outcome 3:

- ⇒ *There has been moderately unsatisfactory progress in conducting energy audits that lead to EE investments in the industrial sector. An Energy Audit study was started in May 2013 with 2 international experts and 1 local expert working on the first stages of*

*Walk-Through Energy Audits (WTEAs). Guides and training modules will be ready in the first quarter of 2014.*

- ⇒ *There has been unsatisfactory progress in the identification of energy saving investment opportunities. These will only be identified after the implementation of Energy Audits*
- ⇒ *There has been moderately unsatisfactory progress in the delivery of trained energy auditors (Output 3.1), internationally certified companies under EnMS (Output 3.2), WTEAs for 300 industrial entities (Output 3.3), and detailed energy audits for 220 industrial entities (Output 3.4). Preparations for the delivery of these outputs will not commence until actual energy audits are conducted and demonstration projects are started in Component 4*

Rating:   relevance:     2  
           effectiveness:  1  
           efficiency:     2  
           overall rating:  2

The lack of substantial progress on this component severely hampers the ability of the Project to facilitate industrial investments into energy efficiency measures. While there has been some progress in preparing the framework of assistance for energy audits in the industrial sector on this Project, there can be no further progress until the ITC vacancy is filled in.

One of the serious issues confronting this Project is its inability to execute the activities to establish the energy audit program. There has been reluctance by the implementing partners to allow the PMC to proceed with the delivery of training and dissemination of energy audit approaches to external stakeholders (such as energy auditors) within the framework of ISO 50001 and ISO 50002. The audit methodology under ISO 50001 ensures that the cost of identifying specific and implementable energy efficiency improvements is used most effectively and in accordance with management policies of the industrial entities. Global experience indicates that the EE savings from completed projects increases when these audits are included as a part of a systematic energy management approach. This would include the step-wise approach to energy audits from WTEAs to detailed energy audits that is currently regarded as the global best practice norm. Furthermore, this step-wise approach would also be a means to:

- gradually engage industrial entities, particularly SMEs, to implement an energy review of low-cost savings of their facilities;
- provide the rationale and demand for the detailed energy audit that focuses on a single area of specific energy use and improves accounting of that energy consumption;
- provide specific actions required to reduce energy consumption of a particular industrial facility that would eventually lead to EE investments;
- create awareness of EE amongst management personnel and industrial decision makers (through the short and concise WTEAs building up to the detailed energy audits); and
- create demand for energy service providers (through the provision of EE details for which industrial managers can see the value of outsourcing such services).

Though the ProDoc is not clear on the purpose of detailed energy audits, one can surmise that detailed energy audits would be investment-grade energy audits (a comprehensive energy audit that qualifies capital expenditures) that would lead into outputs in Component 4. However, the Evaluator notes that the Government of Turkey has adopted ISO 50001 EnMS with the standard translated into Turkish, and that WTEAs and the detailed energy audits are a part of the IEEI PPM

that has been officially endorsed by the Government of Turkey. Notwithstanding the GoT's drivenness to adopt best practices for energy audits and to have the industrial sector implement EE measures, there has been poor progress in setting up an energy audit program for the industrial entities.

### 3.3.6 Outcome 4: State-of-the-art energy management practices and EE measures, business and financing models are demonstrated

#### Intended Outcome 4:

- ⇒ 10% improvement in specific energy consumption (SEC) of demonstration projects
- ⇒ 40 SMEs and 25 medium-large enterprises have ~~optimized~~ ~~demonstrated~~ energy systems ~~optimization~~ and EE processes and technologies ~~demonstrated~~
- ⇒ 40 SMEs and 25 medium-large enterprises used for case studies
- ⇒ 2 demo project experience exchange seminar/workshops.

#### Actual Outcome 4:

- ⇒ Unable to rate this component due to lack of progress with energy audits

Rating:    *relevance:*        unable to rate  
               *effectiveness:*   unable to rate  
               *efficiency:*       unable to rate  
               *overall rating:*   unable to rate

Although the Government of Turkey has adopted the EnMS within ISO 50001, dissemination of ISO 50001 and its new energy audit requirements to industrial private sector stakeholders has not yet commenced. Workshops to disseminate energy audits under ISO 50001 and 50002, notably the investment grade energy audits, will commence in early 2014. With more than one year of energy audit capacity building under Outcome 3, the Project should be able to target mid-2015 for the commencement of EE investments by large industry and SMEs.

## 3.4 Project Budget and Cost Effectiveness

Table 2 provides an overview of expenditures of the GEF Project budget of USD 2.71 million from March 2010 to September 30, 2013. As of September 30, 2013, USD 1,196,901, or close to 20% of the GEF-funded Project budget, has been expended. USD 4,763,103 remains in the Project budget for technical assistance activities.

*The cost effectiveness of the Project has not unsatisfactory.* With 20% of the Project budget expended after 30 months of operation (since the Inception Mission in May 2011), there are still a number of major activities to meet the Project objectives including:

- Most of the outputs from Outcome 1 including:
  - Design of program to collect enhanced energy consumptive information from 1,500 industrial entities, and the actual collection of this information (Output 1.1);
  - Setup of EMUs within 10 OIZs (Output 1.4); and
  - Strengthened and integrated financial mechanisms for EE measures (Output 1.5);
- Technical training and awareness raising activities for a wide range of stakeholders external to government stakeholders (Outcome 2);

**Table 2: Project Budget and Expenditures (in USD)**

Outcome	2010		2011		2012		2013		Total Disbursed			Total Planned for Project			Total Remaining		
	UNDP	UNIDO	UNDP	UNIDO	UNDP	UNIDO	UNDP*	UNIDO	UNDP	UNIDO	Total	UNDP	UNIDO	TOTAL	UNDP	UNIDO	TOTAL
Outcome 1: Strengthened regulatory framework			\$33,264	\$2,218	\$70,946	\$88,111	\$99,088	\$126,124	\$203,298	\$216,453	\$419,751	\$363,623	\$409,878	\$773,501	\$160,325	\$193,425	\$353,750
Outcome 2: Enhanced awareness and capacity building			\$24,907	\$4,450	\$14,035	\$3,453	\$28,772	\$9,522	\$67,714	\$17,425	\$85,139	\$879,511	\$760,490	\$1,640,001	\$811,797	\$743,066	\$1,554,862
Outcome 3: Energy audits programs			\$16,689	\$4,320	\$18,513	\$34,871	\$59,894	\$74,544	\$95,096	\$113,735	\$208,830	\$654,669	\$795,332	\$1,450,001	\$559,573	\$681,597	\$1,241,171
Outcome 4: State-of-the-art energy practices demonstrated			\$13,066	\$0	\$962	\$4,953	\$4,000	\$89,396	\$18,027	\$94,349	\$112,377	\$577,715	\$671,286	\$1,249,001	\$559,688	\$576,937	\$1,136,624
Monitoring & Evaluation			\$28,340	\$2,650	\$19,735	\$22,324	\$7,253	\$25,309	\$55,327	\$50,283	\$105,610	\$181,981	\$56,019	\$238,000	\$126,654	\$5,736	\$132,390
Project Management			\$46,385	\$2,500	\$106,808	\$22,324	\$64,976	\$22,202	\$218,169	\$47,026	\$265,195	\$609,500	\$0	\$609,500	\$391,331	-\$47,026	\$344,305
<b>TOTAL (actual)</b>	\$0	\$0	\$162,651	\$16,138	\$230,999	\$176,036	\$263,982	\$347,096	\$657,631	\$539,270	\$1,196,901	\$3,266,999	\$2,693,005	\$5,960,004	\$2,609,368	\$2,153,735	\$4,763,103
<b>TOTAL (cumulative actual)</b>	\$0	\$0	\$162,651	\$16,138	\$393,650	\$192,174	\$657,631	\$539,269									
<b>% expended of Total Planned Disbursement</b>									20%	20%	20%						

- Conducting and building capacities for industrial entities and ESCOs for a range of energy audits within the guidelines of ISO 50001 and 50002 to the extent that investment-grade energy audits can facilitate investment in EE measures (Outcome 3); and
- Completion of EE measures for 65 industrial entities to demonstrate state-of-the-art EE practices and EE financing mechanisms (Outcome 4).

The remaining GEF resources for IEEI should be sufficient budget to achieve these outcomes. This will depend to a large extent on the ability of the new PC and CTA in re-starting the Project activities in 2014, and hands-on support from the CO to ensure that there is agreement on all work plan activities and timely delivery of these activities. There is more than USD 4.7 million remaining in the IEEI budget, however, to expend prior to the current terminal date of August 31, 2015. With this time remaining, there does not appear to be sufficient time to achieve all objectives of the Project with these resources.

The intended co-financing target of the Project is USD 29.16 million. However, as of August 2013, only there has been co-financing to report from any of the Project partners as detailed in Table 3.

**Table 3: Details of Project Co-Financing**

Partner Agency	Co-Financing Amount		Activities to date
	Target (USD)	to August 2013 (USD)	
UNDP	60,000 (grant)	0	None
UNIDO	50,000 (in-kind)	0	None
YEGM	4,282,000 (cash)	0	None
	658,250 (in-kind)	0	None
TTGV	4,460,000 (cash)	0	None
	165,000 (in-kind)	0	None
KOSGEB	1,317,400 (cash)	0	None
	60,000 (in-kind)	0	None
TSE	126,000 (in-kind)	0	None
Industry	16,960,250 (cash)	0	None
	944,500 (in-kind)	0	None
<b>Total:</b>	<b>29,148,400</b>	<b>0</b>	

### 3.5 Evaluation of Project

Table 4 provides an evaluation of the current outcomes of each Project output. Each output was evaluated against individual criteria of:

- *Relevance* – the extent to which the activity is suited to local and national development priorities and organizational policies, including changes over time.
- *Effectiveness* – the extent to which an objective has been achieved or how likely it is to be achieved.
- *Efficiency* – the extent to which results have been delivered with the least costly resources possible.
- *Results/impacts* – the positive and negative, and foreseen and unforeseen, changes to and effects produced by a development intervention. In GEF terms, results include direct project outputs, short-to medium term outcomes, and longer-term impact including global environmental benefits, replication effects and other, local effects.
- *Sustainability* – the likely ability of an intervention to continue to deliver benefits for an extended period of time after completion. Projects need to be environmentally as well as financially and socially sustainable.

The Project outputs were rated based on the following scale:

- 6: Highly satisfactory (no shortcomings)
- 5: Satisfactory (minor shortcomings)
- 4: Moderately satisfactory
- 3: Moderately unsatisfactory (significant shortcoming)
- 2: Unsatisfactory (major problems)
- 1: Highly unsatisfactory (severe shortcomings)

*The overall rating of the Project is Moderately Unsatisfactory (MU), based mainly on:*

- Relevance of IEEI: moderately unsatisfactory. While the objectives of the Project are strongly in-line with GoT goals for EE, the continued lack of progress will increase the risk that IEEI becomes less relevant to the GoT's efforts to improve industrial EE, notwithstanding the high level of interest of all stakeholders to support the Project;
- Impacts of IEEI: moderately unsatisfactory:
  - Accelerated adoption of ISO 50001 by Government of Turkey where Project resources were used to translate the ISO standards into Turkish;
  - No efforts have been initiated towards raising awareness amongst industrial stakeholders, technical personnel and energy service providers;
  - Only the methodologies for WTEA and the “detailed” energy audit have been identified in 2013 and near the mid-point of the Project, with only YEGM personnel exposed to the new methodologies;
  - No EE projects have yet been conceptualized for demonstration;
  - Various financing mechanisms have been studied with the intention of integrating available EE financing sources from the various Project implementing partners into a “harmonized” financing mechanism;

**Table 4: Summary Evaluation of Project**

<b>Project Strategy</b>	<b>Relevance</b>	<b>Efficiency</b>	<b>Effective-ness</b>	<b>Overall Rating</b>
<b>Outcome 1:</b> Strengthened institutional-regulatory framework and a national Energy Management Standard contributing to the implementation of the EE Law	3	2	3	2.7
<b>Outcome 2:</b> Enhanced capacity and awareness of Turkish industry and energy service providers	2	2	2	2
<b>Outcome 3:</b> Energy audit program for large industry and SMEs implemented	2	2	1	1.7
<b>Outcome 4:</b> State-of-the-art energy management practices and EE measures, business and financing models are demonstrated	Unable to rate	Unable to rate	Unable to rate	Unable to rate
<b>Monitoring and Evaluation</b>	4	4	4	4
<b>Overall Rating</b>	2.8	2.5	2.5	<b>2.6</b>

- Outcomes of IEEI: moderately unsatisfactory:
  - Institutional and regulatory framework has not been strengthened as there has been no substantial efforts to collect industrial energy use data, setting benchmarks, setting up of regional energy management units as a means to assist industry with compliance to the 2007 EE Law;
  - Awareness of industry managers, technical personnel and energy service providers has not been enhanced to the extent that EE investments have been made;
  - The Project has only started activities towards implementing an energy audit program that includes 3 out of 4 “training of trainers” (ToT) workshops completed to date;
  - Efforts towards implementing demo projects and financing mechanisms on EE measures has not even been scoped.
- Effectiveness of IEEI: moderately unsatisfactory:
  - Project expenditures to date has been ~USD 1.2 million over 30 months that has produced three studies (energy audit methodology, financing mechanisms, and energy portal design) + three ToT ISO 50001 training workshops;
  - Project leadership has not been effective based on their inability to establish a collaborative working relationship with implementing partners and advance progress of a number of important Project activities.
- View of direct beneficiaries and project participants of IEEI:
  - Implementing partners are frustrated over the lack of progress;
  - Some implementing partners have reported on the lack of follow-up and execution on decisions made during PSC meetings;
  - Implementing partners claim that the past project manager and project coordinator did not interact well with implementing partners;
  - Implementing partners have complemented the work of all the specialist foreign consultants recruited to date as having provided useful outputs for project beneficiaries.

## 3.6 Sustainability and Replicability

### 3.6.1 Sustainability

In assessing the sustainability of the Project, we asked “how likely will Project outcomes (from the revised log-frame of the May 2011 Inception Report as in Appendix D) be sustained after termination of the Project”. Sustainability of these objectives was evaluated in the context of financial resources, socio-political risks, institutional framework, governance and environmental factors, using a simple ranking scheme:

- *Likely (L)*: very likely to continue and resources in place;
- *Moderately Likely (ML)*: model is viable, but funding or resources may not be in place;
- *Moderately Unlikely (MU)*: model is not viable or needs changing; and/or resources not in place; and
- *Unlikely (U)*: model is not viable and resources are not in place

The evaluation for sustainability is shown on Table 5. It is important to note that the index is intended simply to facilitate an assessment of future sustainability and is not a rating of project management and consultants. Instead, it is a rating of the project design and viability going forward, including availability of budget and resources for continuation.

*Project sustainability rating is Likely (L), notwithstanding the poor progress to date, with the following rationale:*

- The strong engagement of all Government stakeholders interviewed on the IEEI Project to support energy audits, improve the availability of energy consumptive information from industrial stakeholders, capacity building and awareness raising activities, and EE demonstration projects;
- A strong commitment of YEGM and TSE to improve EE adoption by industrial entities:
  - ⇒ Industrial EE is a high government priority;
  - ⇒ The adoption of ISO 50001 (Energy Management Systems) by the Turkish Government and the translation of the standard into Turkish;
  - ⇒ The provision of ToT workshops to YEGM for ISO 50001 energy audit framework;
  - ⇒ Regulations in place obligating industrial SMEs to report their energy consumption to YEGM if it exceeds 1,000 toe annually;
- Strong incentives for industrial SMEs to adopt EE measures as a means to reduce their operational costs and improve their competitiveness, in light of the doubling of electricity costs over the past 4 years.



**Table 5: Assessment of Sustainability for Objectives**

Outcome	Assessment of Sustainability	Dimensions of Sustainability
<p><b>Outcome 1: Strengthened institutional-regulatory framework and a national Energy Management Standard contributing to the implementation of the EE Law.</b> This includes:</p> <ul style="list-style-type: none"> <li>• updated and expanded energy use information on a harmonized database</li> <li>• dissemination of energy consumption benchmarks</li> <li>• adoption of a National Energy Management System</li> <li>• functional regional energy management units within OIZs</li> <li>• strengthened and integrated financial systems for EE investments</li> </ul>	<ul style="list-style-type: none"> <li>• <i>Financial Resources:</i> Financial resources are available from the implementing partners, all government agencies, to support, promote and enforce industrial EE policies based on the targets of the EE Law and regulations to reduce energy intensities of the industrial sector by 20% by 2023;</li> <li>• <i>Socio-Political Risks:</i> The Government issued the 2004 Energy Efficiency Strategy, promulgated the 2007 Energy Efficiency Law, and set a target of 20% reduction in energy intensities for all sectors by 2023 of which the industrial sector in Turkey was a priority. These are indicators of the high importance of industrial energy efficiency for the Government of Turkey;</li> <li>• <i>Institutional Framework and Governance:</i> YEGM has a mandate to research and promote EE in Turkey as well as providing advice on EE-related secondary legislation and regulations;</li> <li>• <i>Environmental Factors:</i> Reduced energy consumption and GHG emissions will be a consequence of strengthened institutional-regulatory framework activities of the Project.</li> </ul> <p style="text-align: right;"><b><u>Overall Rating</u></b></p>	<p style="text-align: center;">L</p> <p style="text-align: center;">L</p> <p style="text-align: center;">L</p> <p style="text-align: center;">L</p> <p style="text-align: center;">L</p>
<p><b>Outcome 2: Enhanced capacity and awareness of Turkish industry and energy service providers.</b> This includes:</p> <ul style="list-style-type: none"> <li>• additional EE investment projects made by industrial</li> <li>• ESCO performance contracts closed</li> <li>• Harmonized website that includes information from a number of agencies with assistance for EE investments</li> <li>• Enhanced capacities of industrial decision makers, energy managers and ESCO personnel</li> </ul>	<ul style="list-style-type: none"> <li>• <i>Financial Resources:</i> Financial resources are available with government agencies and the industrial entities for the technical support, training and implementing of EE measures. More significantly, the EE measures will reduce industrial costs of operations;</li> <li>• <i>Socio-Political Risks:</i> Industrial entities in general wish to learn more about implementing EE measures as this will improve the competitiveness of their businesses;</li> <li>• <i>Institutional Framework and Governance:</i> The 2007 EE Law requires industrial entities that use more than 1,000 toe annually of energy to report their energy consumption to YEGM. The Project will assist YEGM to monitoring and improving compliance by SMEs to this requirement;</li> <li>• <i>Environmental Factors:</i> Reduced energy consumption and GHG emissions are a consequence of enhanced capacity and awareness activities of the Project to Turkish industry and energy service providers.</li> </ul> <p style="text-align: right;"><b><u>Overall Rating</u></b></p>	<p style="text-align: center;">L</p> <p style="text-align: center;">L</p> <p style="text-align: center;">L</p> <p style="text-align: center;">L</p> <p style="text-align: center;">L</p>
<p><b>Outcome 3: Energy audit program for large industry and SMEs implemented.</b> This includes:</p> <ul style="list-style-type: none"> <li>• Increased share of energy audits that lead to actual industrial EE investments;</li> <li>• Increase in the number of identified additional energy saving investment opportunities from energy audits;</li> <li>• Trained retail sales staff to improve sales of EE appliances</li> </ul>	<ul style="list-style-type: none"> <li>• <i>Financial Resources:</i> Financial resources will be available from various government agency funds to facilitate the completion of energy audits for industrial entities;</li> <li>• <i>Socio-Political Risks:</i> Industrial entities that consume more than 1,000 toe of energy annually need to report their energy consumption to YEGM. The Project's assistance to implement a ISO 50001-based energy audit program will improve compliance of industrial entities, notably SMEs sector, to this requirement;</li> <li>• <i>Institutional Framework and Governance:</i> The Government has adopted ISO 50001, the standard for energy management systems and modernized energy. This will be enforced by YEGM who will benefit from the Project's activities to upgrade their capacities for oversight of WTEAs, detailed energy audits and investment-grade energy audits for industrial entities;</li> </ul>	<p style="text-align: center;">L</p> <p style="text-align: center;">L</p> <p style="text-align: center;">L</p> <p style="text-align: center;">L</p>

**Table 5: Assessment of Sustainability for Objectives**

Outcome	Assessment of Sustainability	Dimensions of Sustainability
	<ul style="list-style-type: none"> <li><i>Environmental Factors</i>: Reduced energy consumption and GHG emissions are a consequence of implementing energy audit program activities of the Project for Turkish industry and energy service providers.</li> </ul> <p style="text-align: right;"><b>Overall Rating</b></p>	L
<p><b>Outcome 4: State-of-the-art energy management practices and EE measures, business and financing models are demonstrated.</b> This includes:</p> <ul style="list-style-type: none"> <li>improvement in specific energy consumption (SEC) of demonstration projects</li> </ul>	<ul style="list-style-type: none"> <li><i>Financial Resources</i>: Large industrial entities generally have sufficient funds to implement EE measures. SMEs likely do not have fiscal resources to implement EE measures; however, they do have access to a number of EE financing mechanisms from YEGM, KOSGEB and TTGV which the Project will assist to improve SME access to financing for EE measures;</li> <li><i>Socio-Political Risks</i>: Industrial entities need to see EE measure demonstrations to boost their confidence to implement EE measures;</li> <li><i>Institutional Framework and Governance</i>: YEGM, TSE, TTGV and KOSGEB are available for support of EE investments by industrial entities in Turkey;</li> <li><i>Environmental Factors</i>: Reduced energy consumption and GHG emissions are a consequence of EE demonstration activities of the Project.</li> </ul> <p style="text-align: right;"><b>Overall Rating</b></p>	L  L  L  L

### 3.6.2 Replicability

EE measures demonstrated by the Project will be replicated if all outputs are delivered as designed on this Project to create an enabling environment for industrial entities to implement EE measures for their facilities. This would include:

- The availability of energy consumptive information on a harmonized database that integrates information from large and SME industries (Outputs 1.1 and 2.1);
- The setting of benchmarks for energy consumptive activities for specific industrial activities that will give confidence to other industrial entities to implement EE measures (Output 1.2);
- The setup of energy management units within organized industrial zones to support inquiries and technical assistance to other industrial entities (Output 1.4);
- The setup of a user-friendly financial mechanism that will encourage other industrial entities to implement EE measures (Output 1.5);
- Awareness raising and enhanced technical knowledge for a wide range of relevant stakeholders including industrial decision makers, industrial energy managers and energy service providers. These stakeholders will be able to make decisions on EE investments and implement EE measures for industrial entities (Outputs 2.2, 2.3 and 2.4);
- Implementing an energy audit programme consistent with ISO 50001 that will build the confidence of other industrial entities and decision makers on the rationale for implementing EE measures (Outcome 3); and
- Dissemination of the lessons learned and benefits of the demonstration of EE measures to boost the confidence of other industrial entities to commit to EE investments (Outcome 4).

## 4. CONCLUSIONS AND RECOMMENDATIONS

### 4.1 Conclusions

- Project progress has been poor with virtually no impact from Project activities implemented thus far;
- Poor progress notwithstanding, there are a number of Project achievements and indicators that serve as solid building blocks for the Project to advance its industrial EE agenda with remaining GEF resources including:
  - Adoption of ISO 50001 for Energy Management Systems, and the subsequent translation of this standard to Turkish and the dissemination of the standard at 3 ToT workshops;
  - A review of energy audit mechanisms for Turkey with recommendations on future directions for the industrial sector to reduce their energy intensities;
  - A review of financial mechanisms available to industrial entities to implement EE measures with recommendations on improving access and sustainability of financing to industrial entities for EE measures; and
  - The eagerness of all Project implementing partners to see substantial progress of all Project activities, noting the importance of EE in the industrial sector to Turkey's economy.
- There are sufficient Project resources (USD 4.76 million) remaining that can be utilized “re-start” the Project (in addition to Project activities already initiated) to achieve its objectives, most important being the EE demonstration projects from Outcome 4. However, the current remaining time of IEEI (assuming the current Project terminal date of August 30, 2015) of 21 months, is likely insufficient time to expend these funds and to achieve Project objectives. As such, an extension of the Project from its terminal date of August 2015 will be necessary;
- For the Project to succeed, the effectiveness of the new Project Coordinator and CTA will be crucial. The new PC will need to utilize lessons learned from the execution of IEEI over the past 30 months and raise the level of confidence of the implementing partners that the PMC can deliver the intended outputs and outcomes of the Project. This will be a challenging task notably the coordination and facilitating consensus amongst Project's 4 implementing partners, 2 executing agencies and industrial stakeholders. The new Project Coordinator and ITC will need to be effective in transferring EE knowledge to both public and private sector stakeholders, and leading industrial stakeholders towards EE investment commitments and reducing their energy intensities;
- The Project planning matrix (PPM) needs to be re-written and clarified with new targets that will improve management of the Project.

## 4.2 Recommendations

To improve the likelihood of the IEEI Project achieving its intended outcomes with remaining GEF resources, the following recommendations are provided:

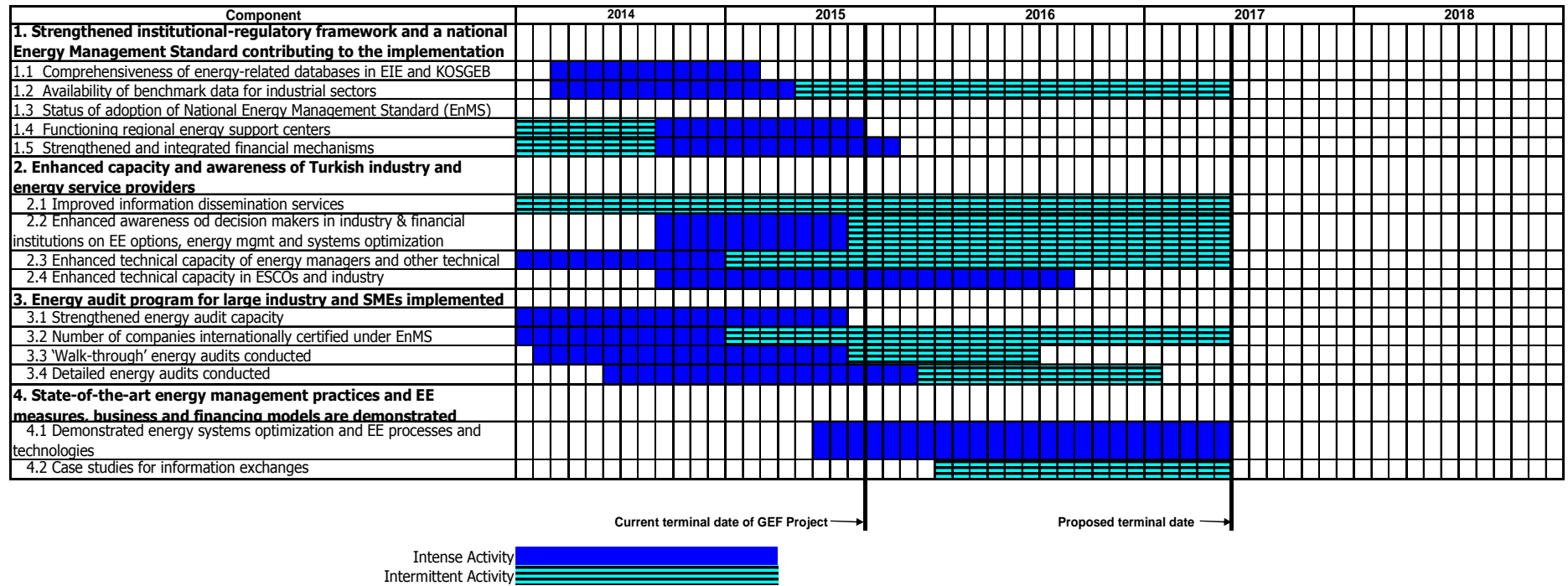
**Recommendation 1: Extend the Project for another 21 months to a new terminal date of May 31, 2017 to allow the Project to undertake all planned activities with the following rough order of priority.**

- Strengthening energy auditor capacity for “walk-through”, detailed energy audits and investment grade energy audits (Outcome 3). This would be a top priority given that it is the pre-cursor to any activity on implementing demonstration EE measures, business models and EE financing mechanisms (outcome 4). To meet the targets for energy audit capacity for the industrial sector, activities within Outcome 3 should commence as soon as the new PC and CTA are on the Project, for a minimum period of 18 months;
- Enhancing technical capacity for industrial energy managers (Output 2.3). This is important to ensure that the new National Energy Management Standards (EnMS) will be promoted and setup in industrial entities. This activity should commence immediately for a period of 12 months or more as appropriate;
- Finalizing decisions on which industrial sector to focus on for the collection of energy usage data, the specific type of energy data to collect, and the use of the energy data (as a part of Output 1.1). These decisions will have the purpose of assisting SMEs as well as larger enterprises to comply with the EE law of 2007 and related secondary legislation requiring these industrial entities to disclose their energy usage data to YEGM. This activity should commence during Q1 of 2014 for a period of 12 months (or more if appropriate) as there is much preparatory work to agree on the type of data to collect, engaging the industrial entity to disclose energy information to YEGM, and to collect sufficient information to meet the project target of 1,500 industries;
- Setting of benchmarks for targeted industries (Output 1.2) using collected and analyzed data from Output 1.1. This can commence within Q1 of 2014 with the provision that there is sufficient data collected from Output 1.1 on a specific industrial activity;
- Enhancing EE awareness of industrial decision makers and energy service providers (Output 2.3). This activity can commence within Q3 or Q4 of 2014;
- Setting up of EMUs in ten OIZs (Output 1.4) and EE financing mechanisms (Output 1.5). These setups should be substantially completed by Q2 of 2015, and in advance of implementing the demonstration EE measures (Outcome 4);
- Implementing demonstration EE investments (Outcome 4) after achieving the aforementioned priorities. Development of demo EE investments could commence as early as mid-2015 and continue to the proposed terminal date of February 28, 2017;

A draft Project schedule bar chart is provided on Figure 3.

**Recommendation 2: The new Project Coordinator and Chief Technical Advisor will need to provide strong coordination functions between the 4 implementing partners, 2 execution agencies and industrial stakeholders on the Project.** The new PC and CTA will need to develop collaborative and trusting relationships with YEGM and the other implementing partners of the Project. They should have personal attributes that demonstrate flexibility and strive to seek consensus in their roles of augmenting Government efforts to promote industrial EE.

Figure 3: Revised IEEI Implementation Schedule



**Recommendation 3: UNDP and UNIDO will need to closely monitor Project progress and adaptively manage the Project according to what has been achieved by the Project.** This will require close and thorough monitoring of the performance of the new PC and CTA, and more frequent consultations with the NPD and other key personnel from the other implementing partners. The Evaluator suggests that initially, UNDP and UNIDO should have monthly meetings on progress that could be less frequent if there is confidence that the Project is progressing satisfactorily. If certain Project interim targets have not been met, the PMC should closely consult with the NPD as well as UNDP and UNIDO monitors to prepare actions to mitigate any delays or risks that may include scaling back of certain targets (e.g. reducing the number of energy audits conducted). These adaptive management actions are proposed since (with the remaining proposed 39 months) the risk of Project delays are high if the new PC and CTA are unable to bring consensus and execute the AWP and PSC decisions in a timely manner.

**Recommendation 4: The Project should promote a range of financing options to implement demo EE measures instead of an emphasis on ESCOs.** For example, SMEs may opt to finance their EE measures in other ways. As such, the Project should promote a range of financing options to suit SMEs that are available from some of the Project's implementing partners including soft loans, commercial loans, grants, loan guarantee funds as well as ESCOs. It is also understood that the legal framework for ESCOs in Turkey is still under development<sup>18</sup>; hence, there is a high risk of not achieving the target of closing 10 new ESCO performance contracts under Outcome 2. The PSC should review and revise this to an achievable target.

**Recommendation 5: The Project should report on its linkages and collaboration with the World Bank's PMR Project in Turkey as a means to improve the quality of industrial MRV and ultimately, enhance EE investment returns through proposed carbon pricing instruments.** The Project does provide support for the generation of industrial energy use data which would be developed under the demonstration projects on Outcome 4. The Project's outputs should be closely linked with the PMR Project that should have the impact of augmenting the system under which industrial entities collect data and information on baseline conditions within an MRV structure, and provide energy usage and emission reports to YEGM and other regulatory institutions such as MoEU.

Similar to the 2007 EE Law requiring disclosure of energy usage data, there is a Turkish MRV by-law based on the MRV regulation in the EU ETS, that requires the establishment of an installation-level monitoring, reporting, and verification system for all major sources of GHG emissions from the industrial sector (e.g. coke production, metals, cement, glass, ceramic products, paper and pulp, chemicals over specific threshold sizes/production levels). Under MRV legislation, operators are required to monitor their emissions in accordance with approved monitoring plans and submit their verified emissions reports annually. The MRV by-law, however, does not establish any emission limitation or reduction mandate on the operators. Rather, each industrial entity needs to submit the monitoring plans for its installations first to an accredited verifier for review, and then to MoEU by June 2014. The first reporting period is set as 1 January – 31 December 2015, and the reports for that period must first be independently verified by one of the accredited verifiers. The verified monitoring reports are to be sent to the Ministry in April 2016.

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<sup>18</sup> ESCO deals to date in Turkey have only involved large companies. As such, considerable efforts may be required to reduce the perceived risks (by financial institutions) and boost the confidence in these ESCOs in providing services to smaller industrial SMEs

Through reporting the Project's collaboration with the PMR project, UNDP and GEF can receive assurances that there is work towards the consolidation of MRV procedures for energy usage data and GHG emissions in collaboration with MoEU, accreditation bodies and verifiers. Such assistance can pilot an energy usage and GHG emission system that will inform policy choices for YEGM or MoEU with regards to market-based mechanisms and enhance incentives for industrial entities to invest in EE measures. The MoEU is currently working with the industrial associations to identify the relevant industrial facilities eligible for this assistance. The key outcome of an improved and robust MRV system will provide Turkey with accurate information on GHG emissions in the industrial sector, as well as on the technologies, fuels, and emission factors at the various installations. This will also assist the Government of Turkey in developing a solid basis for designing and implementing climate change mitigation policies and measures as well as other energy efficiency and environmental policies, and the deployment of results based finance instruments.

***Recommendation 6: Simplify the PPM and reset realistic EOP targets.*** A draft revised PPM is provided in Appendix D. All Project stakeholders should review the targets set in the PPM to ensure their comfort in achieving these targets with a new terminal date of February 28, 2017. For example, can the Project achieve the target of enhanced energy information from 1,500 industrial entities within a 39-month period? In the edited version, Outcome 5 was dropped from the PPM as it does not have any direct developmental relevance and forms the M&E plan for the Project.

### 4.3 Lessons Learned

The only lesson that can be taken from the IEEI Project is as follows:

- Managerial personnel or chief technical advisors of UNDP market transformation projects should be aware of their main roles: to serve as a trusted partner to build the capacity of the host institution and facilitate knowledge transfers that work towards the objectives of the project. While good technical knowledge of the project subject with key technical personnel is important, perhaps equally important is the ability of these personnel to foster a collaborative partnership and project working environment to effectively transfer and share this knowledge with the host institutions.

## APPENDIX A – MISSION TERMS OF REFERENCE

### MID-TERM EVALUATION OF THE UNDP/GEF Project: PIMS 4113: Improving Energy Efficiency in Industry

<b>Project Title:</b>	Improving Energy Efficiency in Industry in Turkey (EE Industry)
<b>Vacancy Type:</b>	One (1) External Vacancies
<b>Location:</b>	Turkey (Ankara)
<b>Category:</b>	Environment and Sustainable Development (ESD)
<b>Type of contract:</b>	IC (Individual Contract)
<b>Reporting Language:</b>	English
<b>Starting Date:</b>	7 October 2013
<b>Expected duration of Assignment:</b>	25 man/days throughout the contract validity (non-consecutive)
<b>Duration of Contract:</b>	7 October 2013 – 13 December 2013
<b>Reference Code:</b>	MTE/EEI/01

#### 1. Introduction

##### 1.1 Project Summary Table

<b>Project Title:</b>	Improving Energy Efficiency in Industry in Turkey			
<b>GEF Project ID:</b>	PIMS: 4113		<b><u>at endorsement</u></b> <b><u>(Million US\$)</u></b>	<b><u>at completion</u></b> <b><u>(Million US\$)</u></b>
<b>UNDP Project ID:</b>	74019	<b>GEF financing:</b>	6.020 (3.327 UNDP-2.693 UNIDO)	
<b>Country:</b>	Turkey	<b>IA/EA own:</b>	.110 (60 UNDP-50 UNIDO)	
<b>Region:</b>	RBEC	<b>Government:</b>	6.444	
<b>Focal Area:</b>	Climate Change	<b>Other:</b>	22.640	
<b>FA Objectives, (OP/SP):</b>		<b>Total co-financing:</b>	29.234	
<b>Executing Agency:</b>	General Directorate of Renewable Energy (YEGM)	<b>Total Project Cost:</b>	35.104	
<b>Other Partners involved:</b>	UNIDO, KOSGEB, TTGV, TSE	ProDoc Signature (date project began):		10.08.2010
		(Operational) Closing Date:	Proposed: Aug 2010	Actual: Aug 2015



## 2. Standard UNDP/GEF M&E requirements

This Mid Term Evaluation (MTE) is initiated by the UNDP Turkey as the Implementation Agency for this project and it aims to provide managers (at the Project Implementation Unit, UNDP Turkey Country Office and UNDP-GEF levels) with strategy and policy options for more effectively and efficiently achieving the project's expected results and for replicating the results. It also provides the basis for learning and accountability for managers and stakeholders.

The Monitoring and Evaluation (M&E) policy at the project level in UNDP/GEF has four objectives:

- to monitor and evaluate results and impacts;
- to provide a basis for decision making on necessary amendments and improvements;
- to promote accountability for resource use; and
- to document, provide feedback on, and disseminate lessons learned.

A mix of tools is used to ensure effective project M&E. These might be applied continuously throughout the lifetime of the project – e.g. periodic monitoring of indicators -, or as specific time-bound exercises such as mid-term reviews, audit reports and independent evaluations.

In accordance with UNDP/GEF M&E policies and procedures, all projects with long implementation periods are strongly encouraged to conduct mid-term evaluations. In addition to providing an independent in-depth review of implementation progress, this type of evaluation is responsive to GEF Council decisions on transparency and better access of information during implementation.

The MTE is intended to identify potential project design problems, assess progress towards the achievement of objective, identify and document lessons learned (including lessons that might improve design and implementation of other UNDP-GEF projects), and to make recommendations regarding specific actions that might be taken to improve the project. It is expected to serve as a tool of validating or filling the gaps in the initial assessment of relevance, effectiveness and efficiency obtained from monitoring. The MTE provides the opportunity to assess early signs of project success or failure and prompt necessary adjustments.

## 3. Project Context

### **Background Information:**

Turkey has come a long way in setting up the regulatory framework to promote energy efficiency, including a National Energy Efficiency Strategy, Energy Efficiency Law and secondary legislation. Based on this framework, priorities have been given to improve energy efficiency (EE) in industry. However, all efforts were largely made by the companies and the dissemination of the efforts and outputs of EE needs concerted efforts covering all industries, especially including small and medium-sized enterprises (SMEs) that form the bulk of industrial enterprises in Turkey. Various finance, capacity, technology and policy barriers still stand in the way of the widespread adoption of energy-efficient processes and technologies.

Turkey is among the top 20 world economies with Gross Domestic Product (GDP) of USD 772 billion (2011). The economy is driven predominantly by domestic consumptions (70% of GDP) and exports (23% of GDP). Services and production are the main economy drivers. In the

last 10 years, Turkey's economy has grown at an average rate of 5.5%, and even in the 2009, when the global economic crisis hit, the economy still grew by 4.8%. This economy growth can be sustained if it is matched by an appropriate sustainable energy supply. Although Turkey is building a number of new power generation facilities, net energy imports have increased in recent years (4.6% of GDP for 2010, 6.2% of GDP for 2011).

In recent years, Turkey has given more importance to energy efficiency to provide energy supply security to the fast growing economy, to reduce pollution and energy load on economy. Including the Energy Efficiency Strategy and Energy Efficiency Law, an important distance has been covered on this subject to form the legal and institutional framework and support energy efficiency.

There are issues within the context of the Law and related secondary regulations, such as increasing and supporting energy efficiency, setting up energy efficiency consulting companies (EVD), forming energy management systems, promoting energy efficiency investments (Efficiency Improvement Projects (VAP) and Voluntary Agreements), increasing energy efficiency in transportation and buildings, preventing the sale of inefficient appliances and increasing awareness.

Within the scope of the legislation, in the field of energy efficiency training and certification, energy audits, consultancy and project services are being expanded throughout the country by giving authorization to universities with certain qualifications, chambers of electrical and mechanical engineers, and energy efficiency consulting companies (EVDs). Within the scope of applications which were launched in 2009; 2 universities, 2 professional chambers and 34 EVD Companies operates these activities as authorized certificate holder institutions. Energy management programme was started in 1995, energy management is an obligation in industrial plants including power plants and industrial organized zones and also public, commercial and service buildings having over a certain size. TS EN ISO 50001 Standard for Energy Management System is formed and realized appropriate to user manual and conditions standards. There are already over 1.250 industrial plants, 950 buildings, 25 power plants and 30 industrial organized zones in YEGM data bank. Those who will serve as energy manager in enterprises are required, to attend training programs to be delivered and certified by YEGM and institutions authorized by YEGM under the supervision and coordination of YEGM. This training programme has been launched in 1997 and the training documents produced in that year have still been used in these training programmes. So far, training programmes have been held for more than 5.000 technical people and they have been certified as energy manager in Turkey. In terms of improving capacity of skilled labor force about energy management; improving the training and certification programs, and case studies, to show the benefits of energy management in OIZs to the relevant stakeholders are important for Turkey.

Industrial Energy Efficiency (EE) can play major role in improving the energy security of Turkey and ensuring sustainable growth of the economy. The Government spent considerable efforts to introduce relevant support policies and legislation that will catalyze the financing and implementation of EE projects. In this context the government has been implementing some of incentive programs to encourage investment in energy efficiency in the industry, but the implementation is not satisfactory. Therefore, it is more important for Turkey to develop financial mechanisms attracting energy efficiency investments in industrial and commercial sectors while it is also important to make such incentive schemes more effective in the industrial sector, to enlarge the project market and integrate them with other financial mechanisms already existing in Turkey and disseminate them to SMEs. Financing is a critical component of the EE project cycle a

number of barriers currently exist on the market that prevent large scale flow of investments from Local Financial Institutions (LFI) to industrial EE projects.

The project will strive to remove the identified barriers through a comprehensive and integrated approach that will focus on: (1) Contributing to the implementation of the EE Law by strengthening the institutional-regulatory framework and promoting a national Energy Management Standard; (2) Enhancing capacity and creating awareness in Turkish industrial companies as well as financial service and energy service providers; (3) Implementation of energy audits in large industry and SMEs; (4) Demonstration of state-of-the-art management practices, EE measures and technologies and appropriate business and financing models.

GEF support of USD 5.9 million is requested to support these activities which will be co-financed by UNDP and UNIDO (USD 60,000 and 50,000 respectively), the Turkish Government partners (YEGM and KOSGEB) and TTGV with a USD 10.4 million contribution. An expected USD 17.0 million investment by industry in audits, energy management and energy efficiency measures and technologies will result in direct emission reduction of around 61 kilotons of CO<sub>2</sub> annually and (together with the barrier removal activities of the project) would lead to substantial indirect emission reduction.

### **Overall Project Objective:**

The Project Objective is 'To improve energy efficiency of the Turkish industry by enabling and encouraging companies in the industrial sector for efficient management of energy use by different energy efficiency measures and energy efficient technologies'.

The project will focus on:

- Contributing to the implementation of the EE Law by strengthening the institutional capacities and regulatory framework; promoting and disseminating Energy Management Standard (EnMS) While the recently adopted Energy Efficiency Law (EE Law) provides a good basis for advancing energy efficiency of the Turkish industry, there is a need to build the capacities of the key entities engaged for its implementation to effectively meet the objective of the Law as well as to elaborate further policy instruments to enhance its impact. This component will support the improvement of data gathering on EE in industry and address the lack of 'benchmark' information regarding the energy performance in the various processes of the industrial subsectors in the country, as well as training on energy management. The capacity will be strengthened of authorities and entities involved will be strengthened to facilitate effective implementation of the adopted EE policies and regulations in the country.
- Enhancing capacity and creating awareness in Turkish industrial companies as well as financial service and energy service providers; The target group of this awareness raising and capacity strengthening component will be (a) top management of industrial enterprises, (b) energy management and technical staff in enterprises and (c) energy service providers and consultants.
- Implementation of energy audits in large industry and SMEs; The project will support up to 300 initial "walk-through" energy audits as one of the primary awareness raising tools at the company level (providing on-site practical training for local trainees). The priority will be given not only to the plants that have highest energy intensity but also that have a relatively broad representation of different industrial sub-sectors. Attention will also be given to SMEs and cooperation will be sought with other activities funded by multilateral and bilateral agencies.
- Demonstration of state-of-the-art management practices, EE measures and technologies and appropriate business and financing models; Well selected, designed and properly monitored demonstration projects are considered as essential tools for providing concrete showcases for

the targeted stakeholders on the existing energy saving opportunities including costs and benefits, possible implementation and financing mechanisms and the pros and cons associated with them. In this respect, selection criteria will be developed for which besides benefiting from the available public incentive and concessional lending schemes can benefit from additional support of the GEF funds in their design. In the selection of the projects, specific emphasis will be given for including different sectors, most promising technologies and, as applicable, different implementation and financing mechanisms, including, as applicable, energy performance contracting. The value added of the expected GEF participation lies not only in making the projects more attractive to the first required clients in general, who are taking some additional risk in testing some eventually new technologies or other EE measures in Turkey, but also in facilitating direct access of the project team to the project data and the use of the project for the awareness raising and capacity building activities under components 1 and 2. The project aims at 65 industrial companies (of which 40 SMEs) participating in the demonstration component under the project energy efficiency measures and technologies.

#### Project concept and design

Mid Term Evaluation Expert (MTE Expert) will assess the project concept and design. MTE Expert should review the problem addressed by the project and the project strategy, encompassing an assessment of the appropriateness of the objectives, planned outputs, activities and inputs as compared to cost-effective alternatives. The executing modality and managerial arrangements should also be judged. The MTE Expert will revise and re-assess the relevance of indicators and targets, review the work plan, planned duration and budget of the project.

#### Implementation

The MTE Expert will assess the implementation of the project in terms of quality and timeliness of inputs and efficiency and effectiveness of activities carried out. Also, the effectiveness of management as well as the quality and timeliness of monitoring and backstopping by all parties to the project should be evaluated. In particular the MTE is to assess the Project Management Unit's use of adaptive management in project implementation.

#### Project outputs, outcomes and impact

The MTE Expert will assess the outputs, outcomes and impact achieved by the project as well as the likely sustainability of project results. MTE should encompass an assessment of the achievement of the immediate objectives and the contribution to attaining the overall objective of the project. The MTE Expert should also assess the extent to which the implementation of the project has been inclusive of relevant stakeholders and to which it has been able to create collaboration between different partners. The ET will also examine if the project has had significant unexpected effects, whether of beneficial or detrimental character.

## **4. Detailed Scope of Work**

The MTE Expert will look at the following aspects:

### **4.1 Project Concept**

*4.1.1. Project relevance and strategy:* The extent to which the project is suited to local and national development priorities and organizational policies, including changes over time as well as the extent the activities contribute towards attainment of global environmental benefits:

- a. How and why project outcomes and strategies contribute to the achievement of the expected results.

- b. Examine their relevance and whether they provide the most effective way towards results.
- c. Do the outcomes developed during the inception phase still represent the best project strategy for achieving the project objectives (in light of updated underlying factors)? Consider alternatives.
- d. Were the relevant country representatives, from government and civil society, involved in the project preparation?
- e. Does the recipient government maintain its financial commitment to the project?

#### *4.1.2. Preparation and readiness*

- a. Are the project's objectives and components clear, practicable and feasible within its timeframe?
- b. Were the capacities of executing institution and counterparts properly considered when the project was designed?
- c. Were lessons from other relevant projects properly incorporated in the project design?
- d. Were the partnership arrangements properly identified and the roles and responsibilities negotiated prior to project approval?
- e. Were counterpart resources (funding, staff, and facilities), enabling legislation, and adequate project management arrangements in place at project entry?

#### *4.1.3 Stakeholder participation during project preparation*

- a. Did the project involve the relevant stakeholders through information-sharing, consultation and by seeking their participation in the project's design?

#### *4.1.4 Underlying Factors/Assumptions*

- a. Assess the underlying factors beyond the project's immediate control that influence outcomes and results. Consider the appropriateness and effectiveness of the project's management strategies for these factors.
- b. Re-test the assumptions made by the project management and identify new assumptions that should be made
- c. Assess the effect of any incorrect assumptions made by the project

#### *4.1.5 Project organization/Management arrangements*

- a. Were the project roles properly assigned during the project design?
- b. Are the project roles in line with UNDP and GEF programme guides?
- c. Can the management arrangement model suggested by the project be considered as an optimum model? If no, please come up with suggestions and recommendations

#### *4.1.6 Project budget and duration*

- a. Assess if the project budget and duration were planned in a cost-effective way?

#### *4.1.6 Design of Project Monitoring and Evaluation system*

- a. Examine whether or not the project has a sound M&E plan to monitor results and track progress towards achieving project objectives.

- b. Examine whether or not the M&E plan includes a baseline (including data, methodology, etc.), SMART indicators and data analysis systems, and evaluation studies at specific times to assess results and adequate funding for M&E activities.
- c. Examine whether or not the time frame for various M&E activities and standards for outputs are specified.

#### 4.1.8 Sustainability and replication strategy

- a. Assess if project sustainability and replicability strategy was developed during the project design? And assess its relevance

#### 4.1.9 Gender perspective:

- a. Extent to which the project accounts for gender differences when developing project interventions.
- b. How gender considerations are mainstreamed into project interventions?

## 4.2 Project Implementation

### 4.2.1 Project's Adaptive Management

- a. Monitoring Systems
  - Assess the monitoring tools currently being used:
    - Do they provide the necessary information?
    - Do they involve key partners?
    - Are they efficient?
    - Are additional tools required?
  - Reconstruct baseline data if necessary<sup>19</sup>. Reconstruction should follow participatory processes and could be achieved in conjunction with a learning exercise
  - Ensure the monitoring system, including performance indicators, at least meets GEF minimum requirements<sup>20</sup>. Apply SMART indicators as necessary.
  - Apply the GEF Tracking Tool and provide a description of comparison with initial application of the tool.
  - Assess whether or not M&E system facilitates timely tracking of progress towards project's objectives by collecting information on chosen indicators continually; annual project reports are complete, accurate and with well justified ratings; the information provided by the M&E system is used to improve project performance and to adapt to changing needs.
- b. Risk Management
  - Validate whether the risks identified in the project document and PIRs are the most important and whether the risk ratings applied are appropriate. If not, explain why.
  - Describe any additional risks identified and suggest risk ratings and possible risk management strategies to be adopted
  - Assess the project's risk identification and management systems:

<sup>19</sup> See p.67 of UNDP's "Handbook on Monitoring and Evaluation for Results", available at <http://www.undp.org/gef/monitoring/policies.html>

<sup>20</sup> See section 3.2 of the GEF's "Monitoring and Evaluation Policy", available at [http://207.190.239.143/uploadedFiles/Policies\\_and\\_Guidelines-me\\_policy-english\(1\).pdf](http://207.190.239.143/uploadedFiles/Policies_and_Guidelines-me_policy-english(1).pdf)

- Is the UNDP-GEF Risk Management System appropriately applied?
  - How can the UNDP-GEF Risk Management System be used to strengthen the project management?
- c. Work Planning
- Assess the use of the logical framework as a management tool during implementation and any changes made to it
    - Ensure the logical framework meets UNDP/GEF requirements in terms of format and content
    - What impact did the retro-fitting of impact indicators, if such have on project management
  - Assess the use of routinely updated work plans;
  - Assess the use of electronic information technologies to support implementation, participation and monitoring, as well as other project activities;
  - Is work planning processes result-based<sup>21</sup>? If not, suggest ways to re-orientate work planning;
- d. Financial management
- Consider the financial management of the project, with specific reference to the cost-effectiveness of interventions. (Cost-effectiveness: the extent to which results have been delivered with the least costly resources possible. Also called cost-effectiveness or efficacy). Any irregularities must be noted.
  - Is there due diligence in the management of funds and financial audits?
  - Did promised co-financing materialize? (Please fill the form on co-financing attached table 1).
- e. Reporting
- Assess how adaptive management changes have been reported by the project management;
  - Assess how lessons derived from the adaptive management process have been documented, shared with key partners and internalized by partners.
- f. Delays
- Assess if there were delays in project implementation, then what were the reasons?
  - Did the delay affect the achievement of project's outcomes and/or sustainability, and if it did affect outcomes and sustainability then in what ways and through what causal linkages?

#### 4.2.2 Contribution of Implementing and Executing Agencies

- Assess the role of UNDP and General Directorate for Renewable Energy (GDRE) against the requirements set out in the UNDP Handbook on Monitoring and Evaluating for Results. Consider:
  - Field visits
  - Participation in Steering Committees
  - Project reviews, PIR preparation and follow-up
  - GEF guidance
  - Skill mix
  - Operational support
- Assess the contribution to the project from UNDP and GDRE in terms of “soft” assistance (i.e. policy advice & dialogue, advocacy, and coordination) and suggest measures to strengthen UNDP's and GDRE's soft assistance to the project management.

<sup>21</sup> RBM Support documents are available at <http://www.undp.org/eo/methodologies.htm>

#### 4.2.3 Stakeholder Participation, Partnership Strategy

- a. Assess whether or not local stakeholders participate in project management and decision-making. Include an analysis of the strengths and weaknesses of the approach adopted by the project and suggestions for improvement if necessary;
- b. Consider the dissemination of project information to partners and stakeholders and if necessary suggest more appropriate mechanisms;
- c. Identify opportunities for stronger partnerships;

#### 4.2.9 Implementation of replication approach;

- a. Sustainability: extent to which the benefits of the project will continue, within or outside the project scope, after it has come to an end. The evaluators may look at factors such as establishment of sustainable financial mechanisms, mainstreaming project objectives into the broader development policies and sectoral plans and economies or community production;

### 4.3 Project Results (Outputs, Outcomes and Impact)

*4.3.1 Progress towards achievement of intended outcomes/measurement of change: Progress towards results should be based on a comparison of indicators before and after (so far) the project intervention, e.g. by comparing current conditions for development of Protected Areas management effectiveness, financial sustainability and capacity to the baseline ones;*

## 5. Evaluation Methodology

The project progress and achievements will be tested against following GEF evaluation criteria:

- Relevance – the extent to which the activity is suited to local and national development priorities and organizational policies, including changes over time.
- Effectiveness – the extent to which an objective has been achieved or how likely it is to be achieved.
- Efficiency – the extent to which results have been delivered with the least costly resources possible.
- Results/impacts – the positive and negative, and foreseen and unforeseen, changes to and effects produced by a development intervention. In GEF terms, results include direct project outputs, short-to medium term outcomes, and longer-term impact including global environmental benefits, replication effects and other, local effects.
- Sustainability – the likely ability of an intervention to continue to deliver benefits for an extended period of time after completion. Projects need to be environmentally as well as financially and socially sustainable.

The Project will be rated against individual criterion of **relevance, effectiveness, efficiency and impact/results based** on the following scale:

- Highly Satisfactory (HS): The project has no shortcomings in the achievement of its objectives.
- Satisfactory (S): The project has minor shortcomings in the achievement of its objectives.
- Moderately Satisfactory (MS): The project has moderate shortcomings in the achievement of its objectives.
- Moderately Unsatisfactory (MU): The project has significant shortcomings in the achievement of its objectives.



- Unsatisfactory (U) The project has major shortcomings in the achievement of its objectives.
- Highly Unsatisfactory (HU): The project has severe shortcomings in the achievement of its objectives.

As for **sustainability criteria** the evaluator should at the minimum evaluate the “likelihood of sustainability of outcomes at project termination, and provide a rating for this.

The following four dimensions or aspects of sustainability should be addressed:

*Financial resources:*

- a. Are there any financial risks that may jeopardize sustenance of project outcomes?
- b. What is the likelihood of financial and economic resources not being available once the GEF assistance ends (resources can be from multiple sources, such as the public and private sectors, income generating activities, and trends that may indicate that it is likely that in future there will be adequate financial resources for sustaining project’s outcomes)?

*Socio-political:*

- a. Are there any social or political risks that may jeopardize sustainability of project outcomes?
- b. What is the risk that the level of stakeholder ownership (including ownership by governments and other key stakeholders) will be insufficient to allow for the project outcomes/benefits to be sustained?
- c. Do the various key stakeholders see that it is in their interest that the project benefits continue to flow?
- d. Is there sufficient public / stakeholder awareness in support of the long term objectives of the project?

*Institutional framework and governance:*

- a. Do the legal frameworks, policies and governance structures and processes pose risks that may jeopardize sustenance of project benefits?
- b. While assessing this parameter, also consider if the required systems for accountability and transparency, and the required technical know-how are in place.

*Environmental:*

- a. Are there any environmental risks that may jeopardize sustenance of project outcomes? The evaluation should assess whether certain activities will pose a threat to the sustainability of the project outcomes. For example, construction of dam in a protected area could inundate a sizable area and thereby neutralizing the biodiversity related gains made by the project.

On each of the dimensions of sustainability of the project outcomes will be rated as follows:

- Likely (L): There are no or negligible risks that affect this dimension of sustainability.
- Moderately Likely (ML): There are moderate risks that affect this dimension of sustainability.
- Moderately Unlikely (MU): There are significant risks that affect this dimension of sustainability.
- Unlikely (U): There are severe risks that affect this dimension of sustainability.

All the risk dimensions of sustainability are critical. Therefore, overall rating for sustainability will not be higher than the rating of the dimension with lowest ratings. For example, if a project has an ‘Unlikely’ rating in either of the dimensions then its overall rating cannot be higher than ‘Unlikely’.

The evaluator(s) should develop detailed methodology and work plan for MTE during the preparatory phase of the MTE. The MTE tools and techniques may include, but not limited to:

- Desk review;
- Interviews with Project Management Unit and key stakeholders, including UNDP Country Office in Turkey, General Directorate for Renewable Energy (GDRE) of the Ministry of Energy and Natural Resources, Ministry of Environment and Urbanization (MoEU), Ministry of National Education (MoNE) and any other stakeholders as deemed necessary (Annex 3: Tentative List of Meetings).
- Questionnaires.
- Participatory techniques and other approaches for gathering and analysis of data.

An indicative outline of the Mid-term Evaluation Report is presented below.

## 6. Indicative Outline of the Mid-term Evaluation Report

### Title and opening page

- Provide the following information:
  - Name of the UNDP/GEF project
  - UNDP and GEF project ID#s.
  - Evaluation time frame and date of evaluation report
  - Region and countries included in the project
  - GEF Operational Program/Strategic Program
  - Executing Agency and project partners
  - Evaluation team members
  - Acknowledgements

### Executive Summary

- 2 -3 pages that:
  - Briefly describe the project evaluated
  - Explain the purpose and objectives of the evaluation, including the audience
  - Describes key aspects of the evaluation approach and methods
  - Summarizes principle conclusions, recommendations and lessons

### Acronyms and Abbreviations

(See: UNDP Editorial Manual<sup>22</sup>)

### Introduction

- Purpose of the evaluation
- Briefly explain why the terminal evaluation was conducted (the purpose), why the project is being evaluated at this point in time, why the evaluation addressed the questions it did, and the primary intended audience.
- Key issues addressed
- Providing an overview of the evaluation questions raised .
- Methodology of the evaluation
- Clear explanation of the evaluation's scope, primary objectives and main questions. The Evaluation ToR may also elaborate additional objectives that are specific to the project focal area and national circumstances, and which may address the project's integration with other UNDP strategic interventions in the project area
- Stakeholders' engagement in the evaluation, including how the level of stakeholder involvement contributes to the credibility of the evaluation findings, conclusions and recommendations.
- Structure of the evaluation

<sup>22</sup> UNDP Style Manual, Office of Communications, Partnerships Bureau, updated November 2008

- Acquaint the reader with the structure and contents of the report and how the information contained in the report will meet the purposes of the evaluation and satisfy the information needs of the report's intended users

#### **Evaluation Team**

- Briefly describing the composition of the evaluation team, background and skills and the appropriateness of the technical skill mix, gender balance and geographical representation.

#### **Ethics**

- The evaluators should note the steps taken to protect the rights and confidentiality of persons interviewed (see UNEG 'Ethical Guidelines for Evaluators' for more information).<sup>23</sup> Attached to this report should be a signed 'Code of Conduct' form from each of the evaluators.

#### **Project Description and development context**

- Project start and duration
- Problems that the project seeks to address
- Immediate and development objectives of the project
- Main stakeholders

#### **Findings**

- (In addition to a descriptive assessment, all criteria marked with (\*) should be rated<sup>24</sup>)

#### **Project Formulation**

- Analysis of LFA (Project logic /strategy; Indicators)
- Assumptions and Risks
- Lessons from other relevant projects (e.g., same focal area) incorporated into project implementation
- Stakeholder participation
- Replication approach
- UNDP comparative advantage
- Linkages between project and other interventions within the sector, including management arrangements

#### **Project Implementation**

- The logical framework used during implementation as a management and M&E tool
- Effective partnerships arrangements established for implementation of the project with relevant stakeholders involved in the country/region
- Feedback from M&E activities used for adaptive management
- Financial Planning
- Monitoring and evaluation: design and implementation (\*)
- UNDP and Executing Agency execution (\*) coordination, and operational issues

#### **Project Results**

- Overall results (attainment of objectives) (\*)
- Relevance, Effectiveness, & Efficiency (\*)
- Country ownership
- Mainstreaming
- Sustainability (\*)
- Catalytic Role & Impact
- Conclusions, recommendations & lessons
- Corrective actions for the design, implementation, monitoring and evaluation of

<sup>23</sup> UNEG, '[Ethical Guidelines for Evaluation](#)', June 2008.

<sup>24</sup> Using a six-point rating scale: 6:Highly Satisfactory, 5: Satisfactory, 4: Marginally Satisfactory, 3: Marginally Unsatisfactory, 2: Unsatisfactory and 1: Highly Unsatisfactory, see section 3.5, page 37 for ratings explanations.

- the project
- Actions to follow up or reinforce initial benefits from the project
- Proposals for future directions underlining main objectives
- Best and worst practices in addressing issues relating to relevance, performance and success
- Annexes.
- TOR
- Itinerary
- List of persons interviewed
- Summary of field visits
- List of documents reviewed
- Questionnaire used and summary of results
- Evaluation Consultant Agreement Form

The length of the MTE Report shall not exceed 30 pages in total (not including annexes).

## 7. TIME FRAME OF WORK

The duration of the assignment will be 60 days upon signature of the Contract.

The work will be undertaken during a period of 25 man/day throughout the time-frame below;

Contract Start Date: 30 September 2013

Contract Completion Date: 29 November 2013

## 8. DUTIES AND RESPONSIBILITIES OF EVALUATION EXPERT

The mid-term evaluation will be carried out by MTE Expert. He/She will receive the support of UNDP Country Office and Project Management Unit, and will be assisted by a translator/interpreter (when needed). It is expected that the evaluation expert will work closely with the Monitoring and Evaluation Administrator hired within the UNDP Environment and Sustainable Development Programme.

### **Mid Term Evaluation Expert**

The international consultant will be responsible to deliver the expected output of the mission

#### Duties and Responsibilities:

- Desk review of documents, development of draft methodology, detailed work plan and MTE outline;
- Debriefing with UNDP and GDRE, agreement on the methodology, scope and outline of the MTE report ;
- Interviews with PMU, UNDP Turkey, GDRE and project partners;
- Debriefing UNDP and project partners and will provide an *aide memoire*;
- Development and submission of the first MTE report draft. The draft will be shared with the key project stakeholders for review and comment;
- Finalization and submission of the final MTE report through incorporating suggestions received on the draft report ;

- Supervision of the work of the national expert (during entire evaluation period).

Monitoring and Evaluation Administrator will:

- Provide support in collection of background materials
- Participation in debriefings with UNDP CO and GDRE representatives; Organize the mission program together with the Project Management Unit, arrange and facilitate meetings with key stakeholders;
- Assistance to the MTE Expert in conducting interviews with relevant stakeholders;
- Participation in debriefing with UNDP and project partners;
- Necessary support will be provided to MTE Expert in circulation of the draft MTE report among the key project stakeholders for review and commenting.

## 9. DELIVERABLES AND REPORTING

The products expected from the evaluation are as follows:

- Inception Report with detailed methodology, work plan and outline;
- Aide memoire following to the finalization of the country visit;
- Mid-term evaluation report with findings;
  - Lessons learned and recommendations for improvement, including recommendations for the revision of project strategy, approach, outputs and activities, if necessary;
  - Recommendations for a strategy for future replication of the project approach for other types of the biodiversity projects, for other countries in the region;
  - Description of best practices, and an “action list” in a certain area of particular importance for the project.

The core product of the Mid-Term Evaluation will be the Mid-Term Evaluation Report given in section 4 supplemented by Co-financing given in Annex 4 and Rate Tables given in Annex 5.

MTE Expert will be responsible to submit the following deliverables.

Estimated Date	Estimated Number of Professional Days to be invested*	Milestone/Deliverables
14 October 2013	5	<b>Inception Report:</b> Desk review, development of methodology, updating time table, drafting mission programme. Incorporating comments received from UNDP Country Office (if necessary).
28 October 2013	5	In-country field visits, interviews, preliminary mission findings briefing(s), debriefings with project partners and providing aide memoire. Delivering a presentation on <b>aide memoire</b> (finding(s) and recommendation(s)) to Project Partners.
11 November 2013	10	Submission of <b>Draft MTE</b> report
18 November 2013		Delivery of the comments of the

		relevant stake holders regarding the Draft MTE Report from UNDP CO.
<b>28 November 2013</b>	5	Submission of the <b>Final MTE Report</b> in line with the comments received
<b>Total Number of days</b>	25	

\* The number of day may change among different activities and deliverables but the total days to be invested cannot exceed 25 days for the content of this TOR. UNDP has the right to request from the Consultant additional number of days to be invested for additional activities, based on the needs of the project.

The final version of the evaluation report should be submitted in electronic format (MS Word) to UNDP Country Office in Turkey no later than **November 28, 2013**.

#### **Reporting Line**

The international consultant will work under the coordination of PIMS 4113: Improving Energy Efficiency in Industry in Turkey Project Coordinator and be responsible to UNDP Environment and Sustainable Development (ESD) Programme Manager for completion of the tasks and duties assigned in Section 7. The deliverables shall be submitted to the UNDP Environment and Sustainable Development (ESD) Programme Manager for final approval. All of the deliverables are subject to approval from UNDP ESD Programme Manager in order to realize the payments to the consultant. He/she will work in close collaboration with GDRE, and other project partners.

#### **Reporting Language**

The reporting language should be in English.

#### **Title Rights**

The title rights, copyrights and all other rights whatsoever nature in any material produced under the provisions of this TORs will be vested exclusively in UNDP.

### **10. PLACE OF WORK**

The place of work is both home-based and Ankara. The MTE Expert is required to be in Ankara for the interviews with the project stakeholders within the time frame given in the below table.

Assignment-related travel and accommodation costs (outside home base) of the below given mission shall be **borne by MTE Expert**.

<b>Objective of the Mission</b>	<b>in Ankara (estimated dates)</b>	<b>Duration</b>
Interview panels with project partners and stakeholders (please refer to Annex 3)	Between 20 and 26 October 2013	7 days (including 2 days for travel)

The number of missions and their travel periods are subject to change and can be mutually rearranged based on the circumstances and the needs.

## 11. TERMS AND PAYMENT

The international consultant will be paid in USD.

If the selected consultant will be Turkish with international experience s/he will be paid in TL (UN monthly exchange rate will be used as official conversion rate from USD to TL).

- **Contracting Authority**

Contracting Authority for this ToR is UNDP, and the contract amount will be provided through UNDP-GEF budget under “PIMS 4113: Improving Energy Efficiency in Industry in Turkey” Project.

- **Contracting Modality**

IC-Individual Contract of UNDP.

- **Payment schedule**

The MTE Expert shall be paid upon submission and approval of UNDP for the deliverables specified in below table, following successful completion of the tasks listed throughout this ToR (specified in Section 7) and assigned by UNDP.

The payments for each deliverable will be based on the number of days to be invested for the respective deliverable. The payments shall be effected only if the deliverables required in this ToR are submitted to UNDP within the time frames stipulated in the ToR and they are approved by UNDP. Without submission and approval of the deliverables, the consultant shall not receive any payment even if he/she invests time for this assignment.

The amount paid to international and local consultant shall be gross and inclusive of all associated costs such as social security, pension and income tax etc.

Name of the Report	Expected Date of Payments	Estimated Number of days to be invested
Inception Report	14 October 2013	5
Submission of the Aide Memoire	28 October 2013	5
Final MTE Report	28 November 2013	15
Total Number of Days		25

### **Tax obligation**

The subscriber is solely responsible for all taxation or other assessments on any income derived from UNDP. UNDP will not make any withholding from payments for the purposes of income tax. UNDP is exempt from any liabilities regarding taxation and will not reimburse any such taxation to the subscriber.

## Annex 1: GEF terminology and project review criteria

**Implementation Approach** includes an analysis of the project's logical framework, adaptation to changing conditions (adaptive management), partnerships in implementation arrangements, changes in project design, and overall project management.

Some elements of an effective implementation approach may include:

- The logical framework used during implementation as a management and M&E tool
- Effective partnerships arrangements established for implementation of the project with relevant stakeholders involved in the country/region
- Lessons from other relevant projects (e.g., same focal area) incorporated into project implementation
- Feedback from M&E activities used for adaptive management.

**Country Ownership/Drivenness** is the relevance of the project to national development and environmental agendas, recipient country commitment, and regional and international agreements where applicable. Project Concept has its origin within the national sectoral and development plans

Some elements of effective country ownership/drivenness may include:

- Project Concept has its origin within the national sectoral and development plans
- Outcomes (or potential outcomes) from the project have been incorporated into the national sectoral and development plans
- Relevant country representatives (e.g., governmental official, civil society, etc.) are actively involved in project identification, planning and/or implementation
- The recipient government has maintained financial commitment to the project
- The government has approved policies and/or modified regulatory frameworks in line with the project's objectives

For projects whose main focus and actors are in the private-sector rather than public-sector (e.g., IFC projects), elements of effective country ownership/drivenness that demonstrate the interest and commitment of the local private sector to the project may include:

- The number of companies that participated in the project by: receiving technical assistance, applying for financing, attending dissemination events, adopting environmental standards promoted by the project, etc.
- Amount contributed by participating companies to achieve the environmental benefits promoted by the project, including: equity invested, guarantees provided, co-funding of project activities, in-kind contributions, etc.
- Project's collaboration with industry associations

**Stakeholder Participation/Public Involvement** consists of three related and often overlapping processes: information dissemination, consultation, and "stakeholder" participation. Stakeholders are the individuals, groups, institutions, or other bodies that have an interest or stake in the outcome of the GEF-financed project. The term also applies to those potentially adversely affected by a project.

Examples of effective public involvement include:

### Information dissemination



- Implementation of appropriate outreach/public awareness campaigns

#### Consultation and stakeholder participation

- Consulting and making use of the skills, experiences and knowledge of NGOs, community and local groups, the private and public sectors, and academic institutions in the design, implementation, and evaluation of project activities

#### Stakeholder participation

- Project institutional networks well placed within the overall national or community organizational structures, for example, by building on the local decision making structures, incorporating local knowledge, and devolving project management responsibilities to the local organizations or communities as the project approaches closure
- Building partnerships among different project stakeholders
- Fulfillment of commitments to local stakeholders and stakeholders considered to be adequately involved.

**Sustainability** measures the extent to which benefits continue, within or outside the project domain, from a particular project or program after GEF assistance/external assistance has come to an end. Relevant factors to improve the sustainability of project outcomes include:

- Development and implementation of a sustainability strategy.
- Establishment of the financial and economic instruments and mechanisms to ensure the ongoing flow of benefits once the GEF assistance ends (from the public and private sectors, income generating activities, and market transformations to promote the project's objectives).
- Development of suitable organizational arrangements by public and/or private sector.
- Development of policy and regulatory frameworks that further the project objectives.
- Incorporation of environmental and ecological factors affecting future flow of benefits.
- Development of appropriate institutional capacity (systems, structures, staff, expertise, etc.) .
- Identification and involvement of champions (i.e. individuals in government and civil society who can promote sustainability of project outcomes).
- Achieving social sustainability, for example, by mainstreaming project activities into the economy or community production activities.
- Achieving stakeholder's consensus regarding courses of action on project activities.

**Replication approach**, in the context of GEF projects, is defined as lessons and experiences coming out of the project that are replicated or scaled up in the design and implementation of other projects. Replication can have two aspects, replication proper (lessons and experiences are replicated in different geographic area) or scaling up (lessons and experiences are replicated within the same geographic area but funded by other sources). Examples of replication approaches include:

- Knowledge transfer (i.e., dissemination of lessons through project result documents, training workshops, information exchange, a national and regional forum, etc).
- Expansion of demonstration projects.
- Capacity building and training of individuals, and institutions to expand the project's achievements in the country or other regions.
- Use of project-trained individuals, institutions or companies to replicate the project's outcomes in other regions.

**Financial Planning** includes actual project cost by activity, financial management (including disbursement issues), and co-financing. If a financial audit has been conducted the major findings should be presented in the TE.

Effective financial plans include:

- Identification of potential sources of co-financing as well as leveraged and associated financing<sup>25</sup>.
- Strong financial controls, including reporting, and planning that allow the project management to make informed decisions regarding the budget at any time, allows for a proper and timely flow of funds, and for the payment of satisfactory project deliverables
- Due diligence due diligence in the management of funds and financial audits.

*Co-financing includes:* grants, loans/concessional (compared to market rate), credits, equity investments, in-kind support, other contributions mobilized for the project from other multilateral agencies, bilateral development cooperation agencies, NGOs, the private sector and beneficiaries. Please refer to Council documents on co-financing for definitions, such as GEF/C.20/6.

*Leveraged resources* are additional resources—beyond those committed to the project itself at the time of approval—that are mobilized later as a direct result of the project. Leveraged resources can be financial or in-kind and they may be from other donors, NGO's, foundations, governments, communities or the private sector. Please briefly describe the resources the project has leveraged since inception and indicate how these resources are contributing to the project's ultimate objective.

**Cost-effectiveness** assesses the achievement of the environmental and developmental objectives as well as the project's outputs in relation to the inputs, costs, and implementing time. It also examines the project's compliance with the application of the incremental cost concept. Cost-effective factors include:

- Compliance with the incremental cost criteria (e.g. GEF funds are used to finance a component of a project that would not have taken place without GEF funding.) and securing co-funding and associated funding.
- The project completed the planned activities and met or exceeded the expected outcomes in terms of achievement of Global Environmental and Development Objectives according to schedule, and as cost-effective as initially planned.
- The project used either a benchmark approach or a comparison approach (did not exceed the costs levels of similar projects in similar contexts)

**Monitoring & Evaluation.** Monitoring is the periodic oversight of a process, or the implementation of an activity, which seeks to establish the extent to which inputs, work schedules, other required actions and outputs are proceeding according to plan, so that timely action can be taken to correct the deficiencies detected. Evaluation is a process by which program inputs, activities and results are analyzed and judged explicitly against benchmarks or baseline conditions using performance indicators. This will allow project managers and planners to make decisions based on the evidence of information on the project implementation stage, performance indicators, level of funding still available, etc, building on the project's logical framework.

<sup>25</sup> Please refer to Council documents on co-financing for definitions, such as GEF/C.20/6. The following page presents a table to be used for reporting co-financing.

Monitoring and Evaluation includes activities to measure the project's achievements such as identification of performance indicators, measurement procedures, and determination of baseline conditions. Projects are required to implement plans for monitoring and evaluation with adequate funding and appropriate staff and include activities such as description of data sources and methods for data collection, collection of baseline data, and stakeholder participation. Given the long-term nature of many GEF projects, projects are also encouraged to include long-term monitoring plans that are sustainable after project completion.

**Annex 2: List of Documents to be Reviewed**

- Project document and its annexes;
- Project CEO Approval Document;
- Inception Report;
- 2011, 2012 and 2013 Annual/ work plans endorsed by Steering Committee;
- Project financial work plans and expenditure reports;
- Annual/Quarter operational and progress reports;
- 2012 and 2013 UNDP/GEF Project Implementation Reviews (PIR);
- Minutes of Steering Committee Meetings;
- Project consultant reports;
- METT scores for project sites;
- Financial Sustainability Scorecard (if available);
- Capacity Assessment Scorecard (if available);
- GEF Monitoring and Evaluation Policies;
- UNDP Handbook on planning, monitoring and evaluating for development results;
- Other upon request.

**Annex 3: Tentative List of Meetings to be Held**

<b>Location</b>	<b>Meetings</b>
UNDP Turkey CO	UNDP ESD Programme Manager, Deputy Residence Representative
General Directorate of Renewable Energy (GDRE), (Ankara)	Deputy General Director (EE Industry National Project Director) and key staff
UNDP – Global Environment Facility	Regional Technical Advisor (Tele Conference)
UNIDO – Industrial Development	Industrial Development Officer (Tele Conference)
Small and Medium Enterprises Development Organization of Turkey- (KOSGEB)	Head of Departments and key staff
Technology Development Foundation of Turkey (TTGV)	Head of Departments and key staff
Turkish Standards Institution (TSE)	Head of Departments and key staff
GEF Operational Focal Point	Head of Departments and key staff

## APPENDIX B – MISSION ITINERARY (FOR OCTOBER 21 TO 25, 2013)

The mid-term evaluation mission was conducted by Mr. Roland Wong, International Consultant in accordance with the objectives of the evaluation and obtained data relevant for making judgments regarding Project success and lessons learned.

<b>October 20, 2013 (Sunday)</b>			
<b>#</b>	<b>Activity</b>	<b>Stakeholder involved</b>	<b>Place</b>
	Arrival of Mr. Roland Wong		
<b>October 21, 2013 (Monday)</b>			
1	Meeting with Project Management Unit	Mr. Seracettin Yuzgulen, Project Administrator, Mr. Orcun Argun	Ankara Directorate General for Renewable Energy (YEGM)
<b>October 22, 2013 (Tuesday)</b>			
2	Meeting with Project Management Unit	Mr. Seracettin Yuzgulen, Project Administrator	Ankara Directorate General for Renewable Energy (YEGM)
<b>October 23, 2013 (Wednesday)</b>			
3	Meeting with UNDP	Dr. Katalin Zaim, Environment and Sustainable Development Programme Manager, UNDP Turkey	Ankara UN House
4	Meeting with UNDP	Ms. Deniz Silliler Tapan	Ankara Directorate General for Renewable Energy (YEGM)
<b>October 24, 2013 (Thursday)</b>			
5	Meeting with TSE	Mr. Gursel Eratak, Electrical and Electronics Engineer	Ankara Directorate General for Renewable Energy (YEGM)
6	Skype conversation with UNDP Regional	Mr. John O'Brien, Mr Robert Kelly, Regional Technical Advisors, Bratislava	
7	Meeting with YEGM	Ms. Süheda Gümüşderelioğlu, Senior Expert, Mr. Yenal Ceylan, Senior Expert, Dr.Zuhal Coskun Senior Expert	Ankara Directorate General for Renewable Energy (YEGM)

<b>October 25, 2013 (Friday)</b>			
8	Meeting with TTGV	Ms. Ferda Ulutas, Coordinator, Ms. Merve Bogurcu, Environmental Projects Group	Ankara, TTGV Offices, Cyberpark, Cyberplaza
	Departure of Roland Wong from Ankara		
<b>November 1, 2013</b>			
9	Skype conversation with UNIDO	Khac Tiep Nguyen, UNIDO	
<b>November 5, 2013</b>			
10	Skype conversation with UNIDO	Khac Tiep Nguyen, UNIDO	
<b>November 19, 2013</b>			
11	Skype conversation with Former CTA of IEEI	Frank Pool	
<b>November 20, 2013</b>			
12	Skype conversation with KOSGEB	Ms. Pinar Isin	

Total number of meetings conducted: 12

## **APPENDIX C – LIST OF PERSONS INTERVIEWED AND DOCUMENTS REVIEWED**

This is a listing of persons contacted in Ankara (unless otherwise noted) during the Evaluation Period for the MTE only. The Evaluation Team regrets any omissions to this list.

- 1) Mr. Seracettin Yuzgulen, Project Administrator, PMU, UNDP;
- 2) Mr. Erdal Çalikoğlu, Deputy General Director, Directorate General of Renewable Energy;
- 3) Ms. Süheda Gümüşderelioğlu, Senior Expert, Directorate General of Renewable Energy;
- 4) Mr. Yenal Ceylan, Senior Expert, Directorate General of Renewable Energy;
- 5) Dr. Zuhâl Coskun, Senior Expert, Directorate General of Renewable Energy;
- 6) Dr. Katalin Zaim, Environment and Sustainable Development Programme Manager, UNDP Turkey;
- 7) Ms. Deniz Silliler Tapan, UNDP Turkey;
- 8) Mr. Robert Kelly, Regional Technical Advisor for Climate Change, UNDP, Bratislava;
- 9) Mr. John O'Brien, Regional Technical Advisor for Climate Change, UNDP, Bratislava;
- 10) Mr. Seracettin Yuzgulen, Project Administrator, IEEI, UNDP Turkey;
- 11) Mr. Khac Tiep Nguyen, UNIDO, Vienna;
- 12) Mr. Gursel Eratak, Electrical and Electronics Engineer, TSE;
- 13) Ms. Ferda Ulutas, Coordinator, Environmental Projects Group, TTGV;
- 14) Ms. Merve Bogurcu, Environmental Projects Group, TTGV;
- 15) Mr. Frank Pool, former CTA for IEEI;
- 16) Ms. Pinar Isin, KOSGEB

### **Documents reviewed for this evaluation includes:**

- 1) UNDP-GEF IEEI Project Document;
- 2) UNDP-GEF IEEI CEO Endorsement Document;
- 3) IEEI Project Inception Report, May 2011;
- 4) 2012 and 2013 UNDP/GEF Project Implementation Reviews (PIRs);
- 5) 2011, 2012 and 2013 Annual Work Plans endorsed by Steering Committee;
- 6) Minutes of Steering Committee Meetings;



- 7) Project Annual/Monthly/Quarter operational and progress reports;
- 8) IEEI Project Report for Energy Efficiency Portal – System Evaluation and Requirements Analysis;
- 9) IEEI Project Report - Energy Audit Mechanisms Review and Future Directions for Turkey, Draft April 2013;
- 10) IEEI Project Report – Improving Financial Mechanisms for Improving Energy Efficiency in Turkey, June 2013.

## APPENDIX D– REVISED PROJECT PLANNING MATRIX

(Red font indicating changes in wording from PPM of May 2011)

	Indicator	Baseline	Targets End of Project	Source of verification	Risks and Assumptions
<b>Project Objective</b> To improve energy efficiency of the Turkish industry by enabling and encouraging companies in the industrial sector for efficient management of energy use by different energy conservation measures and energy efficient technologies	A) Energy savings from EE investments in industrial sector compared to baseline	<ul style="list-style-type: none"> <li>Technical energy savings potential in industry estimated at around 20%</li> </ul>	<ul style="list-style-type: none"> <li>At least 190 GWh per year (energy and fuel)</li> </ul>	<ul style="list-style-type: none"> <li>As given under the various Outcomes</li> </ul>	<ul style="list-style-type: none"> <li>Willingness of industry to invest</li> </ul>
	B) Direct and indirect emission reductions	<ul style="list-style-type: none"> <li>GHG emissions from industry were around 66.5 MtCO<sub>2</sub> in 2009 and are projected to grow to 115.3 MtCO<sub>2</sub> by 2025</li> </ul>	<ul style="list-style-type: none"> <li>Direct emission reduction (associated with demo projects) of 60.9 ktCO<sub>2</sub> p.a. and (assuming an average 10-year lifetime of energy investment) 609 ktCO<sub>2</sub> cumulatively</li> <li><del>Cumulative indirect emission reduction due to project's capacity building activities ranging from 1.8 MtCO<sub>2</sub> (bottom-up approach) to 32.7 MtCO<sub>2</sub> (top-down)</del></li> <li><b>Evaluator comment: indirect emissions are not measurable by Project personnel</b></li> </ul>	<ul style="list-style-type: none"> <li>As given under the various outcomes</li> </ul>	<ul style="list-style-type: none"> <li>Willingness of industry during and after the project</li> </ul>
<b>Outcome 1</b> Strengthened institutional-regulatory framework and a national	C) <del>The content and status of new policies and programs supporting their</del>	<ul style="list-style-type: none"> <li><del>Insufficient implementation of policies and programs</del></li> </ul>	<ul style="list-style-type: none"> <li><del>New provisions available (EnMS)</del></li> <li><del>Institutions strengthened and cooperation</del></li> </ul>	<ul style="list-style-type: none"> <li><del>Government statements</del></li> <li><del>Other verifiers as given below</del></li> </ul>	<ul style="list-style-type: none"> <li><del>See below</del></li> </ul>

	Indicator	Baseline	Targets End of Project	Source of verification	Risks and Assumptions
Energy Management Standard contributing to the implementation of the EE Law	implementation		increased between EIE, KOSGEB, TTGV and OIZs		
Output indicators:	1) Number of industries with updated and expanded information on Strengthened databases on industry and energy use on a harmonized database <sup>26</sup> (output 1.1)	<ul style="list-style-type: none"> <li>0<sup>27</sup></li> </ul>	<ul style="list-style-type: none"> <li>Information on energy use of about 1,500 industries is updated and expanded and put into</li> </ul>	<ul style="list-style-type: none"> <li>Data input format</li> <li>Database output and statistical reports</li> <li>Progress report</li> </ul>	<ul style="list-style-type: none"> <li>Willingness of industries to provide such data (which sometimes can be considered confidential)</li> </ul>
	2) Number of energy consumption benchmarks disseminated and linked with 10 <sup>th</sup> NDP (output 1.2)	<ul style="list-style-type: none"> <li>0<sup>28</sup></li> </ul>	<ul style="list-style-type: none"> <li>25? Benchmark data for all sectors and size of industry are available</li> </ul>	<ul style="list-style-type: none"> <li>Web portal</li> <li>Progress report</li> <li>Seminar presentations</li> </ul>	<ul style="list-style-type: none"> <li>Sufficient sectoral and technology data can be gathered to be able to define benchmarks</li> </ul>
	3) National Energy Management Standard (EnMS) (output 1.3)	<ul style="list-style-type: none"> <li>No EnMS defined</li> </ul>	<ul style="list-style-type: none"> <li>Promulgated and ISO harmonized EnMS with guidelines issued for EnMS implementation</li> </ul>	<ul style="list-style-type: none"> <li>Official publication</li> <li>EnMS user guide</li> <li>Progress report</li> </ul>	<ul style="list-style-type: none"> <li>Government-level support to define and promulgate EnMS</li> </ul>
	4) Number of functioning regional Energy Management Units (EMUs) in	<ul style="list-style-type: none"> <li>0 No energy-dedicated regional support centers</li> </ul>	<ul style="list-style-type: none"> <li>10 with sufficient operating budgets</li> </ul>	<ul style="list-style-type: none"> <li>Business plan</li> <li>Annual reports</li> <li>Project progress report</li> </ul>	<ul style="list-style-type: none"> <li>EIE top management approves the establishment</li> </ul>

<sup>26</sup> These databases will be able to update sectoral energy assessments

<sup>27</sup> Only basic energy consumption data is available from Statistics and YEGM

<sup>28</sup> Benchmark data are available for some sectors

	Indicator	Baseline	Targets End of Project	Source of verification	Risks and Assumptions
	OIZs or energy support centers (output 1.4)				
	5) Number of strengthened and integrated financial mechanisms (output 1.5)	<ul style="list-style-type: none"> <li>0<sup>29</sup></li> </ul>	<ul style="list-style-type: none"> <li>3<sup>30</sup></li> </ul>	<ul style="list-style-type: none"> <li>Official publications on financial mechanisms</li> </ul>	<ul style="list-style-type: none"> <li>Top management of the institutions involved approve proposed changes in the existing mechanisms</li> </ul>
<b>Outcome 2</b> Enhanced capacity and awareness of Turkish industry and energy service providers	Number of additional EE investment projects made by industrial companies per year	<ul style="list-style-type: none"> <li>N/A</li> </ul>	<ul style="list-style-type: none"> <li>About 200<sup>31</sup> EE investments (direct (demos) or indirect (outcome 2; capacity building))</li> </ul>	<ul style="list-style-type: none"> <li>Reports by industry associations; publications</li> <li>Other verifiers as given below</li> </ul>	<ul style="list-style-type: none"> <li>See below</li> </ul>
	Number of new ESCO Expanded business opportunities for ESCOs performance contracts closed	<ul style="list-style-type: none"> <li>No performance contracts concluded by ESCOs to date 0</li> </ul>	<ul style="list-style-type: none"> <li>At least &gt;10 new ESCOs performance contracts concluded per year</li> </ul>		
Output indicators:	1) Number of hits after harmonized websites of YEGM, KOSGEB, TTGV and TSE have been improved and upgraded <sup>32</sup> Improved information dissemination services (output 2.1) Project	<ul style="list-style-type: none"> <li>Websites of EIE, KOSGEB, TTGV, TSE</li> </ul>	<ul style="list-style-type: none"> <li>10,000</li> </ul>	<ul style="list-style-type: none"> <li>Web sites with reports, booklets, brochures on EE, Number of case studies, lessons learned from (inter-) national sources, Project</li> </ul>	<ul style="list-style-type: none"> <li>Implementing agencies coordinate the content of their websites on EE aspects</li> </ul>

<sup>29</sup> The 3 existing mechanisms (YEGM, KOSGEB, TTGV) leave gaps and do not reach all potential beneficiaries

<sup>30</sup> The three existing mechanisms are integrated to target both large companies (YEGM, TTGV) and SMEs (KOSGEB)

<sup>31</sup> Includes direct and indirect investments

<sup>32</sup> Websites to provide integrated info on EE and number of brochures and booklets on EE, Project newsletter, documentaries

	Indicator	Baseline	Targets End of Project	Source of verification	Risks and Assumptions
	<i>to integrate websites.....</i>			newsletter • Progress report	
	2) <b>Number of decision makers in industrial and financial institutions with enhanced awareness who are represented on EE options, energy management and systems optimization (output 2.2)</b>	• <del>Limited number of decision makers are aware of EE options</del> • <del>0</del>	• At least 900 decision makers are aware of EE options	• Presentation at events • Project progress report • Project website	• Willingness of the targeted public to benefit from the training and supporting materials
	3) <b>Number of energy managers and other technical personnel in industry with enhanced technical capacity of energy managers and other technical staff knowledge on EE in industry (output 2.3)</b>	• <del>0 Insufficient technical capacity</del>	• 50	• Training needs assessment and action plan • Presentation at events • Project progress report • Project website	• Willingness of the targeted public to benefit from the training and supporting materials
	4) <b>Number of persons with enhanced technical capacity in ESCOs and</b>	• <del>0 Insufficient technical capacity</del>	• 1,200 <sup>33</sup> Energy service providers are trained at 40 events (workshops, seminars, courses)	• Training needs assessment and action plan	• Willingness of the targeted public to benefit from the training and supporting

<sup>33</sup> Energy managers and other technical staff are trained at 40 events (workshops, seminars, courses) attended by 1,200 people at various places in Turkey on systems optimization, energy engineering and EE technologies and processes, business planning and EE investments

	Indicator	Baseline	Targets End of Project	Source of verification	Risks and Assumptions
	industry (output 2.4)		attended by 1,200 people at various places in Turkey on systems optimization, energy engineering and EE technologies and processes, business planning and EE investments	<ul style="list-style-type: none"> <li>• Presentation at events</li> <li>• Workshop and seminar proceedings</li> <li>• Project progress report</li> <li>• Project website</li> </ul>	materials
<b>Outcome 3</b> Energy audit program for large industry and SMEs implemented	Share of energy audits in Turkey that leading to actual investments in EE in industry	<ul style="list-style-type: none"> <li>• Less than &lt;10%<sup>34</sup></li> </ul>	<ul style="list-style-type: none"> <li>• &gt; 50%</li> </ul>	<ul style="list-style-type: none"> <li>• See below</li> </ul>	<ul style="list-style-type: none"> <li>• See below</li> </ul>
	GWh per year of identified additional energy saving investment opportunities as part of from energy audits	<ul style="list-style-type: none"> <li>• 0</li> </ul>	<ul style="list-style-type: none"> <li>• &gt;At least 190 GWh/year in new EE investments identified</li> </ul>		
	1) Number of trained Strengthened energy auditors (except the people trained by YEGM without project resources) capacity (output 3.1)	<ul style="list-style-type: none"> <li>• 0<sup>35</sup></li> </ul>	<ul style="list-style-type: none"> <li>• Standardized audit procedures in line with EnMS 15001</li> <li>• 10<sup>36</sup> supported by the project</li> </ul>	<ul style="list-style-type: none"> <li>• Audit assessment report</li> <li>• Training reports and presentations</li> <li>• Project progress report</li> <li>• Project website</li> </ul>	Willingness of the targeted public to benefit from the training and supporting materials
	2) Number of companies	<ul style="list-style-type: none"> <li>• 0</li> </ul>	<ul style="list-style-type: none"> <li>• &gt;20 companies certified</li> </ul>	<ul style="list-style-type: none"> <li>• Presentations at training</li> </ul>	<ul style="list-style-type: none"> <li>• Selected companies are</li> </ul>

<sup>34</sup> To be verified by the project

<sup>35</sup> No auditors beyond basic audit training. There are approximately 300 auditors with basic training from YEGM's own resources and programmes.

<sup>36</sup> These energy auditors will be trained in techniques for standardized audit procedures in line with EnMS 50002

	Indicator	Baseline	Targets End of Project	Source of verification	Risks and Assumptions
	internationally certified under EnMS <i>(output 3.2)</i>			<ul style="list-style-type: none"> <li>events</li> <li>Project progress report</li> <li>Project website</li> </ul>	willing to have EnMS implemented
	3) <b>Number of</b> 'walk-through' energy audits conducted <i>(output 3.3)</i>	<ul style="list-style-type: none"> <li>100<sup>37</sup></li> </ul>	<ul style="list-style-type: none"> <li><del>Walk-through energy audits in 170 SMEs and 130 medium-large industry</del></li> </ul>	<ul style="list-style-type: none"> <li>Case studies</li> <li>Audit reports</li> <li>Project progress report</li> <li><b>Disseminated info on 'walk-through' energy audits at 2 events</b></li> </ul>	<ul style="list-style-type: none"> <li>Selected companies are willing to have a walk-through audit</li> </ul>
	4) <b>Number of</b> detailed energy audits conducted <i>(output 3.4)</i>		<ul style="list-style-type: none"> <li><del>Detailed energy audits in 200 SMEs and 20 medium-large industry</del></li> </ul>	<ul style="list-style-type: none"> <li>Case studies</li> <li>Audit reports and feasibility studies</li> <li>Project progress report</li> <li>Project website</li> <li><b>Disseminated info on 'detailed energy audits at 2 events</b></li> </ul>	<ul style="list-style-type: none"> <li>Selected companies are willing to have a detailed audit</li> </ul>
<b>Outcome 4</b> State-of-the-art energy management practices and EE measures, business and financing models	<b>% improvement in</b> specific energy consumption ( <b>SEC</b> ) of demonstration projects	<ul style="list-style-type: none"> <li><del>0 SEC in of demo projects is at country average level</del></li> </ul>	<ul style="list-style-type: none"> <li><del>SEC in demonstration projects improved on average by at least &gt;10%</del></li> </ul>	<ul style="list-style-type: none"> <li><del>As given below</del></li> <li><b>Operations monitoring reports that includes</b></li> </ul>	<ul style="list-style-type: none"> <li>As given below</li> </ul>

<sup>37</sup> EIE energy audits in energy-intensive subsectors

	Indicator	Baseline	Targets End of Project	Source of verification	Risks and Assumptions
are demonstrated				energy consumption	
<i>Output indicators:</i>	1) Number of optimized demonstrated energy systems optimization and EE processes and technologies demonstrated (output 4.1)	<ul style="list-style-type: none"> <li>0 Small number of EE technologies are implemented in some sectors but needs to expanded and extended to more subsectors</li> </ul>	<ul style="list-style-type: none"> <li>Demo activities designed and implemented, targeting at 40 SMEs and 25 medium-large enterprises</li> </ul>	<ul style="list-style-type: none"> <li>Design and financial plans</li> <li>Monitoring reports</li> <li>Project progress report</li> </ul>	<ul style="list-style-type: none"> <li>Selected companies are willing to investment in EE improvements, based on the feasibility analysis</li> <li>Macro-economic environment is conducive for investments by private sector</li> </ul>
	2) Number of case studies for information exchanges (output 4.2)	<ul style="list-style-type: none"> <li>0 case studies EE technologies are implemented in some sectors, but needs to expanded and extended to more subsectors</li> <li>0 information exchanges</li> </ul>	<ul style="list-style-type: none"> <li>40 SMEs and 25 medium-large enterprises</li> <li>2 demo project experience exchange seminar/workshops</li> </ul>	<ul style="list-style-type: none"> <li>Case studies</li> <li>Project website</li> </ul>	<ul style="list-style-type: none"> <li>Selected companies are willing to investment in EE improvements, based on the feasibility analysis</li> <li>Macro-economic environment is conducive for investments by private sector</li> </ul>
<p><b>Not needed as this is the M&amp;E Plan for the Project – see Table 14 in ProDoc ... Outcome 5</b></p> <p>Monitoring and evaluation; knowledge sharing and info dissemination (outputs indicators)</p>	1) Monitoring and evaluation carried out (output 5.1)	• N/A	<ul style="list-style-type: none"> <li>Monitoring (quarterly and annually)</li> <li>Mid-term and final evaluation</li> </ul>	<ul style="list-style-type: none"> <li>Project progress reports</li> <li>APR-PIR</li> </ul>	• Adequate documentation, reporting and filing of documents
	2) Post-project plan and Information on project activities disseminated (output 5.2)	• N/A	<ul style="list-style-type: none"> <li>Baseline study and end-of-project impact assessment</li> <li>Project reports and publications for promotion of EE in industry in Turkey</li> </ul>	<ul style="list-style-type: none"> <li>Baseline and end-of-project study with impacts, lessons learned</li> <li>Project reports</li> </ul>	• Adequate info and knowledge capture, data gathering, reporting and filing of documents



	Indicator	Baseline	Targets End of Project	Source of verification	Risks and Assumptions
				and publications • Progress reports	
	3) Status of final report and exit strategy (output 5.2)	• No consolidation of the results and lessons learnt	• Final project report consolidating the results and lesson learnt from the implementation of the project, as well as project exit strategy	• Action plan • Project report	• Willingness of implementing agencies and partners to work together in future