

Independent Terminal Evaluation

Industrial Energy Efficiency in Key Sectors in Iran

UNIDO Project No.: 120506

GEF ID: 3540



UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION

UNIDO INDEPENDENT EVALUATION DIVISION
Office of Evaluation and Internal Oversight

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We hope that some of the proposed recommendations will contribute to the continuous improvement of future project proposals.

List of acronyms and abbreviations

Abbreviation	Meaning
BREF	Best Available Techniques Reference Document
CASO	Compressed airsystem optimization
CEO	Chief executive officer
CHP	Combined heat and power
CO ₂	Carbon dioxide
CO ₂ eq	Carbon dioxide equivalent
DoE	Department of Energy
EE	Energy efficiency
EMS	Environment Management System
ENEX	International Energy Exhibition
EnMS	Energy Management System
EnPI	Energy Performance Indicator
EnPIM	Energy Performance Indicator Monitoring
ESCO	Esfahan Steel Company
ETS	Emission Trading Schema
GDP	Gross Domestic Product
GEF	Global Environment Facility
GHG	Greenhouse gas
GJ	Giga Joule
HQ	Headquarters
HVAC	Heating, ventilation and air conditioning
IEA	International Energy Agency
IEE	Industrial Energy Efficiency
IFCO	Iranian Fuel Conservation Company
ISO	International Organization for Standardization
JCPOA	Joint Comprehensive Plan of Action
M&E	Monitoring and Evaluation

Abbreviation	Meaning
M&T	Monitoring and Targeting
M&V	Monitoring and Verification
MENA	Middle East & North Africa
MFA	Ministry of Foreign Affairs
MJ	Mega Joule
MOE	Ministry of Energy
MOI	Ministry of Industry
MOP	Ministry of Petroleum
MTR	Mid-Term Review
MW	Megawatt
MWh	Megawatt hours
n/a	Not available
NPC	National Project Coordinator
OECD	Organization for Economic Co-operation and Development
PMU	Project Management Unit
PPP	Public private partnership
PSC	Project Steering Committee
RBM	Results-based Management
RO	Revised output
ROI	Return on investment
SABA	Energy Efficiency Organization of Iran
SAP	Systems Applications Product
SATBA	Renewable Energy and Energy Efficiency Organization
SMART	Specific, Measurable, Achievable, Relevant and Time-bound
SME	Small and medium-sized enterprises
SO	System optimization
SSO	Steam system optimization
tCO ₂	Tons of carbon dioxide
TOC	Theory of Change
TWh	Terawatt hours

Abbreviation	Meaning
UN	United Nations
UNIDO	United Nations Industrial Development Organization
USD	United States Dollar

Glossary of evaluation-related terms

Term ¹	Definition
Activity	Actions taken, or work performed through which inputs, such as funds, technical assistance and other types of resources are mobilized to produce specific outputs.
Assumptions	Hypotheses about factor or risks which could affect the progress or success of a development intervention.
Beneficiaries	The individuals, groups, or organizations, whether targeted or not, that benefit, directly or indirectly, from the development intervention.
Conclusions	Conclusions point out the factor of success and failure of the evaluated intervention, with special attention paid to the intended and unintended results and impacts, and more generally to any other strength or weakness. A conclusion draws on data collection and analyses undertaken, through a transparent chain of arguments.
Data collection tools	Methodologies used to identify information sources and collect information during an evaluation.
Effectiveness	The extent to which the development intervention's objectives were achieved, or are expected to be achieved, taking into account their relative importance.
Efficiency	A measure of how economically resources/inputs (funds, expertise, time, etc.) are converted to results.
Evaluation	The systematic and objective assessment of an ongoing or completed project, programme or policy, its design, implementation and results. The aim is to determine the relevance and fulfilment of objectives, development efficiency, effectiveness, impact and sustainability.
External evaluation	The evaluation of a development intervention conducted by entities and/or individuals outside the donor and implementing organizations.
Goal	The higher-order objective to which a development intervention is intended to contribute.
Impacts	Positive and negative, primary and secondary long-term effects produced by a development intervention, directly or indirectly, intended or unintended.
Independent evaluation	An evaluation carried out by entities and persons free of the control of those responsible for the design and implementation of the development intervention.

¹ For more related terms and definitions see also:
 OECD-DAC (2010).
 UNDG (2011).
 UNIDO e-learning course (n.d.)

Term¹	Definition
Indicator	Quantitative or qualitative factor or variable that provides a simple and reliable means to measure achievement, to reflect the changes connected to an intervention, or to help assess the performance of a development actor.
Inputs	The financial, human, and material resources used for the development intervention.
Lessons learned	Generalizations based on evaluation experiences with projects, programs, or policies that abstract from the specific circumstances to broader situations. Frequently, lessons highlight strengths or weaknesses in preparation, design, and implementation that affect performance, outcome, and impact
Logical framework (logframe)	Management tool used to improve the design of interventions, most often at the project Level.
Mid-Term Review	Evaluation performed towards the middle of the period of implementation of the intervention.
Monitoring	A continuing function that uses systematic collection of data on specified indicators to provide management and the main stakeholders of an ongoing development intervention with indications of the extent of progress and achievement of objectives and progress in the use of allocated funds.
Outcome	The likely or achieved short-term and medium-term effects of an intervention's outputs.
Outputs	The products, capital goods and services which result from a development intervention; may also include changes resulting from the intervention which are relevant to the achievement of outcomes.
Project or program objective	The intended physical, financial, institutional, social, environmental, or other development results to which a project or program is expected to contribute.
Recommendations	Proposals aimed at enhancing the effectiveness, quality, or efficiency of a development intervention; at redesigning the objectives; and/or at their allocation of resources. Recommendations should be linked to conclusions.
Relevance	The extent to which the objectives of a development intervention are consistent with beneficiaries' requirements, country needs global priorities and partners' and donors' policies.
Results	The output, outcome or impact (intended or unintended, positive and/or negative) of a development intervention.
Results framework	The program logic that explains how the development objective is to be achieved, including causal relationships and underlying assumptions.
Theory of Change	A Theory of Change of a project intervention describes the processes of change by outlining the causal pathways from outputs through direct outcomes through other 'intermediate states' towards impact. ²

² UNEP (2017).

Project Fact Sheet

Table 1: Project Fact Sheet for Industrial Energy Efficiency in Key Sectors in Iran

Project title	Industrial Energy Efficiency in Key Sectors in Iran
PROJECT ID	120506
GEF ID	3540
Region	MENA
Country	Islamic Republic of Iran
Project donor	GEF
Project Preparatory Grant (PPG) approval date	September 2009
Project CEO Endorsement/Approval Date	August 2012
Project Implementation start date	July 2012
Project Duration	<i>Expected: 75, Actual:</i>
Implementation end date	<i>Expected: July 31st, 2017, Actual: extended beyond December 2018</i>
Executing partners	Iranian Fuel Conservation Company (IFCO)
Donor funding	USD 5,450,000 (26 %)
Co-financing:	USD 15,150,000 (74 %)
Total project Cost (USD)	USD 20,600,000
Mid-term Review date:	April 2015

Source: own table.

Executive Summary

Introduction

This report presents the findings of the Independent Terminal Evaluation of the project “Industrial Energy Efficiency in Key Sectors in Iran” (herein referred to as “the project” or “IEE project”), implemented by the United Nations Industrial Development Organization (UNIDO) with financing grant provided by the Global Environment Facility (GEF).

The objective of the project is to accelerate the uptake of good energy-efficiency technologies and techniques across five key industrial sectors: iron & steel, petrochemical, refinery, brick and cement. To achieve the project’s objective, five components were carried out: Component 1. Energy Efficiency Certificates and other legislative Drivers, Component 2. Sharing of good Energy Efficiency Practices, Component 3. Training, Benchmarking and other Events, Component 4. Direct Support to Industry, and Component 5. Financial Support.

The IEE project was a full-sized project executed under GEF IV replenishment having UNIDO as the implementation agency and the Iranian Fuel Conservation Company (IFCO) acting as the domestic counterpart.

The project started implementation in July, 2012. By the time of the evaluation the project had not yet set an end date. The original project budget was USD 20,600,000 with USD 5,450,000 in donor funding from GEF and USD 15,150,000 as co-financing, additional contributions were expected from industrial partners. By the time of the evaluation disbursed co-financing amounted to 58 % and donor funding to 78 % of the originally planned.

Evaluation Purpose and Methodology

This Terminal Evaluation was conducted to measure the project’s results in terms of relevance, effectiveness, efficiency, sustainability and impact, in compliance with GEF requirements. An evaluation team of two experts, national evaluation consultant Mr. Amir Hossein Haddadi and international evaluation consultant, Ms. Sarah Rieseberg, acting as a team leader, conducted the Terminal Evaluation. Ms. U. Müge Dolun from UNIDO’s Independent Evaluation Division accompanied the team on the field mission.

The objectives of the Terminal Evaluation are to:

- i. Assess the project performance in terms of relevance, effectiveness, efficiency, sustainability and progress to impact;
- ii. Develop a series of findings, lessons and recommendations for enhancing the design of new and implementation of ongoing projects by UNIDO.

The evidence for the evaluation process was systematically collected through document reviews, interviews and review of the results of surveys conducted by the Project Management Unit (PMU). The field mission took place in the period of June 18th to June 26th, 2018. The evaluation field mission included face-to-face interviews with the national counterparts, the project’s stakeholders and with participating experts and companies. Preliminary findings were presented to the Project Management Unit and members of the Project Steering Committee in Tehran on June 26th, 2018. The findings of the Terminal Evaluation were also discussed with staff at UNIDO Headquarters (HQ) in Vienna in December 2018, leading to a final report in February 2018.

Key Findings

A) Progress toward Impact

The project increased the awareness for several methodological approaches to save energy: Energy management systems (EnMS), system optimization for steam and compressed air systems, Energy Performance Indicators (EnPI), sectoral benchmarking and company culture on energy efficiency. The project's training activities also linked energy efficiency to non-energy benefits. The project welcomed 1,898 participants to its diverse range of workshops, seminars and trainings. It successfully raised awareness of industrial energy efficiency in Iran carrying out eight energy efficiency awareness seminars with 1,172 participants. The project focused on training of staff of 16 factories. 320 participants joined introductory training activities such as user trainings. 406 participants joined activities on EnMS, CASO and SO at expert level, on site and on-the-job training, and EnPI expert training. The project assisted four larger-scale industrial energy efficiency demonstration projects. In the future, the big challenge will be to spread results and achievements from the limited number of partner enterprises to the wider economy. The project contributed to the development of the regulatory framework by holding three policymaker seminars and preparing seven studies and roadmaps as input to the political process. At the end of the project lifetime a financing scheme was launched to fund a pipeline of energy efficiency projects. Monitoring focused on tracking the required outputs. On outcome level no adequate targets had been formulated to track developments beyond the immediate project outputs and identify gaps in the energy efficiency market. The "Industrial Energy Efficiency in Key Sectors in Iran" project has been an enabler of energy efficiency implementation and has directly contributed to energy, financial and greenhouse gas savings of 132,778 t CO₂/a and 0.72 TWh/a in gross savings. In comparison to its original output targets the project only achieved a target achievement of 1.5 % and 2.4 %. Compared to the retroactively calculated expectation for the number of projects realized target achievement was 48 % for emission savings and 75 % for energy savings.

B) Project's Quality and Performance

Design. The original project design included many unrealistic and overly optimistic targets based on a weak baseline. The project results framework was amended following the Mid-Term Review. The risk assessment was overly optimistic which in parts explains the need for revisions of the baseline in 2015. Output 4.5 and Component 5 "*Set up of a Revolving Fund*" were particularly complicated and delayed by the deteriorating international relations and sanctions by the United Nations (UN) Security Council. The design was overloaded with different types of outputs, whereas having more focus and repeated activities with larger target groups would have facilitated implementation and effectiveness. Output 4.5 "*Demonstration projects for industrial energy efficiency pilot schemes*" would have benefited from being integrated in the training components. The output stood alone lacking integration with the overall project design.

Logframe: The revised project logframe is moderately unsatisfactory: Some of the impact indicators listed in the project document were not operationalized, adequate outcome indicators were missing from the original logframe and were not added during the revision process. The lack of outcome indicators is making it difficult to track the long-term effect the project. The logframe included an excessive list of 20 outputs with roughly 31 indicators of which seven were not fully specific, measurable, achievable, relevant and time-bound (SMART).

C) Project Performance

C.1. Relevance. The project is relevant to UNIDO and policies and fully relevant to the GEF focal area of climate change. Certain project components have been more relevant to national stakeholders, these were in particular the demonstration projects and the Revolving Fund.

C.2. Effectiveness. The project was not able to reach the original output targets. Compared to the revised targets after the midterm review, the project achieved 11 out of 20 output targets. Component 5 could not be finalized by the time of the Terminal Evaluation.

C.3. Efficiency. The PMU was only established after one year. The project experienced significant delays and was extended by 16 months till December 2018. The project was producing more outputs intended within the original donor budget. By the time of the Terminal Evaluation, co-financing by IFCO fell significantly short of the pledge made because the Revolving Fund had not been set up, yet.

C.4. Sustainability. Sustainability covers the question whether the projects results are sustained after the end of the project screening for financial, socio-political risks, institutional framework and governance risks. It is assumed that the training of factory managers, factory staff, banks and vendors as well as independent consultants received will keep resonating in Iran (Component 2, 3, partially 4). Financial risks were identified in respect to Component 5 and considerable doubt exist to what extent a financial mechanism has been successfully installed, since the Revolving Fund has not completed a single financing cycle and the bank operating the fund had no knowledge of plans for future investment cycles. It is assumed that the four demonstration projects will keep functioning, it remained unclear to what extent it had the assumed effect of replication. The overall sustainability rating for this project at the time of the Terminal Evaluation Review was likely.

Environmental risks. A separate aspect of sustainability is whether the projects results lead to adverse environmental effects. The most relevant possible adverse environmental effect are the undisclosed rebound effects. These could be particularly problematic in respect to the project's engagement with the fossil fuel producing sector (oil refineries). The project's intervention directly contributed to reduced petrol production costs and increased production with the possible effect of outweighing the gross GHG emission savings. Another important aspect of the project is its explicit objective to carry out energy efficiency to free fossil fuel resources for export, depending on the assumptions, considering the export route could lead to concluding that net GHG savings might be close to zero. The nature of the project type itself, industrial energy efficiency, demands a more careful and analytical approach to rebound effects which can lead, among others due to the induced economic growth effects, to an overshoot in energy demand and related emissions. Overall there seems to be a lack of a transformational approach leading towards a decarbonization of the industry preventing emission rebounds.

D) Cross-cutting performance criteria

D.1. Gender mainstreaming. Gender was not considered at the project design stage; participation of females in awareness and training activities was very low (17 %) but no negative gender impacts were identified. The choice of exclusively male international experts can be regarded as a missed opportunity to strengthen the perception of females in the sector.

D.2. Monitoring & Evaluation (M&E). The M&E budget was considered to carry out the tasks planned. The M&E process and specific reporting requirements were sufficient to track the output targets. Monitoring was not extended to project outcomes. The monitoring did not fully track the outputs stated in the logframe making the assessment of project results difficult.

E) Performance of Partners

E.1. UNIDO Project Management. Project Management has been carried out by the UNIDO Project Manager and the PMU led by the National Project Coordinator. The PMU would have benefited from sharing of experiences with other National Project Coordinators (NPC) carrying out similar projects to receive feed-back and suggestions.

E.2. National counterparts. The Project Steering Committee included IFCO, Ministry of Foreign Affairs (MFA) and UNIDO. National counterparts showed high commitment and involvement in the project but the project would have benefited from a wider outreach and closer direct contact with other local institutions and stakeholders.

E.3. Donor. Donor financing was transferred in time.

Overall Assessment: The “Industrial Energy Efficiency in Key Sectors in Iran” project faced significant challenges in times of rising international tension expressed in a tightening sanction regime. Also, one of the key expectations that energy subsidies would be quickly phased out did not materialize. The project demonstrated a strong ability to learn and adapt to a stronger focus on awareness raising and developed innovative training sessions in the field of cultural change and non-energy benefits. As a result of difficulties faced by the project and an overly optimistic target assumption the original output targets had to be reduced. Nevertheless, the project was successful in carrying out awareness raising, and in-house trainings in 16 factories. The project realized a direct, gross GHG savings of 132,778 tCO₂/a. Unfortunately, the original as well as the revised logframe showed significant weaknesses and lacked outcome indicators to track the contribution the project made to the energy efficiency market. While the trainees will continue promoting energy efficiency, the sustainability of the projects results remains negatively impacted by highly-subsidized energy prices and worsening of international political context. For future projects particularly, the innovative project components deserve closer analysis whether the training material and approach is worth transfer to other contexts.

Recommendations

- **To Gol and UNIDO:** The project should develop an exit strategy. The evaluation findings support the attempts by IFCO and UNIDO to continue to establish the Revolving Fund even if GEF funding cannot be transferred.
- **To Gol:** Engagement of a larger spectrum of stakeholders: Future projects should engage a larger spectrum of stakeholders to increase information sharing.
- **To Gol and UNIDO:** The training component and the promotion of energy management culture in companies was rated more effective than the limited number of implementation pilots. Future projects should spend a greater share of resources on training at the expense of industry specific show-case-projects.
- **To UNIDO:** Set up a community of practice among project teams of different projects to allow for mutual learnings and knowledge management.
- **To UNIDO:** Monitoring of project impact could be improved in respect to the following aspects:

- **Improve the assessment of attribution.**
 - **Introduce standard approach for consideration of rebound effects or standardized tools to assess rebound effects.**
 - **Pay more attention to SMART outcome indicators.**
 - **Use coherent survey tools.**
- **To UNIDO: Become an inspiring example of gender equality.** UNIDO should increase its efforts to deploy female international experts into partner countries.
 - **To UNIDO: Projects should be embedded in a broader vision of resource efficiency and decarbonisation.** Energy efficiency should be viewed to benefit those higher level goals which outweigh energy efficiency as a goal in itself or can even be in contradiction to them. The considerations of embedded energy, resource consumption and decarbonisation should also find their way into designing sustainable energy efficiency projects. In the case of Iran, the inclusion of renewable energy as well as water savings were key interest of the companies.
 - **To GEF and UNIDO: GEF and UNIDO should clarify concerns regarding interventions in the fossil fuel producing sector:** The IEE project are indirectly contribution to environmentally harmful activities by working with fossil fuel producing sector. While these damages are not caused by the project itself, the project increases the financial viability of the fossil fuel sector by improving its efficiency. This offers the project up unduly for criticism.³ GEF and UNIDO should define clearly whether to work with the fossil fuel industries and carefully assess whether the net emission reductions achieved in this sector are positive if macroeconomic rebounds due to price impacts of the intervention are positive.

Lessons

The pilot companies do not only have to fulfil formal requirements such as technologies in use but are more effective if they are also willing to engage with other companies and bear testimony regarding their experience.

A further key lesson learned was the importance of expectation management. It proved to be important to clarify early on the resources demanded from the companies and to make the possible advantages transparent.

³ Trucost (2013).

Table 2: Project ratings

#	Evaluation criteria	Rating in the Terminal Evaluation ⁴	Rating in the Midterm Review
A	Impact (or progress toward impact)	MS	HS
B	Project design	MU	
1	Overall design	MS	
2	Logframe	MU	
C	Project performance	S	
1	• Relevance	S	HR
2	• Effectiveness	S [C1: S, C2: HS, C3: S, C4: S, C5: MS]	[C1: MS C2: MS, C3: S, C4: S, C5: MS]
3	• Efficiency	S	
4	Sustainability	ML	L
D	Cross-cutting performance criteria	MU	
1	• Gender mainstreaming	MS	
2	• M&E: ✓ M&E design ✓ M&E implementation	MU	MS
3	• Results-based Management (RBM)	MU	
E	Performance of partners	MS	
1	• UNIDO	MS	
2	• National counterparts	MS	
3	• Donor	S	
F	Overall assessment	MS	

Source: Midterm review and own compilation.

⁴ Ratings: HS: highly satisfactory, S: satisfactory, MS: moderately satisfactory, MU: moderately unsatisfactory, L: likely, ML: moderately likely, HR: highly relevant.

1. Introduction

1.1 Evaluation Objectives and Scope

The objective of this Independent Terminal Evaluation is to independently assess the “Industrial Energy Efficiency in in Key Sectors in Iran” project, referred to from here onwards as ‘the project’, to help UNIDO improve performance and results of future programmes and projects. The evaluation has two specific objectives:

- (i) Assess the project performance in terms of relevance, effectiveness, efficiency, sustainability and progress to impact;
- (ii) Develop a series of findings, lessons and recommendations for enhancing the design of new and implementation of ongoing projects by UNIDO.

The Independent Terminal Evaluation will cover the whole duration of the project from their starting date on July, 2012 to October 2018.

The key evaluation questions are the following:

- (a) What are the key drivers and barriers to achieve the long-term objectives? To what extent has the project helped put in place the conditions likely to address the drivers, overcome barriers and contribute to the long-term objectives?
- (b) How well has the project performed? Has the project done the right things? Has the project done things right, with good value for money?
- (c) What have been the project’s key results (outputs, outcome and impact, if possible)? To what extent have the expected results been achieved or are likely to be achieved against the project design? To what extent the achieved results will sustain after the completion of the project?
- (d) What lessons can be drawn from the successful and unsuccessful practices in designing, implementing and managing the project?

The terms of reference of the Terminal Evaluation are detailed in Annex V.

1.2 Evaluation Methodology

Arepo Consult was commissioned by UNIDO to conduct the *Independent Impact Evaluation of UNIDO’s Industrial Energy Efficiency-Related Programmes*. As part of this Impact Evaluation at programme level, Arepo Consult provided the team leaders of the evaluation teams for four terminal project evaluations: IEE-Egypt, IEE-Indonesia, IEE-Iran and IEE-Thailand. The team leaders also work on the Impact Evaluation of the programmes as a whole.

The evaluation at hand is the Terminal Evaluation of the IEE project Iran. The evaluation team adopted a Theory of Change approach to assess the causal links between project activities, outputs and outcomes. The team assessed the extent to which the project contributed to the conditions necessary to accelerate the take-up of good energy efficiency technologies and techniques across five Iranian industrial sectors.

A combination of methods was used to deliver evidence-based qualitative and quantitative information, from diverse sources including: desk studies and literature review, individual and group interviews, survey data collected by the PMU and a feedback review. The Terminal

Evaluation was conducted in accordance with UNIDO's evaluation policy.⁵ The evaluation was carried out using a participatory approach that sought to inform and consult key stakeholders of the project.

In preparation for the interviews and country visits, the evaluation team carried out a desk review of programme and project documents available including the Mid-Term Review of the project.

This evaluation was carried out from June to November 2018. The evaluation field visit took place from June 18th to June 26th, 2018. The evaluation team was composed of an international evaluation consultant, Sarah Rieseberg, acting as the team leader, and a national evaluation consultant, Amir Hossein Haddadi. A staff member from UNIDO's Independent Evaluation Division, Müge Dolun, accompanied the team on the field trip.

The desk review involved a review of the original project document, monitoring reports (such as progress and financial reports, and the Mid-Term Review) and notes from the meetings of the Steering Committee. The full document list can be found in Annex IV.

During the country mission, 16 meetings were carried out in which interviews were performed with the stakeholders listed in Annex V. The evaluation field mission included visits to three industrial sites where project activities had been carried out, namely field visits to Esfahan Steel Company (ESCO), Diana Brick Company and Tehran Cement.

1.3 Limitations of the Evaluation

The team was only able to visit a limited number of companies for interviews (three in total when compared to the larger number of 16 partner companies involved).⁶ To collect the feedback from a more representative sample of project participants would require a more quantitative form of data collection via surveying project participants. The interviews were almost exclusively conducted in Farsi with the National Evaluation Consultant assisting in the translation for the other team members. Since translation cannot always transfer all nuances, subtext and culture specific communication forms some of this content might not have been conveyed fully in the translation process. Interviewees often had opposing views regarding a number of issues making triangulation with other forms of documentation (reports and monitoring data) necessary. A further limitation was that throughout the evaluation the project's target achievements could not be fully clarified and Component 5 was still ongoing with its competition remaining unclear.

1.4 Overview of Project Context

The Islamic Republic of Iran is a middle-income country, with 80 million inhabitants and a per-capita gross domestic product (GDP) of USD 19,083 (adjusted for public private partnership

⁵ UNIDO (2015a).

⁶ 1. Abadan Oil Refining Co, 2. Behran Oil, 3. Behbahan Cement, 4. Diana Sofal Brick Co., 5. Esfahan Steel Co., 6. Hormozgan Cement Co., 7. Imam Khomeini Oil Refinery, 8. Morvarid Petrochemical, 9. Kermanshah Petrochemical, 10. Oxin Steel, 11. Regal Petrochemical Co., 12. Sarooj Cement, 13. Sufian Cement, 14. Tabriz Oil Refinery, 15. Yazd Steel Company and 16. Zabol Cement.

(PPP) in 2005). The economy of Iran is considered to be a mixed and transition economy with a large public sector.⁷ Iran's USD 427 bn economy (ranked 27th globally) is dominantly based on fossil fuel extraction. Iran is heavily depending on petroleum exports (USD 55 bn in 2017).

International Sanctions

Between 2010 and 2016 international sanctions imposed on Iran to halt its nuclear enrichment program increased significantly.

For the project at hand, the project document was submitted, revised and resubmitted between February 2011 and May 2012.⁸ At this point Iran already had faced a series of international sanctions.⁹ Additionally, economic sanctions had been passed by the US, the EU and other countries.¹⁰ The sanctions targeted technical assistance and the transfer of oil technology as well as the activity of some Iranian banks. With the Obama administration announcing to talk to Iran without preconditions in 2009, hopes had emerged that international relations would improve. However, in December 2010 Obama signed new sanctions to escalate the pressure on Tehran to halt its nuclear enrichment program.

During the second re-submission process of the project document, further sanctions were passed.¹¹ As a result of the oil embargos, Iran's oil exports were reduced in half and economic growth rate plummeted to sub-zero levels. After the second resubmission of the project document in May 2012, sanctions against Iran were tightened further including Iran's oil export sector, property of the Central Bank of Iran, other Iranian financial institutions, as well as that of the Iranian government, excluding Iran from the Society for Worldwide Interbank Financial Telecommunication (SWIFT) and eventually even the auto industry.

Only in 2015 the Security Council passed a schedule for eventually lifting sanctions. Sanctions were lifted in January 2016. The U.S. reintroduced sanctions against the Islamic Republic of Iran at the end of 2018. In 2016, after the sanctions were lifted as a result of agreement on the Joint Comprehensive Plan of Action (JCPOA 2015) between EU3+3 and Iran, its oil exports returned to previous levels. Consequently, Iran's growth rate climbed from sub-zero levels to 4.3 % in 2017.¹² At the time of writing the Terminal Evaluation in 2018, the USA had exited from JCPOA, leading to a rapid depreciation of the Rial and the introduction of currency controls.

⁷ World Bank (2018a).

⁸ Submission Date: February 21st, 2011, Resubmission date: May 5th, 2011, Resubmission date: 2May 22nd, 2012.

⁹ UN Security Council Resolution 1696 passed in 2006, Resolution 1737 passed in 2006, Resolution 1747 passed in 2007, Resolution 1803 passed in 2008, Resolution 1835 passed in 2008 and Resolution 1929 passed in 2010.

¹⁰ Since 1995 the USA had implemented a broad economic embargo. In 2008 Washington forbid US banks to take part in fund transfers involving Iran. By 2010 the US started to target the Iranian oil industry and its foreign trade partners.

¹¹ June 2011: UN Security Council extended the mandate of the Iran Sanctions Committee Panel of Experts. The Obama administration issued an executive order imposing sanctions on foreign firms that sell Iran energy-sector equipment and services and froze key assets. Foreign banks or financial institutions that process payments through Iran's Central Bank were denied access to U.S. financial markets. The EU froze the assets of 243 Iranian entities. On January 23rd, 2012, the EU decided to ban all purchases of Iranian crude oil from July 1st, 2012.

¹² World Bank.

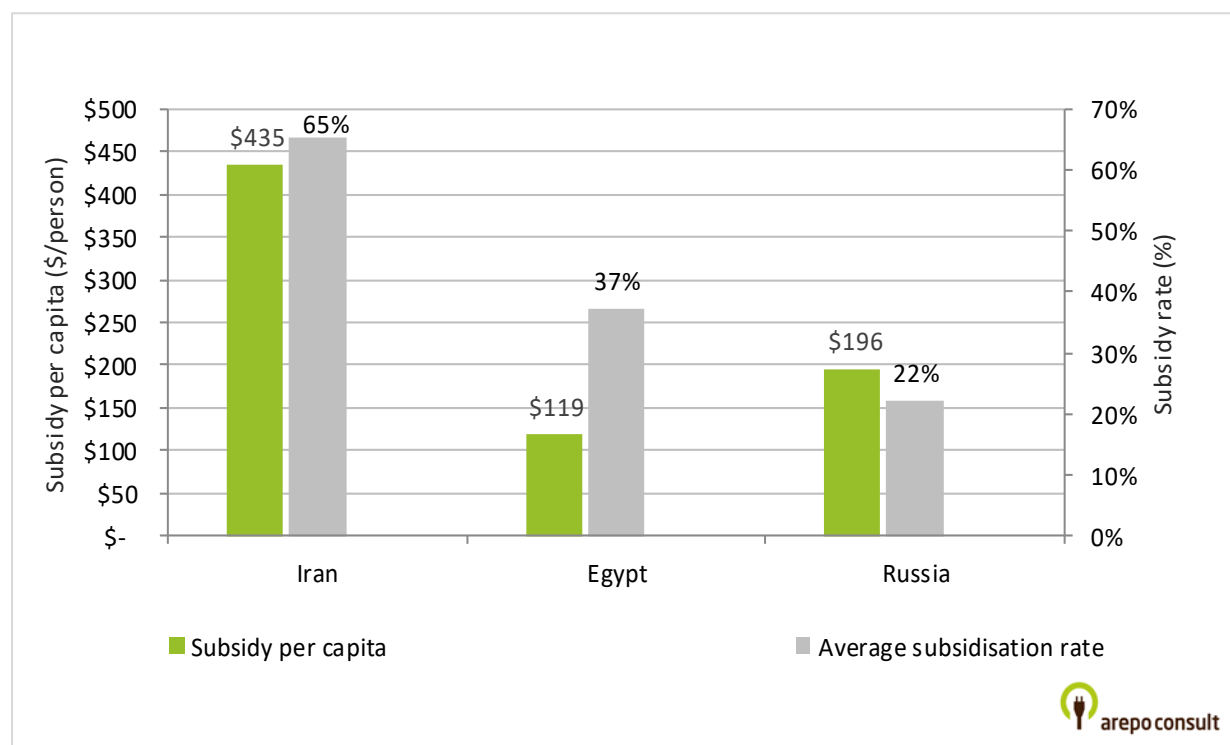
GHG Emissions

In 2014 the Islamic Republic of Iran emitted 801 Mt of CO₂eq with capita emissions of 10.2 t.¹³ In its Nationally Determined Contribution Iran made a conditional pledge of an emission development of 4 % below its business as usual scenario by 2030 or a 12 % below business as usual development conditional on international support of USD 35 bn. Both elements are also conditional on an end to sanctions.¹⁴

Energy Subsidies and Energy Intensity

Being extremely reliant on fossil energy resources had adverse effects on the Iranian economy, primarily the decline in the prosperity of the other sectors as a form of Dutch disease. Another wayward effect of the abundance of fossil fuels is that the Iranian government is heavily subsidizing energy prices: average subsidy rate of energy products is 65 % compared to market prices and subsidy per inhabitant amounts to USD 435. Figure 1 shows Iran's subsidy rates in comparison to Russia and Egypt, two countries with high-subsidy rates themselves.

Figure 1: Energy subsidies in Iran, Egypt and Russia in 2016 (subsidy per capita and average subsidisation rate)



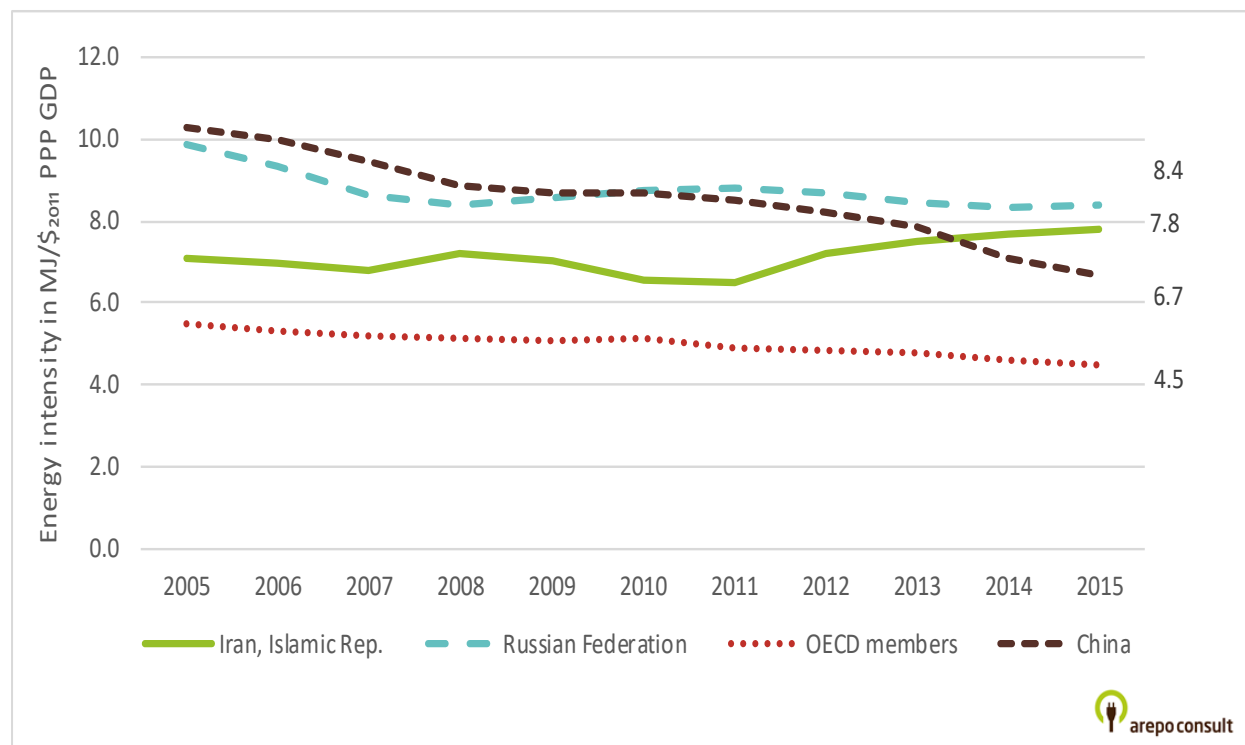
Source: International Energy Agency (IEA) (2015).

¹³ Climatewatch (2018).

¹⁴ CarbonBrief (2015).

It is estimated that in 2016, Iran has spent an excess of USD 80 bn on energy subsidies, which is more than 25 % of the GDP and 30 % of the annual budget.¹⁵ Hence, Iran is suffering high and increasing levels of energy intensity. In 2015, Iran was consuming 7.8 MJ of primary energy to generate USD 1 of GDP which is 52 % higher than global average and 73 % higher than of the Organization for Economic Co-operation and Development (OECD) average (Figure 2).

Figure 2: Energy intensity level of primary energy (MJ/USD2011 PPP GDP)



Source: World Bank (2018b).

The state of energy efficiency in Iran has been deteriorating for several decades across all sectors. Energy intensity is up by more than 50 % and per capita energy consumption has increased by 145 % compared to 1990 levels. As has been shown the energy price situation in Iran has discouraged the formation of an internal market for energy efficiency services and renewable energies. For that reason, the mechanisms and infrastructures financial or otherwise—required for maturity of such market structures did not develop either.

Policy and Legal Framework for Energy in Iran

The relevant ministries in the energy sector of Iran are the Ministry of Energy (MOE) and the Ministry of Petroleum (MOP). MOE is responsible for the water and power sector. MOP is responsible for oil, gas and nuclear energy. Operating under the auspices of the Ministry of Petroleum, the Iran Fuel Conservation Organization is responsible for optimizing energy

¹⁵ International Monetary Fund (IMF)(2014).

consumption, protecting the environment and increasing energy efficiency. Responsible for energy efficiency, is also the Renewable Energy and Energy Efficiency Organization (SATBA), it promotes efficiency and develops clean and renewable energies.¹⁶

In reaction to deteriorating levels of energy efficiency, Iran has begun to implement some policies to promote “energy efficiency”. These policies can be considered well-intended but due to several problems, they have failed to achieve meaningful results. One of the major policy problems is that Iran has scattered policies and regulations which are passed at the central government level and have not been streamlined.

Iran’s long-term energy efficiency

Iran’s long-term energy efficiency (EE) strategy, is primarily stated in a communique from the leader, titled ‘Energy Consumption Pattern Reform Policies’. According to the communique, Iran shall reduce its energy intensity by 33 % by early 2016 and shall halve it by 2020 compared to base year 2012.

The economic, social, and cultural development programs of the Islamic Republic of Iran are medium-term packages of programs, which the government and parliament jointly set up for a period of five years. The 5th and 6th Plan insists heavily on resource management, green management, and reduction of energy intensity in the industries as planned in the Targeted Subsidies Act and Energy Consumption Pattern Reform Act as the most prominent energy efficiency related pieces of law in the Islamic Republic of Iran.

Energy Consumption Pattern Reform Act

Ratified in 2011, the objective of this act was to reform energy consumption patterns and reduce energy intensity. IFCO is responsible for implementing the Act, halving energy intensity in Iran by 2020 (end of the 6th Five-Year Economic Development Plan).^{17,18} The act defines criteria for industrial energy efficiency and prescribes energy management system implementation (compare Figure 3): consumers with natural gas consumption of more than 5 million m³ (or other fuel equivalent) and/ or an electricity demand of more than 1 MWe are required to have an energy management unit in order to carry out energy audits and optimization (Article 24).¹⁹ The government has implemented a penalty mechanism under which non-complying industrial units are penalized from 10 % up to 100 % of their energy costs in case they are overconsuming by more than 45 %. The National Standardization Organization (ISIRI) is responsible for codifying the consumption standards and has done so for several industries including cement.

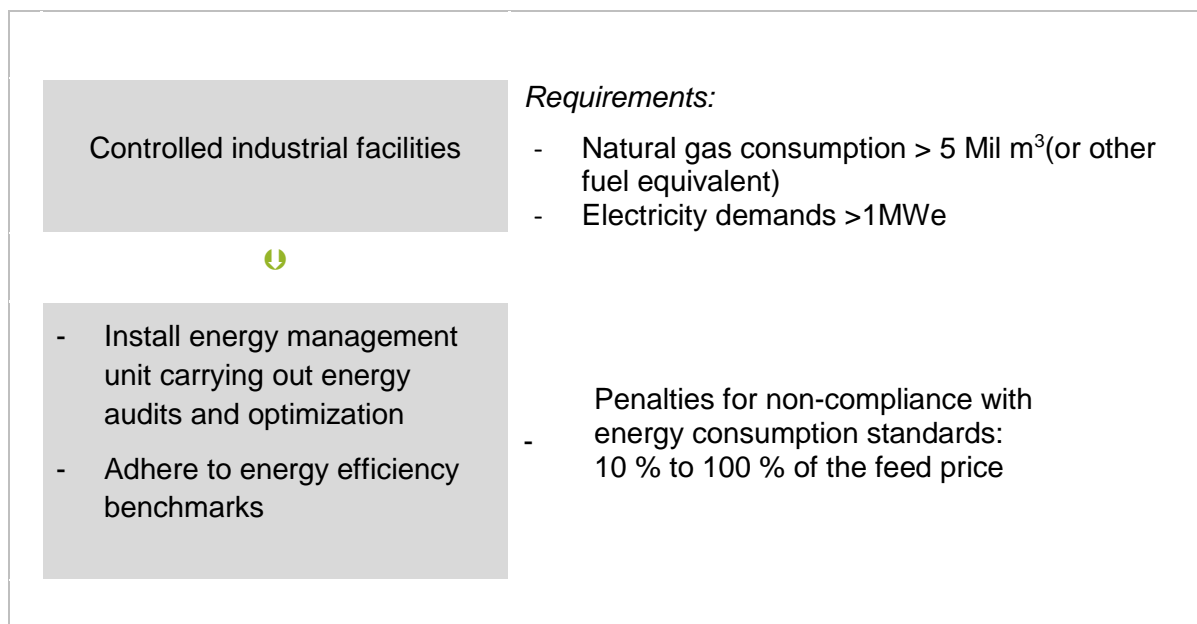
¹⁶ In 2017 SATBA emerged from merging the Renewable Energy Organization of Iran (SUNA) and the Energy Efficiency Organization of Iran (SABA).

¹⁷ Also referred to as „Rectification of Energy consumption law“and the „Act of modification of energy consumption patterns“.

¹⁸ Nachmany, Michal et al. (n.d.).

¹⁹ There was no public data available on how many designated consumers exist or from which sectors.

Figure 3: Requirements on energy efficiency for industry in Iran



Source: own graph.

Targeted Subsidies Act

In accordance with the 5th Five-year Economic, Social, and Cultural Development Program,²⁰ the Targeted Subsidies Act, ratified in 2010, aims at replacing subsidies on food and energy (80 % of all subsidies), replacing them by targeted social assistance, and a move towards free market prices within a five-year period (2010-2015). The most relevant components of this act concerning energy efficiency are as follows:

- 30 % of proceeds of price realization must be spent to support energy efficiency as well as developing national water and energy infrastructures.
- Optimizing energy consumption in manufacturing, services, and residential sector, and encouraging savings and compliance with the consumption pattern introduced by the relevant executive agency.

There are different mechanisms elaborated in the Act for various sectors and circumstances. For instance, the feed prices for industries is set to 65 % of international prices (excluding distribution costs) for a 10-year period.

The Act intended to cut subsidies and utilize the savings for alternative development activities. However, the Act was only partially implemented (from 2009 to 2016 the price of petrol increased from USD 0.0019 to USD 0.24 but other price increases were negligible). A significant portion of the proceeds were distributed as cash handouts.²¹

²⁰ Also referred to as: 5th National Economic, Social, and Cultural Development plan (2010-2015).

²¹ EghtesadOnline (2018).

Removing Barriers to Competitive Production Act (2015)

Article 12 of the Removing Barriers to Competitive Production Act has been the basis for guaranteed purchase of saved energy units (white certificates) and the establishment of an energy efficiency trading market. Iran has been recently trying to establish a white certificate market to encourage energy efficiency investments by the private sector. IFCO and SATBA (which are both energy saving subsidiaries of the Ministry of Petroleum and Ministry of Energy respectively) are tasked with the verification of energy savings and the two ministries will generate certificates which can be sold in the open market or exported to other countries. The scheme has not been implemented yet, hence the exact working mechanism cannot be assessed so far.

1.5 Overview of the project

The project was initiated by UNIDO and the government of the Islamic Republic of Iran as part of Iran's efforts towards promoting energy efficiency in five high energy consuming industrial sectors (iron & steel, petrochemicals, refinery, brick and cement) by adopting a national framework for Energy Management Standards (EnMS).²² The primary aim of this programme is to make a significant contribution towards Iran's energy efficiency strategy, according to the General Consumption Pattern Reform Policies' Iran intends to reduce its energy intensity across all industrial sectors by 20 % by 2024/5 compared with 2012 as the base-year.

The project consisted of five components (formulation of the revised project logframe):²³

- *Component 1 Energy Efficiency Certificates and other legislative Drivers*
- *Component 2 Sharing of good Energy Efficiency Practices*
- *Component 3 Training, Benchmarking and other Events*
- *Component 4 Direct Support to Industry*
- *Component 5 Financial Support*

The project was designed as a four-year project which received an extension of 16 months. The Project Preparatory Grant was approved by GEF in September 2009 and endorsed by GEF Chief Executive Officer (GEF, 2011) in August 2012. The project implementation started in July 2012 and was expected to end by July 2017. By the time of the final evaluation mission (June 2018) the project had not been finalized yet.

Planned project outputs

The project introduced fundamental changes to its logframe at the half-way point. Following the adoption of a revised logframe further changes were made in the day-to-day management.

The original logframe included 26 outputs. Component 1 focussed on energy agreements with the industry of which 150-200 were to be concluded. Component 2 included the setup of the project website which was supposed to be filled with a data bank on EE technologies and a

²² GEF (2011).

²³ The original component titles were: Energy Agreements / Legislative Drivers (Component 1), Sharing of Good Energy Practices (Component 2), training & events (Component 3), direct support for industry (Component 4) and financial mechanisms / support (Component 5).

series of EE documents among them 60 case studies to be generated by the project. Component 3 covered a series of trainings: awareness raising on EnMS for 100 managers, in-depth trainings in system optimization (SO) and EnMS for 100 staff and financial appraisal training for 100 managers. 20 conference exhibitions linked to SO and the dissemination of results of the energy benchmarks studies undertaken in Component 4. Also, special equipment training and training of national trainers was planned. In Component 4 the project design planned the development of energy benchmarks for five sectors. Technical training in auditing, walk through audits (to be carried out by IFCO), the development of the 60 case studies, purchasing of meters and monitoring and targeting (M&T) software, direct support for five demonstration projects. In Component 5, a Revolving Fund with a volume of USD 7million was to be established and run several times during project implementation.

1) Comparison of the original and the revised Logframe

The logframe was revised following the Mid-Term Review in 2015. Compared to the original logframe the revised project results framework was reduced to 20 outputs. Changes were made to 18 or the original 26 outputs. Component 1 saw major changes by redirecting its attention from energy agreements with the industry to studies on market based mechanisms. In Component 2 (and 4) the number of expected case studies was reduced from 60 to 30. In Component 3 a series of targets was reduced: the number of trainees was reduced from 200 participants to 100. The number of SO trainees was reduced from 600 to 100, the number of conference exhibitions was reduced from 20 to 5, and financial appraisal training reduced from 100 to 30 participants. In Component 4 the number of energy benchmarks was reduced from 5 to 1 (without repetition). The output “feasibility studies for 400 specific EE opportunities” was deleted and instead a new output on financial support for online monitoring was introduced. The output installation of metering software was reduced from >100 industrial sites to one pilot project. In Component 5 the size of the Revolving Fund was reduced from USD 7 M to USD 6.5 M.

Table 3 summarizes the key changes. Table 12 in Annex III compares the original and the revised logframe (2015) in detail listing the targets for both (changes between the versions are highlighted in bold-red).

Table 3: Summary of changes to outputs and activities between the 2015 revised logframe and the progress reporting

Summary of changes	
C1	<ul style="list-style-type: none"> - <i>Revised Output 1.1:</i> The output was revised entirely and addresses market-based policy instruments with a focus on energy efficiency certificate trading instead of 150-200 negotiated Energy Agreements with relevant large, energy-intense industrial sites and/or several sub-sectors and clusters. - <i>Revised Output 1.2:</i> The original target was <i>government capacity enhanced to design and implement EE policy</i>. The revised target is far more specific and lists 2 workshops and 20 participants.

Summary of changes	
C2	<ul style="list-style-type: none"> - <i>Revised Output 2.2:</i> The output is formulated with far less detail than in the original version but remains overall similar. - <i>Revised Output 2.3:</i> Case studies on Iranian IEE resulting from Component 4, the number of case studies has been reduced from 60 to 30, and the 20 launch events have been removed.
C3	<ul style="list-style-type: none"> - <i>Revised Output 3.2:</i> The target for the number of trainees in EnMS and SO was reduced from 200 participants to 100. - <i>Original Output 3.4:</i> The programme launch, annual review and closure events did take place but are no longer listed in the revised logframe. - <i>Revised Output 3.4:</i> The output has two sub targets: <i>i. staff trained and ii. conference exhibitions.</i> Target 3.4.i “number of staff trained in system optimization” was reduced from 600 to 100. It should be noted that the revised target no longer qualifies the intensity of the training. Target 3.4.ii “number of conference exhibitions” was reduced from 20 to 5. - <i>Revised Output 3.6:</i> The financial appraisal training was reduced from 100 to 30 participants. - <i>Revised Output 3.7:</i> Output changed from “training on technical equipment” to trainings in system optimization technical, equipment/ capacity building. Number of participants increase from 10 to 40.
C4	<ul style="list-style-type: none"> - <i>Revised Output 4.1:</i> The output was altered entirely. Instead of the development of 5 benchmarks and their repeated data collection after 2-3 years. The output was changed to a training on benchmarking methodologies. - <i>Revised Output 4.3:</i> The output restates RO-4.2. - <i>Original Output 4.4:</i> The output “Detailed technical audits/ feasibility studies for approx. 400 specific EE opportunities/ cluster of opportunities at selected industrial sites” is no longer included in the revised logframe. - <i>Revised Output 4.4:</i> Financial Support for implementing Online monitoring for 2-3 Pilot companies selected from big 5 sectors was newly added to the logframe. - <i>Original Output 4.5:</i> The output “Case Studies: financial support and auditing/ evaluation of 60 EE technologies and techniques across all sectors” is now found in Component 2 and reduced from 60 to 30 case studies. - <i>Revised Output 4.4:</i> The original content “installation of metering software at >100 industrial sites” has been replaced by i. a training component for 10 trainers and ii. one pilot project in the petrochemical industry.
C5	<ul style="list-style-type: none"> - <i>Revised Output 5.1:</i> The budget of the Revolving Fund was reduced by USD 500.000. - <i>Revised Output 5.2:</i> The revised logframe includes an output which resembles original output O-4.8 which is another training activity.

Source: own compilation.

2) Comparison of the revised Logframe and the additions by the Management

Following the revision of the project logframe the PMU partially used a different set of outputs and targets in its progress reporting. The main changes were the inclusion of eight additional outputs: an item framework for certified energy managers, a study on EE cost curves in steam system and the Energy Management Award scheme in the Petroleum Industry as well as a series of information and awareness raising outputs were added. Three outputs and several activities are not listed in the progress reporting and several activities were reformulation. Table 4 summarizes the changes made. For a detailed overview please refer to Table 13 in

Annex III which lists the exact changes between the 2015 logframe and outputs listed in progress reporting.

Table 4: Summary of changes to outputs and activities between the 2015 revised logframe and the progress reporting

Component	Summary of changes
Component 1	The progress report includes three additional outputs : “Setting national standard framework for certified energy managers and energy auditors” and “Study of EE cost curve in steam system” and “Energy Management Award in Petroleum Industry”. For the other outputs there are a series of changes to the activities.
Component 2	Four additional outputs : Many new activities were added as part of the output “other information sharing” which includes a large number of awareness raising and dialogue events, three movies and several brochures. A new output called “Conducting awareness program pilot” was added, as well as the outputs “Monitoring and Evaluation” and “Communication plan”. For Revised Output 2.3 the case study target was reduced from 30 to 20 case studies.
Component 3	The progress reports include many reformulations of activities and targets, e.g. the activity RO-3.2 “100 small and medium-sized enterprises (SMEs) trained in energy management systems” appears to have been changed to the activity “EnMS User training of 30 energy experts”. The outputs RO-3.6 “Financial Appraisal Training” and 3.7. “Training in system optimization technical, equipment/ capacity building” seem to be missing in the progress reports.
Component 4	The activity “One Train of Trainers Workshop on M&T for 10 National Trainers on M&T” is missing from the progress reporting.
Component 5	The component included one additional output in the progress reports called “Revolving Fund: Making links to other funding mechanisms”. Revised Output 5.2.: “Investment assistance” which included training for companies on business plan development was not listed in the progress reporting.

Source: own compilation.

Project Budget

The project is a full-size project with a total project volume of USD 20.6 Mio. According to the original budget, 26 % (USD 5,450,000) of the costs were supposed to be financed by donor funding.²⁴ The project was financed under the GEF-4 Strategic program Climate Change - Strategic Program 2- Industrial Energy Efficiency. 74 % of the budget were to be co-financing from the national counterpart (USD 15,150,000) and UNIDO (USD 150,000). In Output 4.5 the project offers 50 % grant support for test rigs with the remaining amount to be contributed by the companies themselves.²⁵ Figure 10 in Annex III shows the contribution of donor and co-financing per budget component as it was anticipated in the project document.²⁶

Project implementation arrangements

UNIDO is the GEF Executing Agency for this project. UNIDO is executing the project in collaboration with the concerned Government Agency, the Iranian Fuel Conservation Company.

UNIDO is assisted in the procurement process for required equipment, in the selection of national and international consultants as well as the subcontractors in accordance with the operational rules and regulations.

As part of the project IFCO was to undertake > 600 walk-through audit reports and > 400 “detailed study” reports²⁷ to assess if the companies are meeting the standards set by the Iranian National Standard and Industrial Research Organization. IFCO was to play a large role in the dissemination of the Programme outputs as they already have a strong network through their current activities.

A Project Management Unit (PMU) managed the day-to-day project Implementation. The PMU was headed by the National Project Coordinator (NPC). The UNIDO project Manager (at UNIDO HQ) oversaw project implementation and monitoring. IFCO acted as the national executing partner and offered an officer as a focal point for the project.

The Project Steering Committee (PSC) consisted of the following parties:

1. Ministry of Foreign Affairs (MFA)
2. Iranian Fuel Conservation (IFCO), the national executing partner
3. United Nations Industrial Development Organization (UNIDO)

The PSC met six times (2013, 2014, 2015, 2016, 2017-twice) during the project duration of five years (2013-2018).

²⁴ Additionally, GEF provided USD 100,000 as a project preparation grant.

²⁵ These leverage industrial investment does not count into the co-financing.

²⁶ GEF (2011).

²⁷ Please note that in the revised logframe this output has been deleted but remained an outcome.

1.6 Theory of Change

The Theory of Change (TOC) seeks to align the project's elements in a way that reflects the impact logic from direct outputs to the ultimate goals (left to right in

Figure 4). The Theory of Change is harmonized with a more generalized map of IEE-related project linkages produced as part of the independent Impact Evaluation but adapted to this Terminal Evaluation.

Whilst the thematical clustering chosen in the logframe is useful for the workflow, to track the logic chain from outputs to impacts the TOC tracks the activities of different project target groups to understand how the project intends to accelerate the uptake of EE across the industrial sectors. To better guide the reader through the TOC (

Figure 4) colour codes are used for the different project target groups. The project addressed four different target groups which are essential to the energy efficiency market:

- 1) Primary target group: Energy-using enterprises (with varying degrees of intervention depth, divided into the subgroups:
 - i. Wider economy (🏭):
 - ii. Light-intervention companies (🏭):
 - iii. Deep-intervention companies (🏭).
- 2) Technical services and equipment supply chain (🔧), subgroups:
 - iv. Independent consultants and service professionals (👤),
 - v. Equipment supply chain (🔧).
- 3) Finance community (💎):
 - vi. Banks and financial institutions (🏦).
- 4) Policy and standards communities (🟦),
 - i. Technical standards community (🏢)
 - ii. Regulatory actors (🏢)

The first type of outputs (top left of Figure 4) is **direct technical assistance**. 16 companies participated in in-depth interventions in the form of three pilot project installing an online monitoring system in the petrochemical and cement industry (RO-4.4 and an output added after the Mid-Term Review, MTR), five projects were intended for large-scale production improvements (RO-4.5), other companies received in-depth EnMS and SO training for implementation (no output assigned). Further on, companies received energy audits (RO-4.3).

The first type of outputs leads most directly to measurable impacts. At the impact level, as soon as factories have implemented energy efficiency measures, they achieve GHG emission reductions, energy savings, resource consumption reductions, air quality improvements, and industrial competitiveness gains. On the outcome level, UNIDO partner enterprises were expected to share the results of their demonstration projects within their company group,

companies in the sector and the wider economy. On the higher-level outcome level other companies copy the test rigs in their own factories.

However, direct technical assistance is costly and donor projects can typically do them in limited instances. They typically serve as demonstration/pilot projects to raise industrial motivation and confidence in IEE technologies/practices.

Other outputs of UNIDO IEE projects are related to **capacity building**. This includes general *awareness raising and information dissemination*: The “wider economy”, particularly companies from the five target sectors, has been engaged by the UNIDO project indirectly. They have been addressed via the website with EE library and case studies (RO-2.1, RO-2.2, RO-2.4), the participation in conferences and the information material produced. The project also worked on defining one sectoral energy efficiency benchmark for industrial self-evaluation that motivates inefficient industrial sites of the cement sector to carry out energy efficiency improvements.²⁸ The energy award in the petroleum industry (additional output) is intended to motivate companies in the oil producing sector to show-case successful management practices.

Capacity building includes *technical and financial training*: Companies engaged with UNIDO in the form of short trainings and individual workshops (workshops on: EnPI (RO-3.3), introductory EnMS (management training) (RO-3.2), SO (RO-3.3., RO-3.4 and RO-3.7), energy auditing (RO-4.2), use of benchmarks (RO-3.5), financial appraisal (RO-3.6), and business plan development (RO-4.1).

Beyond the primary stakeholder, the project addressed the framework conditions for energy-using enterprises by targeting other stakeholders active in the energy efficiency market. Another stakeholder group addressed by the project is therefore the supply chain. In the Theory of Change the supply chain is divided into the subgroup of independent consultants and service professionals (👤) and the equipment supply chain (🔧). They have received training on system optimization (RO-3.3).


And finally, UNIDO uses capacity building to address the *institutional arrangements and policy makers* via development of a national evaluation framework for certifying energy auditors and energy managers (additional output), benchmark developed and introduced in one industrial sector (RO-4.1), reports and information workshops on market-based *Policy* instruments and a roadmap for EE Certificate trading (RO-1.1) and training on market-based instruments (RO-1.2). The Regulatory actors were addressed with a series of studies and workshops in Component 1). It was intended to address the technical standards community by setting a national standard framework for certified energy managers and energy auditors (output in Component 1 added after the Mid-Term Review).

The intended outcomes of capacity building is to achieve market and policy framework conditions that motivate/enable industry to implement IEE practices and technologies as an integral part of their business practices, without direct UNIDO assistance. On the outcome

²⁸ It is not clear from the Project document whether the benchmark shall serve the industrial sector as an informational tool or whether it is intended to be combined with punitive actions by policy makers such as payments of fines for energy consumption beyond a certain threshold.



level the project intended to improve the in-house capacity of the enterprises to monitor their energy consumption and carry out energy efficiency measures.




The intended impacts of capacity building activities are energy savings, GHG emissions reductions, etc. - the same as for direct assistance in adoption/implementation activities. As it takes more time for capacity building interventions to result in implemented IEE projects, there can be significant delays (often after project closure) before actual impacts are apparent.

The third stakeholder group in the energy efficiency market addressed by the project is the finance community/ the availability of financing. In Component 5 the project intended to set up a revolving investment fund (RO-5.1). On the outcome level the bank in charge of this Fund () is disseminating funds to companies and thereby puts them in the position to invest in EE projects.

The revised project results framework does not formulate adequate, SMART outcome indicators. The outcome formulations listed in Table 5 are therefore suggestions from the evaluation team.

Table 5: Outcomes according to the Theory of Change

Label on diagram		Stakeholders and implicit intended outcomes
		Pilot enterprises
①	EE approaches applied / EE measures implemented	Partner enterprises apply EE approaches and implement EE measures implement pilots show cases – with direct impacts. (auxiliary outcomes: demonstration/confidence and practical training venues, other companies copy the show cases and replicate them in their own facilities)
		Light-intervention companies
②	Approve and carry out EE works Implement EnMS/SO/EnPIs, benchmarking	Industry top management aware, informed, motivated and committed to implementing EnMS/SO/IEE activities – approving: training staff, hiring consultants, investing in better equipment, and applying for financing based on improved business and financial proposal (possible data collection: survey of training participants)
③	Train staff, Hire consultants, Invest in better equipment	Sufficient factory engineers/technicians qualified (at user level) to implement EnMS/SO/IEE activities – carrying out: training staff, hiring consultants, investing in better equipment, and applying for financing based on improved business and financial proposal

Label on diagram		Stakeholders and implicit intended outcomes
	Apply for IEE financing	
		Technical services and equipment supply chain
④	EE advisory services offered	Sufficient independent consultants qualified (at expert level) to offer EE services to factories implementing EnMS/SO/IEE activities (auxiliary outcome: serve as champions/influencers for IEE issues)
⑤	EE equipment and service support offered	Sufficient vendors qualified (at expert level) to offer/service equipment to factories implementing SO/IEE activities (auxiliary outcome: serve as champions/influencers for IEE issues)
		Finance community
⑥	Investment funding offered	Financial community has IEE-appropriate credit lines, guidelines and analytical capacity to offer sufficient external financing – easily-accessible at attractive terms – to factories implementing EnMS/SO/IEE activities Investment credits are issued by the Revolving Fund over several financial years. Industrial enterprises use funds by the Revolving Fund to implement EE measures.
		Policy and standards communities
⑦	Energy auditors and energy managers certified	Technical standards community or government regulators have authority/capacity to certify energy auditors and energy managers
⑧	Industry benchmarks introduced	Distributed to the industry as well as be used by policy makers to develop policies for the sector in question.

Label on diagram		Stakeholders and implicit intended outcomes
⑨	Policy framework improved	Government regulators/agencies have capacity and political will to implement effective – sufficiently ambitious and motivating – EnMS/SO/IEE policies/strategies: Adoption of a market-based national carbon trading scheme with Energy Efficiency Certificates in Iran
⑩	Institutionalised post project continuation of activities	Institutionalised maintenance and expansion of replication pathways – education/training, communications channels, peer networks, etc. – for IEE champions/influencers

Project Impacts

The primary aim of the Industrial Energy Efficiency in Key Sectors project was to make a significant contribution towards Iran’s long-term energy efficiency (EE) strategy. The project aimed to accelerate the uptake of EE across five industrial sectors iron & steel, petrochemical, refinery, brick and cement that combine a large-share of Iran’s industrial energy consumption.

On the impact level, as soon as factories have implemented energy efficiency measures, they achieve gross energy savings leading to GHG emission reductions and energy cost savings. At the same time companies increase their investment in EE technology.

Different types of rebound effects lead to a reduction of the gross GHG emission reductions and energy savings and deliver the net savings. Relevant rebound effects to the project are reduced production cost due to reduced energy inputs in the production process, increased production and economic growth. As the project document states, the accelerated EE uptake shall result in freeing up Iranian fossil fuel resources for export, therefore a significant share of the fossil resources can therefore be assumed to be consumed abroad.²⁹

Assumptions of the Logic Chain on The Outcome Level

Underlying the logic chain from outputs via outcomes to impacts are a series of assumptions (compare project document for the original assumptions). The most relevant framework conditions identified by the evaluation team are added in

Figure 4 in the box “external market factors” and include:

- EE cost effectiveness due to sufficient energy prices,
- Competitive pressures (e.g. age of facilities, supply chain, consumers),
- Environmental and resource policy pressure (carbon trading, white certificates, MEPs etc.),
- Availability of technology,
- Macro-economic stability (inflation rate, economic growth).

²⁹ This is partially due to the price effect: higher Iranian exports reduce world market prices.

Barriers addressed by the project

One key element to track the logic of a project's intervention is to understand why a project chose its respective pathway. The project carries out its activities to remove a series of market barriers that prevent the primary stakeholder, the energy-using enterprises, from carrying out energy efficiency measures. In this section we want to structure the project activities according to that barrier removal effect and clarify which barriers the IEE project chose not to address.

Among energy-using enterprises the project addressed the barriers "*lack of awareness*" and "*lack of in-house expertise*" by means of providing information and capacity building.³⁰ In the partner enterprises. UNIDO helps to set up real-life examples (case studies) and pilot applications of technologies. If the showcases and experiences of the pilots are communicated to the wider economy they address the barriers "*lack of EE-technology showcases*" and "*lack of confidence in viability of EE concepts.*"

The project also addresses other important barriers for the primary stakeholder which lie in the market framework conditions and not with the primary target group itself: With its activities with the technical services and equipment supply chain community the project addresses the barrier "*lack of trusted expertise*" in the EE market of Iran and wants to increase the quality of services provided to the energy-using enterprises.³¹ Setting up a Revolving Fund with a local bank is addressing the barrier "*lack of financial resources*" industrial companies are confronted with.³²

The project Activities in Output 1.1. preparing road maps and reports for the policy community to some extent addresses the problem, that many energy efficiency investments in the energy price context are not economically viable. Market based instruments such as EE Certificates are introducing a financial incentive and address to a limited degree the barrier "*lack of cost-effectiveness*".

Certain important barriers for energy efficiency market in Iran remain or are only partially addressed by the project: due to international sanctions it has been difficult to import technology into the country, foreign investment has also been severely restricted. Two key barriers are therefore "*lack of access to technology*" and "*lack of access to foreign capital*".³³ Energy prices in Iran are extremely low and subsidized below production costs. At the same time inflation and interest rates are high.³⁴ Both factors make many EE investments uneconomical. At the time of project design, it was expected that the Iranian Economic Reform Plan (2010) would become a major driver leading to a subsidy phase out and free market prices over a 5-year period, nevertheless it was described as "unclear" how the energy subsidy

³⁰ The project document refers to these barriers as "*Limited understanding of EE opportunities relevant to Sector*", "*limited understanding/ control on energy use across industry*", "*poor awareness of training/ funding and other support mechanisms*", and "*the concept of the programme for EE is not well known or understood impeding implementation/capacity building*".

³¹ The project document refers to these barriers as "*no domestic supplier of the required EE technology*".

³² The project document refers to these barriers as "*Liquidity restraints*".

³³ The Project document refers to these barriers as "*insufficient foreign investment disrupts expansion plans*".

³⁴ The Project document refers to these barriers as "*lack of incentives to reduce energy efficiency, highly subsidized energy prices*".

was to be phased out. The project document listed the energy subsidy phase out as one of its key assumptions, the barrier “*lack of cost-effectiveness of EE investments*” remains therefore largely unaddressed.

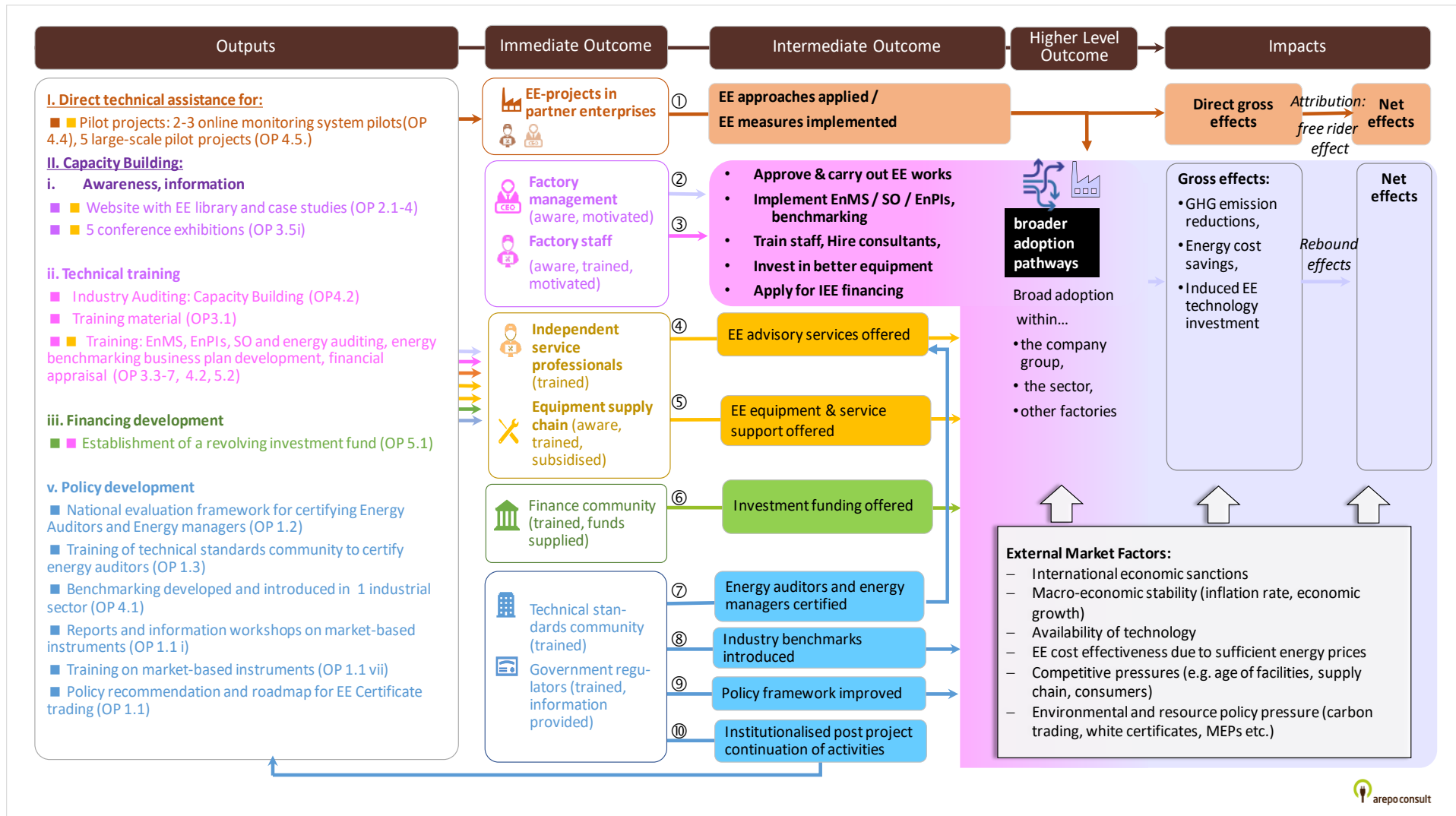
Table 6 summarizes the barriers the project the types of activities chosen, and the barriers not addressed.

Table 6: Barriers addressed by the project

Barriers of energy-using enterprises to carry out energy efficiency measures	Type of Activity
Barriers addressed by the project	
Lack of awareness	<ul style="list-style-type: none"> - Awareness raising (website, conference participation, videos, information material, awareness seminars, cultural change, energy award) - Preparation of informational tools (one energy efficiency benchmark)
Lack of inhouse expertise	<ul style="list-style-type: none"> - Capacity building among factory personnel (EnMS, SO, business plans, financing, benchmarking, auditing, monitoring)
Lack of EE-technology showcases Lack of confidence in viability of EE concepts	<ul style="list-style-type: none"> - Pilot showcases of specific technologies and EE-concepts
Lack of trusted expertise	<ul style="list-style-type: none"> - Capacity building among the Technical services and equipment supply chain community (market-based instruments, certification of service providers) - Preparation of evaluation frameworks for the Policy and standards community (Certification of energy auditors and managers) - Capacity building among the policy and standards community (certification of energy auditors and managers)
Lack of financial resources	<ul style="list-style-type: none"> - Provision of financial resources (Revolving Fund)
Lack of affordability of EE investment	<ul style="list-style-type: none"> - Preparation of road maps and reports for the Policy community (market based environmental policy instruments particularly EE Certificates)
Barriers not or only partially addressed by the project	
Lack of access to technology Lack of access to foreign capital Lack of cost-effectiveness of EE investments	

Source: own table.

Figure 4: Theory of Change of the IEE project Iran from output to impact level



Source: own diagram.

2. Project's contribution to Development Results Effectiveness and Impact

A project *results* include direct project outputs, short- to medium-term outcomes, and progress toward longer-term impact including global environmental benefits, replication effects, and other local effects.³⁵ Effectiveness refers to the extent to which the project's actual outcomes are commensurate with the expected outcomes.

2.1 Project's achieved results and overall effectiveness

The 2015 revised project logframe which was presented to the Steering Committee is used by the evaluation team as a reference point to assess whether the project achieved the intended results. Table 14 in Annex III summarizes the targets and target achievements of the project.

Results of Component 1. Energy Efficiency Certificates and other legislative Drivers

The project succeeded in completing the revised outputs (RO) of Component 1. Several additional activities were carried out in this component: EE cost curve in steam system and Energy Management Award in Petroleum Industries. An additional output which was added "Setting national standard framework for certified energy managers and energy auditors" but was not completed. 50 government managers and policy makers participated in workshops held for the policy and standards community.

Results of Component 2. Sharing of good Energy Efficiency Practices

The project carried out far more activities in Component 2 than originally planned or set out in the revised logframe 2015. The project team added activities such as the output item "*other information sharing*" which included three films including an animated movie, brochures and dialogue and awareness campaigns. The project designed entirely new course content focussing on management psychology. Output 2.3 "30 Iranian Case Studies" could not be completed because only 14 case studies (47 %) were produced in Component 4.

1,172 participants from 400 companies from energy-using enterprises joined the awareness raising activities. The evaluation team had no access to the log of "hits" and downloads from the website.

Results of Component 3. Training, Benchmarking and other Events

In the training component the project succeeded to finalize most of its outputs (4 out of 7). The capacity building activities in Component 3 were attended by 608 participants, 343 joined training at expert level and on-site events and 265 joined light-training activities such as user trainings (Figure 5). 74 managers and energy experts joined a ½ day workshop on EnMS (RO-3.2), 70 participants joined a workshop on EnMS & EnPIs & Monitoring & Verification (M&V) (RO-3.2). The project conducted a 2-day EnMS user training for 30 participants and a 9-day EnMS expert training for 25 experts (RO-3.2). 89 staff members of industrial companies participated in a 3-day-on-site EnMS training, 26 in a non-energy-benefits trainings, 12 experts in a 1-day EnMS training. The project trained 25 experts on EnMS and 44 experts on systems optimization (SO).

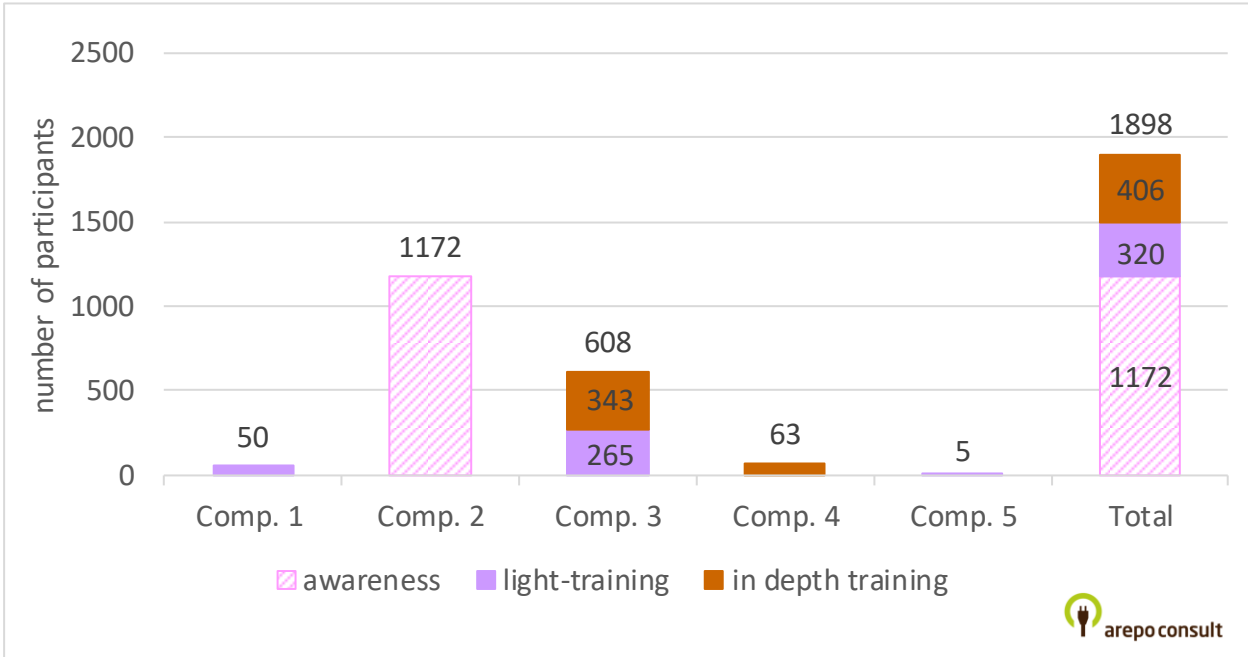
³⁵ GEF (2010b).

21 companies participated actively in awareness activities like measuring, benchmarking, EnPIs, cultural change and M&V activities.

The project carried out an EnMS training outside of Iran in Iraq. The project conducted four conference exhibitions in Iran (R-3.4), other conference exhibitions were carried out abroad.

The project did not reach the target number of energy benchmarking workshops (RO-3.5), the number of trainees for financial appraisal (RO-3.6) and the trainees on technical equipment (RO-3.7).

Figure 5: Number of participants in the project’s training activities



Source: own compilation based on PMU data.

Results of Component 4: Direct Support to Industry

In Component 4 the project team worked closely with partner companies to implement pilots and industrial showcases. 16 individual companies received support with respect to the implementation of EE interventions or the establishment of a management system (Table 15 in Annex III). The on-site training for the demonstration projects and EnPI of Component 4 “Direct support to Industry” were attended by 52 factory staff.

Of the five outputs two achieved its targets (RO-4.1 “Training on benchmarking methodologies” and RO 4.4 “Metering and monitoring and targeting equipment”).

Revised Output 4.2.”i. One workshop for estimated 20-30 trained technical staff with energy audit skills” and “ii. One technical kit on a training for Industrial EE audits developed” was not carried out.

In revised output 4.5. “Demonstration projects for IEE pilot schemes” the project completed 4 instead of 5 projects disbursing around 60% of the planned funds.

The output 4.3. the required number of walk-through audits and studies could not be reached.³⁶

1. Cement: Hormozgan Cement Co., Upgrading of Grate Cooler, investment volume: USD 400,000
2. Iron & Steel: Esfahan Steel Co. (ESCO), Hot charging of billet from Continuous Casting Machine #5 to rolling mill #500, investment volume: USD 1,500,000
3. Oil Refinery: Abadan Oil Refinery, Replacement of barometric condensers of crude distillation unit #80 with Welded plate heat exchangers, investment volume: USD 2,000,000
4. Brick: Diana Sofal Brick Co., installation of a monitoring system, investment volume: USD 32,000

The original project design had set aside USD 3.25 M for five test rigs.³⁷

During the evaluation, it became clear that the „test rigs” were actually fully-fledged production process improvements with large investment volumes, not laboratory style tests.

The project document specified that the test rigs require sufficient endorsement from equipment manufacturers for “*turning the idea into a commercial EE product*”. 3 of the 4 test rigs acquired technology from foreign equipment providers. The import of technology was accompanied with two disadvantages: 1) the purchasing of foreign technology during international economic sanctions proved particularly for the oil & gas sector to be extremely difficult and required enormous resources from the PMU. 2). Foreign technology providers seem to have been less keen to establish their products for widespread role out in the Iranian market. As importing the equipment for the test rigs was very involved, the PMU was forced into micromanaging several of the test rigs and the associated procurement processes. Generally, while it was attractive for the Iranian executing agency, to have international equipment procured, it is not clear to the evaluation team that the project or the demonstration effect was made more effective by international procurement. Potentially, the local manufacturing conditions would have been complemented much better by locally manufactured energy equipment technologies, and their replication potential would most likely have been much more significant.

The evaluation team found that the implementation of the test rigs required much more managerial attention from the PMU than originally budgeted for. Engaging with foreign equipment providers and the transferral of funds tied up significant capacity in Tehran and Vienna.

Results of Component 5: Financial Support

The Revolving Fund could not be completed within the project time frame. The project did not manage to have the fund run several times because it was established too late in the project. By the time of project closure the fund had an institutional set up, but GEF funds could no longer be transferred into Iran. At the time of the final evaluation UNIDO was in discussion with IFCO whether possibilities existed to fund the selected investment project with national funding only. While by the end of the project there was a pipeline of potential projects, there was considerable doubt regarding its sustainability if established. Interviewees expressed doubt regarding whether the fund would in fact be revolving and was to run for more than one investment cycle. Output

³⁶ The revised logframe only includes the target of “>600 walk-throughs and >400 audit reports” in its outcome. Target achievement was 1.5 % and 33 % respectively.

³⁷ Planned funding was USD 600.000 to USD 1,000,000 per test rig.

5.2. “One training for the companies on business plan development to attract EE investments” was not carried out. The workshop on energy efficiency financing for bank experts (RO-3.6) failed to attract the targeted number of attendees.

Achievements on Outcome Level

According to the Theory of Change on the higher outcome levels the capacity building, information and funds provided by UNIDO are applied and replicated by industrial enterprises of the wider economy who themselves carry out EE approaches and invest in EE projects.

The outcomes have not been adequately operationalized, neither in the original, nor in the revised project logframe. Table 11 and 12 in Annex III shows the outcomes and outcome indicators of the original and the revised project results framework.

The monitoring system of the project tracked the number of participants in project activities but did not cover effects on intermediate or higher outcome level. The evaluation team was able to collect anecdotal evidence for some of the outcomes of the Theory of Change:

- Outcome ①:³⁸ Interviewees reported that received requests by companies interested in replicating some of the technology implemented by the pilot projects.
- Outcome ④:³⁹ The four national experts interviewed were still active in the field of energy efficiency.
- Outcome ⑥:⁴⁰ At the time of the evaluation the transfer of the funds for the Revolving Fund was incomplete, but even after a possible establishment some interviewees expressed scepticism whether a second round of finance disbursement was likely.

Quality of Results

The PMU collected feedback from course participants on the quality of the course they participated in. For this purpose, the national project team developed its own survey instrument.

The PMU invited the trainees to rate the training course content, the trainers and the implementation of the training on a scale of 0 (weak) to 4 (very good) (Figure 11, Figure 12, Table 16 and Table 17 in Annex III show the results of the survey).

In the categories “level of course content”/“scientific concepts” and “course content applicability”/“applicability” most courses received an overall rating between good and very good. Only the steam system optimization (SSO)-expert course received slightly lower ratings in the range of “satisfied” to “good” (compare Figure 13 and Figure 14 in Annex III).

The trainings were conducted by two trainers. Both trainers received a scoring from training participants (compare Figure 11). The trainer scoring was used by the PMU to decide on the choice of trainers and to send feed-back for possible improvement. Trainer scores ranged between satisfactory to very good.

³⁸ Partner enterprises apply EE approaches and implement EE measures implement pilots show cases. Auxiliary outcome: other companies copy the show cases and replicate them in their own facilities.

³⁹ Sufficient independent consultants qualified (at expert level) to offer EE services to factories implementing EnMS/SO/IEE activities.

⁴⁰ Investment credits are issued by the revolving fund over several financial years.

The PMU also tracked to what extent participants were satisfied with the setting of the training including the facilities, reception services and the material provided.

Overall the feed-back from training participants was positive. The evaluation team also interviewed several national experts. The results from the feedbacks received by the PMU is in line with the interviewees responses to the evaluation team. The overall direct feedback was very positive with training participants stressing that they gained a new perspective and benefited a lot from the combination of a theoretical and a practical learning approach. Several experts expressed the wish for a more technical training, particularly renewable energy technology would have been appreciated as an addition, since Iran has very limited access to new technologies.

Effectiveness

The project could not carry out the ambitious targets set in the original project design, therefore the design was revised in 2015. This evaluation compares the project's results only against the revised logframe. Still, the project could not achieve many of its (revised) targets.

The project effectiveness is therefore rated as follows: Component 1 "Energy efficiency certificates and other legislative drivers" is rated as satisfactory. Component 2 overachieved in comparison to its original targets, the work carried out in the additionally added output "other information sharing" of Component 2 might have to some degree have taken place at the expense of other training activities that did not achieve their targets, e.g. the Outputs RO-3.5, RO-3.7, RO-4.2, RO-4.3. Nevertheless, the component is rated satisfactory on effectiveness. The training Component 3 is rated satisfactory since a considerable number of staff was successfully trained. Component 4 is rated as moderately unsatisfactory since the majority of case studies was not produced. Feed-back from stakeholders was not very positive in respect to the outreach and visibility of the demonstration projects. One set of "demonstration projects" (the 4 test rigs Output 4.5) applied technology which was very sector specific and partially site specific. The learning and demonstration effects of these applications therefore seem rather limited. The test rigs' implementation does not seem in line with the overall approach of capacity building on overall EE approaches using EnMS, SO, benchmarking, auditing and EnPIs approaches which are cross-sectoral and management-oriented, clearly replicable and have sustainability and exit strategies. This is compounded by the fact that Output 4.5. absorbed undue amounts of UNIDO management capacity and required a micro-managing approach dealing with foreign contractors. Component 5 was started late and so far, has not demonstrated any success. While there is a pipeline of potential projects, there is also considerable doubt regarding the Revolving Fund's sustainability if established. The component is therefore rated moderately satisfactory.

Space for increasing Effectiveness

The project spent its energy on a very high number of diverse outputs. After the mid-term the revision of the logframe could have been used to strictly consolidate rather than to introduce a series of new though partially innovative outputs. The project might have benefitted from a stronger focus on selected central outputs. The project overachieved in Component 2. In addition, it carried out a series of activities added after the MTR. Though highly innovative, the activities might have diverted attention and time from other training activities.

By carrying out more of the same activities, e.g. a stronger focus on EnMS and SO workshops rather than many different activities, the depth of impact could have been improved. The repetition of trainings rather than the development of a large range of different activities would have helped to improve continuity, routines and re-use training materials, monitoring materials etc.

Output 4.5 lacked integration with the other project elements and was an isolated project activity diverting resources rather than functioning integrative or supportive.

The evaluation team found that stakeholders felt excluded and ill-informed of the project’s activities and progress. The effectiveness of the project would have been higher if a wider range of stakeholders had been included. The project might have benefited from an inclusion of more stakeholders to replicate the approaches and carry the discussion and cultural change approach to a wider audience of stakeholders.

Project Target Groups

The project targeted companies of the iron & steel, petrochemical, refinery, brick and cement sector, offering on-site trainings. Some awareness activities were open for a wider audience. The five sectors targeted constitute a large share of the energy consumption in Iran. From this perspective the targeted sectors were well chosen. At the same time the targeted sectors might lack the managerial structures and physical assets most amenable to innovative approaches such as energy management systems. It might have been beneficial to either mix industrial branches outside of traditional heavy industry such as car manufacturers in the trainings to confront training participants particularly managers with positions from outside of their peer group.

Evaluation Criteria C2) Effectiveness	
<ul style="list-style-type: none"> - What are the main results (mainly outputs and outcomes) of the project? What have been the quantifiable results of the project? - To what extent did the project achieve their objectives (outputs and outcomes), against the original/revised target(s)? - What are the reasons for the achievement/non-achievement of the project objectives? - What is the quality of the results? How do the stakeholders perceive them? What is the feedback of the beneficiaries and the stakeholders on the project effectiveness? - To what extent is the identified progress result of the project attributable to the intervention rather than to external factors? - What can be done to make the project more effective? - Were the right target groups reached? 	
Summary of findings	
<ul style="list-style-type: none"> - The project achieved to complete 11 out of 20 output targets. Achievements in the revised Components 1, 2 and 3 were more satisfactory than in the other components. - Although the project underachieved on its target, it should be noted that framework conditions in Iran during the time of implementation were difficult and that the flaws in the original design, particularly the lack of consistency and focus, could not be fully revised during implementation. 	
Rating	
C2) Effectiveness	C 1: Satisfactory C 2: Satisfactory C 3: Satisfactory C 4: Moderately Satisfactory C 5: Moderately satisfactory

2.2 Progress towards impact

2.2.1 Achievements on impact level

The project document sets out an overall objective to “*To promote energy efficiency in five high energy consuming industrial sectors (iron & steel, petrochemicals, refinery, brick and cement) by adopting a national framework for Energy Management Standards (EnMS).*”

Progress towards Impact in Component 1

Iran has passed a white certificate system but at the time of the evaluation it had not come into effect. The project contributed to the EE certificate policy process, to what extent UNIDO’s intervention contributed to the development could not be assessed.

Progress towards Impact in Component 2

1,172 participants joined the awareness trainings. The evaluation team has no information regarding the outreach of the website (log data) not access to data to what extent workshop participants use the information they received. Therefore, the evaluation team largely lacked the data to trace progress towards impacts for Component 2. The large number of participants in the project’s event indicate though that the project had a considerable outreach.

Progress towards Impact in Component 3

Judging from the numbers on output level, it is plausible that the project succeeded in adding significant human capacity to the industrial energy efficiency market of Iran. By following a proven best practice methodology and a structured, systematic approach, the project provided beneficiaries with technical skills, increased awareness at management level, and delivered proofs of concept. Interviewees were appreciative of the training received but little information could be collected to what extent the increased capacity can be used by the work force.

Progress towards Impact in Component 4

The evaluation team received anecdotal evidence of replication of two of the test rigs but could neither validate nor quantify this replication effect.

Overall stakeholders’ assessment of the project’s results was mixed. This was partially due to outsized expectations, e.g. in terms of the quantitative results. The project’s impact was hindered by the overall situation in which energy efficiency is not a primary priority.

Impact Indicators

This objective is tracked with two indicators: Measurable reductions in i) fuel consumption, and ii) GHG emissions reductions. The impact indicators were not designed to track a market transformation beyond savings achieved by immediate project interventions; which limits the ability to track progress towards market impact in this Terminal Evaluation.

In the original project document (Annex A), the medium term targets on impact level were defined as annual energy savings of 30.3 TWh and annual CO₂ emissions avoided of 8.9 Mt CO₂. Cumulative energy cost savings (at international prices) of USD “4,700 Mio” and USD “5,000 M” of EE technology investment (both direct and indirect investments).

Following the adaptation of the project outputs, no new targets were calculated, even though output targets were drastically reduced.

In 2018, the project retroactively calculated two possible revised targets:

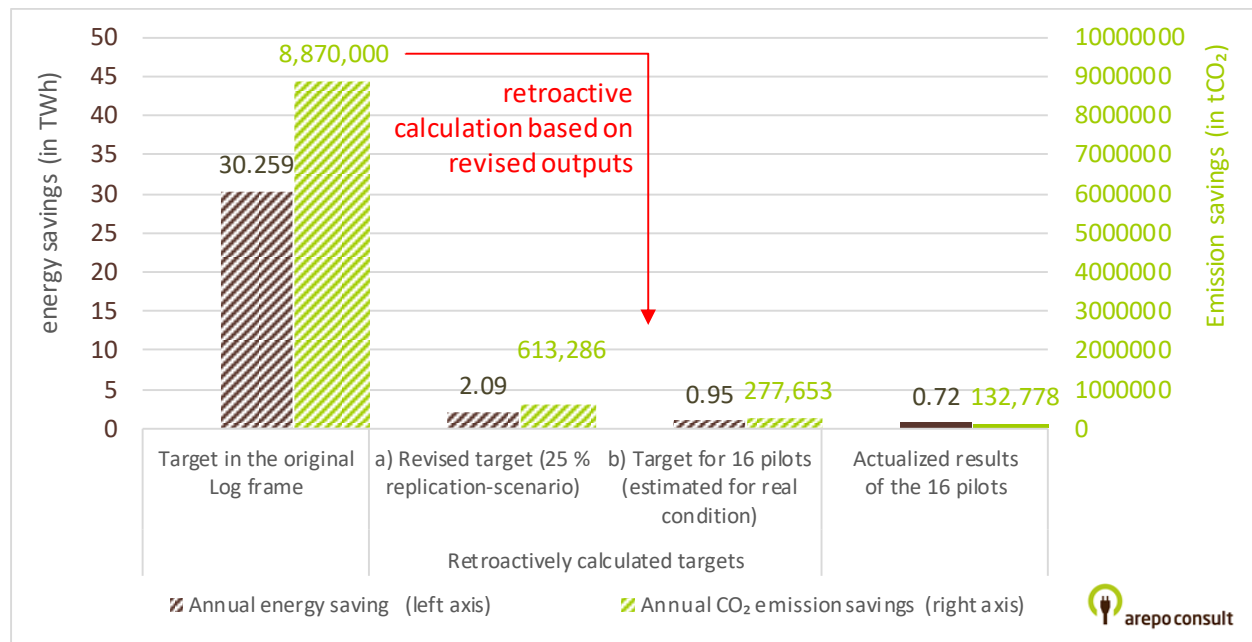
- a) Based on the assumptions of a 25 % replication factor or the actualized number of implementation projects, the targets would have been reduced by a factor of 14 and 32 compared to the original targets.
- b) Based on the actually achieved number of implementation projects, the project expected an annual energy saving of 1.8 TWh and annual CO₂ emissions avoided of 0.28 Mt CO₂.

Figure 6 and Table 7 shows the annual savings targets of the revised and the original logframe compared to the actualized achievements.

In comparison to its original targets the projects achieved a target achievement of 2.4 % in respect to its annual energy saving target of 30,259 TWh and of 1.5 % in respect to its annual emission savings target of 8.87 M tCO₂eq. The highest single CO₂ savings were achieved by the four demonstration projects, followed by the 7 EnMS implementation projects and the EnPI implementation (Figure 15 in Annex III). Monitoring of the CASO and SSO implementation projects was so far incomplete.

Compared to recalculated target b), which is based on the 16 pilot companies, the target achievement is 75 % for annual energy savings and 48 % for CO₂ emission reduction. The short-fall can be partially explained by the fact that some of the implementation projects had not been finalized by the time of the monitoring.

Figure 6: Original and revised impact targets compared to actualized savings



Source: own graph based on PMU data.

Table 7: Impact target achievement

	Annual energy savings	Annual emission saving
Actualized project results	0.72 TWh	132, 778 tCO ₂
Original target	30,259 TWh	8,870,000 tCO ₂
Target achievement by the project compared to original target ^[1]	2.4 %	1.5 %
Retroactive calculation: b) target for 16 pilots	0.95 TWh	277,653 tCO ₂
Target achievement by the project compared to recalculation b) ^[1]	75 %	48 %

^[1] Annual energy reduction of 0.72 TWh and annual emission savings of 132,778 tCO₂.

Source: Data by PMU.

2.2.2 Behavioural Change

2.2.2.1 Economically competitive: Advancing economic competitiveness

The project monitoring concluded that the pilot companies succeed in generating energy cost savings of USD 3.505.228 in local prices. The project reported possible Iranian revenues of USD 14.411.791 if the fossil fuel saved nationally were sold at international market price. Over the entire project portfolio return on investment (ROI) (from the viewpoint of the company) until the time of the final evaluation had still been negative (not all implementation projects had reported their savings): the investment of USD 4.8 M investment to an ROI of USD 0.7 saved /USD invested at national prices. At international prices the ROI would have already be at USD 3.0 /invested USD over the entire portfolio. The data set only contains information from four demonstration projects, seven EnMS projects and three EnPI projects, for a bigger dataset it would be worthwhile to analyse which interventions show the highest ROI. If this type of data collection is continued for a larger number of companies, it could be used in policy making as well as an investment guideline for companies.

2.2.2.2 Environmentally sound: Safeguarding the Environment

The project's intention is to contribute to changes in the environmental status by reducing the use of fossil fuels and reducing GHG emissions. It also mitigates water pollution from the petrochemical industry.

The project through its engagement with the oil and gas sector, is facing two major sustainability issues:

1. **Export of fossil fuel saved:** According to the Chief executive officer (CEO) Endorsement document the project will “*help accelerate the uptake of EE and make substantial energy cost savings (whilst simultaneously reducing Iran’s CO₂ emissions and **freeing up indigenous gas and oil for export**)*”. If this is the intention of the project the net energy savings achieved have to be considered as 0 because all gross savings will result in higher oil and gas exports.
2. **Emission overshoot due to rebound effects:** The project’s engagement in the fossil fuel industry contributes to production cost decreases (energy savings) which can be assumed to lead to price decreases of final oil products.⁴¹ Price decreases for fossil fuels trigger increases in demand which are likely to be higher than the original energy savings in the production facility, therefore the risk of rebound overshoots for this time of intervention is high and should be mitigated.

2.2.2.3 Socially inclusive: Creating shared Prosperity

By design, the choice of participants was not directed at benefitting specific groups or entities in society such as ethnic or religious, minorities or women. Except for gender composition, no data on social stratification or social indicators were collected by the project.

2.2.3 Broader Adoption

2.2.3.1 Mainstreaming

Component 1 is a policy component and intended to institutionalize and mainstream industrial energy efficiency. The government of Iran passed a law introducing a “white certificate” scheme in the *Removing Barriers to Competitive Production Act (2015)* (Article 12), but as described in section 1.2 the scheme has not been implemented and can therefore not be reviewed yet.

2.2.3.2 Replication

Output 4.5 “*Demonstration projects*” was particularly intended to trigger replications. The proposed selection process emphasized that the project’s has endorsement by other stakeholders, including the Sector Trade Association and equipment manufacturers (needed for turning the idea into a commercial EE product).

The replication effect of Output 4.5. was not covered by the monitoring system. The evaluation team could collect anecdotal evidence of the replication potential in the interviews for three of the four test rigs.

The evaluation team could verify that the intended theoretical approach worked for at least one of the test rigs visited. The Diana Brick test rig (demonstration project IV), a temperature monitoring system implemented by a local equipment manufacturer which had the lowest investment volume of the four test rigs. After the successful demonstration at Diana the manufacturer engaged heavily in promoting the project as a showcase to other potential clients. The factory, a small and medium-sized enterprises (SME), was willing to share its experience

⁴¹ These mechanisms are slightly distorted in the case of Iran where national energy prices are even below production cost.

with the potential clients and bear testimony regarding its positive experiences both with the installed technology as well as with the provided software service.

Other projects were less successful, and or had limited replication potential and lacked the prescribed back-up for information dissemination originally required in the project document.

According to the interviews conducted by the evaluation team the demonstration project in the iron & steel sector (demonstration project II) did not lend itself to replication. The technology was in fact not new to Iran and it was reported to the team that the project was in fact a very specific solution only viable for one other steel company in Iran. Additionally, the equipment and service provider contracted was based in Austria and access to the Iranian market proved difficult. Neither the participating stakeholders nor the company interviewed showed the necessary willingness to engage in information sharing regarding this test rig.

In the case of the cement pilot (Demonstration project III) the national cement association was not familiar with project details but was not aware of replication of the project.⁴² Another interview partner claimed that the grate cooler system had been replicated by five companies.

While replication data are lacking, the team could not validate the assumption of (missing) replication but neither at this point found evidence of large scale market dissemination. It seems however, that replication worked best for the nationally based equipment providers. Their interest in finding a larger local market played an important role, as expected in the project document.⁴³

Another key finding was that besides the choice of a case with replication potential, which was not given for all the selected test rigs, the choice of the partner companies is highly significant, because they need to have the willingness to share their experiences.

2.2.3.3 Scaling-up

No data is available to the evaluation team regarding scale-up of the project's results on a larger geographical scale. Possible indicators would be *"investment in energy efficiency in Iran"* or *"industrial sites with an energy management system in place"*.

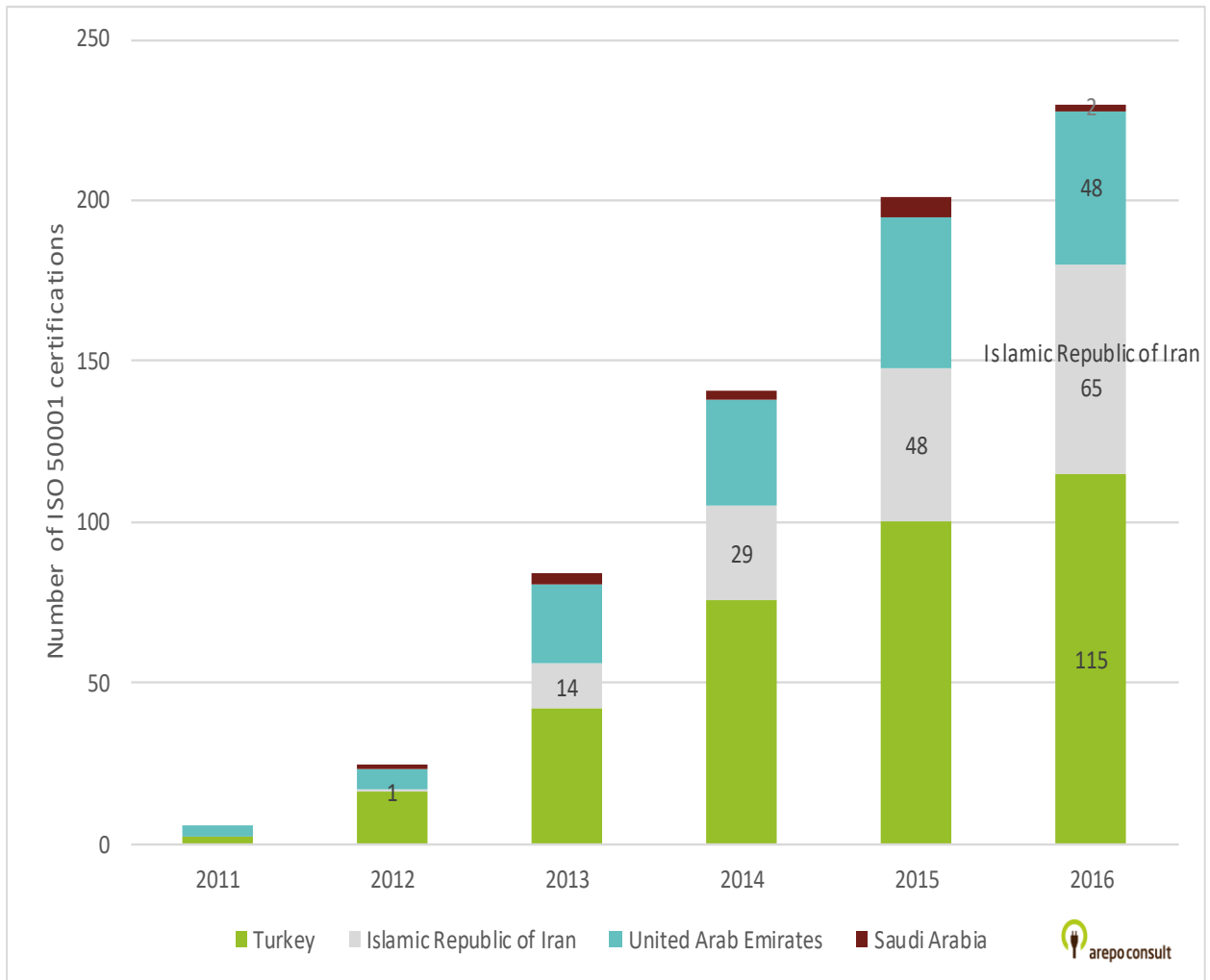
ISO 50001 certifications are another possible proxy for estimating scale-up, the indicator is published annually. The limitation of this indicator for measuring scale-up are the following: i) certifications do not allow the identification of the number of companies certified for the first time, ii) many companies do not recertify or do not recertify annually, iii) many companies do not have an obvious benefit from a certificate and might introduce an uncertified energy management system.

Figure 7 shows, that between 2012 and 2016 ISO 50001 certifications in the Islamic Republic of Iran increased from 1 to 65. Five companies received a certification assisted by the UNIDO project. Based on ISO 50001 certifications only, there are indications that interest in energy efficiency and energy management systems among the industry in the Islamic Republic of Iran is increasing.

⁴² The Project document states: Host sites have to *"have support/ endorsement from other Stakeholders, including the Sector Trade Association (needed for cost-effective dissemination of successful pilot schemes)*.

⁴³ The Project document states: Host sites have to *"have support/ endorsement from other Stakeholders, including [...] equipment manufacturers (needed for turning the idea into a commercial EE product)"*.

Figure 7: ISO 50001 certifications in the region



Source: Own graph based on ISO (2017).

Evaluation Criteria A) Impact (or progress toward impact)

- *Mainstreaming*: To what extent information, lessons or specific results of the project are incorporated into broader stakeholder mandates and initiatives such as laws, policies, regulations and project?
 - *Replication*: To what extent the project's specific results (e.g. methodology, technology, lessons and etc) are reproduced or adopted
 - *Scaling-up*: To what extent the project's initiatives and results are implemented at larger geographical scale?
 - What difference has the project made to the beneficiaries?
 - What is the change attributable to the project? To what extent?
 - What are the social, economic, environmental and other effects, either short-, medium- or long-term, on a micro- or macro-level?
 - What effects are intended or unintended, positive or negative?
- The three UNIDO impact dimensions are:
- *Safeguarding environment*: To what extent the project contributes to changes in the status of environment?
 - *Economic performance*: To what extent the project contributes to changes in the economic performance (finances, income, costs saving, expenditure and etc) of individuals, groups and entities?
 - *Social inclusiveness*: To what extent the project contributes to changes in capacity and capability of individuals, groups and entities in society, including vulnerable groups, and hence generating employment and access to education and training?

Summary of findings

- The project succeeded in adding significant human capacity to the industrial energy efficiency market of Iran
- Wider impact was limited due to problematic economic and political framework conditions during which energy efficiency was not a top priority as well as a project design lacking focus and consistency.
- Monitoring activities were focused to deliver the required outputs but no outcome indicators had been formulated to identify gaps in the energy efficiency market and properly track the project's outreach, replication and further activities of training participants.

Rating

Impact (or progress toward impact)

Moderately satisfactory (S)

3. Project's Quality and Performance

This section of the report addresses the quality and performance of the project, looking at five relevant evaluation areas project design, relevance, efficiency, sustainability and gender mainstreaming.

3.1 Design

3.1.1 Overall design

The design had a clear target to offer services to energy-intensive companies expected to face rising energy costs. The target groups of the project were five key industrial sectors (iron & steel, petrochemical, refinery, brick and cement). The IEE pilot project contributed to strengthening the local technical and managerial capacities on energy efficiency and therefore assisted the Government in its overall energy efficiency strategy. The project was based on two fundamental assumptions i) that economic sanctions would be (partially) lifted and ii) that the subsidy phase out plan would be followed through. Energy efficiency would have allowed the enterprises to compensate the price shock following subsidy phase out. The project would have met the needs of the energy-intensive companies if the assumptions had materialized. Since the macroeconomic situation and subsidy phase out have developed differently, energy savings might not have had the company management's priority it would have had under more favourable conditions.

Most project components were well aligned and formed an integrated approach at project design stage.

Component 4 showed shortcomings in respect to Output 4.5: The project design had set aside 16 % of the total project budget for direct industrial support to establish a *“mini scale pilot schemes to demonstrate and promote innovative engineering solutions parochial to Iran's specific conditions.* These innovative technology applications were not aligned with the training components on EnMS and SO but addressed very different technology applications and sector specific approaches. The Output would have had a wider impact if it had had a focus on applications of cross-sectional technologies linked up to the training activities. The technologies selected were sector-specific sometimes addressed factory-specific energy efficiency potentials and stood isolated from the other project Activities.

Component 5 was not fully aligned with UNIDO's in-house technical expertise and experience. While UNIDO does have extensive technical expertise in the field of capacity building and policy work, experience in the field of establishing a Revolving Fund mechanism has been much lower, so that this project was a testing ground for UNIDO to work with such mechanisms.

Continuation of the Project Design throughout the Project Implementation

The original project design could not be implemented. Whilst the project document already indicated considerable flexibility regarding the activities of the policy component 1 which eventually contained very different outputs than the original plan. The other components, too, saw significant changes. Component 2 was expanded considerably with the PMU showing much effort in the field of basic awareness training and cultural change than originally planned. The pilot projects in Component 4 tied up significant staff capacity because technical and contractual involvement of UNIDO in the project was very high. Component 5 was not implemented as

planned. The Revolving Fund could not be established until the final evaluation and the functionality of mechanism could not be reviewed.

Monitoring and Evaluation at Design Phase

The project design included a Monitoring and Evaluation Plan. M & E was budgeted with 0,6 % of the total project Budget (Figure 10) and 11 % of the project management budget. The MTR identified that due to a lack of feasible baselines, indicators and outputs M&E proved to be challenging.

Risk Management

The project document identified seven project risks

- i) delay to the phasing out of the energy subsidies,
- ii) low government commitment to energy efficiency,
- iii) economic sanctions remain in place,
- iv) failure of Iranian counterpart to fully co-operate in the project,
- v) failure to achieve outcomes after successful delivery of outputs (long term sustainability),
- vi) market risk, and
- vii) implementation risk.

The risks i-iv were rated as medium, risks v-vii as low.

The risk assessment underestimated the effect of increased sanctions and insufficient subsidy phase out.

In respect to risk i. “*delay to the phasing out of the energy subsidies*” the compensation measures suggested that “*close links between the Programme and IFCO will help convince the Iranian government*” has overestimated the project’s possible influence.

Particularly in respect to risk iii “*economic sanctions*”, the risk value “*medium*” for sanctions to remain in place seems overly optimistic. The choice to include two sectors, the petrochemical and the refinery sector, sectors most heavily targeted by sanctions made the project additionally vulnerable to adverse effects among them the difficulties to import the equipment for the test rig, but also potentially deviated managerial attention. In respect to the mitigation activities the project document made the argument that the project’s focus on no/low cost EE opportunities, would reduce “*reliance on International technologies and equipment [...] to a minimum*”. This assessment clearly wrongly assumed that several project components, particularly the pilots and the Revolving Fund would require imports of goods, services and funds.

Evaluation Criteria B) project design	
<ul style="list-style-type: none"> - The problem, need or gap to be addressed by the project is clearly identified, with clear target beneficiaries? - The project design was adequate to address the problems at hand? <ul style="list-style-type: none"> - Is the project consistent with the Country's priorities, in the work plan of the lead national counterpart? Does it meet the needs of the target group? Is it consistent with UNIDO's Inclusive and Sustainable? - Industrial Development? Does it adequately reflect lessons learnt from past projects? Is it in line with the donor's priorities and policies? - Is the applied project approach sound and appropriate? Is the design technically feasible and based on best practices? Does UNIDO have in-house technical expertise and experience for this type of intervention? - To what extent is the project design (in terms of funding, institutional arrangement, implementation arrangements...) as foreseen in the project document still valid and relevant? - Does it include M&E plan and adequate budget for M&E activities? - <i>Risk management</i>: Are critical risks related to financial, social-political, institutional, environmental and implementation aspects identified with specific risk ratings? Are their mitigation measures identified? Where possible are the mitigation measures included in project activities/outputs and monitored under the M&E plan? 	
Summary of findings	
<ul style="list-style-type: none"> - The design was not very clear and had significant weaknesses. The project tried to carry out too many diverse activities and lacked focus. - Though the situation of economic sanctions deteriorated significantly shortly before and during the (re)submission time of the project document, the design underestimated the risks in respect to economic sanctions remaining in place and the phase out of energy subsidies - Risk mitigations were ill-chosen and particularly the inclusion of the Petrochemical and the Refinery sector as key target sectors made the project vulnerable to the economic sanctions and the oil embargo passed in 2012. - Output RO-4.5. was not embedded appropriately in the project and required an excessive amount of time and resources. After the MTR it should have been considered to fundamentally redesign this output. - For the establishment of the Revolving Fund UNIDO lacked the necessary experience, the local context made it particularly challenging to complete this component. - 	
Rating	
B) Project design	Moderately satisfactory

3.1.2 Logframe

The Midterm Review stated that *“The project results framework developed for this project is weak and does not correspond to the veritable baseline of conditions concerning industrial energy efficiency in Iran, it contains only partly baseline indicators which are feasible.”* The Midterm Review recommended: *“Therefore, a new baseline has to be set where necessary, and based on this baseline, new feasible and realistic outputs and target indicators for the project in the project*

results framework ought to be set. The new project results framework has to be approved by the Project Steering Committee (PSC) in close consultation with the GEF Coordination Unit and UNIDO Office for Independent Evaluation.”

The new project results framework - though an improvement from the original document - has not been drafted and reviewed carefully. Some examples of the issues identified are:

- In the new framework activities on different topics appear in the same output, e.g. Revised Output RO-3.4 includes i. 100 staff trained in system optimization and ii. 5 conference exhibitions linked to system optimization organized. The mixing of different activities in the same output is contributing to the logframe appearing badly structured
- Trainings on one topic are found in different outputs: system optimization training is found in RO-3.7, 3.4 and 3.3. Seemingly the same training of energy audit skills appears in output 4.2 and in output 4.3
- Output RO-2.3 "30 Iranian Case Studies": though the case studies are published on the website, they are actually an output of the implementations planned in Component 3 or 4.
- Components include thematically unfit topics: Component 3 includes awareness raising activities such as conference exhibitions. Component 4 includes several outputs on training (training on benchmarking methodologies, energy audit skills, training of trainers).
 - E.g. Revised Output 4.4: The content of the output has been revised from "installation of metering software at >100 industrial sites" into RO-4-4 i. a training for 10 trainers and ii) one pilot project in the petrochemical industry. It remains unclear why the training component remains in Component 4 instead of having been moved to Component 3.
- Output titles and content are not the same:
 - RO-4.3 is titled "walk-through energy audits" but includes a training activity "20-30 trained technical staff with energy audit skills". The walk-through 600 audit reports to be carried out by IFCO are missing from the outputs, but appear in the revised outcome target.
 - RO-4.4 "Metering, Monitoring and Targeting equipment" includes i. "training of trainers workshop on M&T" as well as ii. online monitoring for 1 Pilot on M&T in the petrochemical industry.

Impact Indicators

The impact indicators of the logframe were "1. *Cumulative energy saved, 2. Cumulative CO₂ emissions avoided, 3. USD energy savings (at international prices), and 4. USD millions of EE technology investment. Additional benefits. M&E tracking to be agreed probably as bottom-up assessment: Reduced dust, NOx, SOx, fugitive CH₄ and other emissions, plus wastes arising: to land and water. Reduced Consumable item losses: metal, raw materials, etc.*" The indicator set "additional benefits" was not operationalized and not monitored.

The indicators can track the achievements by participating companies but are insufficient to track the transformation of the energy efficiency market in the wider industry.

Outcome indicators

The revision would have been an opportunity to add adequately operationalized outcome level indicators. Unfortunately, this chance was missed (Table 11: Project outcome (revised and original))

Outcome #	Project strategy	Indicator	Baseline	Primary target	Target
Revised 1.1	Adoption of a market-based national carbon trading scheme with Energy Efficiency Certificates in Iran	Availability of market-based local carbon market and trading with Energy Efficiency Certificates in place in Iran	No market-based local carbon market and trading with Energy Efficiency Certificates	1. Agreed National Energy and CO2 saving targets to harmonize with the project Objectives. 2. Series of bespoke energy agreements with large energy intense Industry in Iran 3. Series of group Energy agreements with SMEs in "Big 5" Sectors	Market-based local carbon market and trading with Energy Efficiency Certificates in place in Iran National standard framework for certifying energy managers and energy auditors
Original project results framework 1.1	1. Liaise with Iranian Government regarding: National Targets and Milestones regarding EE Legislative in Iran and their need on training 2. Facilitate creation of an incentive-based local carbon market and trading with Energy Efficiency Certificates in Iran	Availability of Incentive-based local carbon market and trading with Energy Efficiency Certificates in place in Iran	No incentive-based local carbon market and trading with Energy Efficiency Certificates		<i>Incentive-based local carbon market and trading with Energy Efficiency Certificates in place in Iran</i>

Outcome #	Project strategy	Indicator	Baseline	Primary target	Target
Revised 2.1	1. Dedicated Programme website 2. International EE Best Practice /good practice EE advice 3. Other information sharing	Availability of sharing platforms on Industrial Energy Efficiency in Iran	Information on IEE in Iran exists partly on IFCO, SABA and Department of energy (DoE) websites. No common platform on sharing knowledge on IEE in Iran	1. Building and Maintaining the programme website 2. Making BREF International Benchmarks, GP guidance and case studies, etc. in Farsi 3. Advertising events, publications, other programmes	Sharing of good EE practices through a website, library. Available case studies and Data bank on EE and low carbon technologies
Old project results framework 2.1	<i>1. Dedicated Programme website 2. International Best Practice /good practice EE advice 3. Other information sharing</i>	<i>Availability of sharing platforms on Industrial Energy Efficiency in Iran</i>	<i>Information on IEE in Iran exists partly on IFCO, SABA and DoE websites No common platform on sharing knowledge on IEE in Iran</i>		<i>Sharing of good EE practices through a website, library. Available case studies and Data bank on EE technologies</i>
Revised 3.1	1. Energy management, Energy performance indicator 2. System optimization 3. Financial Appraisal 4. Other Conference/ Exhibitions/ etc. linked to System optimization workshops 5. Capacity building 6. Energy	Identification of number of enterprises for the on-site EnMS training, and performing trainings and benchmarking as per outputs	since 2011, some Energy management systems in line with ISO50001 have been implemented in Industry, however the reference data is not		<ul style="list-style-type: none"> • 3 introductory EnMS training workshops to 100 managers in 50 large enterprises, ½ day each • 100 managers trained in financial appraisal (2 d workshop) • 600 staff trained in system optimization (approx. 20 x 1 to 3-day workshops)

Outcome #	Project strategy	Indicator	Baseline	Primary target	Target
	benchmarking training		available Since 2011, IFCO and also some private institute like TÜV Nord Iran presented some EnMS training courses but there is no reference data and consolidated information . Considering the fact that ISO50001 has not been obligated in Iran up to now, the training was limited.		<ul style="list-style-type: none"> • 20 Benchmarking and M&T workshops of 3-day duration • 20 conference/exhibitions linked to system optimisation
Old project results framework 3.1	<ol style="list-style-type: none"> 1. Energy management 2. Financial Appraisal 3. Other Conference/ Exhibitions/ etc. 4. Equipment training/ capacity building 	Identification of number of enterprises for the on-site EnMS training, and performing trainings and benchmarking as per outputs			Performing the on-site EnMS training in minimum 8 large enterprises, and performing trainings and benchmarking as per outputs
Revised 4.1	<ol style="list-style-type: none"> 1. Energy Performance benchmarking 2. Detailed follow-up technical energy audits 3. Online monitoring 4. Pilot schemes/ 	<ul style="list-style-type: none"> • Implementing of demonstration industrial energy efficiency projects at number of pilot sites 			<ul style="list-style-type: none"> • Benchmark reports of 5 sectors/ sub-sectors with large numbers of similar activities. • Repeat benchmark after 2-3 years • >600 walk-through audit reports

Outcome #	Project strategy	Indicator	Baseline	Primary target	Target
	demonstration projects	within the Big 5 Industries, <ul style="list-style-type: none"> Implementing 2-3 online monitoring projects in big 5 sectors 			<ul style="list-style-type: none"> >400 “detailed study” reports 60 x Iranian Good practice case study documents Pool of auditing equipment held & available through Project Office Approx. 100 sites supported for EMS meters and software Grants of (typically) USD 500k for 4 pilot schemes/ demos
Old project results framework OUTCOME 4.1	<ol style="list-style-type: none"> Energy Performance benchmarking Walk through energy audits Detailed follow-up technical energy audits Good practice case studies on IEE in Iran Energy Audit Equipment Metering and M&T Pilot schemes/demonstration projects 	<i>Implementing of demonstration industrial energy efficiency projects at number of pilot sites within the Big 5 Industries, training and performing of number of walk-through and detailed follow-up technical energy audits, and training in M&T</i>			<i>Implementing of demonstration industrial energy efficiency projects at minimum 4 pilot sites within the Big 5 Industries, training and performing of number of walk-through and detailed follow-up technical energy audits, and training in M&T as per output targets accordingly</i>

Outcome #	Project strategy	Indicator	Baseline	Primary target	Target
Revised 5.1	1. Create links to funding mechanisms for IEE projects in Iran 2. Revolving Fund for EE support in Iran	Establishment and administration of a Revolving Fund for IEE in Iran	No mechanisms for financial support of the companies that want to implement IEE action plans in Iran	A "Revolving Fund " with initial input from the GEF/UNIDO/IFCO programme of > USD 6.5 M (USD 1.5 M from the GEF Grant, and USD 5 M secured by IFCO) established	A "Revolving Fund " with initial input from the GEF/UNIDO/IFCO programme of > USD 6.5 M (USD 1.5 M from the GEF Grant, and USD 5 M secured by IFCO) established
Old project results framework OUTCOME 5.1	1. Create links to funding mechanisms for IEE projects in Iran 2. Revolving Fund for EE support in Iran	Establishment and administration of a Revolving Fund for IEE in Iran	No mechanisms for financial support of the companies that want to implement IEE action plans in Iran		A "Revolving Fund " with initial input from the GEF/UNIDO/IFCO programme of > USD 6.5 M (USD 1.5 M from the GEF Grant, and USD 5 M secured by IFCO) established

lists the original and revised outcomes).

Of the 7 outcome indicators, all but indicator 1.i⁴⁴ restate output results and does not sufficiently differ from the outputs on the level below: Outcome 2.i. *Availability of sharing platforms on Industrial Energy Efficiency in Iran*”, Outcome 3.i. *“Identification of number of enterprises for the on-site EnMS training”*, Outcome 3.ii *“Performing trainings and benchmarking as per outputs*, Outcome 4.i. *Implementing of demonstration industrial energy efficiency projects at number of pilot sites within the Big 5 Industries*, Outcome 4.ii. *“Training and performing of number of walk-through and detailed follow-up technical energy audits, and training in M&Ts”* and Outcome 5.i *“Establishment and administration of a Revolving Fund for IEE in Iran”*.

The lack of indicators means that intended outcomes following the outputs are neither specified nor measurable. To give an example, Output 3.2i *“Training for number of key staff from all sectors, including: Energy Management and EMS (ISO 50001 or similar accreditation)*, would have benefited from an outcome-level indicator tracing how many of the participants introduced an EnMS at their factory.

⁴⁴ Outcome indicator 1.i.: *“Availability of incentive-based local carbon market and trading with Energy Efficiency Certificates in place in Iran”*.

Output Indicators

The revised logframe is equipped with 26 outputs and 35 targets. Some output indicators in the revised logframe are insufficiently operationalized:

- *Revised Output 1.1.: “Established an incentive-based local market for trading with Energy Efficiency Certificates in Iran”* → The indicator is an outcome statement not an output indicator.
- *Revised Output 4.3: “General/ walk-through audit finding reports for Number of industrial sites, a) Short, 1-3 day audits, b) Longer (bespoke) 4-8 day audits), target: “Est 20-30 trained technical staff with energy audit skills, Updating the minimum requirements for an energy audit and improvement of their audit skills”* → The target does not fit with the indicator.
- Several indicators lack the unit to be measured in: *”3.2. Introductory training sessions to number of managers in Big 5 industries and SMEs (bespoke 1-1 direct support for large Organisations; general support for SMEs), Formal training in EnMS and systems optimisation: number of managers in in Big 5 industries and SMEs, Extensive on-site EnMS training for number of enterprises;”* *“3.6 Training of managers in financial assessment at 3-day workshops”, “3.7 Training in system optimisation technical, equipment capacity building Specific training for technical equipment” and “5.2.Training for the companies on Business plan development to attract EE investments.”* → the indicators should state “number of trainings” or “number of trainees” or “number of enterprises sending staff to trainings”.

The output indicators used were either quantitative (How many?) or binary (yes / no). The project design would have benefited from indicators measuring the quality of the outputs, such as “satisfaction with training material provided”.

Gender was not considered at the project design phase. The revised project results framework did not prescribe to collect indicators sex-disaggregated. The PMU did collect this data nevertheless.

Sources of Verification

The revised project results framework lists the following data sources to measure the output indicators

Table 8: Data sources listed in the revised project results framework

Data sources	Achievement of an output
<ul style="list-style-type: none"> • Review of workshop carried out, people trained and framework for White Certificates for Iran recommended (Output 1.2) • Log of “hits” and downloads from site (Output 2.1) • Participant and their evaluation forms from events (Output 3.2) 	<ul style="list-style-type: none"> • Framework for EE Trading in Iran best on international best practice (Output 1.1) • Website up and operation (Output 2.1) • Project documents, copies of reports, studies, etc. (Output 2.2)

<ul style="list-style-type: none"> • Sites to upload to the programme website, Energy Policies, Actions Plans as well as 'Register of Investigations and Actions' (Output 3.2) • M&T 'logbook' demonstrating M&T analysis and target setting techniques (Output 3.2) • Findings of site monitoring activities (Output 3.2) • List of trained trainers, evaluation forms (Output 3.3) • Participant logs/ evaluation forms (Output 3.3, 3.5., 3.6) • Survey of capacity of trainers at project start, mid-term and end. • Regular monitoring and reporting of support consultants (Output 4.2) • Walk-through audit reports (Output 4.3) • List of participants evaluation form of training (Output 4.4) • Participant logs/ evaluation forms (Output 5.2) 	<ul style="list-style-type: none"> • Copies of case studies on IEE in Iran (Output 2.3) • Data bank on energy efficiency technologies (Output 2.4) • Acceptable quality training material available for use. (Output 3.1) • Benchmark reports (Output 4.1) • Projects supported and value of the support (Output 4.5) • Number of projects implemented using financing from the Revolving Fund for IEE in Iran (Output 5.1) • Existence of Revolving Fund (Output 5.1)
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Source: Revised project logframe.

Most of the data sources listed are the existence of outputs (right column in Table 8). The other data sources chosen for the outputs can be considered suitable, as they are cost-effective, reliable and readily available to verify the status of the output indicators before project completion. Data sources to track changes on outcome level had not been included.

On the impact level the original data sources foreseen were: *i) Top-down (National statistical level) data gathering sets and ii) Bottom-up monitors for reporting of energy and output data, with adjustments to BY to accommodate changes to output mix.* It is questionable whether top down data on national statistical level would be readily available.

Assumptions in the Logframe

Assumptions are those external factors over which the project has no influence, but which are relevant for the functioning of the logic chain. For changes to happen along the causal pathways towards outcomes and impact, a number of external conditions need to be met and several external factors need to be present. The original project logframe used the assumptions listed in Table 18, which groups them by stakeholder group / topic.

Some of the assumptions do not reflect the proper level: outcome assumptions can be found at output level. Among these assumptions are for example "*There is no major deterioration in the macro economic and political climate, and Iran emerges from the current financial crisis within the next two-three years.*" and "*Macro economic conditions are such that investment in EE continues to be attractive. Banks have capital for investment.*" They describe well, which barriers effect the logic chain on a higher level but are found on the output level in the original framework.

Another assumption "*Revolving Fund: By 2014/5, the programme will have made 3 years' worth of lending at 1.5 y payback*" is rather an output target rather than an assumption.

A key omission in the project document as well as the revised logframe is the topic of international sanctions. While maybe disguised in the formulation “*There is no major deterioration in the macro economic and political climate.*” Sanctions in contrast to other macroeconomic events make the import of technology extremely difficult and have slowed the project significantly since lengthy interactions with the Sanctions Committee were necessary. The sanctions which were tightened throughout the project period were targeting in particular the energy sector which participated in the project. Other sectors were heavily effected due to the economic slowdown, by the difficulties to import goods and the problems to transfer funds.

Evaluation Criteria for B2) logframe	
<ul style="list-style-type: none"> - <i>Expected results:</i> Is the expected result-chain (impact, outcomes and outputs) clear and logical? Does impact describe a desired long-term change or benefit to a society or community (not as a means or process), do outcomes describe change in target group's behaviour/performance or system/institutional performance, do outputs describe deliverables that project will produce to achieve outcomes? Are the expected results realistic, measurable and not a reformulation or summary of lower level results? Do outputs plus assumptions lead to outcomes, do outcomes plus assumptions lead to impact? Can all outputs be delivered by the project, are outcomes outside UNIDO's control but within its influence? - <i>Indicators:</i> Do indicators describe and specify expected results (impact, outcomes and outputs) in terms of quantity, quality and time? Do indicators change at each level of results and independent from indicators at higher and lower levels? Do indicators not restate expected results and not cause them? Are indicators necessary and sufficient and do they provide enough triangulation (cross-checking)? Are they indicators sex-disaggregated, if applicable? Is the indicator SMART? - <i>Sources of verification:</i> Are the sources of verification/data able to verify status of indicators, are they cost-effective and reliable? Are the sources of verification/data able to verify status of output and outcome indicators before project completion? <p>Assumptions: Are key assumptions properly summarized and reflecting the proper level in the results chain in the logframe?</p>	
Summary of findings	
<ul style="list-style-type: none"> - The revised project logframe shows room for improvement and lists not all the outputs the project produced - A series of output indicators are not carefully formulated (some indicators were not SMART and wrong targets were assigned). Outputs were not logically grouped and similar activities appeared in several outputs. - The revised project logframe does not have adequate indicators at outcome level 	
Rating	
B2) logframe	Moderately unsatisfactory

3.2 Relevance

Work on energy efficiency issues is fully aligned with the UNIDO mandate to “*promote industrial development and co-operation on global, regional and national as well as on sectoral levels*”.⁴⁵ The project was consistent with UNIDO’s mandate and its comparative advantage within the UN family.⁴⁶ UNIDO has been successful in introducing and promoting energy management standards as the principal market-based policy tool to make energy efficiency part of best industry practice. UNIDO is internationally recognized as a leading advocate and provider of technical assistance on industrial energy efficiency policies, energy management standards and industrial energy systems optimization.

The project was funded as part of GEF-4th strategic program 2. Climate change Strategic Program 2: 2.2 “To promote energy-efficient technologies and practices in industrial production and manufacturing processes”.⁴⁷ (See textbox 2). The project was in line with many of the element of the strategic program, particularly in respect to the increased deployment of EE technologies and saving practices addressing steam systems. Additional work on electricity generation, e.g. in combined heat and power (CHP) systems would have even increased the accuracy of fit.

Textbox 2 - Strategic Program 2: *Promoting Energy Efficiency in the Industrial Sector*

This program will promote energy efficiency in the industrial sector, including the deployment and diffusion of energy-efficient technologies and practices in industrial production and manufacturing processes. A successful outcome will be the increased deployment of energy-efficient technologies and adoption of energy-saving practices. Indicators of success will be tons of CO₂eq avoided, volume of investment in new, more efficient plants and equipment, and the quantity of energy saved. This strategic program covers the energy systems in industrial manufacturing and processing, including combustion, steam, process heat, combined heat and power, electricity generation, and other public utilities. SMEs in developing countries demonstrate significant potential for improved efficiency and reduced GHG emissions as they frequently have limited access to the technology and capital necessary for improving their facilities. Adoption of an appropriate energy pricing framework is essential to ensure project effectiveness.

Project Alignment with Iran’s Priorities

The project is in line with the policies of the Islamic Republic of Iran on energy efficiency, in particular with the 2011 Energy Conservation Law aiming to halve energy intensity in Iran by

⁴⁵ UNIDO (1979) Article 1.

⁴⁶ “UNIDO should serve as a global facilitator of knowledge and advice on policies and strategies towards achieving inclusive and sustainable industrial development; and should focus on the three thematic priorities in which it has comparative advantage and expertise: productive capacity-building, trade capacity-building, and sustainable production and industrial resource efficiency” (UNIDO, 2013).

⁴⁷ GEF (n.d.)

2020. The act also requires industrial consumers to put an energy management unit in place to carry out energy audits and optimization. The Ministry of Petroleum is responsible for oil, gas and nuclear energy in Iran and IFCO, the national counterpart to the IEE project is responsible for optimizing energy consumption and increasing energy efficiency.

Evaluation criteria for C1) Relevance	
<ul style="list-style-type: none"> - How does the project fulfil the urgent target group needs? - To what extent is the project aligned with the development priorities of the country (national poverty reduction strategy, sector development strategy)? - How does project reflect donor policies and priorities? - Is the project a technically adequate solution to the development problem? Does it eliminate the cause of the problem? - To what extent does the project correspond to UNIDO’s comparative advantages? <p>Are the original project objectives (expected results) still valid and pertinent to the target groups? If not, have they been revised? Are the revised objectives still valid in today’s context?</p>	
Summary of findings	
<ul style="list-style-type: none"> - The projects objectives are in line with national energy priorities and have enjoyed strong participation of local stakeholders in project implementation. - The project is relevant to UNIDO - The project is relevant to the GEF focal area of climate change 	
Rating	
C1) Relevance	Satisfactory

3.3 Efficiency

This section gives an overview of the extent to which the project has produced results within the expected budget and time frame.

Results within Project Budget

Overall the project could not implement the expected results within the original budget due to unrealistic implementation expectations.

The original share in budget allocation per component largely remained in place during project implementation. Component 1 was the only component that increased its share and doubled in size to USD 1.8 M.

In May 2018 most components had not yet spent their allocated budget (compare Figure 16 in Annex III). Only half of the allocated budget for Component 2 had been used even though far more outputs had been carried out. Also, Component 3 had so far only used 50 % of the funds allocated. Expenditure in Component 4 was 85 % of originally planned. Expenditure in

Component 5 with 22 % of originally planned was particularly low because the Revolving Fund was not active yet.

Results within planned Timeframe

The initial duration of the project was five years, (July 2012 to July 2017). The received an extension till December 2018 (Table 9). The project started with a considerable delay, because the PMU could not be established until June 2013. Most project activities therefore did not start until Q 3 of 2013, only the detailed energy audits and the selection of demonstration projects both carried out by IFCO had been carried out.

The comparison of the early workplan from November 2013 with the final workplan of 2018 (compare Table 19 in Annex III) show the following:

- Much more time was spent on the policy Component 1 then originally envisioned
- Component 2 was expanded considerably in terms of number of outputs and time spent (but remained within budget)
- The demonstration projects (Output 4.5) was intended to be finished by mid-2016 but could not be finished until Q3 2018
- The set-up of the Revolving Fund was supposed to start by July 2013 but did not begin until Q 3 2016, because prior feasibility studies were carried out

Significant delays occurred in Component 4 and 5 because procurement procedures for the demonstration projects, particularly a Trust Fund Agreement, and the terms of references agreed upon with the bank administering the Revolving Fund demanded lengthy negotiations.

Output 4.5. bound too many managerial resources, considering the enormous difficulties associated with the international procurement of technology and import into Iran a different approach, e.g. a change of demonstration companies or a considerable reduction of the investment size would have been more efficient.

Table 9: Original workplan versus implementation of the project

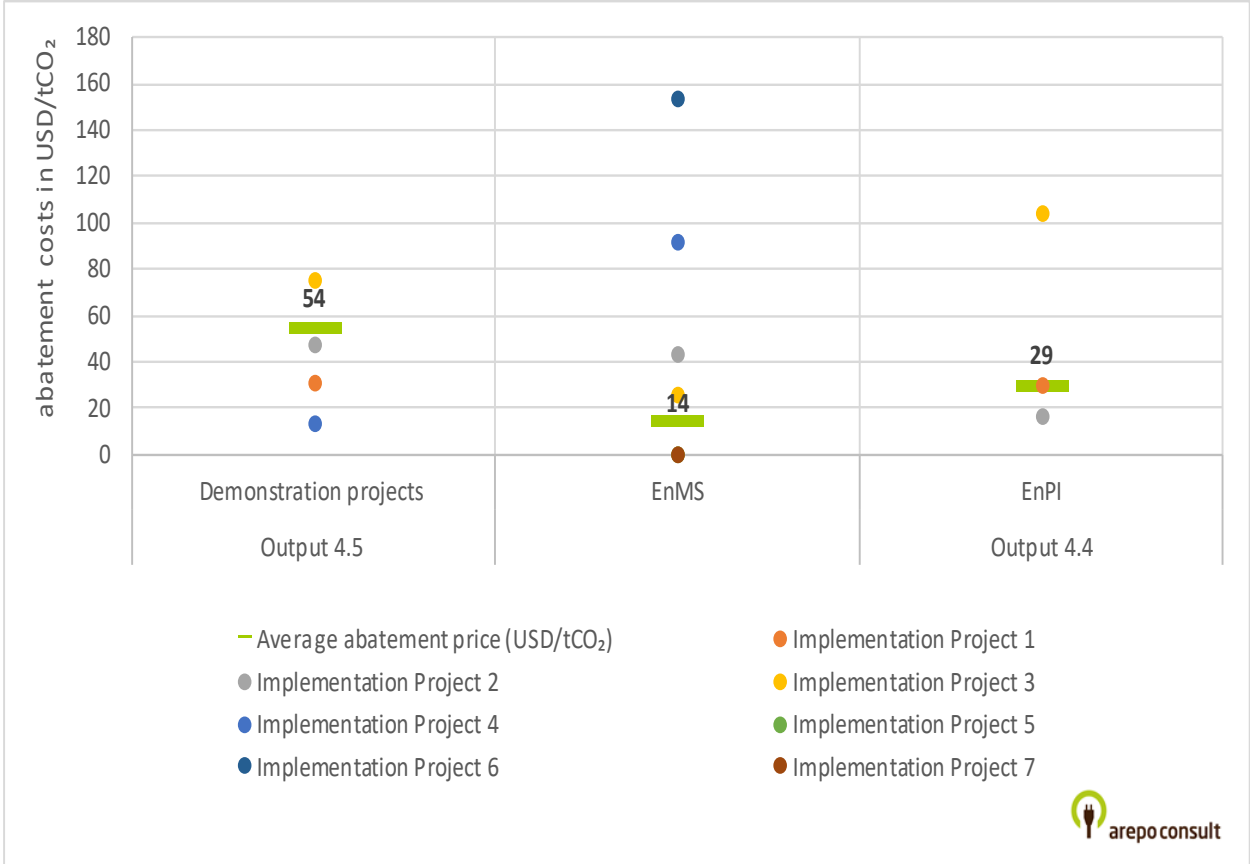
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
Original project timeline	Planned implementation start July 2012		Mid-term Evaluation Dec 2014			Project Closing Date July 2017	
Project implementation	Actual project implementation start July 2012			Mid-term Review date: April 2015			Project close: July 2018 Terminal Evaluation: December 2018

Source: PMU (2012).

Cost effectiveness of the Intervention

The project achieved an average abatement costs of USD 54 / tCO₂ for the demonstration projects, of USD 29 / tCO₂ for EnPI implementation and USD 14 / tCO₂ for EnMS implementation (Figure 8). This data though should not be over-interpreted because the averages are based on a very low number of implementation projects (4 “test rig” demonstration projects, 7 EnMS projects and 3 EnPI projects). Nevertheless, the data indicates that the EnMS and EnPI project approaches had a higher cost effectiveness and are a more efficient allocation of resources than the demonstration rigs.

Figure 8: Abatement costs of the projects implemented



Source: own graph based on project monitoring data.

Evaluation Criteria C3) Efficiency	
<ul style="list-style-type: none"> - How economically are the project resources/inputs (concerning funding, expertise, time...) being used to produce results? - To what extent were expected results achieved within the original budget? If no, please explain why. - Are the results being achieved at an acceptable cost? Would alternative approaches accomplish the same results at less cost? - What measures have been taken during planning and implementation to ensure that resources are efficiently used? Were the project expenditures in line with budgets? - Could more have been achieved with the same input? - Could the same have been achieved with less input? - How timely was the project in producing outputs and outcomes? Comment on the delay or acceleration of the project's implementation period. - To what extent were the project's activities in line with the schedule of activities as defined by the project Team and annual Work Plans? - Have the inputs from the donor, UNIDO and government/counterpart been provided as planned, and were they adequate to meet the requirements? 	
Summary of findings	
<ul style="list-style-type: none"> - The project's original targets were overly ambitious, most of the revised outputs (11 out of 20) could be achieved. The budget expenditure until May 2018 was lower than the original because funds for the Revolving Fund could not be transferred into Iran. - The outputs could not be delivered within the original time line, the project was extended by 17 months. The project has met some delays in the establishment of the PMU and was particularly hampered in Component 5 by the difficulty of reaching an agreement with the responsible bank. Tendering of material which was carried out internationally was significantly delayed because of a lack of offers. 	
Rating	
C3) Efficiency	Satisfactory

3.4 Sustainability

At the time of the Terminal Evaluation an exit strategy had not been formulated. The PMU addressed the need for an exit Strategy in the PSC meeting of August 19th 2015 and in the PSC meeting of July 25th, 2016.^{48,49} Since many project activities remained to be finalized within a limited remaining project time certain doubt remains whether the staff would have time resources to develop such a strategy.

⁴⁸ The development of the post project sustainability plan was supposed to commence in November 2015.

⁴⁹ The last decision was to develop a post project sustainability plan. The plan will be initiated in the next 6 months after July November.

Notwithstanding the lack of an exit strategy many achievements of the project will continue beyond the project's lifetime. The key result of the project are the trained human resources it leaves behind as a legacy. The 406 attendees in on-site and expert training sessions will continue to share and apply their knowledge.

The project further on produced certain information material mainly the website, three video clips and one animation video "Save the Earth" on climate change. The IEE website <http://en.ieeiran.ir/> contains the EnMS material, industry-specific EE information and the case studies for download. At this stage it is planned that the project website will be remain online until 2023. Some of the videos will also be available for some time to come on website such as <https://www.aparat.com>.

Energy savings will continue from the EE measures implemented as a result of Component 3 and 4.

The Revolving Fund mechanisms had not been put into operation by the time of the Terminal Evaluation. While the modalities and contracts are finalized, it is currently impossible to transfer the funds to Iran. Whether it will eventually be successful is not clear yet. Whilst the original project document foresaw 3 years of lending at 1.5 years payback within the project lifetime, considerable doubt was raised by interviewees to what extent a revolving mechanism was to be established. Rather several interviewees were of the opinion that the mechanisms would remain a one-time disbursement of funds. No agreements had been made with the implementing bank to run the mechanism for a second project cycle. These doubts were reinforced by the fact that after a repayment period of several years with inflation and currency devaluation being significant at the time of transfer of the funds, the real value of the fund would have diminished significantly, and no commitment has been made yet to replenish the fund from public sources.

Environmental risks:

From an environmental perspective, sustainability of project outcomes is *likely* (L) based on the assessment that there are minimal environmental risks. IEE measures that have been promoted on this project are removing a number of environmental risks such as emissions from fossil fuel combustion. In future projects, more careful attention could be paid to rebound effects, which are particularly important in the case of working with industrial consumers. Considerable rebound effects can be expected from working directly with the fossil fuel producing industry. Since at this stage decarbonisation pathway for refineries seem rather limited, the transformational contribution of investing in refineries seem to be questionable or at least would demand justification. In contrary the energy efficiency investments in the fossil fuel producing industry is connected with significant rebound effects since it increases profitability of production sites and/or decreases market prices. Therefore, the environmental risks for the project contributions to the fossil fuel industry is rated as unlikely.

Evaluation Criteria C4) Sustainability of benefits	
<ul style="list-style-type: none"> - Will the project results and benefits be sustained after the end of donor funding? - Does the project have an exit strategy? C6: To what extent have the outputs and results been institutionalized? - <i>Financial risks</i>: What is the likelihood of financial and economic resources not being available once the project ends? - <i>Socio-political risks</i>: Are there social or political risks that may jeopardize the sustainability of project outcomes? 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? Do the various key stakeholders see that it is in their interest that project benefits continue to flow? Is there sufficient public/stakeholder awareness in support of the project's long-term objectives? - <i>Institutional framework and governance risks</i>: Do the legal framework, policies, and governance structures and processes within which the project operates pose risks that may jeopardize the sustainability of project benefits? Are requisite systems for accountability, transparency and required technical know-how in place? - <i>Environmental risks</i>: Are there environmental risks that may jeopardize the sustainability of project outcomes? Are there project outputs or higher level results that are likely to have adverse environmental impacts, which in turn might affect the sustainability of project benefits? 	
Summary of findings	
<ul style="list-style-type: none"> - The project will leave a legacy with its contribution to human capacity in the energy efficiency sector of Iran. - The implementation projects supported by the project will continue to achieve emission reductions. Particularly for the project that implemented an EnMS it can be expected that they will continuously achieve higher energy efficiency levels. 	
Rating	
C4) Sustainability of benefits	Moderately likely (ML)

3.5 Gender Mainstreaming

The project design did not consider gender mainstreaming, neither did the monitoring framework include indicators to track gender, establish a baseline or a needs assessment. UNIDO's gender policy was issued in 2015 but has not been included as a part of project activities retrospectively. Though the Mid-Term Review suggested to develop a new project results framework with new baselines and feasible realistic outputs and targets, indicators tracking gender compositions was not included during this process. Though not laid out in the monitoring framework, the project team did track gender composition of training participants.

3.5.1 Gender Composition of the Steering Committee

For the gender composition of the Steering Committee the following methodology was applied: basis for the assessment was the presence of females as representatives of members and the presidency in each individual meeting.⁵⁰ This calculation approach counts each individual one time for each meeting, regular participants do appear up to six times in the count. Based on the six PSC meetings a summative total was formed. Over the course of the project the Steering Committee meetings were attended by 44 representatives of whom 43 % were female (Figure 17 in Annex III).

Gender Composition of Project and Evaluation Team and Personnel hired

Gender Composition of Project and Evaluation Team

Since only limited information about the project team was available only the indicator “**Share of females in list of staff employed by the project (name count)**” can be reported. Additional information on payments (salaries and bonuses) made to the individuals or full-time work equivalents would be more adequate to reflect the gender composition, but this data was not available, therefore the list of people was taken as a fall-back. The project employed over the course of the project seven different staff members out of which three were female (71 %). The National Project Coordinator as well as the Project Manager are female. The evaluation was conducted by two individuals for the mid-term and three for the final review. The share of females in these teams was 60 %. Figure 18 shows the result for all the assessments carried out for project management staff, the evaluation team and international consultants hired.

Gender composition of international experts and national trainers

Further aspects of gender composition to assess are the gender composition of i) international experts and ii) national trainers hired for training purposes. As shown in Figure 18, among the nine international experts no female expert was hired by HQ. International female experts can function as role models for female participants and normalize the presents of females in the field for male colleagues. The wish for a female “role model” among the international experts was shared by the female trainees interviewed. The choice of experts to be exclusively male has to be considered a missed opportunity to promote females in the IEE field in Iran. Data on the gender desegregation of national trainers was not available.

Gender composition of beneficiaries

Beneficiaries were grouped according to their participation in training activities. Overall females only represented 17 % or 321 of the 1,898 participants (this includes a number of duplicates since some participants joined more than one activity). As can be seen in

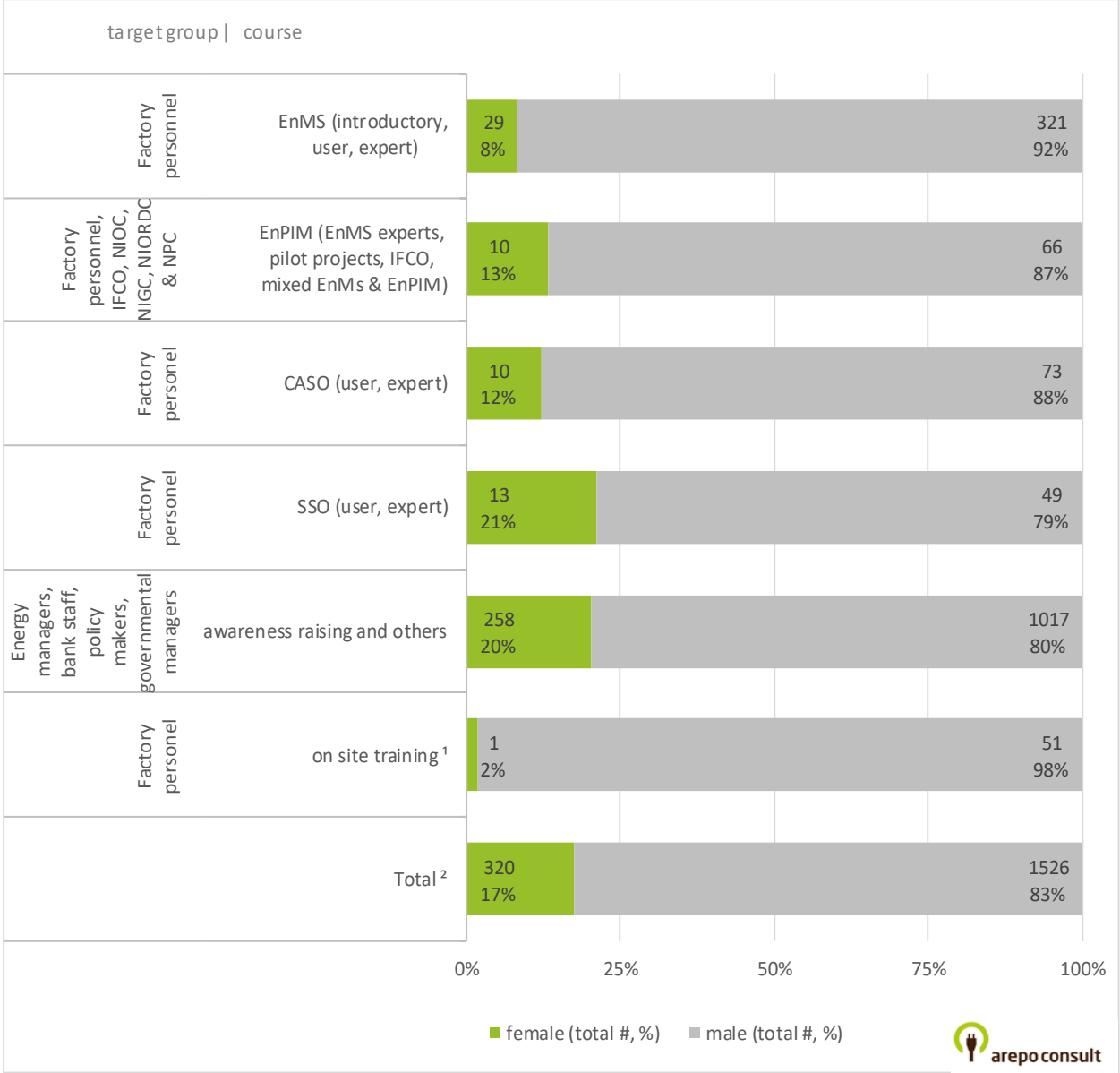
Figure 9 female participation was the lowest in on-site training at pilot sites (2%), EnMS (8 %), CASO (12 %) and EnPI (13 %) trainings and somewhat higher in the SSO training (21 %).

Besides number of participants another important issue is, to evaluate the quality of the course and relevant gender specific experiences or barriers. Examples of such barriers can be if training participation collides with care taker duties or a whether female participants felt they could participate in the training on an equal footing as male participants. The evaluation team could not

⁵⁰ The presence of non-voting observes was not taken into account.

collect a representative number of statements from female training participants about their gender specific experience in the training. One statement collected was the perception that managers of companies would prefer sending male colleagues rather than females to trainings.

Figure 9: Gender composition of project beneficiaries



¹ covers on-site training at demonstration project sites (Hormozgan cement, Abadan oil refining company, Esfahan steel company, Diana brick) as well as on-site training on non-energy benefits at Regal petrochemical, Sufian cement and Sarooj cement.

² The total number sums up training participants of different qualities of training and includes a significant number of duplicates, since some participants joined more than one activity.

Source: Own graph based on PSC (2017).

3.5.2 Results on Gender Mainstreaming

Though in 2015 the gender policy was endorsed by UNIDO, the project design did not include any mechanisms to encourage or facilitate the participation of females in the project’s activities, no rating will therefore be applied to this criterion. Nevertheless, the results from this analysis can serve as a baseline or for comparisons with current and future projects: Average share of females attending the Steering Committee meeting was 43 %. For the project team, based on the list of staff (name count) the share of females was 71 % with the Project Manager as well as the Project Coordinator being females. The share of females in the Mid-Term Review and evaluation team was 60 %. The international experts were exclusively male. The share of females in all training activities was on average 17 % with a high of 21 % in SSO trainings and a low of 2 % during training at pilot sites and of 8 % in EnMS courses.

Evaluation criteria for D1) Gender mainstreaming	
<ul style="list-style-type: none"> - Did the project design adequately consider the gender dimensions in its interventions? Was the gender marker assigned correctly at entry? - Was a gender analysis included in a baseline study or needs assessment (if any)? Were there gender related project indicators? - Are women/gender-focused groups, associations or gender units in partner organizations consulted/ included in the project? - How gender-balanced was the composition of the project management team, the Steering Committee, experts and consultants and the beneficiaries? - Do the results affect women and men differently? If so, why and how? How are the results likely to affect gender relations (e.g., division of labour, decision-making authority)? - To what extent were socioeconomic benefits delivered by the project at the national and local levels, including consideration of gender dimensions? 	
Summary of findings	
<ul style="list-style-type: none"> - As an indicator for the gender ratio among UNIDO employees, only a simple head count was available as an indicator. <p>Share of females in different groups (method of assessment)</p> <ul style="list-style-type: none"> - PSC meetings: 43 % (attendance count) - Project team: 71 % (head count) - Evaluation teams: 60 % (head count) - International experts: 0 % (head count) - Average beneficiaries: 17 % (attendance count) 	
Rating	
D1) Gender mainstreaming	Moderately satisfactory

4. Performance of Partners

4.1 UNIDO

The project’s implementation started in July 2012, but the Project Management Unit could only be established with considerable delay in June 2013. The PMU team regularly reported to HQ in Vienna. The Project Manager visited the project regularly for PSC meetings and briefings. The Project Manager provided supervision and support to the PMU. However, the PMU’s progress and efficiency could have probably benefited from initial training from UNIDO headquarters and structured interaction with the PMUs in other countries to learn of best practices and innovative approaches and to share experiences.

Evaluation criteria for E1) Performance of partners: UNIDO	
<ul style="list-style-type: none"> - Mobilization of adequate technical expertise for project design - Inclusiveness of project design (with national counterparts) - Previous evaluative evidence shaping project design - Planning for M&E and ensuring sufficient M&E budget - Timely recruitment of project staff - Project modifications following changes in context or after the Mid-Term Review - Follow-up to address implementation bottlenecks - Role of UNIDO country presence (if applicable) supporting the project - Engagement in policy dialogue to ensure up-scaling of innovations - Coordination function - Exit strategy, planned together with the government - Review overall effectiveness of project management as outlined in the project document. Have changes been made and are they effective? Are responsibilities and reporting lines clear? Is decision-making transparent and undertaken in a timely manner? Recommend areas for improvement. - To what extent the project has a proper and operational governance system (e.g. PSC with clear roles and responsibilities)? - Review whether the national management and overall coordination mechanisms have been efficient and effective? Did each partner have assigned roles and responsibilities from the beginning? Did each partner fulfil its role and responsibilities (e.g. providing strategic support, monitoring and reviewing performance, allocating funds, providing technical support, following up agreed/corrective actions)? - The UNIDO HQ-based management, coordination, monitoring, quality control and technical inputs have been efficient, timely and effective (e.g. problems identified timely and accurately; quality support provided timely and effectively; right staffing levels, continuity, skill mix and frequency of field visits)? 	
Summary of findings	
<ul style="list-style-type: none"> - UNIDO provided excellent supervision and support to the Project, but the PMU’s efficiency could have benefited from initial training and/or structured communication with PMUs in other countries. 	
Rating	
E1) Performance of partners: UNIDO	Moderately satisfactory

4.2 National Counterparts

IFCO and MFA were present at the PSC meetings. Particularly the lead national counterpart, IFCO, showed high engagement and ownership of the project. Frequent changes of IFCO focal points affected the continuity of collaboration and negatively affected institutional memory and the project learning curve. The evaluation team found that the coordination of other national stakeholders and the dissemination of information in the responsibility of the national counterparts was carried out insufficiently. This aspect was frequently addressed in the Steering Committee e.g. in PSC Meeting November 2013,⁵¹ PSC Meeting August 2015,⁵² and PSC Meeting July 2016⁵³ but no changes in set-up were implemented.

By the time of the evaluation there was no exit strategy had been developed even though there is evidence of a discussion of an exit strategy in the Minutes of PSC Meeting 4 (July 2016).

The planned co-financing according to the CEO-endorsement was planned to amount to USD 15,150,000 (IFCO USD 5,000,000, UNIDO USD 150,000). Actualized co-financing reported by IFCO including standard setting and Energy Audit activities were 58,4 % of pledged (Figure 19), this is largely explained due to the fact that Component 5 the Revolving Fund had not been set up by the time of the evaluation since the transfer of funds into Iran was not possible at this point in time.

⁵¹ Minutes of the PSC Meeting, November 2013: *“MFA expressed his concern on the limited number of entities participating in the Project Steering Committee and pointed to the importance of involving relevant representatives [...]”*

⁵² Minutes of the PSC Meeting, August 2015: *“The MFA representative requested to have a stronger involvement of various stakeholders.”*

⁵³ Minutes of the PSC Meeting, July 2016: *“The GEF focal point of the MFA requested why the representation of the PSC is restricted to IFCO, UNIDO and MFA.”*

Evaluation criteria for E2) Performance of partners: National Counterpart	
<ul style="list-style-type: none"> - Design: Responsiveness to UNIDO’s invitation for engagement in designing the project - Implementation: Ownership of the project - Implementation: Counterpart funding - Implementation: Provide financial contribution as planned (cash or in-kind) - Implementation: Support to the project, based on actions and policies - Implementation: Internal government coordination - Implementation: Facilitation of the participation of Non-Governmental Organizations, civil society and the private sector where appropriate - Implementation: Suitable procurement procedures for timely project implementation - Implementation: Engagement with UNIDO in policy dialogue to promote the up-scaling or replication of innovations - Implementation: Exit strategy, planned together with UNIDO, or arrangements for continued funding of certain activities 	
Summary of findings	
<ul style="list-style-type: none"> - High engagement and ownership of the project by the leading national counterpart - Insufficient facilitation of the participation of other stakeholders and attention paid to the early development of an exit strategy 	
Rating	
E2) Performance of partners: National Counterpart	Moderately satisfactory

4.3 Donor

Funds from GEF were disbursed in a timely manner. GEF does not have a focal point in the Islamic Republic of Iran and there was no direct involvement of GEF in the project activities. There were no specific points of concern regarding the donor involvement brought to the attention of the evaluation team. Considering the limited involvement of GEF for example in policy dialogue the rating is satisfactory.

Evaluation criteria for E3) Performance of partners: Donor	
<ul style="list-style-type: none"> - Timely disbursement of project funds - Feedback to progress reports, including Mid-Term Review, if applicable - Support by the donor's country presence (if applicable) supporting the project for example through engagement in policy dialogue 	
Summary of findings	
<ul style="list-style-type: none"> - GEF disbursed funds in time - There was no direct involvement in project activity 	
Rating	
E3) Performance of partners: Donor	Satisfactory

5. Factors Facilitating or Limiting the Achievement of Results

5.1 Monitoring and Evaluation

The project document described M&E activities, responsible parties and time frame (GEF, 2011: 5). The monitoring activities included: an inception workshop, an inception report, the set-up of an advisory committee, a workshop of industry representatives for voluntary agreements, a report on voluntary agreements and methods of monitoring performance indicators, annual performance reports, steering committee meetings, quarterly progress reports, technical reports, a Mid-Term Review, a terminal project evaluation report, a terminal project report, lessons learned documentation and visits to field sites. Both UNIDO and the PMU were responsible for implementing the M&E system. The main M&E outputs were progress reports (4 monthly reports, 8 quarterly reports and 12 progress reports). The Mid-term Review was conducted in April 2015. In response to the Mid-Term Review's recommendations, the logframe and its output indicators and targets were revised to better reflect the Project's changed work and expectations.

The risks outlined in the original project document were not monitored and not addressed in the reviewed progress reports but merely restate the original statements, though the framework conditions deteriorated significantly throughout the project.

No indicators were included in the logframe at the outcome level and ultimately outcomes were not monitored. Though the PMU kept close contact with the various project participants (national expert trainees, demonstration companies, etc.), there were no formal follow-up surveys to monitor ongoing progress of participants (e.g. asking national experts or partner companies about interventions they have undertaken) since their direct involvement with the project.

Evaluation criteria for D2) Monitoring & Evaluation

M&E design

- Was the M&E plan included in the project document? Was it practical and sufficient at the point of project approval?
- Did it include baseline data and specify clear targets and appropriate indicators to track environmental, gender, and socio-economic results?
- Did it include a proper M&E methodological approach; specify practical organization and logistics of the M&E activities including schedule and responsibilities for data collection;
- Does the M&E plan specify what, who and how frequent monitoring, review, evaluations and data collection will take place? Is the M&E plan consistent with the logframe (especially indicators and sources of verification)?
- Does it allocate adequate budget for M&E activities?

M&E implementation

- How was the information from M&E system used during the project implementation? Was a M&E system in place and did it facilitate timely tracking of progress toward project results by collecting information on selected indicators continually throughout the project implementation period? Did project team and manager make decisions and corrective actions based on analysis from M&E system and based on results achieved?
- Are annual/progress project reports complete, accurate and timely?
- Was the information provided by the M&E system used to improve performance and adapt to changing needs? Was information on project performance and results achievement being presented to the Project Steering Committee to make decisions and corrective actions? Do the project team and managers and PSC regularly ask for performance and results information?
- Are monitoring and self-evaluation carried out effectively, based on indicators for outputs, outcomes and impact in the logframe? Do performance monitoring and reviews take place regularly?
- Were resources for M&E sufficient?
- How has the logframe been used for Monitoring and Evaluation purposes (developing M&E plan, setting M&E system, determining baseline and targets, annual implementation review by the Project Steering Committee...) to monitor progress towards expected outputs and outcomes?
- How well have risks outlined the project document and in the logframe been monitored and managed? How often have risks been reviewed and updated? Has a risk management mechanism been put in place?

Summary of findings

- The M&E process and specific reporting requirements were sufficient to track the output targets and collect information about energy savings realized. The budget provided for M&E at the planning stage was sufficient.
- SMART Outcome indicators were omitted in the logframe at the outcome level and ultimately outcomes were not monitored.
- The logframe has not been used appropriately for Monitoring and Evaluation purposes
- Annual/progress project reports were completed in a timely manner but did not include the exact outputs stated in the logframe. Outputs were added to progress reports in a seemingly adhoc manner.

Rating	
D2) Cross-cutting performance criteria: Monitoring & Evaluation Design and implementation	Moderately unsatisfactory

5.2 Results-Based Management

The Project Steering Committee (PSC) was established “to review the progress made by the project and to make recommendations on corrective actions required, it provides the project team with strategic advice to ensure that the project corresponds to the priority of the Government of Iran and is still within the scope of the project approved by the GEF as the donor of the project” (Minutes of Meeting of the 1st PSC). There were 6 PSC meetings until 2017.

The project submitted progress reports to the PSC and used a tracking tool to follow up on its activities and finances.

Use of the Project’s Results Framework

The original as well as the revised results framework showed serious short comings. Throughout project implementation different versions of the project results frameworks were in use. While the original as found in Annex A of the Project Document lists 26 outputs, the Midterm Review includes a different framework with 17 outputs. The 21 outputs formulated in the revised project result framework was ultimately not followed in the progress reports.

The outputs listed in the progress report change over time as does the terminology. The indicators listed in the progress reports are not in line with the results framework and seemingly on an ad-hoc basis new outputs were added and deleted from the reports.

Delays in Project Start-up and Implementation

As is shown in detail in Table 19 in Annex III the project experienced significant delays and changes in the design structure. Most components ended up carrying out planned activities for a longer period and new activities were added:

- Activities in Component 1 where supposed to end by year 3 but were instead carried out over the entire course of the project with additional outputs added.
- Component 2 “Sharing of good EE Practices” was also planned for year 3 only but instead was carried out continuously with new outputs added.
- While in the workplan from 2012 work on the Fund was supposed to start in 2013 to be established by 2015.⁵⁴ In contrast to this plan, it was only decided in August 2015 to set up the Fund by April 2016.⁵⁵ The tender for financial institutions to run the fund was posted only in June 2016 with bidding responses received in December 2016. It took all of 2017

⁵⁴ By 2015, the revolving fund will have made USD 14 M of EE investment, generated USD 7 M/y energy saving – and growing; have USD 4.8 M/y to re-invest in revolving fund for 2015/6 EE investment.

⁵⁵ PSC (2015).

to discuss with the winning institution. Only starting this process in 2015 was too late to realistically run several funding rounds in the course of the project. While in the project document the Revolving Fund was described as “a major activity” contributing to 1.34 bn tCO₂ of direct emission reductions beyond the project, according to the Mid-Term Review setting up the Revolving Fund was “planned as a last project component”.

The Project displayed several examples of adaptive management. As a reaction to changing policy priorities Component 1 was changed from a focus of energy agreements to market-based policy mechanisms and was carried out longer than originally planned (which had also been an unrealistic timeframe for the original output). Further outputs were offered among them participation of the project in the Energy Awards and the preparation of a steam cost curve study. Component 2 was significantly expanded in reaction to the positive feed-back received. Output 4.5. would have required additional adaptive management in reaction to the difficulties and the time requirements caused by this component. Component 5 experienced significant delays which negatively affected the results achieved in this component.

Evaluation Criteria for D3) Results-based Management

Results-Based work planning

- Review any delays in project start-up and implementation, identify the causes and examine if they have been resolved.
- Are there any annual work plans? Are work-planning processes results-based? Has the logframe been used to determine the annual work plan (including key activities and milestone)?
- Examine the use of the project's results framework/ logframe as a management tool and review any changes made to it since project start.

Results-based monitoring and evaluation

- Verify whether an M&E system is in place and facilitated timely tracking of progress toward project objectives by collecting information on selected indicators continually throughout the project implementation period;
- Review the monitoring tool currently being used: Do they provide the necessary information? Do they involve key partners? Are they aligned or mainstreamed with national systems? Do they use existing information? Are they efficient? Are they cost-effective? Are additional tools required? How could they be made more participatory and inclusive?
- Do project team and manager make decisions and corrective actions based on analysis from M&E system and based on results achieved? Is information on project performance and results achievement being presented to the Project Steering Committee to make decisions and corrective actions? Do the project team and managers and PSC regularly ask for performance and results information?

Results-based reporting

- Assess how adaptive management changes have been reported by the project management and shared with the PSC.
- Assess how well the project Team and partners undertake and fulfil donor and UNIDO reporting requirements (i.e. how have they addressed delays or poor performance, if applicable?)
- Assess how results and lessons derived from the adaptive management process have been documented, shared with key partners and internalized by partners.

Summary of findings	
<ul style="list-style-type: none"> - The project adapted its strategy for component 1 and 2 in response to changes in policy and positive feed-back received. - In light of the delays and capacities tight-up by output 4.5 and component 5 additional adaptive management interventions might have increased the effectiveness. - The project result framework was not adequately used to guide the monitoring process. 	
Rating	
D3) Cross-cutting performance criteria: Results-based Management	Moderately unsatisfactory

5.3 Overarching assessment and rating table

The evaluation concludes that the project was **relevant** to national development was within the UNIDO mandate and consistent with the strategic objective 2 of GEF-4. The project's original target were overly ambitious and not fit for the local context, though a reduction of output targets was carried out after the MTR the project could only fully complete 11 out of its 20 outputs. This was largely due to the adverse framework conditions but also due to a project design with too many diverse outputs lacking focus and the ability to repeat elements and develop a learning curve. Nevertheless, the project made a substantial contribution with its awareness raising and training activities. The evaluation supports the attempts by the IFCO and UNIDO to continue to establish the Revolving Fund even if GEF funding cannot be transferred.

Evaluation Criteria F) Overall assessment	
Overarching assessment of the project, drawing upon the analysis made under project performance and Progress to Impact criteria above but not an average of ratings	
Summary of findings	
<ul style="list-style-type: none"> - The project played a lead role in increasing awareness on energy efficiency in Iran. The project made an important contributions in capacity building for the energy efficiency market - Result achievement below expectation due to a mix of too high expectations, unfavourable conditions and management issues in Output 4.5 and Component 5. - The IEE project demonstrated a strong resilience in adverse conditions delivered its training according to local needs. - The project lacks an exit strategy. 	
Rating	
F) Overall assessment	Moderately Satisfactory

Table 10: project Evaluation Criteria

#	Evaluation criteria	Justification of ratings	Rating in the Terminal Evaluation	Rating in the Midterm Review
A	Impact (or progress toward impact)	<p>The project succeeded in adding significant human capacity to the industrial energy efficiency market of Iran. Wider impact was limited due to problematic economic and political framework conditions during which energy efficiency is not a top priority as well as a project design lacking focus and consistency.</p> <p>Monitoring activities were focused to deliver the required outputs but no outcome indicators had been formulated to identify gaps in the energy efficiency market and properly track the project's outreach, replication and further activities of training participants.</p>	Moderately Satisfactory	Highly Satisfactory
B	Project design	The project deviated from the standard IEE project system and project elements were not well aligned. In the revised project logframe outputs were not carefully formulated and often included activities on different topics. The logframe did not include SMART outcome indicators.	Moderately Unsatisfactory	
1	<ul style="list-style-type: none"> Overall design 	<p>The project would have benefited from a stronger focus on EnMS and SO at the expense of including the development of benchmarks and training on Energy Performance Indicators. Output RO-4.5. was not embedded appropriately in the project and required an excessive amount of time and resources. After the MTR it should have been considered to fundamentally redesign this output.</p> <p>For the establishment of the Revolving Fund UNIDO lacked the necessary experience, the local context made it particularly challenging to complete this component.</p> <p>The design underestimated the risks in respect to economic sanctions remaining in place and the phase out of energy subsidies.</p>	Moderately Satisfactory	/
2	<ul style="list-style-type: none"> Logframe 	The Logical Framework, with its outcomes, outputs and target indicators, has not been developed adequately and was not adequately used for the monitoring of project results.	Moderately Unsatisfactory	/
C	Project Performance		Satisfactory	
1	<ul style="list-style-type: none"> Relevance 	The overall project design is relevant to the national energy priorities. The project is relevant to UNIDO and policies and fully relevant to the GEF focal area of climate change	Satisfactory	HR (highly relevant)

#	Evaluation criteria	Justification of ratings	Rating in the Terminal Evaluation	Rating in the Midterm Review
2	<ul style="list-style-type: none"> Effectiveness 	<p>The project achieved to complete 11 out of 20 output targets. Achievements in the revised Components 1, 2 and 3 were more satisfactory than in the other components.</p> <p>Although the project underachieved on its target, it should be noted that framework conditions in Iran during the time of implementation were difficult and that the flaws in the original design, particularly the lack of consistency and focus, could not be fully revised during implementation.</p>	Satisfactory [C1: S, C2: HS, C3: S, C4: S, C5: n.n.]	C1: MS C2: MS, C3: S, C4: S, C5: MS
3	<ul style="list-style-type: none"> Efficiency 	<p>The project had an implementation time of 6.5 years and has received an extension of 17 months. The project has met some delays in the establishment of the PMU and was particularly hampered in Component 5 by the difficulty of reaching an agreement with the responsible bank. Tendering of material which was carried out internationally was significantly delayed because of a lack of offers.</p> <p>The budget expenditure until May 2018 was lower than the original because funds for the Revolving Fund could not be transferred into Iran.</p>	Satisfactory	
4	<ul style="list-style-type: none"> Sustainability of benefits 	<p>The project made a substantial contribution to human capacity in the energy efficiency sector of Iran.</p> <p>The implementation projects supported by the project will continue to achieve emission reductions. Particularly for the project that implemented an EnMS it can be expected that they will continuously achieve higher energy efficiency levels.</p>	Moderately likely	Likely (L)
D	Cross-cutting performance criteria			
1	<ul style="list-style-type: none"> Gender mainstreaming 	<p>The project had the following share of females in different groups: PSC meetings: 43 % (attendance count), project team: 71 % (head count), evaluation teams: 60 % (head count), International experts: 0 % (head count), average beneficiaries: 17 % (attendance count).</p> <p>Gender was not adequately considered but no negative gender impacts were identified.</p> <p>Particularly the choice of male international experts only can be regarded as a missed opportunity to strengthen the role of females in the sector.</p>	Moderately satisfactory	

#	Evaluation criteria	Justification of ratings	Rating in the Terminal Evaluation	Rating in the Midterm Review
2	<ul style="list-style-type: none"> • M&E: <ul style="list-style-type: none"> ✓ M&E design ✓ M&E implementation 	<p>The M&E process and specific reporting requirements were sufficient to track the output targets and collect information about energy savings realized. The budget provided for M&E at the planning stage was sufficient.</p> <p>SMART Outcome indicators were omitted in the logframe at the outcome level and ultimately outcomes were not monitored.</p> <p>The logframe has not been used appropriately for Monitoring and Evaluation purposes</p> <p>Annual/progress project reports were completed in a timely manner but did not include the exact outputs stated in the logframe. Outputs were added to progress reports in a seemingly adhoc manner.</p>	Moderately Unsatisfactory	Moderately Satisfactory
3	<ul style="list-style-type: none"> • Results-based Management (RBM) 	<p>The project adapted its strategy for component 1 and 2 in response to changes in policy and positive feed-back received.</p> <p>In light of the delays and capacities tight-up by output 4.5 and component 5 additional adaptive management interventions might have increased the effectiveness.</p> <p>The project result framework was not adequately used to guide the monitoring process.</p>	Moderately Unsatisfactory	
E	Performance of partners		Moderately Satisfactory	
1	<ul style="list-style-type: none"> • UNIDO 	<p>UNIDO provided excellent supervision and support to the Project. For future projects by organizing meetings of different National Coordinators, the team leaders should receive the opportunity to learn and leverage experience outside of the country.</p>	Moderately Satisfactory	
2	<ul style="list-style-type: none"> • National counterparts 	<p>IFCO showed a high commitment and engagement in the project. Nevertheless, the inclusion of a wider range of stakeholder might have been beneficial and might have increased the outreach of the project.</p>	Moderately Satisfactory	
3	<ul style="list-style-type: none"> • Donor 	<p>There was no direct involvement in project activity. GEF disbursed funds in time</p>	Satisfactory	
F	Overall assessment	<p>The project played a lead role in increasing awareness on energy efficiency in Iran. The project made an important contributions in capacity building for the energy efficiency market</p> <p>Result achievement below expectation due to a mix of too high expectations, unfavourable</p>	Moderately Satisfactory	

#	Evaluation criteria	Justification of ratings	Rating in the Terminal Evaluation	Rating in the Midterm Review
		<p>conditions and management issues in Output 4.5 and Component 5.</p> <p>The IEE project demonstrated a strong resilience in adverse conditions delivered its training according to local needs.</p> <p>The project lacks an exit strategy.</p>		

6. Conclusions, Recommendations and Lessons Learned

6.1 Conclusions

The project *Industrial Energy Efficiency in Key Sectors in Iran* was developed to promote energy efficiency in five high energy consuming industrial sectors (iron and steel, petrochemicals, refinery, brick and cement) by adopting a national framework for energy management standards.

In alignment with the Theory of Change developed for the overall evaluation of UNIDO's Industrial Energy Efficiency Programme Portfolio by the evaluation team, the project addressed several target groups important for a transformation of the energy efficiency market. With the primary target group, the energy-using enterprises, UNIDO maintained relationships of different degrees of depth: *UNIDO partner companies* received extensive training and functioned as pilot sites, *light-intervention companies* were contacted with awareness raising activities and were offered light training, companies in the *wider economy* were addressed via the website on which the case studies were presented, and by the energy award in petroleum industries.

The project addressed the market conditions for the energy-using enterprises with its policy component which by delivered studies, roadmaps and workshops on market based policy instruments.

The project addressed to a limited degree the secondary stakeholders of the technical service and equipment supply chain with capacity building work for a small number of independent consultants and equipment vendors. In contrast to other IEE projects which had a larger share of training participants from the field of independent consultants and equipment vendors, the Iran project largely – though not exclusively - focussed its expert training on factory personnel and particularly on in-house factory training.

Financing also constituted a further framework condition to activate the energy efficiency market in Iran. It was addressed by the project by the attempt to set-up a Revolving Fund with a partnering bank to increase access to capital for the industry. The financing component was delayed considerably and could not be implemented during the project's lifetime.

Project Outputs

The IEE project was an important attempt to strengthen industrial capacity to improve energy efficiency. The project was negatively affected by several external factors: i) the lack of energy subsidy reform in Iran negatively affected the cost-effectiveness of energy efficiency measures and therefore managerial priority; ii) international sanctions to halt Iran's nuclear enrichment program hampered the import of technology (including measuring equipment) and the transfer of funds into Iran. The worsening economic situation during the project's lifetime deviated attention from energy efficiency as a national industrial priority. Despite the adverse conditions the project delivered a rich and innovative range of outputs and engaged 1,898 participants in its awareness and training activities on energy efficiency. The project produced informational material and 14 case studies for its target industry which it published on the project website. 406 participants joined in-depth training and 320 participants joined user trainings. The project assisted 16 partner enterprises in one or more aspects to improve their energy performance: seven companies were assisted with the introduction of an energy management system (of which five received certification according to ISO 50001), six partner companies received system optimization

training (three on CASO and three on SSO), three partner companies received training on the application of Energy Performance Indicators, four partner companies implemented fully fledged production process improvements with large investment volumes. The project developed an energy benchmark for the cement industry.

The project's original target were overly ambitious and not fit for the local context. Following the Mid-Term Review output targets were therefore significantly reduced but the diversity and high-number of outputs remained a challenge for the project. The project could achieve 11 out of its 20 revised output targets.

Effectiveness

The evaluation of the project's **effectiveness** is based on the outputs and outcomes achieved by the project in its pursuit of promoting industrial EE in Iran. Considering the adverse situation, the project worked in the effectiveness of the project was rated satisfactory. Overall, the project's effectiveness could have been strengthened by including a wider range of stakeholders which could have functioned as multipliers of the technical approach and the material developed. The awareness raising and capacity building activities were rated as more effective than the direct support to industry and the financing component. In terms of the effectiveness of the approach the evaluation found that particularly the four large-scale production process improvements for demonstration purposes was less effective than UNIDO's conventional capacity training approach. UNIDO did not have sufficient experience with setting up a Revolving Fund mechanism particularly not under the complicated conditions in the target country.

Progress towards impact

The impact estimates for the project were overly optimistic. With its interventions by the end of the project's lifetime the project had accomplished an annual energy saving of 0.72 TWh and an annual CO₂ emission reduction of 132,778 t. Achievements compared to original targets was 1,5 % for annual CO₂ emission reductions and 2.4% for annual energy savings. The adoption of EnMS and SO approaches by industries combined with investments to lower the industrial energy intensity is bound to result in additional reduced energy needs and avoidance of GHG emissions, not monitored by the project. The project was successful in creating an enabling environment for the adoption of energy management and system optimization practices in industrial establishments by raising awareness among industrial enterprises of the benefits of adopting EE practices.

The key long-term contribution of the project is an increase an awareness in respect to energy efficiency and the proof-of-concept of the approaches of system optimization and energy management systems. The human capacity strengthened in the Iranian industry will continue to make a positive contribution for energy efficiency.

Relevance

The evaluation concludes that the project was **relevant** to national development priorities and received sufficient support of the key national stakeholders during its formulation. The project's focus on EE is well within the mandate of UNIDO which is widely recognized as a pioneer in promoting energy management standards as a key corporate management tool. The project is also consistent with the strategic objective 2 of GEF-4: tackling climate change through the promotion of energy efficient technologies and practices in industrial production and manufacturing processes.

6.2 Recommendations

To GoI and UNIDO: The project should develop an exit strategy. The evaluation supports the attempts by the IFCO and UNIDO to continue to establish the Revolving Fund even if GEF funding cannot be transferred.

To GoI: *Engagement of a larger spectrum of stakeholders:* Future projects should engage with a larger spectrum of stakeholders to increase information sharing.

To GoI and UNIDO: The training component and the promotion of energy management culture in companies was rated more effective than the limited number of implementation pilots, future projects should spend a greater share of resources on training at the expense of industry specific show-case-projects.

To UNIDO: Companies participating in large-scale show-case-projects should be obliged prior to the project Implementation to engage in publicity and make their innovation transparent for the industry including competitors.

To UNIDO: Set up a community of practice among project teams of different projects to allow for mutual learnings and knowledge managements.

- **To UNIDO:** Monitoring of project impact could be improved in respect to the following aspects:
 - **Improve the assessment of attribution.** PMUs should be equipped with practical tools for better estimating net impacts rather than only gross impacts as carried out currently. Examples of such monitoring tools are comparisons with a control group (e.g. How much did energy efficiency improve in industry overall?). Further attention has to be made to asses free-rider ship among partner enterprises to isolate UNIDO's contribution from the baseline of industrial enterprises improving energy efficiency anyhow. Such data can be collected e.g. via anonymous self-reporting (Would you have carried out the energy efficiency activity without the project?). Future projects might want to correct the project achievements by a factoring in (historic) autonomous energy efficiency development and by attempting to quantify the free-rider effect. These additional assessment help strengthen the meaningfulness and strength of the data collected.
 - **Introduce standard approach for consideration of rebound effects or standardized tools to assess rebound effects.** The difference between gross and net effects on impact level are also a result of rebound effects such as price decreases due to lower production costs and growth effects. These effects should be taken into consideration to make results more credible. In the case at hand UNIDO should pay particular attention how to deal with the problem that energy saved is intended for export.
 - **More attention to SMART outcome indicators.** Constructing **outcome-level** indicators – which are SMART and consistent with an explicit Theory of Change – and monitoring them during the implementation timeframe would raise projects' attention to the sustainability of benefits. Monitoring the outcome-level indicators could also support adaptive management, with possible remedial actions in areas where outcome-level achievements fall below expectations. In particular future projects should identify replication channels and monitor the strength of their outreach.
 - **Use coherent survey tools.** IEE projects should be supplied with standardized (possibly online based) questionnaire formats to monitor the training participants shortly after the training regarding their satisfaction. A second survey should be used to track

achievements on outcome level, e.g. replication data, activity rate and applicability of the training. Survey data from participants should at best be comparable over projects of a similar nature in UNIDO's portfolio.

- **To UNIDO: *Become an inspiring example of gender equality.*** UNIDO should increase its efforts to deploy female international experts into partner countries.
- **To UNIDO: *Projects should be embedded in a broader vision of resource efficiency and decarbonisation.*** Energy efficiency should be viewed to benefit those higher level goals which outweigh energy efficiency as a goal in itself or can even be in contradiction to them. The considerations of embedded energy, resource consumption and decarbonisation should also find their way into designing sustainable energy efficiency projects. In the case of Iran, the inclusion of renewable energy as well as water savings were key interest of the companies.
- **To GEF and UNIDO: *GEF and UNIDO should clarify concerns regarding interventions in the fossil fuel producing sector:*** The IEE project are indirectly contribution to environmentally harmful activities by working with fossil fuel producing sector. While these damages are not caused by the project itself, the project increases the financial viability of the fossil fuel sector by improving its efficiency. This offers the project up unduly for criticism.⁵⁶ GEF and UNIDO should define clearly whether to work with the fossil fuel industries and carefully assess whether the net emission reductions achieved in this sector are positive if macroeconomic rebounds due to price impacts of the intervention are positive.

6.3 Lessons Learned

The pilot companies do not only have to fulfil formal requirements such as technologies in use but are more effective if they are also willing to engage with other companies and bear testimony regarding their experience.

The choice of engaging with a company has to be based on more than interest but full commitment of the company. Commitment should be established in writing, early on in the process. A key lesson learned was the importance of expectation management. It proved to be important to clarify early on the resources demanded from the companies and to make the possible advantages transparent.

⁵⁶ Trucost (2013).

Annex I. Evaluation Terms of Reference

TERMS OF REFERENCE

Independent terminal evaluation of UNIDO project:

**Industrial Energy Efficiency in Key Sectors in Islamic
Republic of Iran**

UNIDO project ID: 120506

GEF project ID: 3540

April 2018

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I. PROJECT BACKGROUND AND CONTEXT⁵⁷

1. Project factsheet

Project title	Industrial Energy Efficiency In Key Sectors in Islamic Republic of Iran
UNIDO project ID	120506
GEF project ID	3540
Country	Islamic Republic of Iran
Project donor(s)	GEF
Project approval date	May 2011
Project implementation start date	July 2012
Expected duration at project approval	75 months
Estimated completion date	30/09/2018
GEF Focal Area	Climate Change
Implementing agency	UNIDO
Expected implementation end date	July 2017
Executing partners	Iranian Fuel Conservation Company (IFCO)
Donor funding	USD 5,450,000
Co-financing:	USD 15,150,000
Total project cost (USD)	USD 20,600,000
Planned terminal evaluation date	May - August 2018

Source: Project document

2. Project context

Between 1970 and 2000, energy consumption in Iran rose almost eight-fold, from 90 million barrels oil equivalent (*mboe*) in 1971 to over 700 *mboe* in 2001. In the same period, the annual energy consumption growth rate was estimated to be 7.8%. This trend has continued steadily since 2001, in particular due to the high growth rate in usage of electric energy in the domestic and commercial sector, together with an increase in energy consumption in the transport sector and a general above average industrial energy intensity. Main reasons for high industrial energy intensity in Iran are the ageing equipment stock, subsidized energy prices, abundant national energy resources, combined with historically low government and management interest. Nevertheless, in the recent years, after becoming an above average industrial energy intensity country, Iran was forced to switch from consuming oil to using gas for the generation of electricity, to the purpose of preventing the domestic primary energy demand from depleting Iran's oil exporting capacity. At the same time, the Iranian Government recognized the challenges and the need for investment in energy savings as well as increasing recognition of environmental responsibilities, setting a reduction target in terms of energy and carbon intensity of the "Big 5" Iranian Industry sectors by 20% by 2025, namely Iron & Steel, Petrochemical, Refinery, Brick and Cement - that collectively consume 71% of Iranian industrial energy.

⁵⁷ Data in this chapter is to be validated by the Consultant against the project document and any changes should be reflected in the evaluation report.

3. Project objectives

The primary goal of this project is to make a significant contribution towards Iran's long-term energy efficiency (EE) strategy, which aims to reduce relative energy consumption across all industrial sectors by 20% by 2025, compared with 2008 as the base-year. The project aims to produce a step-change in industrial EE in Iran, which is facing challenges in developing an energy policy able to deliver a sustainable energy consumption pattern, by accelerating the uptake of energy efficiency across the 5 key industrial sectors, by:

- Setting up market-based policy instruments;
- Providing a framework for National Energy Management Standards (EMS);
- Assisting in capacity building through training;
- Developing targets, providing benchmarks ;
- Identifying technology improvement options to these high energy intensive industrial sectors;
- Sharing of good EE information via a dedicated web-site providing benchmarking, good practice advice, Iranian Case study examples of EE investments, and others;
- Introducing through this project an energy-saving loan scheme, namely a “revolving” EE fund, as a means of encouraging the most appropriate financial mechanisms for encouraging EE investment in Iran.

The main project component and related outputs are:

1. Energy Agreements and other Legislation/ Drivers

- Outputs: 1.1) Liaise with Iranian Government: National Targets and Milestones;
 1.2) Setting up market-based policy instruments.

2. Sharing of good EE practices

- Outputs: 2.1) Dedicated Programme website;
 2.2) International Best Practice /Good practice EE advice;
 2.3) Other information sharing.

3. Training, Benchmarking and other Events

- Outputs: 3.1) Energy management;
 3.2) Financial Appraisal;
 3.3) Other Conference/ Exhibitions/etc.;
 3.4) Equipment training/capacity building.

4. Direct support to Industry

- Outputs: 4.1) Energy Performance benchmarking
 4.2) Walk through energy audits;
 4.3) Detailed follow-up technical audits;
 4.4) Good practice case studies;
 4.5) Energy Audit Equipment;
 4.6) Metering and M&T;
 4.7) Pilot schemes/test rigs.

5. Financial Support

- Outputs: 5.1) Make links to funding mechanisms;
 5.2) Revolving (ESCO type) fund for EE support.

4. Project implementation arrangements

Divided into six components, the programme requires a high degree of coordination and effectiveness among the different key stakeholders involved. With this regard, the role of the Project Management Unit (PMU) is crucial, as it needs to both transfer the knowledge of international practices to the Iranian experts and to complement the International experts with Iranian counterparts who will function as deputies of the international experts. The combined expertise and experience of the team will facilitate management and communication with the wide range of Iran organizations that are targeted by the programme.

Main stakeholders and major roles and responsibilities assigned to them:

Iranian Fuel Conservation Company (IFCO):

- Implementing energy conservation in industry
- Enhancing public awareness in energy efficiency and fuel conservation by publishing books, magazines and through advertising campaigns
- Enforcing fuel conservation measures
- Producing high quality and efficient home appliances and fuel consuming system
- Assisting research institutes and universities technically and financially to hold energy management training courses for government and private sectors
- Providing comprehensive programs of energy conservation in transportation systems
- Providing disciplinary measures to support public conservation culture

Industry Sector:

- Facilitating access/outreach to all major (and many minor) industrial enterprises in Iran – vastly improving the Programme’s “gearing” (ratio of effort to reward) in its efforts to attract industrial enterprises to the Programme;
- Improving the credibility/ understanding of the Programme’s aims and objectives;
- Helping with the Energy Benchmarking exercises: Provide contact details of key people/Organizations, help chase non-respondents, sanity check energy and production data provided by each site, produce the Benchmark report and disseminate findings;
- Identifying sites that would most likely benefit from a “walk-through” audit;
- Acting as a focal point for the Pilot-scale R&D work;
- Acting as a focal point for the Case Study report write-ups; recognizing potentially sensitive information;
- Participating in the EnMS and System Optimization training exercises.

Advisory Committee:

- Providing advice and feedback on the project design and support implementation during operations with policy support and by facilitating key partnerships across the market;
- Providing a forum for the advancement of sustainable energy finance in industry;
- Promoting and sustaining a favorable policy environment for investments.

Ministry of Industry, Mine and Trade:

- Researching of equipment to be used and recommended to the intensive energy sectors

5. Budget information

Table 1. Financing plan summary - Outcome breakdown

Project outcomes/components	Donor (\$)	Co-Financing (\$)	Total (\$)
1. Energy Agreements and other Legislation/ Drivers	280,000	610,000	890,000
2. Sharing of Good EE practices	200,000	360,000	560,000
3. Training, Benchmarking and other Events	250,000	315,000	565,000
4. Direct support to Industry	2,440,000	7,715,000	10,155,000
5. Financial support	1,730,000	5,485,000	7,215,000
Project Management	550,000	665,000	1,215,000
Total project costs	5,450,000	15,150,000	20,600,000

Source: Project document.

Table 2. Co-Financing source breakdown

Name of Co-financier (source)	Classification	Type	Total Amount (\$)
Iranian Fuel Conservation Company (IFCO)	National Government	Cash	7,700,000
Iranian Fuel Conservation Company (IFCO)	National Government	In-kind	7,300,000
UNIDO	Implementing Agency	Cash	30,000
UNIDO	Implementing Agency	In-kind	120,000
Total co-financing			15,150,000

Source: Project document.

Table 3. UNIDO budget execution (starting from 2012)

Item	2012	2013	2014	2015	2016	2017	Total Expenditure (\$)
Contractual Services	425,000	95,023.59	402,827.50	459,763	365,369.02	1,722,703	3,470,686.11
Equipment		1,950.98	3,090.34	700.83	88,062	13,488.95	107,293.1
International Meetings		12,428.8	23		114	10,989.47	23,555.27
Local travel		6,363.16	48,225.39	50,300.93	35,447.17	51,034	191,370.65
Nat.Consult./Staff		43,701	157,752.90	159,057.67	118,510.96	105,628	584,650.53
Other Direct Costs		3,520.20	-883.70	7,166.74	9,646.57	3,925.59	23,375.4
Staff & Intern Consultants	7,817.4	107,872.30	74,610.32	62,653.69	164,386	123,198	540,537.71
Staff Travel	646	1,758.96	638.81	3,265.96	1,769.19	2,149.57	10,228.49
Train/Fellowship/Study	8,463.4		18,894.01	8,269.98	17,576.7	3,808.52	48,549.21
Premises				5,624.65	8,540.95	8,175.88	22,341.48
Grand Total	433,463.4	272,618.99	705,178.57	756,803.45	809,422.56	2,034,775	5,022,587.95

Source: UNIDO. ERP Database, January 2017.

II. Evaluation purpose and scope

The purpose of the evaluation is to independently assess the project to help UNIDO improve performance and results of future programmes and projects.

The evaluation has two specific objectives:

- (i) Assess the project performance in terms of relevance, effectiveness, efficiency, sustainability and progress to impact;
- (ii) Develop a series of findings, lessons and recommendations for enhancing the design of new and implementation of ongoing projects by UNIDO.

The independent terminal evaluation (TE) will cover the whole duration of the project from their starting date in 12/08/2012 to the estimated completion date in 30/09/2018.

III. Evaluation approach and methodology

The TE will be conducted in accordance with the UNIDO Evaluation Policy² and the UNIDO Guidelines for the Technical Cooperation Project and Project Cycle³. The evaluation will be carried out as an independent in-depth evaluation using a participatory approach whereby all key parties associated with the project will be informed and consulted throughout the evaluation. The evaluation team leader will liaise with the UNIDO Independent Evaluation Division (ODG/EIO/IED)

on the conduct of the evaluation and methodological issues. The evaluation will use a theory of change approach and mixed methods to collect data and information from a range of sources and informants. It will pay attention to triangulating the data and information collected before forming its assessment. This is essential to ensure an evidence based and credible evaluation, with robust analytical underpinning. The theory of change will identify causal and transformational pathways from the project outputs to outcomes and longer-term impacts, and drivers as well as barriers to achieve them. The learning from this analysis will be useful to feed into the design of the future projects so that the management team can effectively manage them based on results.

1. Data collection methods

Following are the main instruments for data collection:

- (a) **Desk and literature review** of documents related to the project, including but not limited to:
 - The original project document, monitoring reports (such as progress and financial reports, Mid-Term Review report, output reports, back-to-office mission report(s), end-of-contract report(s) and relevant correspondence.
 - Notes from the meetings of committees involved in the project.
- (b) **Stakeholder consultations** will be conducted through structured and semi-structured interviews and focus group discussion. Key stakeholders to be interviewed include:
 - UNIDO Management and staff involved in the project; and
 - Representatives of donors and counterparts.
- (c) **Field visit** to project sites in Iran and project management in Vienna, UNIDO HQ.
- (d) **Company-level survey**.

2. Evaluation key questions and criteria

The key evaluation questions are the following:

- (a) What are the key drivers and barriers to achieve the long term objectives? To what extent has the project helped put in place the conditions likely to address the drivers, overcome barriers and contribute to the long term objectives?
- (b) How well has the project performed? Has the project done the right things? Has the project done things right, with good value for money?
- (c) What have been the project's key results (outputs, outcome and impact, if possible)? To what extent have the expected results been achieved or are likely to be achieved against the project design? To what extent the achieved results will sustain after the completion of the project?
- (d) What lessons can be drawn from the successful and unsuccessful practices in designing, implementing and managing the project?

The evaluation will assess the likelihood of sustainability of the project results after the project completion. The assessment will identify key risks (e.g. in terms of financial, socio-political, institutional and environmental risks) and explain how these risks may affect the continuation of results after the project ends. Table 4 below provides the key evaluation criteria to be assessed by the evaluation. The details questions to assess each evaluation criterion are in Annex 2.

Table 4 project evaluation criteria

	<u>Evaluation criteria</u>	<u>Mandatory rating</u>
A	Impact (or progress toward impact)	Yes
B	Project design	Yes
1	- Overall design	Yes
2	- Logframe	Yes
C	Project performance	Yes
1	- Relevance	Yes
2	- Effectiveness	Yes
3	- Efficiency	Yes
4	- Sustainability of benefits	Yes
D	Cross-cutting performance criteria	
1	- Gender mainstreaming	Yes
2	- M&E: ✓ M&E design ✓ M&E implementation	Yes
3	- Results-based Management (RBM)	Yes
E	Performance of partners	
1	- UNIDO	Yes
2	- National counterparts	Yes
3	- Donor	Yes
F	Overall assessment	Yes

3. Rating system

In line with the practice adopted by many development agencies, the UNIDO Independent Evaluation Division uses a six-point rating system, where 6 is the highest score (highly satisfactory) and 1 is the lowest (highly unsatisfactory) as per Table 5.

Table 5 project rating criteria

Score		Definition	Category
6	Highly satisfactory	Level of achievement clearly exceeds expectations and there is no shortcoming.	SATISFACTORY
5	Satisfactory	Level of achievement meets expectations (indicatively, over 80-95 per cent) and there is no or minor shortcoming.	
4	Moderately satisfactory	Level of achievement more or less meets expectations (indicatively, 60 to 80 per cent) and there are some shortcomings.	
3	Moderately unsatisfactory	Level of achievement is somewhat lower than expected (indicatively, less than 60 per cent) and there are significant shortcomings.	UNSATISFACTORY
2	Unsatisfactory	Level of achievement is substantially lower than expected and there are major shortcomings.	
1	Highly unsatisfactory	Level of achievement is negligible and there are severe shortcomings.	

IV. Evaluation process

The evaluation will be implemented in five phases which are not strictly sequential, but in many cases iterative, conducted in parallel and partly overlapping:

- i. Inception phase: The evaluation team leader will prepare the inception report providing details on the methodology for the evaluation and include an evaluation matrix with specific issues for the evaluation; the specific site visits will be determined during the inception phase.
- ii. Desk review and data analysis;
- iii. Interviews, survey and literature review;
- iv. Field visits;
- v. Data analysis and report writing.

V. Time schedule and deliverables

The evaluation is scheduled to take place from May to August 2018. The evaluation field mission to Iran is tentatively planned for June 2018. At the end of the field mission, there will be a presentation of the preliminary findings for all stakeholders involved in this project. After the evaluation field mission, the evaluation team leader will visit UNIDO HQ for debriefing and presentation of the preliminary findings of the terminal evaluation. The draft TE report will be submitted to UNIDO 3 weeks after the end of the mission. The draft TE report is to be shared with the UNIDO IEV, UNIDO Project Manager, the GEF and other stakeholders for comments and verification of factual and interpretation errors. The TE leader is expected to revise the draft TE report based on the comments received, edit the language and form and submit the final version in accordance with UNIDO ODG/EIO/IED standards.

Table 6 Tentative schedule

Timelines	Tasks
May 2018	Desk review and preparation of inception report
May 2018	Briefing with UNIDO Project Manager and experts based in Vienna – through Skype
June 2018	Field visits
End of June 2018	Debriefing in Vienna Preparation of first draft evaluation report
July 2018	Preparation of first draft evaluation report Internal peer review of the report by the UNIDO ODG/EVQ/IEV and other stakeholders comments to draft evaluation report
August 2018	Final evaluation report

VI. Evaluation team composition

The project will be evaluated together with a package of a total of four Industrial Energy Efficiency projects covering Thailand, Indonesia, Iran and Egypt and will be part of the ongoing Impact Evaluation of UNIDO's Industrial Energy Efficiency related programmes. The team will be led by a senior evaluation expert with at least 15 years of relevant experience. The field missions will be conducted by evaluation team members selected by the team leader. The team members are expected to possess a minimum of 7 years of relevant strong experience and expertise on evaluation and industrial energy efficiency, and have relevant qualifications in economics, engineering, development or related disciplines. The team will be supported by a national evaluation consultant, who will be separately contracted by UNIDO in each country.

According to UNIDO Evaluation Policy, members of the evaluation team must not have been directly involved in the design and/or implementation of the project under evaluation. An evaluation manager from UNIDO ODG/EIO/IED will provide technical backstopping to the evaluation team and ensure the quality of the evaluation. The UNIDO Project Manager and national project teams will act as resourced persons and provide support to the evaluation team and the evaluation manager. The UNIDO Project Manager and the project team will provide logistical and administrative support the evaluation team to prepare for the field visits. The project team will provide a proposed list of stakeholders (e.g. government officials, private sector representatives and other relevant individuals) to the evaluation team who will make the final decision on who to consult. The project team will arrange the meetings and prepare field visit schedule for the evaluation team, following their request, prior to the field visit.

The evaluation team will maintain close liaison with the representatives of UNIDO, other UN agencies as well as with the concerned national agencies, and with national and international project staff. The evaluation team is free to discuss with the authorities concerned anything relevant

to its assignment. However, it is not authorized to make any commitments on behalf of the Government, the donor or UNIDO.

VII. Reporting

Inception report

This Terms of Reference (ToR) provides some information on the evaluation methodology, but this should not be regarded as exhaustive. After reviewing the project documentation and initial interviews with the Project Manager, the Team Leader will prepare, in collaboration with the team member, a short inception report that will operationalize the ToR relating to the evaluation questions and provide information on what type of and how the evidence will be collected (methodology). It will be discussed with and approved by the responsible UNIDO Evaluation Manager.

The Inception Report will focus on the following elements: preliminary project theory model(s); elaboration of evaluation methodology including quantitative and qualitative approaches through an evaluation framework (“evaluation matrix”); division of work between the team leader and team members; mission plan, including places to be visited, people to be interviewed and possible surveys to be conducted and a debriefing and reporting timetable.⁵⁸

Evaluation report format and review procedures

The draft report will be delivered to ODG/EVQ/IEV (the suggested report outline is in Annex 4) and circulated to UNIDO staff and national stakeholders associated with the project for factual validation and comments. Any comments or responses, or feedback on any errors of fact to the draft report provided by the stakeholders will be sent to UNIDO ODG/EVA for collation and onward transmission to the project evaluation team who will be advised of any necessary revisions. On the basis of this feedback, and taking into consideration the comments received, the evaluation team will prepare the final version of the Terminal Evaluation report.

The evaluation team will present its preliminary findings to the local stakeholders at the end of the field visit and take into account their feed-back in preparing the evaluation report. A presentation of preliminary findings will take place at UNIDO HQ after the field mission.

The TE report should be brief, to the point and easy to understand. It must explain the purpose of the evaluation, exactly what was evaluated, and the methods used. The report must highlight any methodological limitations, identify key concerns and present evidence-based findings, consequent conclusions, recommendations and lessons. The report should provide information on when the evaluation took place, the places visited, who was involved and be presented in a way that makes the information accessible and comprehensible. The report should include an executive summary that encapsulates the essence of the information contained in the report to facilitate dissemination and distillation of lessons.

⁵⁸ The evaluator will be provided with a Guide on how to prepare an evaluation inception report prepared by the UNIDO ODG/EVQ/IEV.

Findings, conclusions and recommendations should be presented in a complete, logical and balanced manner. The evaluation report shall be written in English, with an executive summary in English, and follow the outline given in Annex 1.

VIII. Quality assurance

All UNIDO evaluations are subject to quality assessments by UNIDO ODG/EVQ/IEV. Quality assurance and control is exercised in different ways throughout the evaluation process (briefing of consultants on methodology and process of UNIDO ODG/EVQ/IEV, providing inputs regarding findings, lessons learned and recommendations from other UNIDO evaluations, review of inception report and evaluation report by UNIDO ODG/EVQ/IEV).

The quality of the evaluation report will be assessed and rated against the criteria set forth in the Checklist on evaluation report quality, attached as Annex 4. The applied evaluation quality assessment criteria are used as a tool to provide structured feedback. UNIDO ODG/EVQ/IEV should ensure that the evaluation report is useful for UNIDO in terms of organizational learning (recommendations and lessons learned) and is compliant with UNIDO's evaluation policy and these terms of reference. The draft and final evaluation report are reviewed by UNIDO ODG/EVQ/IEV, which will submit the report to the donor and circulate it within UNIDO together with a management response sheet.

Annex 1: Project Results Framework

The detailed Monitoring and Evaluation Plan, and Risk Assessment Plan, which were both developed and implemented for this project will be shared with the evaluation expert once recruited.

Project Narrative	Indicator	Baseline	Target	Sources of Verification	Assumptions/Risks
<p>Project Objective</p> <p>Promote energy efficiency in the industries through introduction of ISO energy management standard incorporating industrial system optimization</p>	<ul style="list-style-type: none"> • Measurable reductions in electricity and fuel consumption by industry • Calculated GHG emissions reductions 	<p>No direct and indirect electricity and fuel consumption reductions</p> <p>Baseline values to be determined through data collection and discussions with industry</p>	<p>Electricity savings: 83,712 MWh,</p> <p>Fuel savings of 1,914,142 GJ</p> <p>Emissions reduction of 196,757 tCO₂ during the project duration (to be determined after technical assessments during the project implementation)</p>	<p>Terminal reports</p> <p>Peer-to-peer network</p> <p>End-of-project survey</p>	<p>Continuous support of concerned government authorities</p> <p>Active support driven by industry</p>
Component 1: ISO compliant energy management systems					
Outcome 1: Compliance to a policy instrument that encourages industrial enterprises to adopt ISO compatible energy management standards to deliver sustainable improvements in industrial energy efficiency and competitiveness					
Output 1.1: Training material and tools on energy management developed	Training material on energy management systems provided to industrial enterprises.	Continued use of generic training material on energy management in industrial facilities.	Availability of translated, comprehensive training material and tools specifically supporting the development and implementation of energy management compatible with ISO 50001.	<ul style="list-style-type: none"> • UNIDO experts' reports • Project progress reports 	Continuous government and industry sector support and participation
Output 1.2: National awareness campaign launched on ISO 50001	National campaign provided information to industry to adopt ISO 50001.	Limited awareness campaign launched on energy management standard in the past.	Promotional literature distributed to industries to promote the adoption of ISO 50001.	<ul style="list-style-type: none"> • Awareness campaign report • Progress and annual reports 	Sustained government support and participation

Project Narrative	Indicator	Baseline	Target	Sources of Verification	Assumptions/Risks
Output 1.3: National experts/factory personnel trained on energy management systems	<ul style="list-style-type: none"> • Number of trained national experts • Number of trained factory personnel 	Current/proposed training programs limited to generic aspects of energy management without comprehensive guidelines and not specifically addressing content of ISO 50001	Training on energy management in line with ISO 50001 of: <ul style="list-style-type: none"> • 50 national experts • 500 factory managers (out of which 300 will be trained in energy management system implementation) 	Reports of UNIDO's international experts and list of attendees	Sufficient commitment to energy management on the part of national experts and factory personnel
Output 1.4: Peer-to-Peer network between industrial enterprises created and operational	Network established and used to support program recognition and present savings result from energy management.	Government database only, no formal peer-to-peer discussion platforms on energy management exist.	All participating enterprises share their implementation plan on energy management on the network and learn from others' experience and results	Annual report on web-based participating facility results	Willingness to upload their experience with energy management (EE measures and projects undertaken)
Component 2: Industrial energy systems optimization					
Outcome 2: A cadre of energy efficiency professionals created within industrial facilities as well as consultants and suppliers to initiate a process to transform local markets effectively and to provide industrial systems optimization services					
Output 2.1: Training material and tools on systems optimization developed	Training material on systems optimization provided to industrial enterprises.	Continued use of generic IEE training material focusing on energy audits and specific sectors, but generic technology replacement opportunities.	Availability of translated, comprehensive training material and tools on systems optimization	<ul style="list-style-type: none"> • UNIDO experts' reports • Project progress and annual reports 	Continuous government support and participation
Output 2.2: National experts/factory personnel trained on optimization of steam, compressed air, fan and pumping systems	<ul style="list-style-type: none"> • Number of trained national experts • Number of trained factory personnel 	Current/proposed training programs (both national and donor-supported) do not address systems optimization.	Training in systems optimization of: <ul style="list-style-type: none"> • 50 national experts • 400 factory managers 	<ul style="list-style-type: none"> • Reports of UNIDO's international experts • List of training sessions attendees 	Sufficient commitment to systems optimization on the part of national experts and factory personnel

Project Narrative	Indicator	Baseline	Target	Sources of Verification	Assumptions/Risks
Output 2.3: Equipment vendors/suppliers trained on systems optimization	Number of trained equipment vendors/suppliers	Continued exclusive focus by vendors on the sale of individual equipment items. Least purchase price continues to be the main driver for purchasers of steam boilers, pumps, and air compressors.	Training of 50 equipment suppliers/vendors of energy-efficient products in systems optimization	<ul style="list-style-type: none"> • Reports of UNIDO's international experts • List of training session attendees 	Sufficient commitment to systems optimization on the part of equipment suppliers
Component 3: Enhancement of industrial EE financing capacity development					
Outcome3: Increased availability of financial and institutional support for industrial energy efficiency initiatives					
Output 3.1: Harmonized EE project evaluation criteria	Evaluation criteria are harmonized within financial institutions to help them select best EE projects.	Financial institutions continue to appraise EE projects without standards and recognized criteria using current bank projects evaluation criteria.	Criteria for evaluating EE projects are developed and harmonized by main financial institutions in Thailand	<ul style="list-style-type: none"> • Project progress reports • UNIDO experts' reports 	Sufficient commitment from financial institutions to change the way they currently evaluate EE projects
Output 3.2: Trainings provided to banks/FIs on EE projects financing	Number of financial institutions and local banks personnel trained to understand main features of EE projects and better appraise EE projects proposals.	Weak capacity of financial institutions and local banks to understand and evaluate EE projects.	Strengthened capacity of financial institutions and local banks on EE projects evaluation	<ul style="list-style-type: none"> • Training sessions report • Project progress reports • Attendance list 	Financial institutions and local banks are committed enough to build their capacity and invest in EE projects

Project Narrative	Indicator	Baseline	Target	Sources of Verification	Assumptions/Risks
Output 3.3: Training material developed and industry managers trained on the development of financial proposals	<p>Training material relating to financing of energy efficiency project development are provided to industries.</p> <p>Number of trained facility managers/personnel in industrial energy efficiency project development.</p>	<p>No specific material existed to help industrial managers prepare financially sound proposals to mobilize the necessary funds from financiers and banks management.</p> <p>Continued use of generic methods, which do not properly consider the financial impact and opportunities of EE in facilities.</p>	<p>Availability of translated, comprehensive material and guidelines specifically supporting the development of financial proposals for EE projects</p> <p>Industrial facility managers/personnel have the capacity to analyse systems optimization and energy management projects and use energy and O&M costs reduction projects</p>	<ul style="list-style-type: none"> • Project progress reports • UNIDO experts' reports • List of attendees 	<p>Sufficient commitment from facility managers to take action on project financial development</p>
Component 4: Implementation of energy management and systems optimization projects					
Outcome 4: Demonstrable energy savings in participating factories through systems optimization and energy management standards and increased adoption of energy management standards by industry					
Output 4.1: Energy management systems implemented	<ul style="list-style-type: none"> • Number of factories with energy management plans implemented • Number of case studies • Number of factories registered for peer-to-peer network 	<p>Limited implementation of energy management systems in Thailand, leaving its (export) industry unprepared for potential market demand for energy-efficient production of goods for export.</p>	<ul style="list-style-type: none"> • 200 factories adopted energy management plans and completed operational improvement projects • 50 factories adopted and implemented ISO 50001 • Participating factories registered with the peer-to-peer network report energy savings 	<ul style="list-style-type: none"> • Case studies from national experts that have received training • Reports of UNIDO's international experts 	<ul style="list-style-type: none"> • Continuous support from the National Standardization Agency and the government • Sufficient interest from industry • Successful introduction of peer-to-peer network

Project Narrative	Indicator	Baseline	Target	Sources of Verification	Assumptions/Risks
Output 4.2: Documented systems optimization demonstration projects	<ul style="list-style-type: none"> • Number of completed steam, pumping, fan and compressed air systems assessments • Number of completed systems optimization projects 	Absence of local examples of successful optimization of industrial steam, pumping, and compressed air systems hindering nationwide uptake of good EE practices.	<ul style="list-style-type: none"> • 75 systems assessments conducted of which 50 led to completed systems optimization projects • 25 case studies showing GHG emission reductions 	<ul style="list-style-type: none"> • Case studies from national experts • Reports of UNIDO's international experts 	Sufficient commitment from industrial enterprises to take action on systems optimization following systems assessment
Output 4.3: Recognition program developed and implemented	Recognition program for participating companies established based on successful achievements	Ad-hoc publicity for EE success stories from the industry.	Formal recognition of factories achieving power/fuel consumption reductions reflected in government reports	<ul style="list-style-type: none"> • Award ceremony highlighting successful projects • Project annual reports 	Continuous government support for a recognition program

Annex 2: Detailed questions to assess evaluation criteria

The evaluation team will assess the project performance guided by the questions below. It should be noted that these are the guiding questions. In the inception report, the evaluator will specify key issues and key questions for the evaluation to focus on.

#	<u>Evaluation criteria</u>
A	<p>Progress to impact</p> <ul style="list-style-type: none"> ✓ <u>Mainstreaming</u>: To what extent information, lessons or specific results of the project are incorporated into broader stakeholder mandates and initiatives such as laws, policies, regulations and project? ✓ <u>Replication</u>: To what extent the project's specific results (e.g. methodology, technology, lessons and etc.) are reproduced or adopted ✓ <u>Scaling-up</u>: To what extent the project's initiatives and results are implemented at larger geographical scale? ✓ What difference has the project made to the beneficiaries? ✓ What is the change attributable to the project? To what extent? ✓ What are the social, economic, environmental and other effects, either short-, medium- or long-term, on a micro- or macro-level? ✓ What effects are intended or unintended, positive or negative? <p>The three UNIDO impact dimensions are:</p> <ul style="list-style-type: none"> ✓ <u>Safeguarding environment</u>: To what extent the project contributes to changes in the status of environment? ✓ <u>Economic performance</u>: To what extent the project contributes to changes in the economic performance (finances, income, costs saving, expenditure and etc.) of individuals, groups and entities? ✓ <u>Social inclusiveness</u>: To what extent the project contributes to changes in capacity and capability of individuals, groups and entities in society, including vulnerable groups, and hence generating employment and access to education and training?
B	<p>Project design</p>
1	<ul style="list-style-type: none"> • <u>Overall design</u> ✓ The problem, need or gap to be addressed by the project is clearly identified, with clear target beneficiaries? ✓ The project design was adequate to address the problems at hand? ✓ Is the project consistent with the Country's priorities, in the work plan of the lead national counterpart? Does it meet the needs of the target group? Is it consistent with UNIDO's Inclusive and Sustainable Industrial Development? Does it adequately reflect lessons learnt from past projects? Is it in line with the donor's priorities and policies? ✓ Is the applied project approach sound and appropriate? Is the design technically feasible and based on best practices? Does UNIDO have in-house technical expertise and experience for this type of intervention?

#	<u>Evaluation criteria</u>
	<ul style="list-style-type: none"> ✓ To what extent the project design (in terms of funding, institutional arrangement, implementation arrangements...) as foreseen in the project document still valid and relevant? ✓ Does it include M&E plan and adequate budget for M&E activities? ✓ Risk management: Are critical risks related to financial, social-political, institutional, environmental and implementation aspects identified with specific risk ratings? Are their mitigation measures identified? Where possible, are the mitigation measures included in project activities/outputs and monitored under the M&E plan?
2	<ul style="list-style-type: none"> • <u>Logframe</u> ✓ Expected results: Is the expected result-chain (impact, outcomes and outputs) clear and logical? Does impact describe a desired long-term change or benefit to a society or community (not as a mean or process), do outcomes describe change in target group's behaviour/performance or system/institutional performance, do outputs describe deliverables that project will produce to achieve outcomes? Are the expected results realistic, measurable and not a reformulation or summary of lower level results? Do outputs plus assumptions lead to outcomes, do outcomes plus assumptions lead to impact? Can all outputs be delivered by the project, are outcomes outside UNIDO's control but within its influence? ✓ Indicators: Do indicators describe and specify expected results (impact, outcomes and outputs) in terms of quantity, quality and time? Do indicators change at each level of results and independent from indicators at higher and lower levels? Do indicators not restate expected results and not cause them? Are indicators necessary and sufficient and do they provide enough triangulation (cross-checking)? Are they indicators sex-diaggregated, if applicable? Are the indicator SMART? ✓ Sources of verification: Are the sources of verification/data able to verify status of indicators, are they cost-effective and reliable? Are the sources of verification/data able to verify status of output and outcome indicators before project completion? ✓ Are key assumptions properly summarized and reflecting the proper level in the results chain in the logframe?
C	Project performance
1	<ul style="list-style-type: none"> • <u>Relevance</u> ✓ How does the project fulfil the urgent target group needs? ✓ To what extent is the project aligned with the development priorities of the country (national poverty reduction strategy, sector development strategy)? ✓ How does project reflect donor policies and priorities? ✓ Is the project a technically adequate solution to the development problem? Does it eliminate the cause of the problem? ✓ To what extent does the project correspond to UNIDO's comparative advantages? ✓ Are the original project objectives (expected results) still valid and pertinent to the target groups? If not, have they been revised? Are the revised objectives still valid in today's context?
2	<ul style="list-style-type: none"> • <u>Effectiveness</u>

#	<u>Evaluation criteria</u>
	<ul style="list-style-type: none"> ✓ What are the main results (mainly outputs and outcomes) of the project? What have been the quantifiable results of the project? ✓ To what extent did the project achieve their objectives (outputs and outcomes), against the original/revised target(s)? ✓ What are the reasons for the achievement/non-achievement of the project objectives? ✓ What is the quality of the results? How do the stakeholders perceive them? What is the feedback of the beneficiaries and the stakeholders on the project effectiveness? ✓ To what extent is the identified progress result of the project attributable to the intervention rather than to external factors? ✓ What can be done to make the project more effective? ✓ Were the right target groups reached?
3	<ul style="list-style-type: none"> • <u>Efficiency</u> ✓ How economically are the project resources/inputs (concerning funding, expertise, time...) being used to produce results? ✓ To what extent were expected results achieved within the original budget and timeframe? If no, please explain why. ✓ Are the results being achieved at an acceptable cost? Would alternative approaches accomplish the same results at less cost? ✓ What measures have been taken during planning and implementation to ensure that resources are efficiently used? Were the project expenditures in line with budgets? ✓ Could more have been achieved with the same input? ✓ Could the same have been achieved with less input? ✓ How timely was the project in producing outputs and outcomes? Comment on the delay or acceleration of the project's implementation period. ✓ To what extent were the project's activities in line with the schedule of activities as defined by the Project Team and annual Work Plans? ✓ Have the inputs from the donor, UNIDO and Government/counterpart been provided as planned, and were they adequate to meet the requirements?
4	<ul style="list-style-type: none"> • <u>Sustainability of benefits</u> ✓ Will the project results and benefits be sustained after the end of donor funding? ✓ Does the project have an exit strategy? ✓ To what extent the outputs and results have been institutionalized? <p><i>Financial risks:</i></p> <ul style="list-style-type: none"> ✓ What is the likelihood of financial and economic resources not being available once the project ends? <p><i>Socio-political risks:</i></p> <ul style="list-style-type: none"> ✓ Are there any social or political risks that may jeopardize the sustainability of project outcomes?

#	<u>Evaluation criteria</u>
	<ul style="list-style-type: none"> ✓ 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? ✓ Do the various key stakeholders see that it is in their interest that project benefits continue to flow? ✓ Is there sufficient public/stakeholder awareness in support of the project's long-term objectives? <p><i>Institutional framework and governance risks:</i></p> <ul style="list-style-type: none"> ✓ Do the legal frameworks, policies, and governance structures and processes within which the project operates pose risks that may jeopardize the sustainability of project benefits? ✓ Are requisite systems for accountability and transparency and required technical know-how in place? <p><i>Environmental risks:</i></p> <ul style="list-style-type: none"> ✓ Are there any environmental risks that may jeopardize the sustainability of project outcomes? ✓ Are there any project outputs or higher level results that are likely to have adverse environmental impacts, which, in turn, might affect the sustainability of project benefits?
D	Cross-cutting performance criteria
1	<ul style="list-style-type: none"> • <u>Gender mainstreaming</u> ✓ Did the project design adequately consider the gender dimensions in its interventions? Was the gender marker assigned correctly at entry? ✓ Was a gender analysis included in a baseline study or needs assessment (if any)? Were there gender-related project indicators? ✓ Are women/gender-focused groups, associations or gender units in partner organizations consulted/ included in the project? ✓ How gender-balanced was the composition of the project management team, the Steering Committee, experts and consultants and the beneficiaries? ✓ Do the results affect women and men differently? If so, why and how? How are the results likely to affect gender relations (e.g., division of labour, decision-making authority)? ✓ To what extent were socioeconomic benefits delivered by the project at the national and local levels, including consideration of gender dimensions?
2	<ul style="list-style-type: none"> ○ <u>M&E:</u> ○ M&E design ○ Was the M&E plan included in the project document? Was it practical and sufficient at the point of project approval? ○ Did it include baseline data and specify clear targets and appropriate indicators to track environmental, gender, and socio economic results?

#	<u>Evaluation criteria</u>
	<ul style="list-style-type: none"> ○ Did it include a proper M&E methodological approach; specify practical organization and logistics of the M&E activities including schedule and responsibilities for data collection; ○ Does the M&E plan specify what, who and how frequent monitoring, review, evaluations and data collection will take place? Is the M&E plan consistent with the logframe (especially indicators and sources of verification)? ○ Does it allocate adequate budget for M&E activities? ○ M&E implementation ○ How was the information from M&E system used during the project implementation? Was an M&E system in place and did it facilitate timely tracking of progress toward project results by collecting information on selected indicators continually throughout the project implementation period? Did project team and manager make decisions and corrective actions based on analysis from M&E system and based on results achieved? ○ Are annual/progress project reports complete, accurate and timely? ○ Was the information provided by the M&E system used to improve performance and adapt to changing needs? Was information on project performance and results achievement being presented to the Project Steering Committee to make decisions and corrective actions? Do the Project team and managers and PSC regularly ask for performance and results information? ○ Are monitoring and self-evaluation carried out effectively, based on indicators for outputs, outcomes and impact in the logframe? Do performance monitoring and reviews take place regularly? ○ Were resources for M&E sufficient? ○ How has the logframe been used for Monitoring and Evaluation purposes (developing M&E plan, setting M&E system, determining baseline and targets, annual implementation review by the Project Steering Committee...) to monitor progress towards expected outputs and outcomes? ○ How well have risks outlined the project document and in the logframe been monitored and managed? How often have risks been reviewed and updated? Has a risk management mechanism been put in place?
3	<ul style="list-style-type: none"> ○ <u>Results-based management (RBM)</u> <p><i>Results-Based work planning</i></p> <ul style="list-style-type: none"> ○ Review any delays in project start-up and implementation, identify the causes and examine if they have been resolved. ○ Are there any annual work plans? Are work-planning processes results-based? Has the logframe been used to determine the annual work plan (including key activities and milestone)? ○ Examine the use of the project's results framework/ logframe as a management tool and review any changes made to it since project start. <p><i>Results-based monitoring and evaluation</i></p>

#	<u>Evaluation criteria</u>
	<ul style="list-style-type: none"> ○ Verify whether an M&E system is in place and facilitated timely tracking of progress toward project objectives by collecting information on selected indicators continually throughout the project implementation period; ○ Review the monitoring tool currently being used: Do they provide the necessary information? Do they involve key partners? Are they aligned or mainstreamed with national systems? Do they use existing information? Are they efficient? Are they cost-effective? Are additional tools required? How could they be made more participatory and inclusive? ○ Do project team and manager make decisions and corrective actions based on analysis from M&E system and based on results achieved? Is information on project performance and results achievement being presented to the Project Steering Committee to make decisions and corrective actions? Do the Project team and managers and PSC regularly ask for performance and results information? <p><i>Results-based reporting</i></p> <ul style="list-style-type: none"> ○ Assess how adaptive management changes have been reported by the project management and shared with the PSC. ○ Assess how well the Project Team and partners undertake and fulfil donor and UNIDO reporting requirements (i.e. how have they addressed delays or poor performance, if applicable?) ○ Assess how results and lessons derived from the adaptive management process have been documented, shared with key partners and internalized by partners.
E	Performance of partners
1	<ul style="list-style-type: none"> ○ <u>UNIDO</u> ○ Mobilization of adequate technical expertise for project design ○ Inclusiveness of project design (with national counterparts) ○ Previous evaluative evidence shaping project design ○ Planning for M&E and ensuring sufficient M&E budget ○ Timely recruitment of project staff ○ Project modifications following changes in context or after the Mid-Term Review ○ Follow-up to address implementation bottlenecks ○ Role of UNIDO country presence (if applicable) supporting the project ○ Engagement in policy dialogue to ensure up-scaling of innovations ○ Coordination function ○ Exit strategy, planned together with the government ○ Review overall effectiveness of project management as outlined in the Project Document. Have changes been made and are they effective? Are responsibilities and reporting lines clear? Is decision-making transparent and undertaken in a timely manner? Recommend areas for improvement. ○ To what extent the project has a proper and operational governance system (e.g. PSC with clear roles and responsibilities)?

#	<u>Evaluation criteria</u>
	<ul style="list-style-type: none"> ○ Review whether the national management and overall coordination mechanisms have been efficient and effective? Did each partner have assigned roles and responsibilities from the beginning? Did each partner fulfil its role and responsibilities (e.g. providing strategic support, monitoring and reviewing performance, allocating funds, providing technical support, following up agreed/corrective actions)? ○ The UNIDO HQ-based management, coordination, monitoring, quality control and technical inputs have been efficient, timely and effective (e.g. problems identified timely and accurately; quality support provided timely and effectively; right staffing levels, continuity, skill mix and frequency of field visits)?
2	<ul style="list-style-type: none"> • <u>National counterparts</u> ✓ Design <ul style="list-style-type: none"> ○ Responsiveness to UNIDO’s invitation for engagement in designing the project ✓ Implementation <ul style="list-style-type: none"> ○ Ownership of the project ○ Provide financial contribution as planned (cash or in-kind) ○ Support to the project, based on actions and policies ○ Counterpart funding ○ Internal government coordination ○ Exit strategy, planned together with UNIDO, or arrangements for continued funding of certain activities ○ Facilitation of the participation of Non-Governmental Organizations (NGOs), civil society and the private sector where appropriate ○ Suitable procurement procedures for timely project implementation ○ Engagement with UNIDO in policy dialogue to promote the up-scaling or replication of innovations
3	<ul style="list-style-type: none"> • <u>Donor</u> ✓ Timely disbursement of project funds ✓ Feedback to progress reports, including Mid-Term Evaluation, if applicable ✓ Support by the donor’s country presence (if applicable) supporting the project for example through engagement in policy dialogue
F	<p>Overall assessment</p> <ul style="list-style-type: none"> ✓ Overarching assessment of the project, drawing upon the analysis made under Project performance and Progress to Impact criteria above but not an average of ratings.

Annex 3: Job descriptions



UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION TERMS OF REFERENCE FOR PERSONNEL UNDER INDIVIDUAL SERVICE AGREEMENT (ISA)

Title:	Senior International Industrial Energy Efficiency expert – Team Leader
Main Duty Station and Location:	Home-based
Mission/s to:	Iran and to Vienna/Austria
Start of Contract (EOD):	1 March 2018
End of Contract (COB):	30 June 2018
Number of Working Days:	32 working days

ORGANIZATIONAL CONTEXT

The Office for Independent Evaluation is responsible for the independent evaluation function of UNIDO. It supports learning, continuous improvement and accountability, and provides factual information about result and practices that feed into the programmatic and strategic decision-making processes.

PROJECT CONTEXT (See evaluation terms of reference attached)

Duties: The senior international evaluation consultant will act as a Team leader in this project evaluation according to the terms of reference. She/he will be responsible for the preparation of the evaluation report, including the coordination of inputs from other team members. The Team Leader will perform the following tasks:

MAIN DUTIES	Concrete/ Measurable Outputs to be achieved	Working Days	Location
1. Review project documentation and relevant country background information (national policies and strategies, UN strategies and general economic data); determine key data to collect in the field and adjust the key data collection instrument if needed; Prepare an inception report which streamlines the specific questions to address the key issues in the TOR, specific methods that will be used and data to collect in the field visits, detailed evaluation methodology confirmed, draft theory of change, and tentative agenda for field work.	<ul style="list-style-type: none"> Adjust table of evaluation questions, depending on country specific context; Prepare a map of stakeholders to interview during the field missions; The inception report. Submitted to evaluation manager. 	7 days	Home-based
2. Briefing with the UNIDO Independent Evaluation Division, project managers	<ul style="list-style-type: none"> Detailed evaluation schedule with tentative mission agenda (incl. list of stakeholders to 	1 day	Through skype

MAIN DUTIES	Concrete/ Measurable Outputs to be achieved	Working Days	Location
and other key stakeholders at UNIDO HQ.	interview and site visits); mission planning; • Division of evaluation tasks with the team member.		
3. Conduct field mission in 2018 ⁵⁹ .	<ul style="list-style-type: none"> • Conduct meetings with relevant project stakeholders, beneficiaries, etc. for the collection of data and clarifications; • Agreement with the team member on the structure and content of the evaluation report and the distribution of writing tasks; • Evaluation presentation of the evaluation's initial findings prepared, draft conclusions and recommendations to stakeholders in the country at the end of the mission. 	12 days	Iran
4. Present overall findings and recommendations to the stakeholders at UNIDO HQ.	<ul style="list-style-type: none"> • After field mission(s): Presentation slides, feedback from stakeholders obtained and discussed 	2 days	Vienna, Austria
5. Prepare the evaluation report, with inputs from the team member, according to the TOR; Coordinate the inputs from the team member and combine with her/his own inputs into the draft evaluation report; Share the evaluation report with UNIDO HQ and national stakeholders for feedback and comments.	<ul style="list-style-type: none"> • Draft evaluation report. 	7 days	Home-based
6. Revise the draft project evaluation report based on comments from UNIDO Independent Evaluation Division and stakeholders and edit the language and form of the final version according to UNIDO standards.	<ul style="list-style-type: none"> • Final evaluation report. 	3 days	Home-based
	TOTAL	32 days	

⁵⁹ The exact mission dates will be decided in agreement with the Consultant, UNIDO HQ, and the country counterparts.

REQUIRED COMPETENCIES

Core values:

1. Integrity
2. Professionalism
3. Respect for diversity

Managerial competencies:

1. Strategy and direction
2. Judgement and decision making
3. Conflict resolution

Core competencies:

1. Results orientation and accountability
2. Planning and organizing
3. Communication and trust
4. Client orientation
5. Organizational development and innovation

MINIMUM ORGANIZATIONAL REQUIREMENTS

Education: Advanced university degree preferably in economics, energy, development or related disciplines.

Technical and Functional Experience:

- At least 15 years of progressive and proven professional development experience in the field of evaluation, and knowledge of industrial energy efficiency;
- A minimum of ten years practical experience in the field of development projects, including evaluation experience at the international level involving technical cooperation in developing countries;
- Adequate understanding of local social and cultural issues;
- Exposure to the needs, conditions and problems in developing countries; experience in Thailand is a plus

Languages: Fluency in written and spoken English is required.

Absence of Conflict of Interest:

According to UNIDO rules, the consultant must not have been involved in the design and/or implementation, supervision and coordination of and/or have benefited from the programme/project (or theme) under evaluation. The consultant will be requested to sign a declaration that none of the above situations exists and that the consultants will not seek assignments with the manager/s in charge of the project before the completion of her/his contract with the Office for Independent Evaluation.



UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION
TERMS OF REFERENCE FOR PERSONNEL UNDER INDIVIDUAL SERVICE AGREEMENT (ISA)

Title:	National Industrial Energy Efficiency – Team member
Main Duty Station and Location:	Home-based
Mission/s to:	Iran and to Vienna/Austria
Start of Contract (EOD):	1 March 2018
End of Contract (COB):	30 June 2018
Number of Working Days:	27 working days

ORGANIZATIONAL CONTEXT

The Office for Independent Evaluation is responsible for the independent evaluation function of UNIDO. It supports learning, continuous improvement and accountability, and provides factual information about result and practices that feed into the programmatic and strategic decision-making processes.

PROJECT CONTEXT (See evaluation terms of reference attached)

Duties: The international expert will act as a Team leader in this project evaluation according to the terms of reference. She/he will be responsible for the preparation of the evaluation report, including the coordination of inputs from other team members. He/she will perform the following tasks:

<u>MAIN DUTIES</u>	Concrete/measurable outputs to be achieved	Expected duration	Location
Desk review Review and analyze project documentation and relevant country background information; in cooperation with the team leader, determine key data to collect in the field and prepare key instruments in English (questionnaires, logic models); If need be, recommend adjustments to the tools in order to ensure their understanding in the local context; Analyze and assess the aspects related to quality infrastructure in the country, specifically in the context of the project's objectives and targets.	Evaluation questions, questionnaires/interview guide, logic models adjusted to ensure understanding in the national context; A stakeholder mapping.	5 days	Home-based
Coordinate the evaluation mission agenda, ensuring and setting up the required meetings with project partners and government counterparts, and organize and lead site visits, in close cooperation with project staff in the field.	<ul style="list-style-type: none"> • Detailed evaluation schedule • List of stakeholders to interview during the field missions. 	3 days	Home-based

<u>MAIN DUTIES</u>	Concrete/measurable outputs to be achieved	Expected duration	Location
<p>Coordinate and conduct the field mission with the team leader in cooperation with the Project Management Unit, where required;</p> <p>Consult with the team leader on the structure and content of the evaluation report and the distribution of writing tasks.</p> <p>Conduct the Farsi-English translation for the team leader while in the field visits.</p>	<ul style="list-style-type: none"> • Presentations of the evaluation's initial findings, draft conclusions and recommendations to stakeholders in the country at the end of the mission. • Agreement with the Team Leader on the structure and content of the evaluation report and the distribution of writing tasks. 	12 days (including travel days)	Iran (10 days)
Prepare inputs and analysis to the evaluation report according to Inception Report and as agreed with the Team Leader.	Draft analysis to the evaluation report prepared.	5 days	Home-based
Contribute to the revision of the draft project evaluation report based on comments from UNIDO Independent Evaluation Division and stakeholders and edit the language and form of the final version according to UNIDO standards.	Final evaluation report prepared.	2 days	Home-based
TOTAL		27 days	

REQUIRED COMPETENCIES

Core values:

1. Integrity
2. Professionalism
3. Respect for diversity

Managerial competencies:

1. Strategy and direction
2. Judgement and decision making
3. Conflict resolution

Core competencies:

1. Results orientation and accountability
2. Planning and organizing
3. Communication and trust
4. Client orientation
5. Organizational development and innovation

MINIMUM ORGANIZATIONAL REQUIREMENTS

Education: Advanced university degree preferably in economics, energy, engineering, development or related disciplines.

Technical and Functional Experience:

- A minimum of 10 years practical experience in the field of industrial energy efficiency;
- Experience with evaluation of development projects will be an asset;
- Exposure to the needs, conditions and problems in developing countries in the region.

Languages: Fluency in written and spoken English and Farsi is required.

Absence of conflict of interest:

According to UNIDO rules, the consultant must not have been involved in the design and/or implementation, supervision and coordination of and/or have benefited from the programme/project (or theme) under evaluation. The consultant will be requested to sign a declaration that none of the above situations exists and that the consultants will not seek assignments with the manager/s in charge of the project before the completion of her/his contract with the UNIDO Independent Evaluation Division.

Annex 4- Outline of an in-depth project evaluation report

Executive summary (maximum 5 pages)

Evaluation purpose and methodology

Key findings

Conclusions and recommendations

Project ratings

Tabular overview of key findings – conclusions – recommendations

1. Introduction

1.1. Evaluation objectives and scope

1.2. Overview of the Project Context

1.3. Overview of the Project

1.4. Theory of Change

1.5. Evaluation Methodology

1.6. Limitations of the Evaluation

2. Project's contribution to Development Results - Effectiveness and Impact

2.1. Project's achieved results and overall effectiveness

2.2. Progress towards impact

2.2.1. Behavioral change

2.2.1.1. Economically competitive - Advancing economic competitiveness

2.2.1.2. Environmentally sound – Safeguarding environment

2.2.1.3. Socially inclusive – Creating shared prosperity

2.2.2. Broader adoption

2.2.2.1. Mainstreaming

2.2.2.2. Replication

2.2.2.3. Scaling-up

3. Project's quality and performance

3.1. Design

3.2. Relevance

3.3. Efficiency

3.4. Sustainability

3.5. Gender mainstreaming

4. Performance of Partners

4.1. UNIDO

4.2. National counterparts

4.3. Donor

5. Factors facilitating or limiting the achievement of results

5.1. Monitoring & evaluation

5.2. Results-Based Management

5.3. Other factors

5.4. Overarching assessment and rating table

6. Conclusions, recommendations and lessons learned

6.1. Conclusions

6.2. Recommendations

6.3. Lessons learned

6.4. Good practices

Annexes (to be put online separately later)

- Evaluation Terms of Reference
- Evaluation framework
- List of documentation reviewed
- List of stakeholders consulted
- Project logframe/Theory of Change
- Primary data collection instruments: evaluation survey/questionnaire
- Statistical data from evaluation survey/questionnaire analysis

Annex 5: Checklist on evaluation report quality

Project Title:

UNIDO project ID:

Evaluation team:

Quality review done by:

Date:

Report quality criteria	UNIDO IED assessment notes	Rating
a. Was the report well-structured and properly written? (Clear language, correct grammar, clear and logical structure)		
b. Was the evaluation objective clearly stated and the methodology appropriately defined?		
c. Did the report present an assessment of relevant outcomes and achievement of project objectives?		
d. Was the report consistent with the ToR and was the evidence complete and convincing?		
e. Did the report present a sound assessment of sustainability of outcomes or did it explain why this is not (yet) possible? (Including assessment of assumptions, risks and impact drivers)		
f. Did the evidence presented support the lessons and recommendations? Are these directly based on findings?		
g. Did the report include the actual project costs (total, per activity, per source)?		
h. Did the report include an assessment of the quality of both the M&E plan at entry and the system used during the implementation? Was the M&E sufficiently budgeted for during preparation and properly funded during implementation?		
i. Quality of the lessons: were lessons readily applicable in other contexts? Did they suggest prescriptive action?		
j. Quality of the recommendations: did recommendations specify the actions necessary to correct existing conditions or improve operations ('who?' 'what?' 'where?' 'when?'). Can these be immediately implemented with current resources?		
k. Are the main cross-cutting issues, such as gender, human rights and environment, appropriately covered?		
l. Was the report delivered in a timely manner? (Observance of deadlines)		

Rating system for quality of evaluation reports

A rating scale of 1-6 is used for each criterion: Highly satisfactory = 6, Satisfactory = 5, Moderately satisfactory = 4, Moderately unsatisfactory = 3, Unsatisfactory = 2, Highly unsatisfactory = 1, and unable to assess = 0.

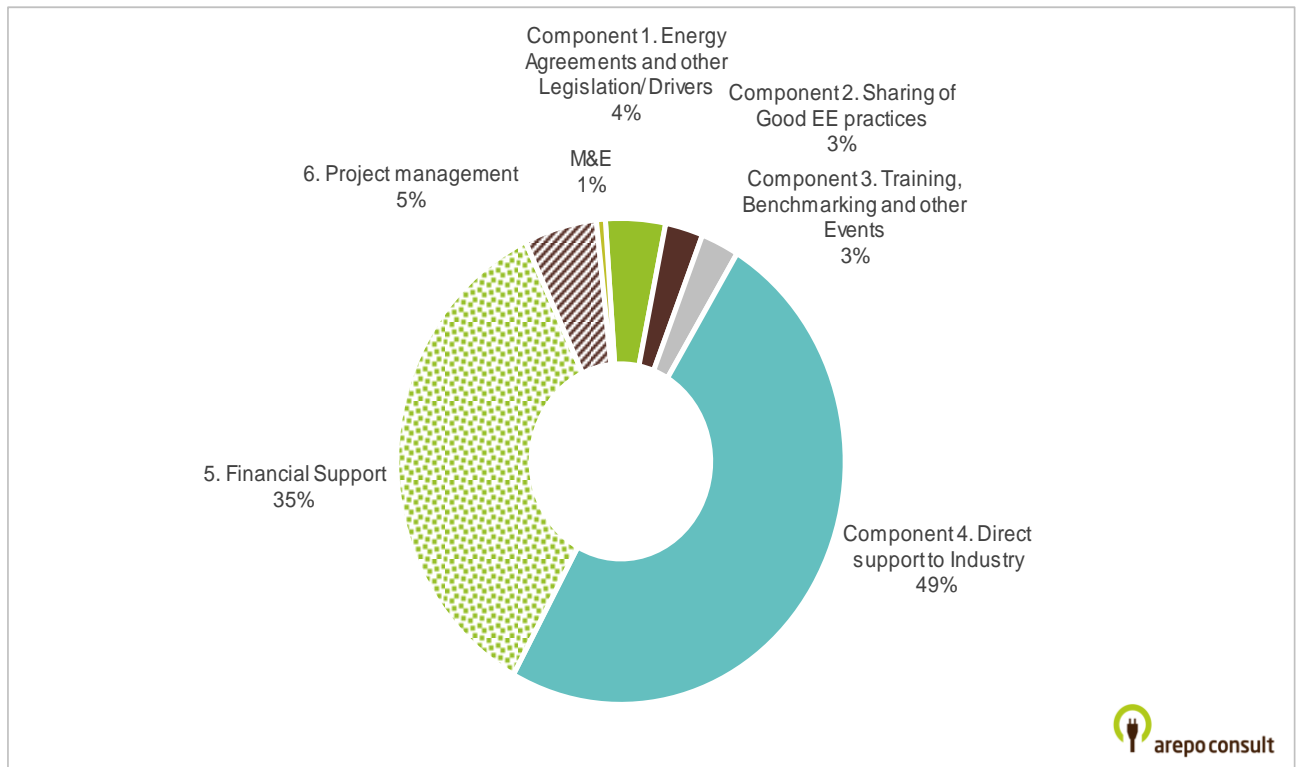
Annex II. Evaluation Framework

#	Evaluation criteria	Data source(s)
A	Impact (or progress toward impact)	Interviews, PMU
B	Project design	
1	Overall design	GEF CEO Endorsement, Stakeholder Interviews, Revised project logframe
2	Logframe	GEF CEO Endorsement, Revised project logframe
C	Project performance	
1	Relevance	Stakeholder Interviews (national counterparts, UNIDO, PMU)
2	Effectiveness	PMU, Interviews
3	Efficiency	PMU, Stakeholder Interviews (national counterparts, UNIDO, PMU)
4	Sustainability of benefits	Interviews (beneficiaries, national counterparts, UNIDO, PMU)
D	Cross-cutting performance criteria	
1	Gender mainstreaming	PMU, Interviews with female participants
2	M&E: <ul style="list-style-type: none"> - M&E design - M&E implementation 	Interviews (PMU)
3	Results-based Management (RBM)	PMU Progress Reports
E	Performance of partners	
1	UNIDO	Stakeholder Interviews (national counterparts, PMU)
2	National counterparts	Stakeholder Interviews (UNIDO, PMU)
3	Donor	Stakeholder Interviews (national counterparts, UNIDO, PMU)
F	Overall assessment	Summary of Findings

Source: own compilation

Annex III. Additional Documentation

Figure 10: Original project budget per project component (in USD 1.000)



Source: own graph based on GEF (2011)

Table 11: Project outcome (revised and original)

Outcome #	Project strategy	Indicator	Baseline	Primary target	Target
Revised 1.1	Adoption of a market-based national carbon trading scheme with Energy Efficiency Certificates in Iran	Availability of market-based local carbon market and trading with Energy Efficiency Certificates in place in Iran	No market-based local carbon market and trading with Energy Efficiency Certificates	1. Agreed National Energy and CO ₂ saving targets to harmonize with the project Objectives. 2. Series of bespoke energy agreements with large energy intense Industry in Iran 3. Series of group Energy agreements with SMEs in “Big 5” Sectors	Market-based local carbon market and trading with Energy Efficiency Certificates in place in Iran National standard framework for certifying energy managers and energy auditors
Original project results framework 1.1	1. Liaise with Iranian Government regarding: National Targets and Milestones regarding EE Legislative in Iran and their need on training 2. Facilitate creation of an incentive-based local carbon market and trading	Availability of Incentive-based local carbon market and trading with Energy Efficiency Certificates in place in Iran ⁶⁰	No incentive-based local carbon market and trading with Energy Efficiency Certificates		<i>Incentive-based local carbon market and trading with Energy Efficiency Certificates in place in Iran</i>

⁶⁰ Source of Verification: “Incentive-based local carbon market and trading with Energy Efficiency Certificates”.

Outcome #	Project strategy	Indicator	Baseline	Primary target	Target
	<i>with Energy Efficiency Certificates in Iran</i>				
Revised 2.1	1. Dedicated Programme website 2. International EE Best Practice /good practice EE advice 3. Other information sharing	Availability of sharing platforms on Industrial Energy Efficiency in Iran	Information on IEE in Iran exists partly on IFCO, SABA and Department of energy (DoE) websites. No common platform on sharing knowledge on IEE in Iran	1. Building and Maintaining the programme website 2. Making BREF International Benchmarks, GP guidance and case studies, etc. in Farsi 3. Advertising events, publications, other programmes	Sharing of good EE practices through a website, library. Available case studies and Data bank on EE and low carbon technologies
Old project results framework 2.1	1. <i>Dedicated Programme website</i> 2. <i>International Best Practice /good practice EE advice</i> 3. <i>Other information sharing</i>	<i>Availability of sharing platforms on Industrial Energy Efficiency in Iran⁶¹</i>	<i>Information on IEE in Iran exists partly on IFCO, SABA and DoE websites No common platform on sharing knowledge on IEE in Iran</i>		<i>Sharing of good EE practices through a website, library. Available case studies and Data bank on EE technologies⁶²</i>
Revised 3.1	1. Energy management, Energy performance indicator 2. System optimization 3. Financial Appraisal	Identification of number of enterprises for the on-site EnMS training, and performing trainings and	since 2011, some Energy management systems in line with ISO50001 have been implemented in		• 3 introductory EnMS training workshops to 100 managers in 50 large enterprises, ½ day each

⁶¹ Source of Verification: "Website, EE library, case studies available on the website and the EE library, and data bank on EE technologies".

⁶² Risks and Assumptions: "The Programme Office, Team Leader, key staff, etc. and programme web-site are acted upon as soon as the Programme starts - with no barriers to their development. Any delays will have a cumulative impact on these specific deliverables".

Outcome #	Project strategy	Indicator	Baseline	Primary target	Target
	4. Other Conference/ Exhibitions/ etc. linked to System optimization workshops 5. Capacity building 6. Energy benchmarking training	benchmarking as per outputs ⁶³	Industry, however the reference data is not available Since 2011, IFCO and also some private institute like TÜV Nord Iran presented some EnMS training courses but there is no reference data and consolidated information. Considering the fact that ISO50001 has not been obligated in Iran up to now, the training was limited.		<ul style="list-style-type: none"> • 100 managers trained in financial appraisal (2 d workshop) • 600 staff trained in system optimization (approx. 20 x 1 to 3-day workshops) • 20 Benchmarking and M&T workshops of 3-day duration • 20 conference/exhibitions linked to system optimisation
Old project results framework 3.1	1. Energy management 2. Financial Appraisal 3. Other Conference/ Exhibitions/ etc. 4. Equipment training/ capacity building	Identification of number of enterprises for the on-site EnMS training, and performing trainings and benchmarking as per outputs			Performing the on-site EnMS training in minimum 8 large enterprises, and performing trainings and benchmarking as per outputs ⁶⁴

⁶³ Source of Verification: “Performing the trainings of ■ on-site EnMS training in minimum 7 large enterprises, ■ EnPI training for up to 30 experts and policy makers ■ Capacity building and workshop of system optimization in two systems, ■ Capacity building on Energy Auditing training ■ One workshop in Benchmarking methodology training ■ 5 conferences linked to SO and EnMS”.

⁶⁴ Risks and Assumptions: “Sites are sufficiently motivated to send delegates for training and upload Programme Website. Local trainers are interested in the information and resources and this contributes to their capacity to train others Suppliers are sufficiently motivated to showcase technologies and prepare presentations”.

Outcome #	Project strategy	Indicator	Baseline	Primary target	Target
Revised 4.1	<ol style="list-style-type: none"> 1. Energy Performance benchmarking 2. Detailed follow-up technical energy audits 3. Online monitoring 4. Pilot schemes/ demonstration projects 	<ul style="list-style-type: none"> • Implementing of demonstration industrial energy efficiency projects at number of pilot sites within the Big 5 Industries, • Implementing 2-3 online monitoring projects in big 5 sectors⁶⁵ 			<ul style="list-style-type: none"> • Benchmark reports of 5 sectors/ sub-sectors with large numbers of similar activities. • Repeat benchmark after 2-3 years • >600 walk-through audit reports • >400 “detailed study” reports • 60 x Iranian Good practice case study documents • Pool of auditing equipment held & available through Project Office • Approx. 100 sites supported for EMS meters and software • Grants of (typically) USD 500k for 4 pilot schemes/ demos
Old project results framework OUTCOME 4.1	<ol style="list-style-type: none"> 1. Energy Performance benchmarking 2. Walk through energy audits 3. Detailed follow-up technical energy audits 4. Good practice case studies on IEE in Iran 5. Energy Audit Equipment 6. Metering and M&T 7. Pilot 	<i>Implementing of demonstration industrial energy efficiency projects at number of pilot sites within the Big 5 Industries, training and performing of number of walk-through and detailed follow-up technical energy audits, and training in M&T</i>			<i>Implementing of demonstration industrial energy efficiency projects at minimum 4 pilot sites within the Big 5 Industries, training and performing of number of walk-through and detailed follow-up technical energy audits, and training in</i>

⁶⁵ Source of Verification: “Implementing of demonstration industrial energy efficiency projects at five pilot sites within the Big 5 Industries Implementing online monitoring in 2-3 pilots of big 5 sectors Implementing energy benchmarking in one sector Industry energy auditing: capacity building and training Technical / Detailed Energy Audits”.

Outcome #	Project strategy	Indicator	Baseline	Primary target	Target
	<i>schemes/demonstration projects</i>				<i>M&T as per output targets accordingly⁶⁶</i>
Revised 5.1	1. Create links to funding mechanisms for IEE projects in Iran 2. Revolving Fund for EE support in Iran	Establishment and administration of a Revolving Fund for IEE in Iran	No mechanisms for financial support of the companies that want to implement IEE action plans in Iran	A "Revolving Fund " with initial input from the GEF/UNIDO/ IFCO programme of > USD 6.5 M (USD 1.5 M from the GEF Grant, and USD 5 M secured by IFCO) established	A "Revolving Fund " with initial input from the GEF/UNIDO/ IFCO programme of > USD 6.5 M (USD 1.5 M from the GEF Grant, and USD 5 M secured by IFCO) established
Old project results framework OUTCOME 5.1	1. Create links to funding mechanisms for IEE projects in Iran 2. Revolving Fund for EE support in Iran	<i>Establishment and administration of a Revolving Fund for IEE in Iran⁶⁷</i>	<i>No mechanisms for financial support of the companies that want to implement IEE action plans in Iran</i>		<i>A "Revolving Fund " with initial input from the GEF/UNIDO/ IFCO programme of > USD 6.5 M (USD 1.5 M from the GEF Grant, and USD 5 M secured by IFCO) established⁶⁸</i>

Source: Original and revised project logframe.

⁶⁶ Risks and Assumptions: "There is no major deterioration in the macro economic and political climate. Iran emerges from the current financial crisis within 2-3 years. The impact from the phasing out of the Energy Subsidy has no major bearing on the robustness of individual sectors or Iranian industry. The barriers identified are the principal constraints to growth in this area. The Programme helps overcome existing EE market barriers and builds a sustainable market capacity "Before" monitoring may need adjustment if (say) the "after" case has to meet legislative requirements or minimum standards."

⁶⁷ Source of Verification: "Existing Revolving Fund for IEE projects in Iran".

⁶⁸ Risks and Assumptions: "There is no major deterioration in the macro economic and political climate, and Iran emerges from the current financial crisis within the next two-three years. By 2016/7, programme will have made 3 year's worth of lending at 1.5 y payback."

Table 12: Outputs according to the original and the revised project results framework

#	Original project results framework 2010 ^[69]	Original target	#	Revised project results framework 2015	Revised target
1	Energy agreements and other legislation/ drivers		1	Energy efficiency certificates and other legislative drivers	
O-1.1	Negotiated Energy Agreements with Industry	<p>Series of Negotiated Energy Agreements with relevant Iranian Government Body, for an estimated 150-200 large, energy-intense Industrial sites and/or several sub-sectors and clusters</p> <p>Established Negotiated Energy Agreements, with (1) 2024/5 EE targets and Milestones (2) Written Action Plans In place for: - 15 steel sites - 15 Refineries, - 50 Petrochemicals, - 60 cement sites; - 20-30 of the largest brick 5-10 Sectors/ Groups/ clusters of SME operators</p>	RO-1.1	Development of proposal for an incentive-based national carbon trading scheme with Energy Efficiency Certificates in Iran	<ul style="list-style-type: none"> - 1 Report on National Legal Framework for EE in Iran - 1 report prepared for Framework for EE Trading in Iran based on international best practice - 1 framework for Energy Efficiency Certificates Iran recommended - Sector-specific roadmap for at least two sectors for implementation of the proposed incentive-based national carbon trading scheme with Energy Certificates in Iran
O-1.2	Government capacity enhanced	Government capacity to design and implement an effective industrial EE policy enhanced	RO-1.2	Government capacity enhanced	<ul style="list-style-type: none"> - One introductory workshop on EE in Iran - One workshop on Energy Efficiency Laws and practices in Energy Efficiency "Best Practice" countries, with a special focus on Energy Efficiency Certificates CO₂ Emissions trading carried out - 20 policy makers trained in Iran

⁶⁹ Outputs are sorted according to the revised project results framework (right side) which has a different order of outputs.

#	Original project results framework 2010 ^[69]	Original target	#	Revised project results framework 2015	Revised target
2 Sharing of good EE practices			2 Sharing of good energy efficiency practices		
O-2.1	Website	Dedicated website for energy/ environment/ low carbon technologies and techniques, with access to events and training, Case Study reports, the library of information, etc., Website up and operation. Log of "hits" and downloads from site	RO-2.1	Website for energy/ environment/ low-carbon technologies and techniques	– 1 Website for energy/ environment/ low-carbon technologies and techniques completed
O-2.2	EE Library	Library of information (in Farsi), covering: <ul style="list-style-type: none"> - International Best Practices, Guidance & Benchmarks; - Good operating practices sector specific and cross sector; - 60 Iranian Case Study reports of EE investment in EE technologies and techniques; - National Energy "Benchmarks" for industrial sectors with large numbers of broadly similar operators; - Audited findings from up to 5 "demonstration" or "pilot-scheme" projects; - Proceedings from talks and events supported by the EE programme; - Forum for discussion and sharing of best practices > 200 documents/ reports/ event or training activities/ etc. all pertinent to the Iranian Industry EE program 	RO-2.2	Energy Efficiency Library	<ul style="list-style-type: none"> – > 200 documents/ reports/ event or training activities/ etc. all pertinent to the Iranian Industry EE program – Audited findings from 5 "demonstration" or "pilot-scheme" project
O-2.3	Case Studies	<ul style="list-style-type: none"> - 60 case study documents - At least 20 x Launch events 	RO-2.3	Case Studies on Iranian Industrial Energy Efficiency	– 30 Iranian case study reports of EE investment in EE technologies and techniques
O-2.4	EE Technologies	Data bank on energy efficiency technologies	RO-2.4	Energy Efficiency Technologies	– International Data bank on energy efficiency technologies available on the website

#	Original project results framework 2010 ^[69]	Original target	#	Revised project results framework 2015	Revised target
3	Training and other events		3	Training, benchmarking and other events	
O-3.1	Generate EnMS Training material	Fully developed training materials for <ul style="list-style-type: none"> - EnMS training and - system optimization 	RO-3.1	Generate EnMS Training material	<ul style="list-style-type: none"> - Training materials for EnMS training in Iran available for use - Training materials for system optimization available for use
O-3.2	Training for 100's of key staff from all sectors, inc: <ul style="list-style-type: none"> - Energy Management and EMS (ISO14001/ ISO50001 or similar accreditation); - Energy Benchmarking - M&T techniques - Staff awareness and motivation - Sector specific and cross-sector EE technologies/ techniques 	Covering: <ul style="list-style-type: none"> - Introductory training sessions to 100 managers in 50 large enterprises (bespoke 1-1 direct support for large Organizations; general support for SMEs) - Formal training in EnMS and systems optimization: 100 managers in 50 enterprises - Extensive on-site EnMS training for 10 large enterprises; - 100 SMEs trained in energy management systems - Others bespoke 	RO-3.2	<ul style="list-style-type: none"> - Training for number of key staff from all sectors, including: <ul style="list-style-type: none"> - Energy Management and EMS (ISO 14001/ ISO 50001 or similar accreditation); - Energy Benchmarking - M&T techniques - Staff awareness and motivation - Sector specific and cross-sector EE technologies/ techniques 	<ul style="list-style-type: none"> - 100 managers from Big 5 industries and SMEs are to be trained in a workshop on EMS - Extensive on-site EnMS training for 10 large enterprises - 100 SMEs trained in energy management systems <p style="text-align: center;"><i>n/a</i></p>
O-3.3	In-country capacity building. [Training trainers]	Up to 10 national trainers trained in EMS and systems optimization, Average "trainer capacity score" increased target x4 by end of project compared to start	RO-3.3	In-country capacity building. [Training trainers]	1 Training of trainers in EMS, systems optimization and EnPI done in Iran for 10 national trainers
O-3.4	General program events	Include program launch, annual review and closure		No longer listed	
O-3.5	Other Training Conferences, exhibitions, seminars.	<ul style="list-style-type: none"> - Link in with other related conferences etc. i. 600 staff trained in system optimization (20 three day workshops) ii. 20 conference exhibitions linked to system optimization 	RO-3.4	Other Training Conferences, exhibitions, seminars.	<ul style="list-style-type: none"> i. 100 staff trained in system optimization ii. 5 conference exhibitions linked to system optimization organized

#	Original project results framework 2010 ^[69]	Original target	#	Revised project results framework 2015	Revised target
O-3.6	Energy Performance "Benchmarking"	Disseminate findings from Energy benchmarks, (see 3 above: 20 energy benchmarking and M&T workshops of 3)	RO-3.5	Energy performance benchmarking	20 energy benchmarking and M&T workshops of 3-day duration
O-3.7	Financial Appraisal Training	100 managers trained in financial assessment at 3-day workshops	RO-3.6	Financial appraisal training	Minimum 30 persons trained for a financial assessment for energy efficiency projects at 3-day workshops
O-3.8	Training in system optimization technical, equipment/ capacity building	Specific training for technical equipment 10 national consultants with up to 15 different types of kit	RO-3.7	Training in system optimization technical, equipment/ capacity building	Minimum of 2 trainings in system optimization technical, equipment/ capacity building Specific training for technical equipment and 20 persons on average per training
4	Direct support to industry		4	Direct support to industry	
4.1	Benchmarking	<ul style="list-style-type: none"> - Iran benchmarking developed and introduced in 5 industrial sectors/ sub-sectors, - Target 5 sub-sectors of predominantly SMEs (e.g. cement, brick, direct reduced iron steel). with (1) initial and (2) repeat benchmark after 2-3 years. 	RO-4.1	Energy Performance Benchmarking	Training on benchmarking methodologies.
O-4.2	Industry auditing: capacity building	In-country industrial auditing skills: <ul style="list-style-type: none"> i. Est 20-30 trained technical staff with energy audit skills ii. Technical EE testing kit likely to be with the above staff 	RO-4.2	Industry Auditing: Capacity Building	<ul style="list-style-type: none"> i. One workshop for estimated 20-30 trained technical staff with energy audit skills ii. One technical kit on a training for Industrial EE audits developed
O-4.3	Walk through audits	General/ walk-through audit finding reports for 600 industrial sites, including:	RO-4.3	Walk-through energy audits and Technical	i. Est 20-30 trained technical staff with energy audit skills

#	Original project results framework 2010 ^[69]	Original target	#	Revised project results framework 2015	Revised target
		(a) Identification of up to 30 % EE opportunities per site; (b) Practical (and part-costed) EE plan-of-action. Two main types are envisaged: - Short, 1-3 day audits: largely focused at SME operators with limited technical expertise. - Longer (bespoke) 4-8 day audits. Useful to sectors with larger energy-intense operators		Detailed Energy Audits	Updating the minimum requirements for an energy audit and improvement of their audit skills
O-4.4	Technical/ detailed audits	Detailed technical audits/ feasibility studies for approx. 400 specific EE opportunities/ cluster of opportunities at selected industrial sites.			
O-4.5	Case Studies	60 x Iranian Case Study reports: financial support and auditing/ evaluation of 60 EE technologies and techniques across all sectors, case studies will be used to promote EE technologies and populate the Program web-site	(See output RO-2.3)	(Case Studies on Iranian Industrial Energy Efficiency)	30 Iranian Case Study reports of EE investment in EE technologies and techniques)
O-4.6	Metering and M&T equipment	Financial support for purchase and installation of sub meters/ M&T software at >100 industrial sites. (Target: USD1.5 M support, support for 100 sites)	RO-4.4	Metering and M&T equipment	i. One train of trainers workshop on M&T for 10 National Trainers on M&T. ii. Online monitoring for 1 pilot on M&T in the petrochemical industry
O-4.7	Demo/ pilot schemes	Direct financial support for up to 5 "demonstration" / "pilot-scheme" projects.	RO-4.5	Demonstration projects for IEE pilot schemes	Log number projects & value of support. Target: -USD3.25 M support ; support for 5 projects
O-4.8	Investment assistance			<i>Moved to 5.2</i>	<i>Moved to 5.2</i>
5	Financial Support			Financial Support	
O-5.1	Revolving investment fund	Revolving Fund": By end 2011/12, to have an ESCO-type loan scheme system in place, with initial input from the GEF/UNIDO/ IFCO program of >USD7 M	RO-5.1	1. Create links to funding mechanisms for IEE projects in Iran 2. Revolving Fund for EE support in Iran	The Revolving Fund is in place, with initial input from the GEF/UNIDO/ IFCO program of > USD 6.5 M (USD 1.5 M from the GEF Grant, and USD 5 M secured by IFCO) Revolving Fund is set-up and disburses USD 6.5 M for projects in IEE in Iran

#	Original project results framework 2010 ^[69]	Original target	#	Revised project results framework 2015	Revised target
O-4.8	Investment assistance	Assist participating sites to attract EE investments. [Links with Financial support, below.]	RO-5.2	Establishment of Revolving investment fund	One Training for the companies on Business plan development to attract EE investments.
5.2	Case Studies	See 4.5		n/a	n/a
5.3	Financial Appraisal training	See 3.7		n/a	n/a
5.4	Meter, M&T equipment	See 5		n/a	n/a

Source: GEF (2011), GEF (2015).

Table 13: Outputs according to the revised project results framework (2015) versus the progress reports

#	Revised project results framework 2015	Revised target ⁷⁰		Outputs listed in Progress Reports	Targets listed in Progress Reports since September 2015 ⁷¹
1	Energy Efficiency Certificates and other Legislative Drivers		1	Energy Efficiency Certificates and other legislative Drivers	
RO-1.1	Development of proposal for an incentive-based national carbon trading scheme with Energy Efficiency Certificates in Iran		1.1	Liaise with Iranian Government	Set or revise national energy policies and legislations (P-16, P-17, P-18, P-20, P-21, P-22, P-23, P-24, P-25)
		i. 1 Report on National Legal Framework for EE in Iran			
		ii. 1 report prepared for Framework for EE Trading in Iran based on international best practice			
		iii. 1 framework for Energy Efficiency Certificates Iran recommended			
		iv. Sector-specific roadmap for at least two sectors for implementation of the proposed incentive-based national carbon trading scheme with Energy Certificates in Iran			
		v. 1 Report on National Legal Framework for EE in Iran			
				Framework of white certificate	The white certificate trading is in place as a rule (P-16, P-17, P-18, P-20, P-21, P-22, P-23, P-24, P-25)
				Road map of carbon trading	Carbon trading road map is delivered to Government (P-16, P-17, P-18, P-20, P-21, P-22, P-23, P-24, P-25)

⁷⁰ Bold, purple text marks the difference between the revised logframe and the items listed in the Progress Reports.

⁷¹ Sources for the outputs and their targets are the Progress Reports marked at PR and the report number.

#	Revised project results framework 2015	Revised target ⁷⁰		Outputs listed in Progress Reports	Targets listed in Progress Reports since September 2015 ⁷¹
			added	Setting national standard framework for certified energy managers and energy auditors	2 training course for national trainers (Train the trainers) (P-18, P-20, P-21, P-22) (not listed in P-23)
RO-1.2	Government capacity enhanced	<ul style="list-style-type: none"> 1 introductory workshop on EE in Iran 1 workshop on Energy Efficiency Laws and practices in Energy Efficiency "Best Practice" countries, with a special focus on Energy Efficiency Certificates CO₂ Emissions trading carried out 20 policy makers trained in Iran 		Liase with Iranian Government	4 awareness seminar holding for policy makers for more involvement (P-16, P-17, P-18, P-20, P-21, P-22, P-23, P-24, P-25)
	n/a	n/a			Text in Progress reports' body: "Agreed national energy and CO ₂ saving targets in line with project objectives"
	n/a	n/a	added	Study of EE cost curve in steam system	EE cost curve Developed (P-23, P-24, P-25)
	n/a	n/a	added	Energy Management Award in Petroleum Industry	Applicants assessed and award ceremony held (P-25)
2	Sharing of good Energy Efficiency Practices				
	n/a	n/a	2.0	Communication plan	Communication plan was developed (P-16, P-17, P-18, P-20, P-21, P-22, P-23, P-24, P-25)
RO-2.1	Website for energy/ environment/ low-carbon technologies and techniques	1 Website for energy/ environment/ low-carbon technologies and techniques completed	2.1	Dedicated website	Website set and established and materials and events are uploaded and shared. (P-16, P-17, P-18, P-20, P-21, P-22, P-23, P-24, P-25)
RO-2.2	Energy Efficiency Library	<ul style="list-style-type: none"> > 200 documents/ reports/ Event or training activities/ etc. all pertinent to the Iranian Industry EE program Audited findings from 5 "demonstration" or "pilot-scheme" project 		EE library (International BP info, good practice advice and Case studies and others news)	Best practices, best available technologies related publications, case studies of the projects and national case studies are collected, selected and shared on website. (P-16, P-17, P-18, P-20, P-21, P-22, P-23, P-24, P-25)
					One news per week uploaded on website (P-17, P-18, P-20, P-21, P-22, P-23, P-24, P-25)

#	Revised project results framework 2015	Revised target ⁷⁰		Outputs listed in Progress Reports	Targets listed in Progress Reports since September 2015 ⁷¹
RO-2.3	Case Studies on Iranian Industrial Energy Efficiency	30 Iranian Case Study reports of EE investment in EE technologies and techniques	2.3	Developing case studies	20 EE case studies ⁷² was developed and published (P-20, P-21, P-22, P-23, P-24, P-25)
RO-2.4	Energy Efficiency Technologies	International Data bank on energy efficiency technologies available on the website		n/a	n/a
	n/a	n/a	2.5 added	Other information sharing	- 5 designs of EE brochures & posters and 5 booklets in 5 sectors are printed out and distributed (P-16, P17, P-18, P-20, P-21, P-22, P-23, P-24, P-25)
	n/a	n/a			- 3 EE films and video clips are designed, produced and shared (P-16, P17, P-18, P-20, P-21, P-22, P-23, P-24, P-25)
	n/a	n/a			- 7 EE dialogues and awareness raising campaigns ⁷³ are held; (P-16, P17, P-18 P-20 P-21, P-22, P-23, P-24, P-25)
	n/a	n/a			- Participation in five conferences, exhibitions, etc. with the purpose of awareness raising. (P-16, P17, P-18, P-20P-21, P-22, P-23, P-24, P-25)
	n/a	n/a			- Social Medias (P-16, P17, P-18, P-20P-21, P-22, P-23, P-24, P-25)
	n/a	n/a	2.6 added	Monitoring and Evaluation	- Baseline assessment delivered (P-16 P17, P-18, P-20P-21, P-22, P-23, P-24, P-25) - Final assessment delivered (P-16 P17, P-18, P-20P-21, P-22, P-23, P-24, P-25)
	n/a	n/a	2.7 added	Conducting awareness program pilot	The results of awareness raising in pilot delivered (P-25)

⁷² The body of the progress reports lists “30 Iranian case study and good practice document” in Component 4.

⁷³ P16 states 5-7 EE dialogues and awareness raising campaigns are held.

#	Revised project results framework 2015	Revised target ⁷⁰		Outputs listed in Progress Reports	Targets listed in Progress Reports since September 2015 ⁷¹
3	Training, Benchmarking and other Events				
RO-3.1	Generate EnMS Training material	100 managers from Big 5 industries and SMEs are to be trained in a workshop on EMS Extensive on-site EnMS training for 10 large enterprises 100 SMEs trained in energy management systems		<i>Carried out but not listed in the progress reports</i>	<i>Carried out but not listed in the progress reports</i>
RO-3.2	Training for number of key staff from all sectors, including: - Energy Management and EMS (ISO14001/ISO50001 or similar accreditation); - Energy Benchmarking - M&T techniques - Staff awareness and motivation - Sector specific and cross-sector EE technologies/ techniques	100 managers from Big 5 industries and SMEs are to be trained in a workshop on EMS	3.2	Five half-day Introductory seminar to 100 managers in 50 large enterprises	Five half-day awareness seminars were held. (P-16 P17, P-18, P-20, P-21, P-22, P-23, P-24, P-25)
		Extensive on-site EnMS training for 10 large enterprises		Extensive On-site EnMS training	Text in the Progress reports' body: "Awareness workshop on EnMS for 100 managers, EnMS of 100 Managers, Practical EnMS in 10 Companies" (P-16, P17, P-18, P-20, P-21, P-22, P-23, P-24, P-25)
		100 SMEs trained in energy management systems		EnMS User training of 30 energy experts	– On-site EnMS training was performed in 10 enterprises (P-16 P17, P-18, P-20, P-21, P-22, P-23, P-24, P-25)
		30 experts are trained in EnMS formal training			30 experts are trained in EnMS formal training (P-16, P17, P-18, P-20, P-21, P-22, P-23, P-24, P-25)
		n/a	n/a		
n/a	n/a			– No cost /low cost opportunities in 10 enterprises are identified (P-16 P17, P-18, P-20, P-21, P-22, P-23, P-24, P-25)	
RO-3.3	In-country capacity building. [Training trainers]	1 training of trainers in EMS, systems optimization and EnPI done in Iran for 10 national trainers		System Optimization (SO) Training for 50 National Experts	– 40 Iranian energy experts, engineers, vendor experts are trained in user training of two SOs (P-16, P-17, P-18, P-20, P-21, P-22, P-23, P-24, P-25) – 30 energy experts, engineers and vendor experts are trained in expert training of two SOs (P-16, P-17, P-18, P-20, P-21, P-22, P-23, P-24, P-25)
RO-3.4		i. 100 staff trained in system optimization			

#	Revised project results framework 2015	Revised target ⁷⁰		Outputs listed in Progress Reports	Targets listed in Progress Reports since September 2015 ⁷¹
	Other Training Conferences, exhibitions, seminars.	ii. 5 conference exhibitions linked to system optimization organized			Participation in 15 ^[74] EE conferences and events (P-16, P-17, P-18, P-20, P-21, P-22, P-23, P-24, P-25)
			Link with Conferences for training EnMS, EnPI and SO	n/a	
RO-3.5	Energy Performance Benchmarking	20 energy benchmarking and M&T workshops of 3-day duration		EnPI Training	Totally 40 trainees from government staff as well as energy experts are trained (P-16, P-17, P-18, P-20, P-21, P-22, P-23, P-24, P-25) Text in the Progress reports' body: "20-30 trainees in benchmarking and M&T workshops"
RO-3.6	Financial Appraisal Training	- Minimum 30 persons trained for a financial assessment for energy efficiency projects at 3-day workshops		n/a	n/a
RO-3.7	Training in system optimization technical, equipment/ capacity building	- Minimum of 2 trainings in system optimization technical, equipment/ capacity building Specific training for technical equipment and 20 persons on average per training		n/a	n/a
4 Direct support to Industry					
RO-4.1	Energy Performance Benchmarking	Training on benchmarking methodologies		Energy Benchmarking in cement Sector	" (P-16, P-17, P-18, P-20, P-21, P-22, P-23, P-24) / "Study of energy benchmarking delivered and presented to Cement sector and policy makers" P-25
	n/a	n/a	added	Monitoring of EnPI in cement sector	Establish online monitoring in two cement pilots ⁷⁵ (P-16, P-20, P-21, P-22, P-23, P-24, P-25)
RO-4.2	Industry Auditing: Capacity Building	One workshop for estimated 20-30 trained technical staff with energy audit skills One technical kit on a training for Industrial EE audits developed		Training for number of key staff from all sectors, on energy auditing (ISO 50002)	20-25 trainees have received training (P-16 (P-16, P-17, P-18, P-20, P-21, P-22, P-23, P-24, P-25)

⁷⁴ The body of the report refers to 20 EE case studies.

⁷⁵ Progress report body refers to a target of "online monitoring of main energy performance indicators in two sectors."

#	Revised project results framework 2015	Revised target ⁷⁰		Outputs listed in Progress Reports	Targets listed in Progress Reports since September 2015 ⁷¹
RO-4.3	Walk-through energy audits and Technical Detailed Energy Audits	Est 20-30 trained technical staff with energy audit skills Updating the minimum requirements for an energy audit and improvement of their audit skills		Detail Energy Audit	
					100 energy audit reports presented (P-16, P-17, P-18, P-20, P-21, P-22, P-23, P-24, P-25)
RO-4.4	Metering and M&T equipment	One Train of Trainers Workshop on M&T for 10 National Trainers on M&T.			
		Online monitoring for 1 Pilot on M&T in the petrochemical industry		Implement online monitoring system in petrochemical sector	Online monitoring software for EnPIs installed and applied on one petrochemical plant (P-16, P-17, P-18, P-20, P-21, P-22, P-23, P-24, P-25)
RO-4.5	Demonstration projects for IEE pilot schemes	Log number projects & value of support. Target: -USD3.25 M support ; support for 5 projects		Pilot projects in the following sectors 1) Iron & Steel, 2) Cement, 3) Oil Refinery, 4) Brick	- The project has been implemented - Energy saving was achieved (P-16, P-17, P-18, P-20, P-21, P-22, P-23, P-24, P-25)
5 Financial Support					
RO-5.1	Establishment of Revolving investment fund	The Revolving Fund is in place, with initial input from the GEF/UNIDO/ IFCO program of > USD 6.5 M (USD 1.5 M from the GEF Grant, and USD 5 M secured by IFCO) Revolving Fund is set-up and disburses USD 6.5 M for projects in IEE in Iran		Establishment of Revolving Fund for EE support	"Activated Revolving Fund in EE project" (P-16, P-17) " Mobilized the whole money of Revolving Fund to the EE projects" (P-18, P-20, P-21, P-22, P-23, P-24)
RO-5.2	Investment assistance	1 training for the companies on business plan development to attract EE investments.		n/a	n/a
	n/a	n/a	5.3 added	Revolving Fund s: Making links to other funding mechanisms	Made links to other financial mechanisms in EE project (P-16, P-17, P-18, P-20, P-21, P-22, P-23, P-24) " Financial mechanism set for EE projects " (P-25)

Source: GEF (2015).

Table 14: Projects results, target and target achievement

Components & Outcomes	Revised Output	Targets		Target Achievement	Achievement in %	Output completed	
Project Objective: To promote energy efficiency in five high energy consuming industrial sectors (Iron&Steel, Petrochemicals, Refinery, brick and cement) by adopting a national framework for Energy Management Standards (EnMS) in Iran	Medium term targets	Targets in CEO Endorsement⁷⁶	Retroactive target calculation (25 % replication-scenario):				
		Annual savings					
		30,259 TWh/a	2,09 TWh/a	0.95 TWh	2 % compared to CEO endorsement	No	
		8.87 Mt CO ₂ /a	0.61 Mt CO ₂ /a	132.778 tCO ₂ /a	1 % compared to CEO endorsement	No	
		n/a	n/a	Cost savings at international prices: USD 14,411,791 a		No	
		Cumulative savings					
		58.26 TWh	4.024 TWh	n/a	n/a	No	
		17.07 Mt CO ₂		Cumulative CO ₂ reduction till 2018: 226,536.76 tCO ₂	n/a	No	
		n/a	n/a	Cumulative energy saved 4,345,403.27 giga joule (GJ)	No target	n/a	
		Energy cost savings: USD 4,700 M				No monitoring data	
		Investment in EE technologies and techniques: USD 5,000 M (both direct and indirect investments)			n/a	No monitoring data	
		Indigenous fossil fuel reserve savings of 0.8 x 10 ⁹ m ³ gas and 0.8 M m ³ oil			n/a	No monitoring data	
				Targets in CEO Endorsement⁷⁷			

⁷⁶ No new targets were set in the revised logframe.

⁷⁷ No new targets were set in the revised logframe.

Components & Outcomes	Revised Output	Targets	Target Achievement	Achievement in %	Output completed
	Long term aims (by end 2024/5)	238.5 Mt of cumulative CO ₂ savings as a result of the GEF programme	n/a	No monitoring data	
		USD 6,000 M of energy savings per year (USD 42,200 M cumulative), with USD 18.100 M cumulative investment in EE technologies and techniques.	n/a	No monitoring data	
		Indigenous fossil fuel reserve savings of 7 x 10 ⁹ m ³ gas and 7 M m ³ oil.	n/a	No monitoring data	
		Targets in revised logframe			
Component 1: Outcome: Adoption of an incentive-based national carbon trading scheme with Energy Efficiency Certificates in Iran	1.1. Development of proposal for an incentive-based national carbon trading scheme with Energy Efficiency Certificates in Iran	1 Report on national legal framework for EE in Iran	Two reports on best practices of EE policies in developed countries including: Review International Best Practice in Industrial Energy Efficiency -Dec. 2014 Energy standards in developed countries- Aug.2015	done	yes
		1 report prepared for Framework for EE Trading in Iran based on international best practice	n/a	n/a	
		<i>- Not listed in 2015 logframe -</i>	One report of "Analysis of effectiveness and efficiency of existing policies in Iran" Nov. 2014	done	
		1 framework for Energy Efficiency Certificates Iran recommended	One study of EE certificate (white certificate)	done	
		Sector-specific roadmap for at least two sectors for implementation of the proposed incentive-based national carbon trading scheme with Energy Certificates in Iran	One study on framework and infrastructure of carbon emission trading including three reports: Review the background, best practices and lessons learnt of Cap and Trade scheme Financial aspects of a national emissions trading scheme	done	

Components & Outcomes	Revised Output	Targets	Target Achievement	Achievement in %	Output completed
			Framework for a national emission scheme including modalities, procedures and structures		
		<i>Not listed in 2015 logframe -</i>	One study on renewable energy certificate (RE certificate)	<i>n/a</i>	
		<i>- Not listed in 2015 logframe -</i>	Present a 2-year roadmap for the introduction of National Carbon Trading Scheme in Islamic Republic of Iran	<i>n/a</i>	
		<i>Not listed in 2015 logframe -</i>	Establishing, designing and holding 1st Energy Management Award in Petroleum Industries in cooperation with IFCO as encouraging policy instrument	<i>n/a</i>	
	1.2. Government capacity enhanced	One introductory workshop on EE in Iran	One seminar to policy makers, on Formulation of Industrial Energy Efficiency Policy and Related Instruments in Iran, presenting modern policy instruments in Europe like voluntary energy agreement and Emission Trading Scheme (ETS) Oct. 2014	done	yes
		One workshop on Energy Efficiency Laws and practices in Energy Efficiency "Best Practice" countries, with a special focus on Energy Efficiency Certificates CO ₂ Emissions trading carried out 20 policy makers trained in Iran	Seminar on Energy Efficiency Certificate Oct. 2015	done	yes
		<i>- Not listed in 2015 logframe -</i>	Seminar on Carbon Emission scheme Jan. 2016	<i>n/a</i>	
		<i>Not listed in 2015 logframe -</i>	21 experts of IFCO and SATBA trained in EnPI within two workshops	<i>n/a</i>	

Components & Outcomes	Revised Output	Targets	Target Achievement	Achievement in %	Output completed
Component 2 Outcome: 1. Dedicated Programme website 2. International Best Practice /Good practice EE advice 3. Other information sharing	2.1 Website for energy/ environment/ low-carbon technologies and techniques	1 Website for energy/ environment/ low-carbon technologies and techniques completed	Website on address ieeiran.ir built and updated within duration of the program	done	yes
	2.2. Energy Efficiency Library	> 200 documents/ reports/ Event or training activities/ etc. all pertinent to the Iranian Industry EE programme Audited findings from 5 "demonstration" or "pilot-scheme" project	82 news stories including 68 news of the IEE program and 13 news of industries posted on Website 37 photo and video of program activities including 3 video clips and 1 animation of climate change produced and shared on website (Multimedia) 14 Best available technologies/ techniques shared on EE library on Website 14 documents/ reports of component one of the programme shared on website Reports, video and photo reports, presentations and speeches of 6 IEE seminars uploaded on Website 16 training materials of EnMS, EnPI and energy System optimizations and 7 case studies on EnMS implementation shared on website. 5 reports of demonstration projects in Iron and steel, Cement, Oil Refinery and Brick sectors and 2 mission reports of EnPI pilots shared on website 2 initial study on Revolving Fund shared on website	100 %	yes

Components & Outcomes	Revised Output	Targets	Target Achievement	Achievement in %	Output completed
			4 posters, 5 brochures and 3 technical booklets shared on website		
			> 5000 set of posters, brochures, technical booklets and case studies shared with main stakeholders and industries in different occasions and events		
			2 discussion forum on basecamp platforms formed for EnMS and EnPI pilot implementations		
			2 discussion groups on social media (Telegram) formed and worked for compressed air and steam system optimizations		
	2.3 Case Studies on Iranian Industrial Energy Efficiency	30 Iranian case study reports of EE investment in EE technologies and techniques	14 Case Studies prepared and published (16 case studies are under preparation)	Completion rate: 47 %	no
	2.4 Energy Efficiency Technologies	International Data bank on energy efficiency technologies available on the website	> 200 EE technologies from program activities mostly from energy audits of IFCO, Revolving Fund and Energy Award collected and will be shared on Website.	done	yes
	- Not listed in 2015 logframe -	- Not listed in 2015 logframe -	2 EE awareness raising workshops delivered to 31 energy managers, energy experts and government experts 2 EE awareness raising workshop to 30 middle managers and 18 operators of Iran Steel Alloy co.	n/a	

Components & Outcomes	Revised Output	Targets	Target Achievement	Achievement in %	Output completed
Component 3: Outcomes: 1. Energy management 2. Financial Appraisal 3. Other Conference/ Exhibitions/ etc 4. Equipment training/ capacity building	3.1 Generate EnMS Training material	Training materials for EnMS training in Iran available for use Training materials for system optimization available for use	EnMS material generated by UNIDO HQ Translation of material for training EnMS & EnPI generated by UNIDO-field office	done	yes
	3.2. Training for number of key staff from all sectors, including: - Energy	100 SMEs trained in energy management systems	½ day EnMS & EE awareness seminar: > 400 companies (1,898 energy managers and experts) attended	400 %	yes
	Benchmarking	100 managers from Big 5 industries and SMEs are to be trained in a workshop on EMS	1/2-day EnMS seminar: 74 managers and energy experts trained	done	
	- M&T techniques		EnMS & EnPIs & M&V training: 70 energy managers and experts of petroleum industry (petroleum refineries / gas refineries / petrochemicals /...)		
	- Sector specific and cross-sector EE		2-day EnMS user training: 30 energy experts and consultants		
	technologies/ techniques		9-day EnMS expert training (3 modules): 25 energy experts and energy managers trained		
	- Staff awareness and motivation				
- Energy Management and EMS (ISO14001/ ISO50001 or similar accreditation);					
		Extensive on-site EnMS training for 10 large enterprises	3-day-on-site EnMS training: 89 energy relevant key staff of 7 large enterprises	done	

Components & Outcomes	Revised Output	Targets	Target Achievement	Achievement in %	Output completed
			½ day on-site training on non-energy benefits: 26 experts of 3 large enterprises trained		
			1-day EnMS seminar: 12 experts of 1 large enterprise trained		
	3.3 In-country capacity building. [Training trainers]	1 Training of trainers in EMS, systems optimization and Energy Performance Indicators done in Iran for 10 national trainers	25 energy experts trained on EnMS 44 energy experts trained as national trainer of SO: (22 on CASO and 22 on SSO)	690 %	yes
	3.4 Other Training	100 staff trained in system optimization	User training SSO: 44 trainees User training CASO: 35 trainees	done	yes
	Conferences, exhibitions, seminars.	<i>n/a</i>	1 EnMS training delivered to the oil, gas and power experts of Iraqi-Kurdistan region, Iraq, 2016.	<i>n/a</i>	
		5 conference exhibitions linked to system optimization organized	Presenting IEE program in International Oil, Gas and Petrochemical Exhibition, Iran, 2014	done	
			One presentation delivered in "1st Iran-European Union Business Forum on Sustainable Energy", Iran, 2017		
			Participate and showcase IEE program outputs in Kish International Energy Exhibition (ENEX), Iran, 2018		
			One conference paper delivered in "12th international energy conference", Iran, 2018		
			2 conference papers delivered in "3rd International Congress On Energy Efficiency & Energy Related Materials", Turkey, 2015		

Components & Outcomes	Revised Output	Targets	Target Achievement	Achievement in %	Output completed
			2 presentations delivered in "Round Table «Oil, Gas and Green Solutions: Technologies for Production and Processing» in the TECHNOCASPIN, Russia, 2016		
			1 presentation delivered on achievement of EnMS program in "Energy Management Expert Group Meeting", Austria, 2016		
	3.5 Energy Performance "Benchmarking"	20 energy benchmarking and M&T workshops of 3-day duration	1 workshop on the results of energy benchmarking study in cement sector held for 34 top managers, energy managers and experts of cement sector	7 %: assuming that 4 out of a target of 60 workshop days were carried out	no
			3 M&T of EnPI training workshops held in Sarooj Cement, Behbahan Cement and Regal Petrochemical Companies for 37 managers and experts		
	3.6 Financial Appraisal Training	Minimum 30 persons trained for a financial assessment for energy efficiency projects at 3-day workshops	5 local bank officers trained on bankable energy efficiency projects	17 % in respect to personnel, the duration of the workshops could not be assessed	no
	3.7 Training in system optimization technical, equipment/ capacity building	Min. 2 trainings with 20 persons on average per training: SO technical	Overlap with output 3.3., achievement unclear	unclear	unclear
		Min. 2 trainings with 20 persons on average per training: equipment/ capacity building	n/a	0 %	no
		Min. 2 trainings with 20 persons on average per training: Specific training for technical equipment	n/a	0 %	

Components & Outcomes	Revised Output	Targets	Target Achievement	Achievement in %	Output completed
Component 4 Outcomes: 1. Energy Performance benchmarking 2. Walk through energy audits 3. Detailed follow-up technical energy audits 4. Good practice case studies on IEE in Iran 5. Energy Audit Equipment 6. Metering and M&T 7. Pilot schemes/demonstration projects	4.1 Energy Performance Benchmarking	Training on benchmarking methodologies	1 workshop on methodology of energy benchmarking held for 14 experts	100 %	yes
		<i>No target included in revised logframe, output added later</i>	2 pilots: Monitoring of EnPIs in cement sector	<i>n/a</i>	<i>n/a</i>
	4.2. Industry Auditing: Capacity Building	1 workshop for estimated 20-30 trained technical staff with energy audit skills One Technical Kit on a Training for Industrial EE audits developed	n/a	0 %	no
	4.3 Walk-through energy audits and Technical Detailed Energy Audits	Est 20-30 trained technical staff with energy audit skills Updating the minimum requirements for an energy audit and improvement of their audit skills	n/a	Target achievement is missing	no
		<i>No target included in revised logframe, original logframe stated ">600 walk-through audit reports >400 "detailed study"</i>	135 Technical Energy audit performed by IFCO	34%	no
			32 walk-through audits conducted and more than ... EE opportunities identified and collected	1.5%	
	4.4. Metering and M&T equipment	Online monitoring for 1 pilot on M&T in the petrochemical industry	M&T of EnPIs performed in 1 Petrochemical	100 %	yes
		1 train of trainers workshop on M&T for 10 National Trainers on M&T	15 national experts trained as trainers in M&T of EnPI	150 %	
	4.5 Demonstration projects for IEE pilot schemes	Number projects: 5 projects	4 EE demonstration projects	80 %	no
		Value of support: USD 3.25	Supported in ~ USD 2 M	~60 % of funds disbursed	

Components & Outcomes	Revised Output	Targets	Target Achievement	Achievement in %	Output completed
Component 5 Outcomes: 1. Create links to funding mechanisms for IEE projects in Iran 2. Revolving Fund for EE support in Iran	5.1 Establishment of Revolving investment fund	The Revolving Fund is in place	Revolving Fund is set up Contract signed with Local Bank	done	no
		with initial input from the GEF/UNIDO/IFCO programme of > USD 6.5 M (USD 1.5 M from the GEF Grant, and USD 5 M secured by IFCO)	USD 4.5 M (1.5 M from project and USD 3 M from Bank) is agreed to be allocated	69 % of funds made available	
		Revolving Fund is set-up and disburses USD 6.5 M for projects in IEE in Iran	Projects reviewed and selected 14 technical proposals		
	5.2 Investment assistance	One training for the companies on business plan development to attract EE investments.	Not yet	0 %	no

Source: Compilation based on project data.

Table 15: Industrial partners of the UNIDO project

	Industrial Partner	awareness activities¹	EE interventions EnMS establishment
Component 2 Cultural change	Yazd alloy Steel Company	x	
Component 3 Monitoring and Verification	Esfahan Steel Co. (ESCO)- CASO	x	
Component 3 EnMS training 7 companies	1. Imam Khomeini Oil Refinery		ISO 50001 certification in progress
	2. Regal Petrochemical Co.		ISO 50001 certified
	3. Kermanshah Petrochemical		ISO 50001 certified
	4. Oxin Steel		ISO 50001 certified
	5. Sarooj Cement		
	6. Sufian Cement		ISO 50001 certified
	7. Zabol Cement		ISO 50001 certified
	<ul style="list-style-type: none"> o (Tehran Cement not completed) o (Shomal Cement not completed) 		
Component 3 SO training	1. CASO Esfahan Steel Co. (ESCO) 2. CASO Regal Petrochemical Co. 3. CASO Tabriz Oil refinery 1. SSO Abadan Oil Refinery 2. SSO Behran Oil 3. SSO Morvarid Petrochemical		x

	Industrial Partner	awareness activities ¹	EE interventions EnMS establishment
Component 4 Demonstration test rigs	<ol style="list-style-type: none"> 1. Abadan Oil Refining Co., contractor: LANPEC ^[2] 2. Esfahan Steel Co. (ESCO), contractor: INTECO ^[3] 3. Hormozgan Cement Co., contractor: CemProTEc ^[4] 4. Diana Sofal Brick Co., local contractor: unknown to evaluation team ^[5] <ul style="list-style-type: none"> ○ <i>Ati Morvarid Pardis Co. status not known to evaluation team</i> 		x
Component 4 RO-addition: Monitoring of EnPIs in cement sector RO-4.4:Online monitoring system in petrochemical sector	<ol style="list-style-type: none"> 1. Regal Petrochemical Co. (RO-4.4) 2. Sarooj Cement (RO-4.1) 3. Behbahan Cement (RO-4.1) 	x	
Component 4 Benchmarking	16 cement companies analysed	x	
Component 5 finance	<ol style="list-style-type: none"> 1. Pasargad bank 		

^[1] measuring, benchmarking, EnPIs, cultural change and M&V activities)

^[2] LANPEC is registered in China

^[3] INTECO is registered in Austria

^[4] CemProTec is registered in Germany

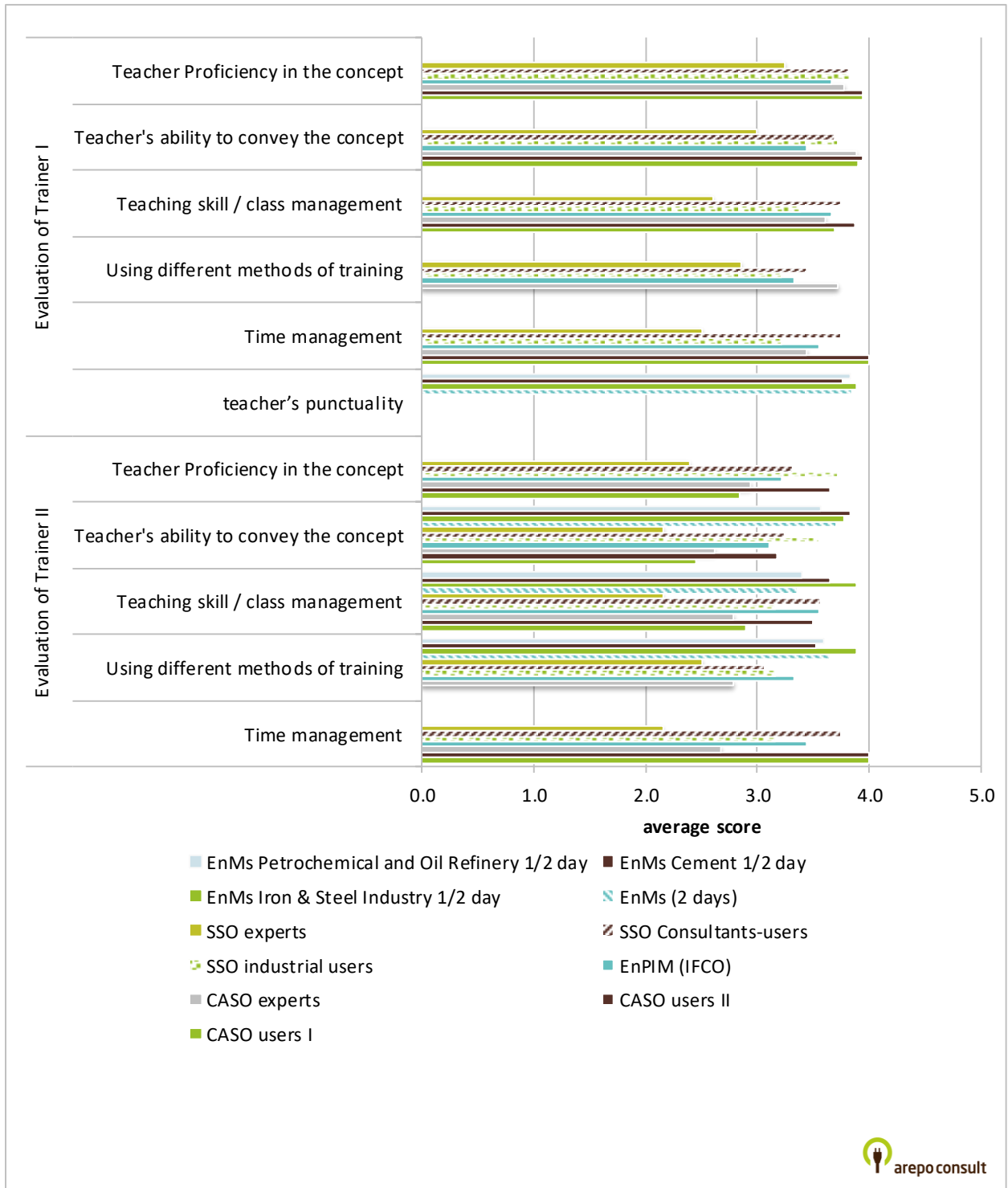
Source: own compilation.

Table 16: Labels used in survey tool I and II assessing course quality

	Labels used in batch I	Labels used in batch II
Evaluation of training course content	- Scientific concepts	- Level of course content
	- Applicability	- Level of course content applicability
Evaluation of trainer I and II	- Teacher Proficiency in the concept	- Teacher Proficiency in the concept
	- Teacher 's ability to convey the concept	- Teacher's ability to convey the concept
	- teaching skill/management	- Teaching skill class management
		- Using different methods of training
	- teacher's punctuality	- Time management
Evaluation of planning & implementation of the training	- Quality of material	- Pamphlet quality
	- session commencing and finishing	- Sessions start and ending time
	- Facilities/ sound screen/...	- Availability of training facilities
	- place/ light /temperature	- Training space, lighting, heating, ventilation and air conditioning (HVAC)
	- Refreshments	- Reception and services

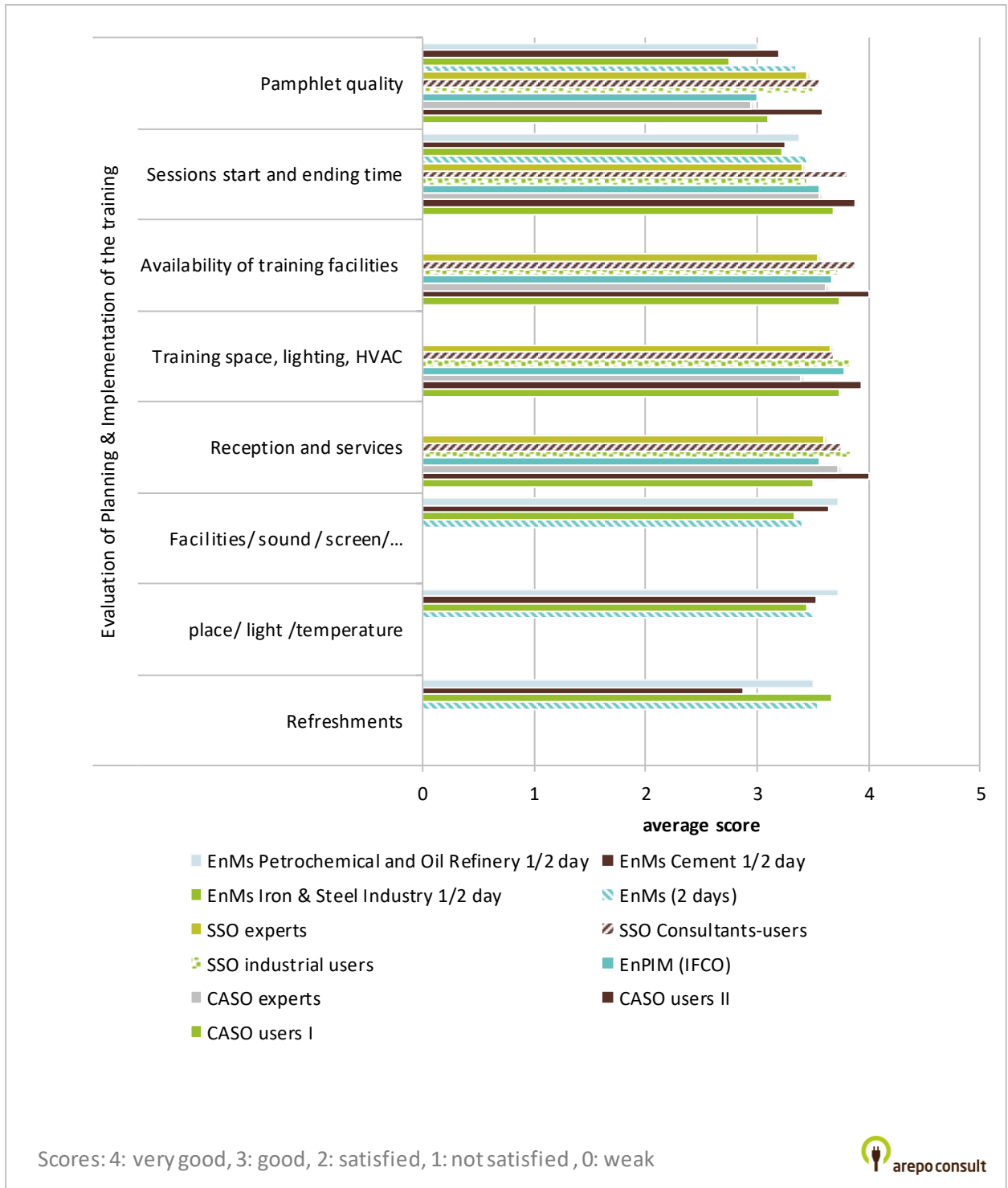
Source: PMU Survey "feedback of training participants".

Figure 11: Scoring of trainers



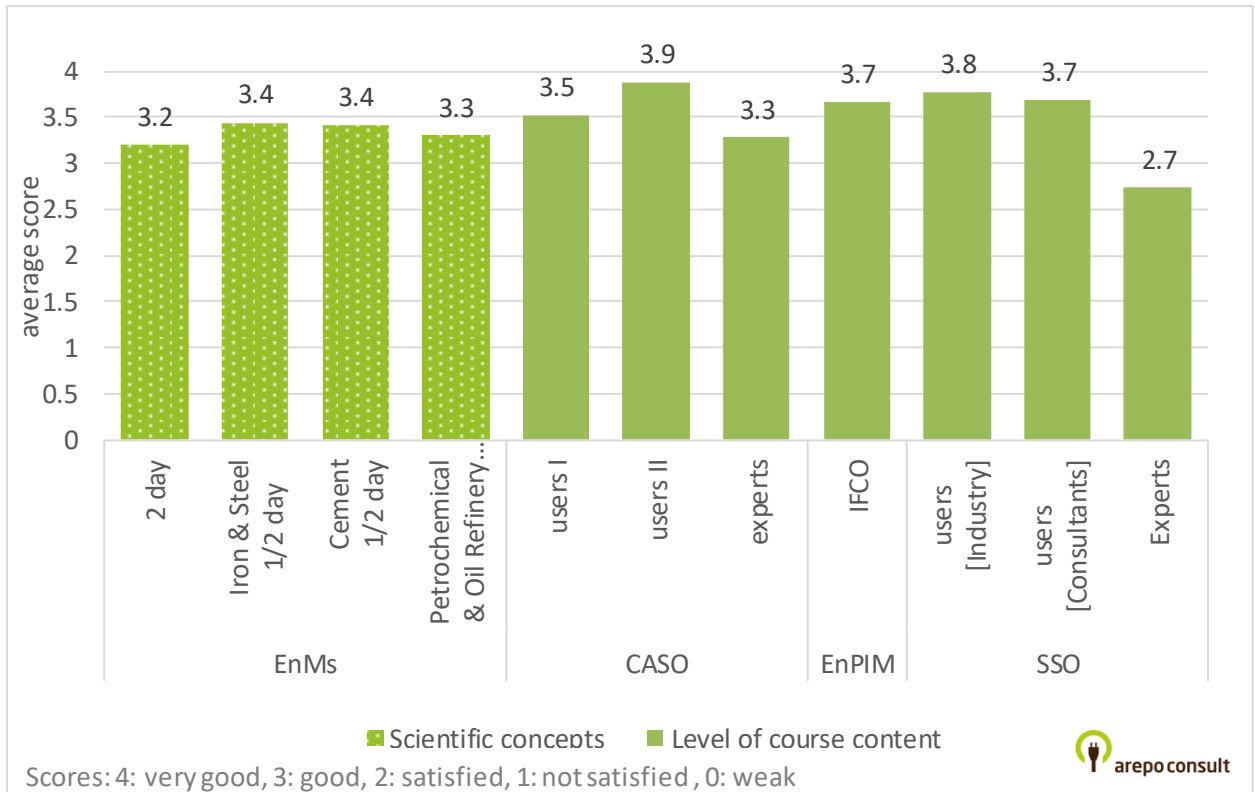
Source: PMU Survey “feedback of training participants”.

Figure 12: Scoring of facilities



Source: PMU Survey "feedback of training participants".

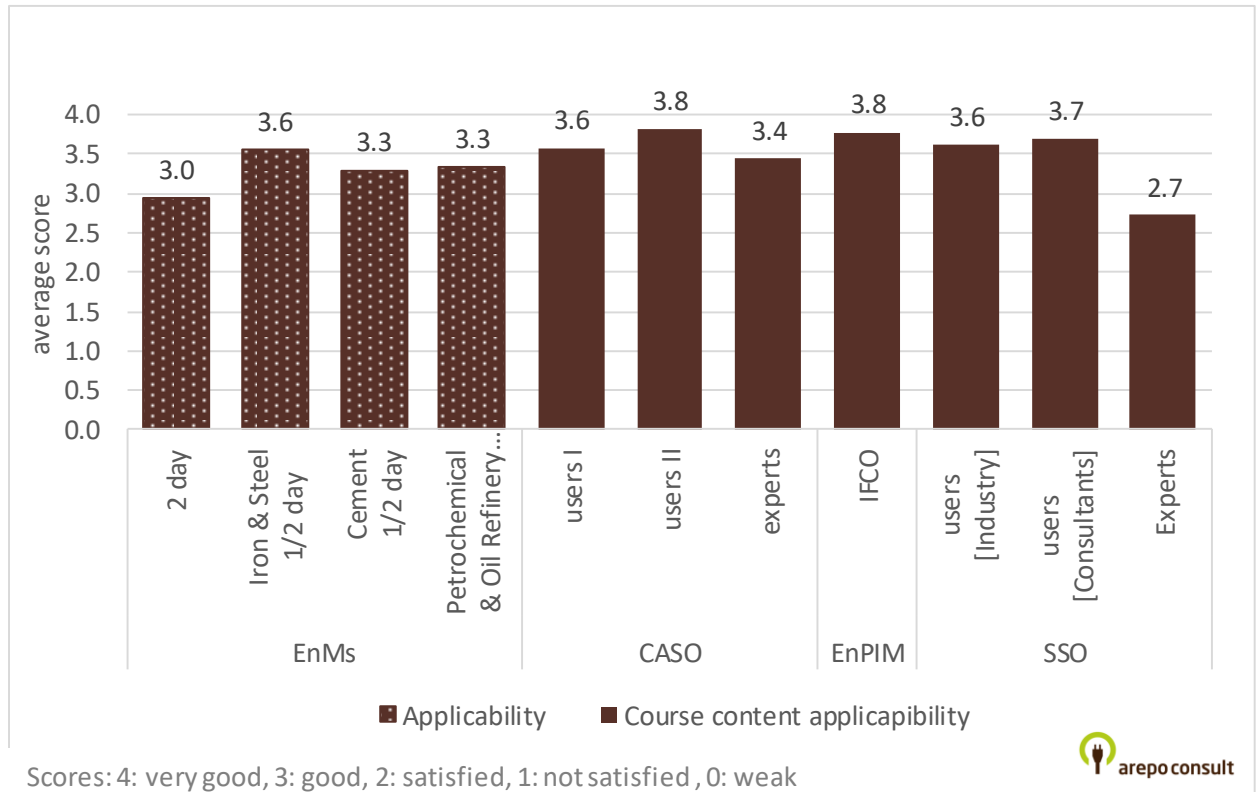
Figure 13: Scoring of level of course content*



* The different colours are used because the first set of questionnaires used the term “scientific concepts” whilst the second batch used the term “level of course content”.

Source: PMU Survey “feedback of training participants”.

Figure 14: Scoring of applicability of course content



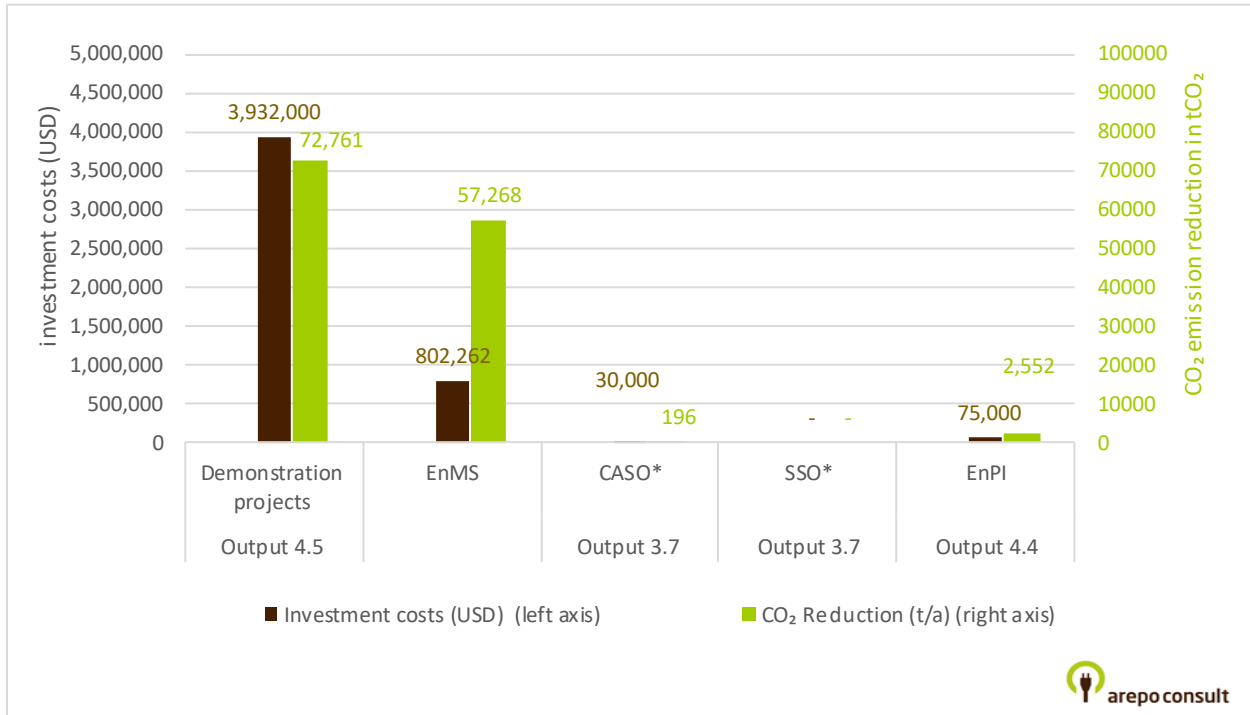
Source: PMU Survey “feedback of training participants”.

Table 17: Scoring of training quality

		CASO users I	CASO users II	CASO experts	EnPIM (IFCO)	SSO industrial users	SSO Consultants-users	SSO experts	EnMS (2 days)	EnMS Iron & Steel Industry 1/2 day	EnMS Cement 1/2 day	EnMS Petrochemical and Oil Refinery 1/2 day
Evaluation of Planning & Implementation of the training	Refreshments								3.6	3.7	2.9	3.5
	Place/ light / temperature								3.5	3.4	3.5	3.7
	Facilities/ sound screen/...								3.4	3.3	3.6	3.7
	Reception and services	3.5	4.0	3.7	3.6	3.8	3.8	3.6				
	Training space, lighting, HVAC	3.7	3.9	3.4	3.8	3.8	3.7	3.7				
	Availability of training facilities	3.7	4.0	3.6	3.7	3.7	3.9	3.6				
	Sessions start and ending time	3.7	3.9	3.6	3.6	3.4	3.8	3.4	3.5	3.2	3.3	3.4
Evaluation of Trainer II	Pamphlet quality	3.1	3.6	2.9	3.0	3.5	3.6	3.5	3.4	2.8	3.2	3.0
	Time management	4.0	4.0	2.7	3.4	3.2	3.8	2.2				
	Using different methods of training	0.0	0.0	2.8	3.3	3.2	3.1	2.5	3.7	3.9	3.5	3.6
	Teaching skill class management	2.9	3.5	2.8	3.6	3.2	3.6	2.2	3.4	3.9	3.6	3.4
	Teacher's ability to convey the concept	2.4	3.2	2.6	3.1	3.6	3.3	2.2	3.7	3.8	3.8	3.6
Evaluation of Trainer I	Teacher Proficiency in the concept	2.8	3.6	2.9	3.2	3.7	3.3	2.4				
	Teacher's punctuality								3.9	3.9	3.8	3.8
	Time management	4.0	4.0	3.4	3.6	3.2	3.8	2.5				
	Using different methods of training	0.0	0.0	3.7	3.3	3.2	3.4	2.9				
	Teaching skill class management	3.7	3.9	3.6	3.7	3.4	3.8	2.6				
course content	Teacher's ability to convey the concept	3.9	3.9	3.9	3.4	3.7	3.7	3.0				
	Teacher Proficiency in the concept	3.9	3.9	3.8	3.7	3.8	3.8	3.3				
	Course content applicability	3.6	3.8	3.4	3.8	3.6	3.7	2.7				
	Applicability								3.0	3.6	3.3	3.3
	Level of course content	3.5	3.9	3.3	3.7	3.8	3.7	2.7				
	Scientific concepts								3.2	3.4	3.4	3.3

Source: PMU Survey "feedback of training participants".

Figure 15: Investment costs and CO₂ emission reduction of the implementation projects



*CASO & SSO: project monitoring not completed

Source: own graph based on project monitoring data.

Table 18: Summary of assumptions / risks listed in the project results framework sorted by stakeholder group

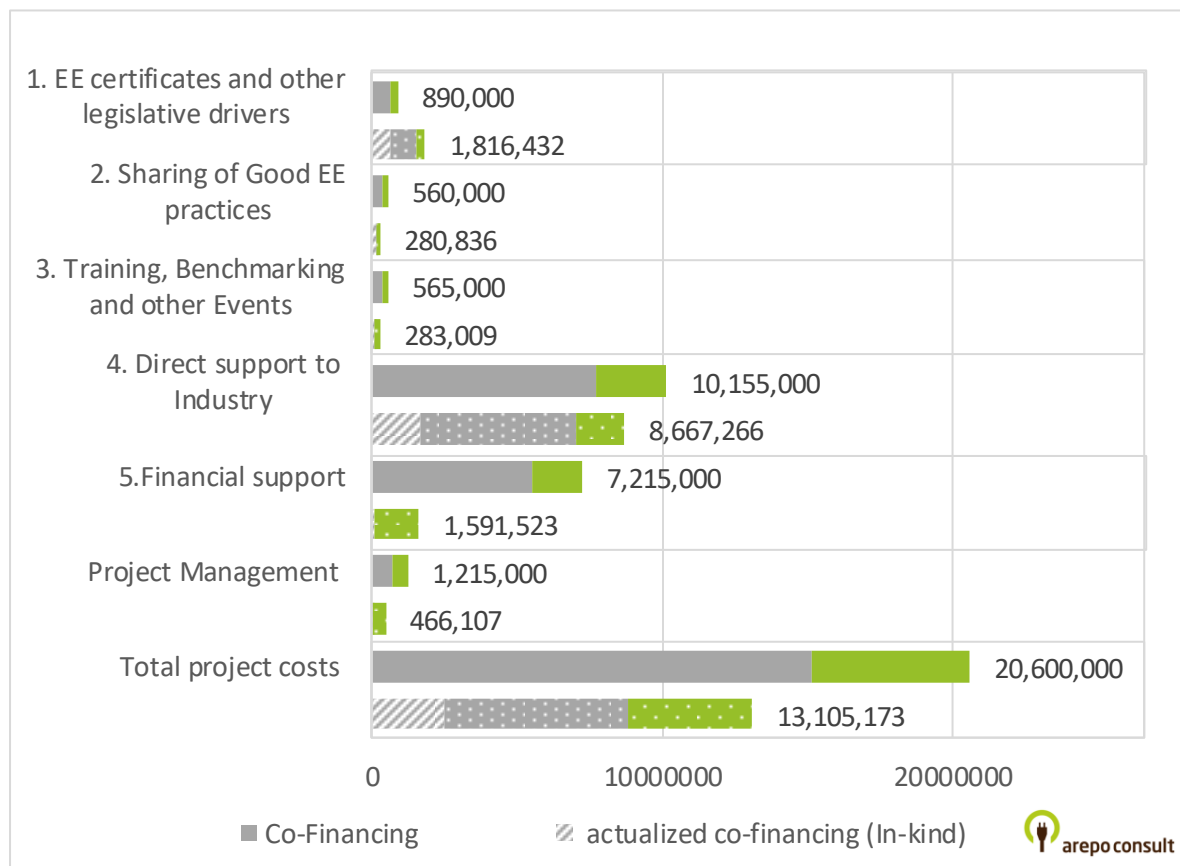
Topic / Stakeholder	Assumptions / risks from the original project results framework*	Assumptions / risks from the revised project results framework*
Macroeconomic conditions	<ul style="list-style-type: none"> • Macro-economic conditions are such that investment in EE continues to be attractive. • There is no major deterioration in the macro economic and political climate. Iran emerges from the current financial crisis within 2-3 years. • The Program helps overcome existing EE market barriers and builds a sustainable market capacity • Projected growth patterns across industry, of 6 % pa, are realistic • No substantial change to industrial output product mix • Energy costs = nominal value USD 40/MWh 	<ul style="list-style-type: none"> • Macro-economic conditions are such that investment in EE continues to be attractive. • There is no major deterioration in the macro economic and political climate, and Iran emerges from the current financial crisis within the next two-three years. • The Program helps overcome existing EE market barriers and builds a sustainable market capacity • Many of the legislative and economic drivers discussed in previous sections are in-place • The impact from the phasing out of the Energy Subsidy has no major bearing on the robustness of individual sectors or Iranian industry.

Topic / Stakeholder	Assumptions / risks from the original project results framework*	Assumptions / risks from the revised project results framework*
	<ul style="list-style-type: none"> All investments (including that not influenced by the Program), assume a nominal 3-year payback for average investment Implementation of project Activities will foster industrial energy efficiency investments and reduce CO₂eq emissions The impact from the phasing out of the Energy Subsidy has no major bearing on the robustness of individual sectors or Iranian industry. 	<ul style="list-style-type: none"> The barriers identified are the principal constraints to growth in this area.
<ul style="list-style-type: none"> Industry Energy-using enterprises 	<ul style="list-style-type: none"> Sites are sufficiently motivated to send delegates for training and upload Program Website. 	<ul style="list-style-type: none"> Sites are sufficiently motivated to send delegates for training and upload Program Website Companies have capital for investment. Interest of the company to learn more on investment assistance Interested persons for a training in financial appraisal Interested persons for a training in energy audits, energy benchmarking and M&T Willingness of industry to participate as a demo project "Identify companies interested to participate in a benchmarking Identify sufficient number of auditors interested in the workshop for industrial energy auditing skills Identify companies where to perform the energy walk-through audit reports Interested persons to participate in the ToR Workshop on M&T Interested persons for a training in system optimization Sites are sufficiently motivated to send delegates for training Readiness of counterparts to share the case studies
<ul style="list-style-type: none"> Individual consultants 	<ul style="list-style-type: none"> Local trainers are interested in the information and resources and this contributes to their capacity to train others Companies choose to make energy efficiency investments 	<ul style="list-style-type: none"> Local trainers are interested in the information and resources and this contributes to their capacity to train others Local trainers are interested in the training and their capacity to train others Interested persons for a training in energy audits, energy benchmarking and M&T

Topic / Stakeholder	Assumptions / risks from the original project results framework*	Assumptions / risks from the revised project results framework*
<p>■ Equipment suppliers</p>	<ul style="list-style-type: none"> • Suppliers are sufficiently motivated to showcase technologies and prepare presentations • Energy saving service providers find the line of business profitable 	<ul style="list-style-type: none"> • Suppliers are sufficiently motivated to showcase technologies and prepare presentations
<p>■ Finance community (Revolving Fund)</p>	<ul style="list-style-type: none"> • Banks have capital for investment. • By 2014/5, program will have made 3 years' worth of lending at 1.5 y payback 	<ul style="list-style-type: none"> • Banks have capital for investment.
<p>■ Policy community</p>	<ul style="list-style-type: none"> • Energy subsidy for industry to be phased out over next 5 years 	<ul style="list-style-type: none"> • Interest in an incentive-based local market for trading with Energy Efficiency Certificates in Iran • Political will to work on increasing the Government capacity to implement and improve an effective industrial EE policy • Political will for establishing the IEE Revolving Fund for Iran • Securing the co-financing for the Revolving Fund Iran to offer security of the monetary value of the USD 1.5 M from the GEF Grant for establishing the Revolving Fund
<p>PMU</p>		<ul style="list-style-type: none"> • The Program Office, Team Leader, key staff, etc. and program web-site are acted upon as soon as the Program starts with no barriers to their development. • Identify a suitable expert • Marketing of the website, in order to ensure sufficient familiarity • No delays in identifying suitable experts for the training • Having enough qualified trainers to develop the training material • Enterprises for the on-site EnMS training for ten large sites are identified • Insufficient number of documents reports event or training activities from the Iranian Industry EE program will be made available for the EE library • Insufficient number of Iranian Case Study reports of EE investment in EE technologies and techniques available • Library on EnMS and System Optimization is readily available and will be easy to put. *unfinished formulation of the text*

*Green text marks risks/assumption that are identical in both documents.

Figure 16: Budget allocation versus budget expenditure as of May 2018



Source: Data provided by PMU.

Table 19: Comparison of the Workplan 2012 and 2018

Workplan 2012																												
Project Work Plan			Year 1				Year 2				Year 3				Year 4				Year 5									
			Jul-12				Jul-13				Jul-14				Jul-15				Jul-16				Jun-17					
Programme Management																												
Energy Agreements and other Legislation Drivers																												
1.	Liaise with Iranian Government																											
2.	Facilitate Voluntary Agreements																											
Final Workplan 2018 with changes marked in red by the evaluation team																												
			Year 1		Year 2				Year 3				Year 4				Year 5				Year 6				Y 7			
			2012		2013				2014				2015				2016				2017				2018			
		Activity title	Start Date	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3
		IEE Project level	Jul. 12																									
1		Energy Agreements and other Legislation/ Drivers	Jul. 13																									
1.1		Liaise with Iranian Government	Jul. 13																									
1.2		Facilitate EE certificate	Jul. 13																									
1.3		Carbon trading road map	Jul. 14																									
1.4		Studying on EE cost curve in steam system - a guide for policy makers	Jan. 16																									
1.5		Energy Management Award in Petroleum Industry	Nov. 17																									

Workplan 2012

Project Work Plan	Year 1			Year 2			Year 3			Year 4			Year 5		
	Jul-12			Jul-13			Jul-14			Jul-15			Jul-16		Jun-17
Sharing of Good EE Practices															
1. Dedicated website															
2. International BP info															
3. Good practice advice															
4. Other info sharing															

Component 2

Final Workplan 2018 with changes marked in red by the evaluation team

Activity title	Start Date	2012		2013				2014				2015				2016				2017				2018						
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3				
IEE Project level	Jul. 12	Year 1		Year 2				Year 3				Year 4				Year 5				Year 6				Y 7						
2 Sharing of Good EE Practices	Apr. 14																													
2.1 Developing Communication plan	Jul. 14																													
2.2 Dedicated Website	Nov. 14																													
2.3 Other info sharing and awareness raising	Apr. 14																													
2.4 Monitoring and Evaluation	<i>new!</i> Jul. 15																													
2.5 Case Studies	<i>new!</i> Oct. 16																													
2.6 Conducting awareness program pilot	<i>new!</i> Oct. 17																													

Workplan 2012

Project Work Plan	Year 1			Year 2			Year 3			Year 4			Year 5		
	Jul-12			Jul-13			Jul-14			Jul-15			Jul-16		Jun-17
Training Benchmarking and other Events															
1. Energy Management															
2. Financial Appraisal															
3. Other conferences															
4. Equipment training/capacity building (System Optimization, Benchmarking, M&T)															

Component 3

Final Workplan 2018 with changes marked in red by the evaluation team

Activity title	Start Date	2012		2013		2014				2015				2016				2017				2018		
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3		
IEE Project level	Jul. 12	Year 1		Year 2		Year 3				Year 4				Year 5				Year 6				Y 7		
3 Training and other Events	Jul. 13																							
3.1 Energy Management system (Including EnPI)	Jul. 13																							
3.2 System Optimization Training for 100 National Experts	Jul. 15																							
3.3 Participate in Conferences (linked to EnMS and system optimization)	Mar. 16																							

Workplan 2012

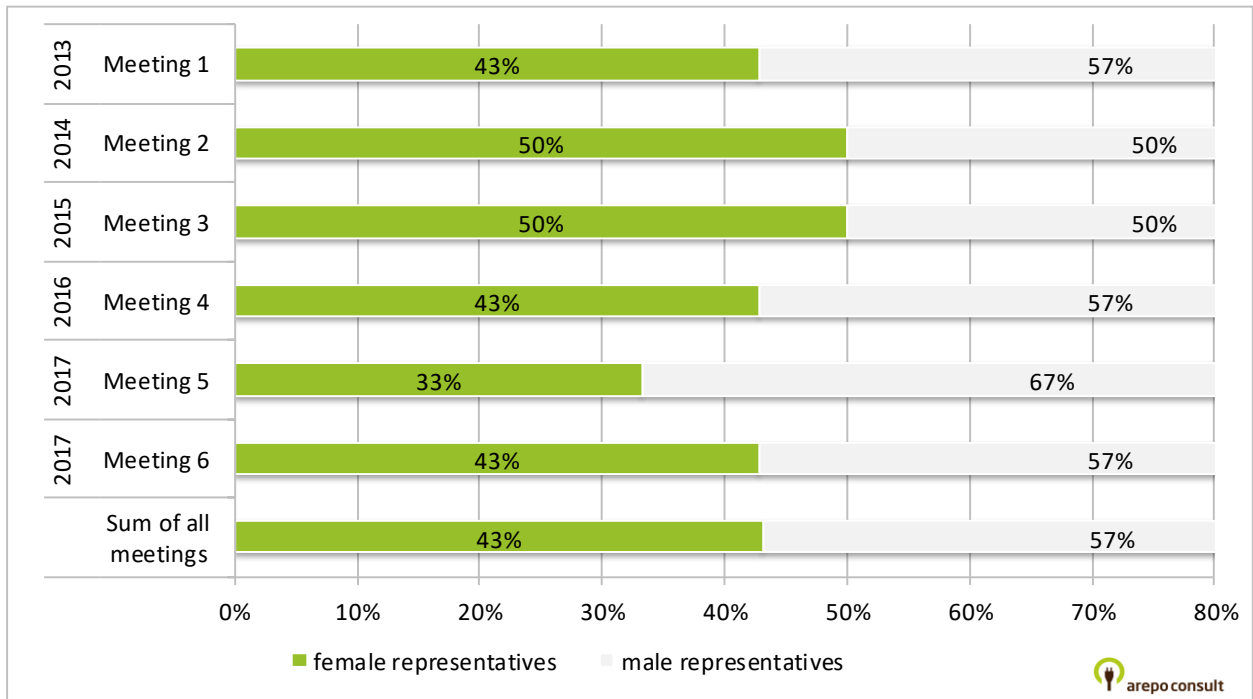
Project Work Plan	Year 1			Year 2			Year 3			Year 4			Year 5		
	Jul-12			Jul-13			Jul-14			Jul-15			Jul-16		Jun-17
Direct Support to Industry															
1. Energy performance Benchmarking															
2. Energy Audit Equipment															
3. Walk through audits															
4. Detailed audits															
5. Metering and M&T															
6. Pilot schemes/test rigs															
7. Good practice case studies															

Component 4

Final Workplan 2018 with changes marked in red by the evaluation team

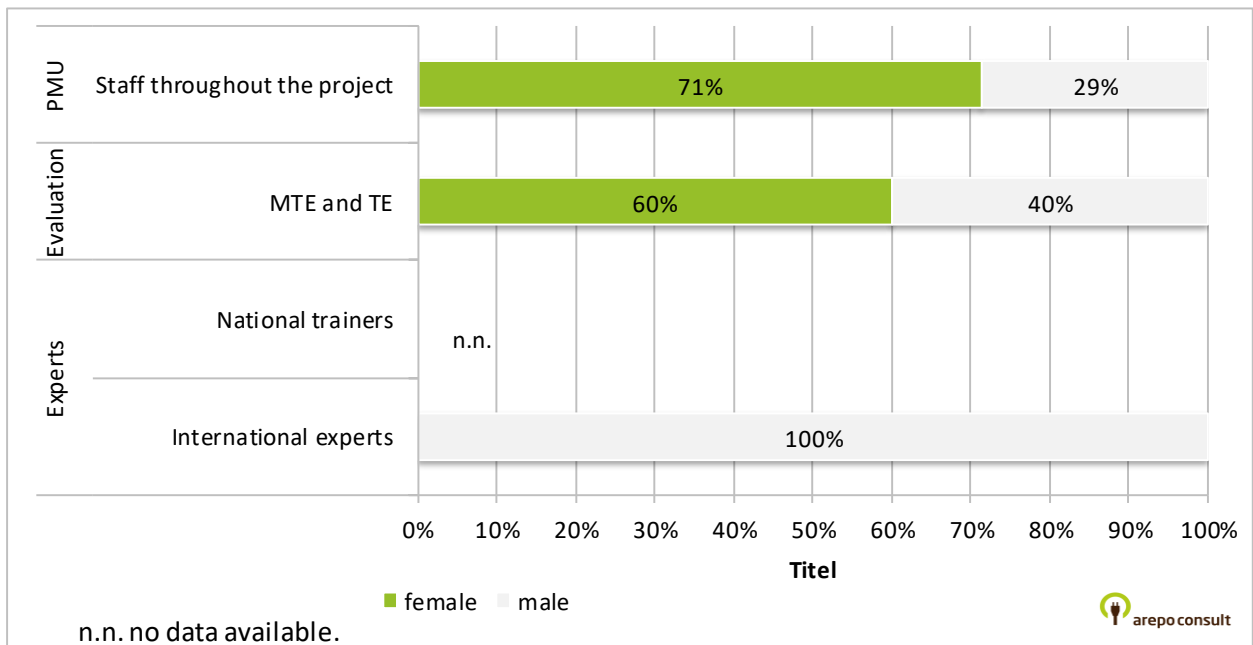
Activity title	Start Date	2012		2013		2014		2015		2016		2017		2018	
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
		Year 1		Year 2		Year 3		Year 4		Year 5		Year 6		Y 7	
IEE Project level	Jul. 12														
4 Direct support to Industry	12. Jul														
4.1 Energy Performance Benchmarking and training	Feb. 16														
4.2 Training on Energy auditing (ISO50002)	Jun. 16														
4.3 Detailed Energy Audits (By IFCO)	Jul. 12														
4.4 Energy performance monitoring in 3 pilots	Oct. 15														
4.5 Pilots (Demonstration Projects)	Dec. 12														

Figure 17: Gender composition of the representatives of members in the Steering Committee meetings



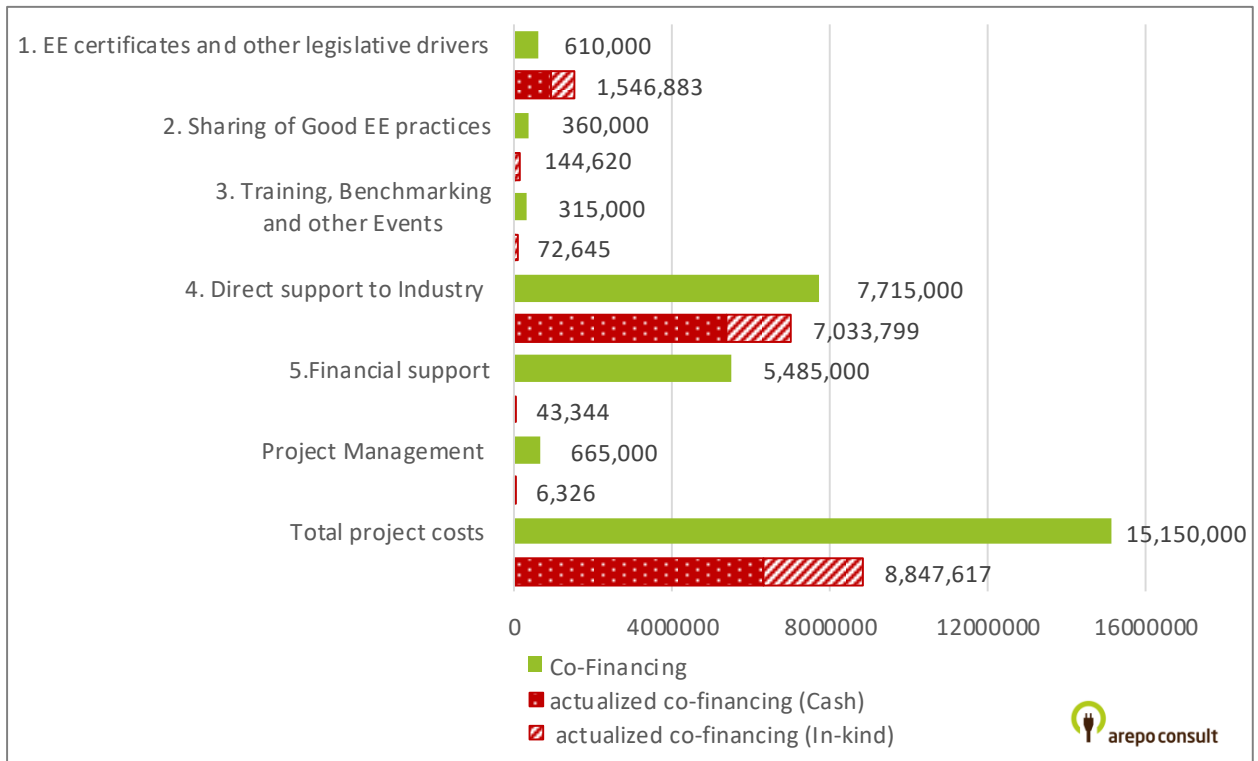
Source: own graph.

Figure 18: Gender composition of project and evaluation team and personnel hired



Source: own graph.

Figure 19: Pledged co-financing compared to actualized co-financing



Source: own graph based on PMU data.

Annex IV. List of documentation reviewed and references

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Annex V. List of Stakeholders consulted

Table 20: List of interviewees

Organisation/ Institution	Role in the project	Contact
Ministry of Foreign Affairs (MFA)	#	Mr. Mousavi, Director of international affairs in environment and Sustainable Development Mr. Golriz (Director of International Environmental Affairs)
Ministry of Industry (MOI)	#	Mr. Ghobadian, Deputy of Minister in Training, research and Technology and Mr. Mirsalehi (UNIDO's focal point in Iran, Director General of Industrial Property Office)
IFCO	National Executive agency	Mr. Azadmehr (Senior expert and contact person of GEF project) Ms. Ahmadi (Manager of planning and systems)
SATBA	#	Mr. Nezhad (Deputy of Technical Affairs and standards) Mr. Sigaroudi (Director General, Public Relation & International Affairs Office)
Research Institute of Petroleum Industry	Stakeholder interested in the project Output on market based instruments	Mr. Kashefi
National Iranian Gas Company		Mr. Pakseresht (Research & Technology Director)
Industrial Management Institute	Stakeholder running training courses and the Iran Management Award	Ms. Akbari (Graduate Studies Director) Project Manager of the Iran Management Award

Organisation/ Institution	Role in the project	Contact
Iranian Association of Energy Service Companies (IRESCO)	Stakeholder	Mr Najafi (Chairman) Mr Mirshams (Secretary and Member of the Board)
Rah Shahr International Group		Ms. Maleki
University of Tehran		Mr. Shafie-Pour (Assistant Professor)
Allplan	Consultant on financing of Energy Efficiency projects for UNIDO	Mr. Rahimi
Asiawatt		Mr. Mirshams (Managing Director)
UNIDO PMU	Project Team	Nasim Shekari Mahdi Shakouri Marziyeh Kouhestani
UNIDO's representative in Iran	UNIDO Iran Office	Ms. Maryam Javan Shahraki
Pasargad Bank	Bank in charge of administering the Revolving Fund	Focal points of the bank: Mr. Pourgholamali (Head of Corporate & Private Banking) Ms. Gholipour
Esfahan steel Co. (ESCO) Isfahan	Pilot of Compressed air and demonstration project	Company management Mr. Zia (Construction & manufacturing, Logistic Deputy) Mr. Iranpur (Project Manager of Hot Charge) Mr. Ahmadi (Senior Manager of Expansion) Factory experts (CASO)
Diana Brick Isfahan	Demonstration project	Mrs. Sutavadee Techajunta, Expert of Technical Regulation Ms. Witchar Pichainarong, Standard Officer

Organisation/ Institution	Role in the project	Contact
Tehran Cement	Participating Co. in energy benchmarking	Mr. Sarani (Technical Deputy)
Cement Industry Association	Association of a participating sector	Mr. Sheikhan (General Secretary) Mr. Ghaffari (Technical Assistance and Production) Mr. Amini yekta
System Optimization National Experts	Experts trained by the project	Mr. Rezakhani: EnMS and Steam cost curve study expert Ms. Sayahi and Mr. Mehri: CASO experts Mr. Najafi or Javdan: SSO expert
Energy Benchmarking Experts	Experts trained by the project	Mr. Ziari, national consultant in energy Benchmarking of cement sector
EnMS and M&V expert National Experts	Experts trained by the project	Mr. Arab, EnMS and M&V expert

Source: Mission Plan.