



# PROJECT IDENTIFICATION FORM (PIF)

PROJECT TYPE: FULL-SIZED

TYPE OF TRUST FUND: GEF TRUST

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## PART I: PROJECT INFORMATION

Project Title: <b>Promoting Energy-Efficient Motors in Small and Medium Sized Enterprises (SMEs)</b>			
Country(ies):	Turkey	GEF Project ID: <sup>1</sup>	9081
GEF Agency(ies):	UNDP	GEF Agency Project ID:	5285
Other Executing Partner(s):	Turkey Ministry of Science, Industry and Technology Directorate General for Productivity	Submission Date:	March 27, 2015
GEF Focal Area (s):	Climate Change	Project Duration (Months)	60
Integrated Approach Pilot			Corporate Program:
Name of Parent Program (if applicable):		Agency Fee (\$)	356,250

### A. INDICATIVE FOCAL AREA STRATEGY FRAMEWORK AND OTHER PROGRAM STRATEGIES<sup>2</sup>

Objectives/Programs (Focal Areas, Integrated Approach Pilot, Programs)	Trust Fund	(in \$)	
		GEF Project Financing	Co-financing
CC-1 Program 1: Acceleration of low emission technology, innovation, and update through demonstration, deployment and transfer using policies and mechanisms.	GEFTF	\$3,750,000	\$26,350,000
<b>Total project costs</b>		<b>3,750,000</b>	<b>\$26,350,000</b>

### B. INDICATIVE PROJECT DESCRIPTION SUMMARY:

**Project Objective:** The project aims to promote significant additional investment in industrial energy efficiency in Turkey by transforming the market for energy efficient motors used in small and medium sized enterprises. This objective will be achieved by strengthening the legislative and regulatory framework related to both new and existing EE motors in Turkey, developing appropriate governance and information infrastructure, upgrading test laboratories at the Turkish Standards Institute (TSI), launching a sustainable financial support mechanism (FSM) and by developing and implementing a comprehensive public awareness and training programme.

Project Component	Financing Type <sup>3</sup>	Project Outcomes	Trust Fund	(in \$)	
				GEF Project Financing	Co-financing
Component 1: Strengthened legislative and regulatory and policy	TA	1.1 Completed Survey of local EE motors market in Turkey including assessment of energy consumption and potential for energy-efficiency gains	GEFTF	TA: \$ 200,000	TA: \$1,400,000

<sup>1</sup> Project ID number will be assigned by GEFSec and to be entered by Agency in subsequent document submissions

<sup>2</sup> When completing Table A, refer to the GEF Website, [Focal Area Results Framework](#) which is an *Excerpt from GEF-6 Programming Directions*

<sup>3</sup> Financing type can be either investment (Inv) or technical assistance (TA)

Project Component	Financing Type <sup>3</sup>	Project Outcomes	Trust Fund	(in \$)	
				GEF Project Financing	Co-financing
framework for EE motors in Turkey		<p>1.2 Completed detailed review of all existing Turkish and international policies and regulations applicable to EE motors applications in Turkey (including a review of global policies and international standard IEC 60034-30 and EU Standard 640/2009 and their applicability for Turkey)</p> <p>1.3 Minimum Energy Performance Standards (MEPS) for electric motors developed and adopted in line with international and/or EU Directives</p> <p>1.4 Strengthened legislative, regulatory, and policy frameworks for implementation and meeting of Eco-design standards for electric motors</p>			
Component 2: Development of governance and information infrastructure in electric motors industry	TA	<p>2.1 Turkish EE Motors Manufacturers industry Association (TEMMA) created/strengthened and continues to operate effectively after the life-time of the project with sustainable business model which leads to greater awareness about the economic and environmental benefits of EE motors</p> <p>2.2 Creation/Strengthening/Constant Updating of a National EE database for all electric motors in Turkey specifying all performance characteristics to be further enhanced by the EE Motors Manufacturers Association.</p>	GEF TF	TA: \$250,000	TA: \$2,000,000
Component 3: Upgraded Turkish Standards Institute (TSI) test laboratory and strengthened monitoring, verification, and enforcement	TA/IN V	<p>3.1 Upgraded Turkish Standards Institute (TSI) Test laboratory, through detailed training and capacity building, and able to test for compliance with performance standards for EE motors</p> <p>3.2 Improved structured enforcement and verification program with adequately trained staff for laboratory testing and market surveillance</p>	GEF TF	<p><b>TA:</b> \$200,000</p> <p><b>Investment:</b> \$ 1,200,000</p>	<p><b>TA:</b> \$ 600,000</p> <p><b>Investment:</b> \$3,000,000</p>
Component 4: One-Stop-Shop Financial Support Mechanism	TA/IN V	<p>4.1 At least 8 Energy audits and at least 4 feasibility studies successfully carried out for the four demonstration projects</p> <p>4.2 At least 4 Demonstration Projects that successfully demonstrate the 'One-</p>	GEF TF	<p><b>TA:</b> \$215,000</p> <p><b>Investment:</b> \$ 1,200,000</p>	<p><b>TA:</b> \$2,120,000</p> <p><b>Investment:</b> \$15,000,000</p>

Project Component	Financing Type <sup>3</sup>	Project Outcomes	Trust Fund	(in \$)	
				GEF Project Financing	Co-financing
		Stop-Shop' Financial Support Mechanism, targeting end-users  4.3 Development and Successful Launch of 'One-Stop-Shop' Financial Mechanism within KOSGEB to identify, measure, and implement EE motors replacement projects			
Component 5: Training, Public Awareness, and PR campaign for EE Motors	TA	5.1 Development and delivery of detailed training for both manufacturers, industry, and end-users including the general public  5.2 Raising awareness of electric motor manufacturers and industrial companies of the financial and environmental benefits of using EE motors  5.3 Comprehensive nationwide PR and awareness campaign on EE Motors  5.4 Project Website		\$ 300,000	\$1,150,000
Subtotal				\$ 3,565,000	\$ 25,270,000
Project Management Cost (PMC) (includes direct project costs of \$60,000) <sup>4</sup>				\$185,000	\$1,080,000
<b>Total Project Cost</b>				\$3,750,000	\$26,350,000

If Multi-Trust Fund project: PMC in this table should be the total and enter trust fund PMC breakdown here( )

**C. INDICATIVE SOURCES OF CO-FINANCING FOR THE PROJECT BY NAME AND BY TYPE, IF AVAILABLE**

Sources of Co-financing	Name of Co-financier	Type of Co-financing	Amount (\$)
GEF Agency	UNDP Turkey CO	Cash	\$80,000
GEF Agency	UNDP Turkey CO	In-kind	\$220,000
National Government	Ministry of Science, Industry, and Technology	Cash	\$500,000
National Government	Ministry of Science, Industry, and Technology	In-kind	\$2,200,000
National Government	Turkish Standards Institute	In kind	\$350,000

<sup>4</sup> For GEF Project Financing up to \$2 million, PMC could be up to 10% of the subtotal; above \$2 million, PMC could be up to 5% of the subtotal. PMC should be charged proportionately to focal areas based on focal area project financing amount in Table D below.

National Government	Turkish Standards Institute	Cash	\$3,000,000
National Government	KOSGEB	In kind	\$2,000,000
National Government	KOSGEB	Cash	\$ 3,000,000
Private Sector	Electric motor manufacturers	In-Kind	\$15,000,000
<b>Total Co-financing</b>			\$ 26,350,000

**D. INDICATIVE TRUST FUND RESOURCES REQUESTED BY AGENCY(IES), COUNTRY(IES) AND THE PROGRAMMING OF FUNDS<sup>A)</sup>**

GEF Agency	Trust Fund	Country Region/ Global	Focal Area	Programming of Funds	(in \$)		
					GEF Project Financing (a)	Agency Fee (b) <sup>b)</sup>	Total c=a+b
UNDP	GEF	Turkey	CC		3,750,000	356,250	4,126,250
<b>Total Grant Resources</b>					<b>3,750,000</b>	<b>356,250</b>	<b>4,126,250</b>

a) No need to fill this table if it is a single Agency, single Trust Fund, single focal area and single country project.

b) Refer to the [Fee Policy for GEF Partner Agencies](#).

**E. PROJECT PREPARATION GRANT (PPG)<sup>5</sup>**

Is Project Preparation Grant requested? Yes X

**PPG AMOUNT REQUESTED BY AGENCY(IES), TRUST FUND, COUNTRY(IES) AND THE PROGRAMMING OF FUNDS**

Project Preparation Grant amount requested: \$					PPG Agency Fee:		
GEF Agency	Trust Fund	Country/ Regional/Global	Focal Area	Programming of Funds	(in \$)		
					PPG (a)	Agency Fee <sup>6</sup> (b)	Total c = a + b
UNDP	GEFTF	Turkey	CCM		\$100,000	9,500	109,500
<b>Total PPG Amount</b>					<b>\$100,000</b>	<b>\$9,500</b>	<b>109,500</b>

**F. PROJECT'S TARGET CONTRIBUTIONS TO GLOBAL ENVIRONMENTAL BENEFITS<sup>7</sup>**

Provide the expected project targets as appropriate.

<sup>5</sup> PPG requested amount is determined by the size of the GEF Project Financing (PF) as follows: Up to \$50k for PF up to \$1 mil; \$100k for PF up to \$3mil; \$150k for PF up to \$6 mil; \$200k for PF up to \$10m. On exceptional basis, PPG amount may differ upon detailed discussion and justification with GEFSEC

<sup>6</sup> PPG fee percentage follows the percentage of the Agency fee over the GEF Project Financing amount requested.

<sup>7</sup> Provide those indicator values in this table to the extent applicable to your proposed project. Progress in programming against these targets for the projects per the *Corporate Results Framework* in the [GEF-6 Programming Directions](#), will be aggregated and reported during mid-term and at the conclusion of the replenishment period. There is no need to complete this table for climate adaptation projects financed solely through LDCF and/or SCCF.

Corporate Results	Replenishment Targets	Project Targets
4. Support to transformational shifts towards a low-emission and resilient development path	750 million tons of CO <sub>2</sub> eq mitigated (include both direct and indirect)	450,000

## PART II: PROJECT JUSTIFICATION

### A. PROJECT OVERVIEW

**A.1. Project description.** Briefly describe:

#### A.1.1 Global environmental problems and/or adaptation problems, root causes and barriers that need to be addressed;

1. Globally, electric motors and the systems they drive represent the single largest electricity end-use consumer in the industrial sector of countries, consuming twice as much as lighting, the next largest end-use.<sup>8</sup> Globally some 300 million motors are in use in industry, infrastructure and large buildings. Roughly 30 million new electric motors are sold each year for industrial purposes. The three-phase asynchronous AC induction motor is the global standard for general-purpose medium-size industrial motors. These motors have a significant impact on the total energy operating cost for industry, with energy consumption representing more than 97 percent of total motor operating costs over the motor's lifetime. It is estimated that electric motor driven systems used to drive pumps, fans, compressors and other mechanical traction equipment account for between 43% and 46% of all global electricity consumption, resulting in 6,040 Mt of CO<sub>2</sub>eq emissions and costing approximately USD 565 billion per year on electricity used.<sup>9</sup> It is estimated that by 2030 without comprehensive and effective energy-efficiency policy measures, energy consumption from electric motors will rise to 13,360 TWh, 8,570 Mt of CO<sub>2</sub>eq emissions and almost USD 900 billion electricity use per year.
2. Energy Efficient (EE) electric motor systems have been recognized as having one of the largest energy and cost savings potentials of any industrial Greenhouse Gas (GHG) mitigation technology. Motor technology has evolved over the last few decades, using best practice energy efficiency of electrical motors can be improved by 20% to 30% on average, even a small improvement in efficiency can result in significant energy and cost savings. One example is the National Electrical Manufacturers Association (NEMA) premium-efficiency motor program, which will save 5.8 terawatts of electricity and prevent the release of nearly 80 million metric tons of carbon into the atmosphere over the next ten years. This is equivalent to keeping 16 million cars off the road.<sup>10</sup>
3. EE electric motors include IE2 (high efficiency), IE3 (premium efficiency) and IE4 (ultra premium efficiency). IE2 motors and beyond (e.g – IE2, IE3, and IE4) are electric motors that have been rebuilt, recycled or retrofitted with new efficient components to produce high efficiency through a process of electric motor remanufacturing (EMR).<sup>11</sup> Whilst investing a little more money upfront in one of these motors is often paid back in energy savings between 1 to 3 years, the purchase of a new motor often tends to be driven by the price, not the electricity it will consume and rewinding old inefficient motors is common practice<sup>12</sup>. The replacement or remanufacture of existing electric

<sup>8</sup> OECD/IEA, 2011 Energy-efficiency policy opportunities for electric motor-driven systems, available at [file:///Users/mrbartle/Dropbox/UNDP/Turkey%202014/PIFs/EE%20Motors/ee\\_for\\_electricsystems%20IEA%20policy%20guidelines.pdf](file:///Users/mrbartle/Dropbox/UNDP/Turkey%202014/PIFs/EE%20Motors/ee_for_electricsystems%20IEA%20policy%20guidelines.pdf)

<sup>9</sup> Ibid

<sup>10</sup> NEMA, <http://www.nema.org/gov/energy/efficiency/premium>

<sup>11</sup> The difference between EMR and traditional electric motor rewinding is that EMR results in the product, which has higher efficiency than the original electric motor. Whilst rewinding electric motors results in restoration of its former function, and thus is not a new product.

<sup>12</sup> The process of rewinding worn-out inefficient electric motors provides merely restores motors to their former efficiency level

motors often requires significant capital investment which means that motors are often old and inefficient and are not replaced even after their useful product lifetime has finished.

4. The market for electric motors in Turkey is large and growing rapidly. Sales of electric motors, generators and transformers in Turkey reached USD 4 billion in 2012, growing 12% per annum on average over the review period. The market is dominated by purchases of electric motors and generators by a wide spectrum of buyers from different countries with Germany and China being the two main countries. Local manufacturing valued at US 2 billion in 2012 and is growing at over 10%. This means that approximately 50% of new purchases of electric motors in Turkey comes from the domestic market and approximately 50% is imported.
5. However, despite this growth, Turkish industry is heavily reliant on non-EE electric motors, with more than 15 million currently in operation. Turkish industry exhibits relatively high-energy intensity at 0.38 (ratio of energy use per USD of GDP), which is twice that of OECD countries at 0.19.<sup>13</sup> The industrial sector accounts for 42 % of final energy consumption in Turkey, which is expected to rise to 46% by 2020. The IEA estimates the motor system energy savings potential in Turkey in Exojoules per year (Ej/yr) in manufacturing electricity use is 0.21Ej/yr, motor system electricity use 0.13 Ej/yr<sup>14</sup> and overall motor systems saving potential 0.03 Ej/yr<sup>15</sup>. It is estimated by Turkey's Ministry of Science, Industry and Technology (MoSIT) that if all industrial electric motors sold in Turkey over the next 10 years were of the high efficiency rating IE3 and IE4 type, an energy saving of 32,000 GWh can be achieved. This is equivalent to three years of power generation capacity of Turkey's Keban Hydropower plant.
6. Turkey's rapid population and economic growth and continued industrialization has led to a rapid increase in Turkey's electricity demand which grew by more than 90% from 2001 to 2011. This trend shows little signs of slowing with Turkey experiencing some of the fastest growth in energy demand of countries in the Organization for Economic Cooperation and Development (OECD). According to the International Energy Agency (IEA), energy use will continue to grow at an annual growth rate of around 4.5% from 2015 to 2030, approximately doubling over the next decade. The IEA expects electricity demand growth to increase at an even faster pace by 6% to 7% annually until 2023.<sup>16</sup> This situation is highly problematic as Turkey has limited domestic reserves and is highly dependent on energy imports, importing approximately 70% of its energy needs and 60% of its electricity needs exposing the country to increased energy insecurity in the future.<sup>17</sup> Meeting this level of growth will require significant investment in the energy sector as well as energy efficiency efforts, much of which will come from the private sector.<sup>18</sup>
7. Coupled by growth in energy demand, Turkey's greenhouse gas emissions are growing at one of the fastest rates in the world. Energy production and usage account for 77 percent of the country's greenhouse gas emissions. Since 1990 GHG emissions in Turkey have more than doubled from 188.43 million tons of CO<sub>2</sub>eq (mtCO<sub>2</sub>e) in 1990 to 439.9 mtCO<sub>2</sub>eq in 2012 representing an increase of 133.5% an average increase of 6.05% per annum. While Turkey is a party to the Kyoto Protocol, it does not have targets due to the fact that it is not in Annex B. In the successor agreement to the Kyoto Protocol, expected to be adopted in Paris in 2015, it is expected that Turkey will adopt GHG emission reduction targets along with all other nations which will provide a further incentive to invest in energy-efficiency in Turkey.
8. The Turkish Government recognizes the opportunity for energy savings from energy efficient electric motors and systems and has made energy efficiency a priority of industry, development and climate change policy. However the market share of EE motors is currently very low due to a range

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<sup>13</sup> IEA, 2008 Annual report

<sup>14</sup> Estimated at 60% of manufacturing electricity use.

<sup>15</sup> Estimated at 20% energy savings fraction.

<sup>16</sup> Turkish Electricity Transmission Company (TEIAS), 2013: Turkish Electricity Production Planning Study (2005-2020). Available at: [www.teias.gov.tr/Eng/apkuretimplani/veriler.htm#\\_Toc86219420](http://www.teias.gov.tr/Eng/apkuretimplani/veriler.htm#_Toc86219420)

<sup>17</sup> Yuksel, I., 2013: Renewable energy status of electricity generation and future prospect hydropower for Turkey, Renewable Energy, 50: 1037-1043

<sup>18</sup> US EIA, 2014 Turkey country overview. Available at: <http://www.eia.gov/countries/analysisbriefs/Turkey/turkey.pdf>

of market barriers implementation of EE motor systems remains low. These market barriers are described in more detail in Section 18.

#### **A.1.2 The baseline scenario of any associated baseline projects,**

9. In Turkey 30-35% of total electricity consumption is represented by industry. It is estimated that 70% of energy consumption in industry is by electric motor-driven systems 90% of which use 3-phase squirrel cage asynchronous motors. Motors in Turkey are highly energy intensive, it is estimated that an average electric motor in Turkey consumes an amount of energy equal to its purchase cost in about 45-60 days (running for 8 hours in a single shift). A typical electric motor causes an energy cost of more than 50 times its purchase cost during its 20 years of service life. This means that energy-efficiency plays an extremely important role in the decision on which motor to purchase.
10. 800,000 to 1,000,000 new motors are placed on the market every year (power range 0.75 kW – 375 kW). The Turkish Ministry of Science, Industry and Technology (MoSIT) Directorate General for Productivity estimates that on average 1,000,000 electric motors are produced domestically every year, a small amount, 10-15% of which meet IE3 standard, whilst 500,000 units are imported. The main manufacturers in Turkey are Gamak, Wat Motor, Volt Motor, Abana, Eldaş. It is estimated that 85% or up to 12-18 million electric motors operated in Turkish industry are below IE2 (with variable speed drive) or IE3 level of energy efficiency as of 2012.
11. Whilst many industrial actors operating in Turkey are aware of the cost saving benefits of energy efficiency, they have limited access to information on the benefits of replacing non-efficient electric motors. Consequently, purchasing decisions often favor lower cost, less efficient electric motor, instead of a more efficient ones that may cost on average 20% more and have a payback on investment between 1-3 years depending on technology and efficiency levels.

#### **A variety of regulations, policies, action plans and strategies targeting various aspects of EE motors have been devised and are currently under implementation including the following:**

12. Energy efficiency is broadly targeted under *The Energy Efficiency Law* and *Energy Strategy Plan for Turkey*, adopted in 2007 setting the rules for energy management in industry amongst other sectors. Under the plan a 20% primary energy intensity reduction target is set for 2023 compared to 2008 levels. Transforming the market for energy-efficient motors in Turkey will constitute an important part of reaching this target.
13. Turkey's 10<sup>th</sup> Development plan, under the “Energy Efficiency Improvement Program” outlines the responsibilities of MoSIT to implement “Energy Efficiency Improvement in Industry.” One of three key policy areas outlines the goal of: “*increasing energy efficiency through replacing low efficiency AC electric motors*” for which MoSIT has formulated national standards on electric motors following EU Commission Regulation (EC) No 640/2009 on electric motors. This regulation, to be introduced in two phases (1 January 2015 for electric motors having a rated power between 7.5 kW and 375 kW and 1 January 2017 motors between 0.75 kW and 375 kW), sets eco-design and minimum energy performance standards which require manufactured and imported three-phase asynchronous AC induction electric motors with a power rating between 0.75 kW and 375 kW to meet IE2 coupled with variable speed drive, IE3 or IE4 standard by 2017.
14. MoSIT has also prepared an action plan for EE electric motors. A number of activities to be implemented under this plan include: a) timely phasing out of electric motors that do not reach IE3 (targeting 50%) or IE2 with variable speed drive levels of efficiency and eventually IE4; b) supporting testing laboratory activities; c) raising awareness with industrialists and; d) creating effective market surveillance and testing and inspection of motors. The Directorate General for Industry under MoSIT has also developed the Electrical and Electronics Sector Strategy and Action Plan (2012-2016) that aims to improve value added through improving design of products and components. The plan outlines the important role energy efficiency in electric motors plays in the reduction of energy consumption and outlines the need for efforts to encourage the use of EE electric motors. The Directorate General for Renewable Energy (DGRE) under the Ministry of Energy and Natural Resources (MoENR) launched the “Energy Efficient Electric Motor Initiative”

to support electric motors. Even with the advent of the new National Standards on electric motor requirements, this regulation is applicable only to new electric motors to be marketed (imported or locally manufactured and sold on Turkish markets) and excludes the 85% or up to 12-18 million non-efficient electric motors of the currently operated in Turkey.

**Initiatives for EE electric motors:**

15. A number of initiatives and incentives to encourage industry to replace non EE motors exist and include the following:
  - a. The DGRE regularly implements “Efficiency Improvement Projects in Industrial facilities” pursuant to implementing regulations that confer tasks and responsibilities upon the DG for Renewable Energy.
  - b. An ongoing UNDP-UNIDO GEF project for industrial energy efficiency entitled “Improving Energy Efficiency in Industry” aims to improve energy efficiency of Turkish industry by enabling and encouraging companies in the industrial sector to implement efficient management of energy use by different energy conservation measures and energy efficient technologies. This project which started in mid-2011 and which is currently under implementation is not specifically focused on replacement of electric motors but rather the project focuses on establishing energy management units within industrial zones, conducting energy audits and promoting investment in energy-efficiency in general. It also focuses on larger industrial enterprises whereas this project targets small and medium sized enterprises (SMEs). The project does not have any focus on creating an industry association for electric motors, on strengthening test laboratories for electric motors, or designing/strengthening a financial support mechanism (FSM) for electric motors. The activities of this project are complementary to this planned project and it is estimated that UNDP-UNIDO project will be finishing around the time that this project is starting meaning that this project can and will be designed in a way to be fully complementary and build upon the lessons learned.
  - c. Private sector initiatives include the voluntary electric motor replacement initiative recently launched by Turkish household appliance company Arçelik at Gebze Organized Industrial Zones which are yet to yield any results.
  - d. The Turkish Small and Medium Enterprises Development Organization (KOSGEB) provide support to SMEs including in the area of energy efficiency, however KOSGEB do not currently provide any support packages specifically targeted at increasing EE motor application in industry. It is only with the support of this project that KOSGEB will be able to develop and launch a ‘One Stop Shop’ financial support mechanism to replace old electric motors that are often inefficient and costly with new more efficient ones. The cash co-financing provided by KOSGEB to the project (US\$3,000,000) will be used for the implementation of the FSM with GEF funds use for design of the FSM and for capacity building and training related activities.
  - e. DGRE provides investment support for energy efficiency projects with a maximum payback period of five years. The investment support covers 20 percent of project costs up to a maximum of 500,000 Turkish lira (100 lira= US\$55). However, there is no specific preferential treatment for motors in the DGRE energy-efficiency support programme.
16. Whilst a multitude of initiatives have been implemented by numerous government and non-government institutions to support EE motor market transformation in Turkey, so far they have had limited success and there is currently no ‘One Stop Shop’ initiative focusing on the least efficient motors which works to (a) replace and dispose of old motors (b) provide support in undertaking feasibility study analysis for purchase of new electric motors and (c) provides financial support for the purchase and utilization of the new more efficient motors. It is likely that poor coordination between initiatives, low industry awareness and inadequate financing options has meant these initiatives have only achieved an estimated 1500 motor replacements over the past 5 years. This is a very small number when one considers that there are in place at least 15 million electric motors



currently in operation in Turkey. In addition there are currently no government private sector interventions targeting the improvements in energy efficiency of locally manufactured IE2, IE3, or IE4 motors and no known industry or private sector led interventions, such as the one proposed by this project.

### A.1.3 The proposed alternative scenario, with a brief description of expected outcomes and components of the project

17. The proposed project aims to achieve a market transformation through accelerated application of new EE motors and replacement of existing electric motor stock. The project will develop and strengthen a One Stop Shop EE Electric Motors financial support mechanism to support the government to target and convert 40% of the over 15 million motors that are currently IE0 and IE1 efficiency and achieving a conversion of approximately 7.5 – 9.5 million motors to IE2 (with variable speed drive installed), IE3 and IE4 standards. The project will achieve this market transformation by developing and implementing the following interrelated activities: 1) Strengthening policy and institutional frameworks and helping to elaborate the smooth implementation of policy; 2) support to domestic motor manufacturing capacity and increasing market transparency; 3) ensuring effective enforcement through introducing proactive market surveillance, compliance, and strengthening testing procedures; 4) providing tailored financial solutions to end users and motor manufacturers to incentivize manufacture and utilization of EE motors; 5) raising awareness of the benefits of EE motors technologies and their application for Turkish industry. Through the One Stop Shop Financial Support Mechanism, the project aims to directly catalyze at least an additional \$20 million USD in investment in EE motors before the end of the project (i.e – during the project lifetime) and once the project is over and the financial mechanism continues to operate the amount of investment leveraged will be much higher.
18. However, there are a number of market barriers in Turkey which are preventing the transformation of the EE motors market. These barriers and the means by which this project will aim to overcome these barriers are detailed in Table 1 below:

**Table 1: Market Barriers to Implementation of EE Electric Motor Systems in Turkey:**

<b>Barrier category</b>	<b>Description and Component of Project Which Will Address this Barrier</b>
Legal, Regulatory and Policy Barriers	<p><i>Lack of coordination between different government agencies and their respective regulations, policies, action plans and incentives</i></p> <p>Whilst electric motor eco-design and minimum energy performance standards as well as a raft of development goals, strategies, policies, regulations awareness campaigns and incentives targeting EE motors have been implemented by government institutions in Turkey, limited results have been achieved so far. This is firstly because of a lack of systematic and coordinated efforts and because regulations only cover new motors to be placed on the market and contains no provision for replacement or remanufacture of existing inefficient motors already in use in industrial enterprises. Component 1- outcome 1.2 – strengthening legislative, regulatory and policy frameworks including testing monitoring and enforcement and will assist to overcome these barriers and component 3 provides a financial support mechanism to encourage replacement.</p> <p><i>Lack of standards for electric motor remanufacturing industry</i></p> <p>Currently there are no existing or planned mandatory standards for the electric motor remanufacturing industry and REMs. Therefore REMs are not subject to meeting eco-design standards. In addition, minimum energy performance standards (MEPS) for motors in the European Union do not apply in Turkey. Component 1 will assist in overcoming this barrier.</p>
Information and Awareness Barriers	<p><i>Lack of baseline information and awareness of technology, applications and energy efficiency potential of EE electric motors</i></p>

	<p>Whilst energy efficient electric motors have been available in the Turkish market for over 10 years and have been employed in various industries, there is still a low level of awareness and lack of readily accessible baseline information for energy cost savings potential across different industry applications. There is also low attention to EE electric motors benefits and opportunities of industrial companies' top management when looking at their investments planning and decisions. Furthermore, electric motor manufacturers have limited awareness of different technologies and methods of design and manufacture for IE2, IE3, and IE4 because of the various components which can be used to remanufacture non EE motors. Creation under Component 2 of an EE Motors Industry Association will help to overcome this barrier as well as the creation of a national data base of all EE motors.</p>
<p>Testing, compliance and enforcement Barriers</p>	<p><i>Inefficient testing and enforcement capabilities leading to low compliance</i>  There is a general lack of enforcement capability and no proactive market surveillance and enforcement plan for EE electric motor legislation. Enforcing compliance is made even more difficult as the majority of industrial electric motors are not over the counter products and thus not so easily monitored. This requires the design of new and proactive market surveillance plans, the upgrading of lab facilities and testing procedures aligned with monitoring and enforcement plans with sufficient enforcement capabilities of monitoring and enforcement bodies. Therefor component 3 of the project will assist the Turkish Standards Institute (TSI) with upgrading their test laboratories and assist MOSIT to strengthen and align monitoring and enforcement plans to ensure compliance. Succinctly, component 1 aims to strengthen enforcement capabilities, for example modifications to associated regulations enabling TSI to conduct random spot checks of EE motors, an activity they currently cannot undertake.</p>
<p>Financial Barriers</p>	<p><i>High inherent costs of shut down, repair and replacement procedures for electric motors</i>  One of the major barriers to retrofitting or replacing non EE motors are the inherent costs commonly incurred during the shut down period required to service or replace motors. REM motors in particular inherently require longer shut down periods as motors often have to be removed and taken to special facilities for remanufacture. The One Stop Shop EE Motors Financial Support Mechanism to be developed in partnership with KOSGEB will provide long-term financing, including beyond the lifetime of the project, to make it easier to make investments in energy-efficiency for SMEs.</p> <p><i>Lack of Suitable Financial Products and Support Schemes</i>  Whilst the energy efficiency sector is well established in Turkey with many local FIs and IFIs offering various financial schemes and products for energy efficiency projects, EE motors are a relatively new product and thus financial products catering for EE motors are limited. The specific circumstances of replacing non EE motors with either IE2, IE3, or IE4, often includes the cost of shut down and replacement, the rate of return on investment and payback period warrants the creation under Component 4 of a One Stop Shop' Financial Support mechanism within KOSGEB for phasing out old motors and replacing them with IE2, IE3, or IE4. The financial support mechanism will be supported by KOSGEB to ensure its sustainability beyond end of project. GEF support will be used for the design of the mechanism.</p> <p>Additionally, electric motor manufacturers face high upfront investment costs of upgrading their manufacturing capabilities to produce IE2, IE3, or IE4 motors. Many manufacturers therefore operate old and inefficient motors that remain in use well beyond their useful product lifetime. The One Stop Shop financial support mechanism to be developed and implemented by this project will include providing an incentive (a subsidy) in order to incentivize replacement of old industrial motors.</p>
<p>Institutional and technical Capacity and awareness</p>	<p><i>Weak technical capacity of industry to identify and develop EE motor opportunities</i>  The lack of capacity of industrial companies to identify and develop bankable EE electric motor projects Secondly, companies may not be aware of finance options or the administrative procedures of acquiring finance. Targeted information dissemination and awareness raising is necessary precondition for growth in EE motor market demand.</p>

	<p>Component 2 and Component 5 of the project will help with capacity building and awareness raising activities.</p> <p><i>Lack of capacity to produce EE motors and under developed supply chains</i></p> <p>Whilst the market for developing EE motors in Turkey is growing, low domestic demand means the local supply chain for EE motors remains under developed with limited technical capacity (and number of individual manufacturers) designing and producing products of IE3 and especially IE4 standard. In addition, there is no domestic manufacturing capacity for electric motor coupled components such as variable speed drives. These factors have resulted in both higher prices for domestically produced products and limited technology solutions. EE Efficient motor manufacturing capacity is almost nonexistent in Turkey whilst opportunities are abundant. Understanding the opportunities and limitations of supply chain is a critical element of expanding the production of IE2, IE3, and IE4 motors. Training to EE motors and industrial enterprises on EE motors, including the supply chain issues, will be supported under Component 5 of this project.</p>
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19. A baseline study and scoping exercise at the project preparation phase will be used to identify the penetration rate of EE and non-efficient electrical motors, energy consumption data as well as to explore the key barriers to introduce the new EE motor regulations and support the phase out of inefficient electrical motors. A baseline study will reveal the current share of energy inefficient electric motors and potential savings in different industry subsectors in various Organized Industrial Zones (OIZs). These activities will also be coordinated with other relevant on going energy efficiency activities and projects implemented by the UNDP in Turkey. The projects five interrelated components are outlined below:

**Component 1: Strengthened legislative and regulatory and policy framework for EE motors in Turkey**

20. This component addresses policy and institutional barriers present in current policies and regulatory frameworks and aims to support an enabling environment for the promotion and application of EE motors in Turkey. The GEF project will strengthen Turkey's efforts to adopt EU Commission Regulation (EC) No 640/2009 to increase the energy efficiency of electric motors. This will be achieved through enhancing existing policies and formulating new policies where necessary as well as enhancing the coordination between government institutions through strengthening institutional frameworks and focusing on introduction of EU-compatible legislation.
21. **Outputs under component 1 include:** Output 1.1: Review and strengthening of existing policies and regulations both in Turkey and internationally for EE electric motors; Output 1.2: Formulation of new supportive policies for EE electric motors taking into account international best practice (e.g – IEC 60034-30, EU Standard 640/2009 and others ...). In reflection of output 1.1; Output 1.3: Strengthening of institutional coordination - formulation of project steering committee including representatives from all relevant Government authorities.
22. These outputs will provide a detailed review and assessment of: a) current and planned policies, regulations and enforcement strategy as well as international best practice policies and regulations for energy-efficient motors; b) support measures for introducing the new eco design standards; and c) proposed methods for phasing out of existing low efficiency electric motors. The GEF project will provide necessary capacity assistance to draft and adopt new policies that regulate minimum energy performance standards (MEPS) amongst other adjustments to strengthen the enabling environment for investment in EE motors. Additionally policies or activities that may be included are: a waste and recycling management plan for old inefficient motors to be reviewed at PPG phase. The project will also formulate an EE electric motors project steering committee in order to coordinate government efforts.

**Component 2: Development of governance and information infrastructure in electric motors industry**

23. This component addresses a number of capacity and institutional barriers present in local EE motors manufacturing industry, in particular a lack of local capacity for cost effective design and manufacturing of more efficient motors. Supportive activities will target collective governance and representation of electric motor manufacturers, through the (not yet promulgated) creation/strengthening of an electric motor manufacturers association - the Turkish Electric Motors Manufacturers Association (TEMMA), representing manufactures that wish to improve their capacity to design, produce and retail EE motors, associated technology and services.
24. **Outputs under component 2 include:** Output 2.1: Development/Strengthening of a Turkish Electric Motors Manufacturers Association (TEMMA); Output 2.2 development of a National EE database for all electric motors.
25. Activities under this component will include a research laboratory and; demonstrations, capacity development for improved product design and manufacturing of IE2, IE3, and IE4 motors. It is also proposed that The Project will support the development of a national database of electric motors in Turkey managed by TEMMA and containing all technical information (energy consumption, technical specifications, GHG emissions) and financial information (replacement cost) on all electric motors. TEMMA will provide data and support to the development of a market surveillance system working closely with Ministry of Industry, Science, and Technology. It is expected the activities and outputs under this component will lead to increased capacity to produce EE motors in Turkey.

**Component 3: Upgraded Turkish Standards Institute (TSI) test laboratory and strengthened monitoring, verification, and enforcement**

26. This component will address barriers to effective monitoring and enforcement of eco-design and minimum energy performance standards by strengthening the monitoring and enforcement programme. This will be achieved through the development of a proactive market surveillance plan, improving testing procedures, as well as upgrading testing laboratories and staff. A market tracking/monitoring system will also be established to help formulate the baseline of market activities and will help the government formulate new policies reinforcing Component 2. These activities will ensure effective enforcement and implementation of the regulation on eco-design requirements. These activities will be strongly coordinated and strengthened by the two on going UNDP-GEF projects also focusing on energy efficiency testing, monitoring, reporting and verification (MRV) activities and market monitoring.
27. **Outputs under component 3 include:** Output 3.1 Assessment of MRV needs; Output 3.2 upgrading of testing facilities; Output 3.3 Development of Enforcement and Market surveillance plan; Output 3.4 Development of market tracking system
28. Activities to be undertaken include a review and evaluation of current and planned regulations, testing lab testing procedures and market surveillance. Recommendations will be made for upgrading of the Turkish Standards Institute Testing lab, which in addition to recommendations concerning equipment procurement will lead to the adoption of improved testing procedures, market surveillance measures and enforcement capacity development. The GEF Project will then, in partnership with TSI cover the incremental costs of establishing/strengthening a test laboratory and capacitation of staff specifically focused on testing for electric motors and their compliance with Eco Design regulations. The test laboratory will also have to include the capability to demonstrate IE2, IE3, and IE4 motor product design and manufacturing. come from the co-financing contribution of the TSI.
29. The Project will also assist a Project Unit at the Directorate General for Product Safety and Inspection of Industry Products for electric motor monitoring activities **to** develop a structured enforcement and verification program and a market surveillance plan outlining necessary testing procedures for EE motors at retail outlets, imported through customs and at manufacturing and industrial facilities to ensure compliance. Finally a market tracking system to monitor market information such as price and sales volume will be established and implemented by MoSIT with

information also provided by TEMMA. Information will be disseminated in the awareness raising activities of component 5 to create market transparency.

#### **Component 4: One-Stop-Shop Financial Support Mechanism in KOSGEB**

30. Component 4 aims to address the identified financial barriers preventing the replacement or remanufacture of electric motors. The GEF project will partner with KOSGEB to augment their existing plans for financial support mechanisms to support industrial energy efficiency and develop a tailor made financial support mechanism for industrial EE motors in SMEs.
31. Outputs under this component include: Output 4.1: Energy Audits; Output 4.2: Feasibility Studies and Business Plans; Output 4.4: At least 4 Pilot EE Motors Demonstration projects are used to Pilot the One Stop Shop Financial Support Mechanism with KOSGEB; Output 4.5 : Scaled Up One Stop Shop Financial Support Mechanism with KOSGEB in place and operating effectively:
32. The One Stop Financial Support mechanism will help with identification of inefficient motors and procuring and installing suitable EE motors focusing on the end-users. KOSGEB will provide 3m in cash co-finance to assist GEF investment of 1.5m to provide a variety of incentives supporting end-users and targeting inefficient motor replacement in SMEs. KOSGEB will explore a variety of incentives including performance grants, soft loans, loan guarantees, revolving funds and other forms of credit enhancement schemes but the exact choice of financial support mechanism will not be decided until during the Project Preparation Grant (PPG) phase. The financial support mechanism will be implemented in two phases (i) a demonstration phase where additional GEF support and assistance will be provided and (ii) a commercialization phase where GEF support will be much reduced. The exact differences between how the demonstration phase and the commercialization phase will work will need to be carried out during the PPG phase.
33. At least 4 detailed feasibility studies and business plans will be developed for 4 EE Motors demonstration projects to be piloted using the One Stop Shop financial support mechanism. Demonstration projects will provide examples in different types of industries of how the market transformation can work. The final stages of the Project will ensure the financial support mechanism is operating on a sustainable basis and that it is in place at the end of the project and continues to operate effectively. A lower level of GEF support for the One Stop Shop Financial Support Mechanism will be provided during the commercial phase, as compared to the demonstration phase.

#### **Component 5: Training, Public Awareness and PR Campaign for EE Motors**

34. This component will focus on greatly increasing awareness among manufacturers, industry and the general public on the benefits from energy efficient electric motors. Detailed trainings will be carried out with both manufacturers, distributors, and industry on the benefits of EE electric motors, the new regulations, and product testing and certification requirements.
35. Outputs under this component include: Output 5.1 : Detailed Training and Capacity development for EE motor design and manufacturing; Output 5.2: Awareness Raising; Output 5.3: Nation Wide PR Campaign
36. An awareness raising campaign will aim to raise the awareness of industrial actors (both manufacturers and end-users including the general public) and in turn encourage increased investment in efficient motors applied in industry. The awareness raising campaign including at least 10 seminars will identify key players, motor systems purchasing and management practice and; what barriers inhibit facilities managers and engineering staff from implementing elements of good practice in relation to EE motors and systems. It will inform participants on new laws, regulations, and policies and on the financial support mechanisms available, including the One Stop Shop KOSGEB Financial Support Mechanism. A training programme for EE motor design, manufacturing and remanufacturing will including dissemination meetings, the production of technical brochures for different motors and the production of research articles. Finally, a nation wide PR campaign will target media (television/radio/internet/print media) to raise awareness to the general public on the benefits of EE industrial motors.

#### **A.1.4 Incremental/additional cost reasoning and the expected contributions from the baseline, the GEFTF, LDCE/SCCF and co-financing**

40. MOSIT estimates that in the absence of the GEF project it is likely that existing national Eco Design standards on electric motors will eventually see a slow but gradual increase in new EE motors through the replacement of old and inefficient motors that can no longer be rewound (business as usual), for example through increased enforcement of the Eco Design legislation. However, the rate of replacement is expected to be much faster with this project. During the PPG phase the project will make an estimate of the extent to which the rate of replacement can be expected to increase because of this project. Without this project, enforcement is likely to remain weak and other existing barriers such as, incomplete information for manufacturers and end users, slow market development, non-compliance and financial barriers will prevent full-scale market transition happening quickly. Furthermore, in the absence of strengthened and appropriately targeted financial support mechanisms, demonstration of technology, and policies supporting the replacement of old non-efficient motors, industrial actors will likely continue to have little incentive to replace existing non-efficient electric motors. This is evident in the project baseline with only an estimated 1500 motors replacements as a result of all market activity over the last 5 years. With this project alone, the expected replacement rate is expected to rise to 2,500 motors per annum which is a significant increase from 300 per year to 2,500 per year.
41. The proposed GEF project takes a systematic approach to achieve market transformation and address barriers through providing technical and investment assistance to promote the timely development, demonstration and financing of EE motors. This systematic approach will simultaneously remove market barriers through the five components outlined. To achieve market transformation the following incremental costs will be covered by the GEF project to cover the costs of technical assistance, without which the following outcomes would not be achieved:
  - a. Technical assistance to develop coordination between different institutions and forming a project steering committee to coordinate the work of various Ministries and General Directorates.
  - b. Strengthen existing finance mechanisms so they are more accessible to industry in order to overcome the inherent barrier of high costs of replacing or retrofitting electric motors focused on enhancing the financial support mechanism support from KOSGEB and developing a One Stop Shop mechanism.
  - c. Formulates a proactive enforcement framework, providing the necessary upgrading of testing laboratory at the Turkish Standards Institute, testing procedures and provides staff training to ensure better enforcement of standards.
  - d. The development of the Turkish Energy Efficiency Manufacturers Association (TEMMA) which will include development of a national data base of EE motors and of a market tracking system will include technical and energy performance data as well as making available technology pricing that will be disseminated in the awareness raising activities creating market transparency and enabling consumers to choose the most appropriate and cost effective technological solutions.
42. The proposed project will also cover the additional investment costs necessary for a number of transformational activities. Investment costs covered include creation/strengthening of the electric motor manufacturers association (TEMMA), an electric motors research laboratory and training workshops to develop capacity of electric motor manufacturers, distributors, and industry. The projects also covers the additional investment costs necessary to pilot and demonstrate advanced EE electric motor manufacturing as well as demonstrating to electric motor ends users the benefits, technology and finance options available for EE electric motors. Without this intervention advancements in motor technologies may not occur nor would a sufficient number of non-efficient motors be replaced.

#### **A.1.5 Global Environmental Benefits (GEFTF) and/or adaptation benefits (LDCE/SCCF)**

43. The proposed project will realize its expected outcomes through removing barriers and capacity and technical assistance to accelerate the domestic manufacture, remanufacture of EE motors and replacement of existing non-efficient electric motor stock. The project will support the government to convert 40%, or approximately 7.5 – 9.5 million existing non-efficient motors with energy ratings of IE0, IE1 and IE2 (without variable speed drive) to IE2 (with variable speed drive installed), IE3 and IE4 standards. Of these 6-7.2 million motors, the one stop shop financial support mechanism will target the manufacture of approximately 10,000 (2,500 per year) motors with an energy rating of IE3 and above over the five year period of the project. It is estimated this will achieve a total of 750,000 MWh of cumulative energy savings. The 4 demonstration projects are estimated to save approximately 15,000 MWh of electricity. Whilst the global environmental benefit of the project given the grid emissions factor of 0.605 (tCO<sub>2</sub>eq/MWh) works out to an estimated direct emissions reduction of 9,075 tons of CO<sub>2</sub>eq or approximately 90,750-121,000 tons of CO<sub>2</sub>eq over the 15-25 year lifetime of investment. Indirect emissions reductions of 453,750 tons CO<sub>2</sub>eq with 2,722,500 - 3,630,000 tons of CO<sub>2</sub>eq over the lifetime of investment.
44. Additional indirect global benefits will arise from the transformative effect of new legislation, innovative policies and financial mechanisms developed as a direct result of the project interventions. The interventions of this project will continue to foster mitigation actions through increased application of EE motor technologies after the completion of the project. Calculations to more clearly define global environment benefits will be reviewed and refined during the PPG phase.

#### **A.1.6 Innovativeness, sustainability and potential for scaling up**

45. The project demonstrates its innovativeness, sustainability and potential for scaling up with a two-prong approach. Firstly the project demonstrates sustainability by systematically addressing long term barriers to EE motors through removing knowledge, awareness, technical, policy, finance and regulatory barriers to the market and by the fact that the Financial Support Mechanism (FSM) will receive support from KOSGEB cash co-financing to the project. Secondly through awareness raising activities and strengthened capacity, the project will help to disseminate technology and elaborate the transformation of the market thus demonstrates its potential for scaling up.
46. The innovativeness of this project also rests with the One Stop Shop Financial Support Mechanism with KOSGEB which aims to have secured the replacement of some 10,000 inefficient motors by the end of the project as the basis for scaling up and replication. The replication potential in Turkey is excellent as currently it is estimated that approximately 85% of the 15 million electric motors stock currently being used in Turkey are sub-par in terms of energy efficiency.

#### **A.2. Stakeholders.**

47. The following table outlines the key stakeholders and their various roles in the project:

**Table 1-2: Role of Various Project Stakeholders on EE Motors Project**

<b>Stakeholder</b>	<b>Role</b>
DG for Productivity (national implementing agency) and Ministry of Science, Industry and Technology	As the national implementing agency and key stakeholder, the DG will be the recipient of targeted technical assistance. The DG for productivity will: formulate and strengthen EE motors policy and regulatory packages; assist the formulation of new business models and financial packages to support EE motor purchase, remanufacture and replacement; assist in the design and preparation of other technical assistance packages; develop the framework for energy and technical audit plans; assist the development of the market tracking system. The Ministry of Science, Industry, and Technology will chair the Project Steering Committee for this project.
Turkish Standards Institute and the Ministry of Science, Industry and Technology	The Turkish Standards Institute (TSI) will take a lead on the work related to support for component 3 of the project meaning support for the strengthening of one (or more) test laboratories and receive technical assistance to develop and implement: a proactive market surveillance plan and ongoing market monitoring, reporting and verification activities;

(including testing laboratories)	upgrades to testing laboratory. It will also be involved in component 5 related to the necessary training of appropriate staff and national awareness campaign.
KOSGEB, local financial institutions, international financial institutions	Will develop, support and implement the One Stop Shop Financial Support Mechanism building upon their existing credit lines and focused specifically on EE motors. The role of KOSGEB will be manage and implement the financial support mechanism through both (i) the demonstration phase and (ii) the commercial phase of operation.
Electric motor manufacturers	Electric Motor Manufacturers will be the recipient of technical support to: access finance; training and information and awareness campaigns and demonstration projects to demonstrate design and manufacture advanced EE motor technologies. Will also receive assistance to form a Turkish Electric Motors Manufacturers Association (TEMMA) and supply information for the market tracking system.
Industry sectors/end users of electric motors	Will be the recipients of technical support to assess the application of EE motors across different industries. Businesses selected for pilot projects will receive financial support the replacement, remanufacturing or purchase of EE electric motors. Demonstration projects and awareness raising activities will be tailored to their preferences and different applications of EE motors in different industries.
Ministry of Energy and Natural Resources (MoENR)	The role of MoENR on energy efficiency studies is supporting the legislative, regulatory, and policy framework related to energy-efficient motors in Turkey. This will include support for work related to minimum energy performance standards (MEPS) for electric motors and support for eco-design labeling. In addition to this, MoENR is responsible for the accreditation and certification of ESCOs
Organized Industrial Zones (OIZ) and Their Energy Management Units	OIZs will support demonstration projects and awareness raising activities and different applications of EE motors in various industries. Energy management units will especially, work in corporation with ESCOs during CDEA. Both of them will provide data for National Database mentioned in component 2.
The Scientific and Technological Research Council of Turkey, Energy Efficiency Association,	The Scientific and Technological Research Council of Turkey and Energy Efficiency Association will support demonstration projects and awareness raising activities and different applications of EE motors in various industries.
Energy Service Companies (ESCO)	Energy Service Companies (ESCO) will carry out comprehensive design energy audits (CDEA) mentioned in Output 4.1 during both demonstration projects and commercial phase.

A full review of potential stakeholders and a stakeholder coordination plan will be completed during the PPG phase and during development of the full project documentation.

### A.3. Gender Considerations:

48. As with all UNDP projects, project activities and components will consider gender dimensions in line with the UNDP Gender Equality Strategy (2008-2015)<sup>19</sup>, which outlines the organization's commitment to promoting gender equality, women's empowerment and gender mainstreaming in UNDP projects. The project proposes to conduct analysis through focus groups with male and female stakeholders to identify the role gender plays in different aspects of EE motor technology investment and deployment. As a result the project can develop a set of prioritized recommendations for mainstreaming gender needs and a gender action plan detailing how recommended measures can be implemented which may lead to changes in the project design. Practical gender indicators can then be used to assess the impact of measures. Socio-economic aspects will be considered by this project as the improved energy performance of motors will lead to lower life cycle costs making them more affordable for the general public and thereby promoting and supporting economic development.

<sup>19</sup> <http://www.undp.org/content/dam/aplaws/publication/en/publications/womens%20empowerment/gender%20equality%20strategy%202008%202011/0601.pdf>



#### A.4. Risks

49. During project implementation a number of risks may prevent the project objectives from being achieved, these are outlined below along with the means by which this project will attempt to address these risks:

**Table 1:3 – Risk Assessment Log and Means of Mitigation**

<b>Risk</b>	<b>Level</b>	<b>Description and Mitigation</b>
Users of old non EE motors may not want to purchase new IE2, IE3, and IE4 motors because incentive and financial support system are insufficient, especially for SMEs	Medium	End users of electric motor technology, especially those with functional non-EE motors may not want to replace their old motors with new EE motors, with the cost of replacement being a major factor. In order to mitigate this risk the project will include information dissemination and promotion so to ensure that end users understand the benefits of EE motors, especially from an energy and cost savings perspective. Furthermore to mitigate the cost factor the project will develop tailored financial assistance packages that factor in pay-back periods and other inherent costs such as shut down.
One Stop Shop KOSGEB Financial Support Mechanism does not work	Medium	This risk is mitigated by first testing the mechanism with a demonstration phase, which will include additional GEF support. Only once the demonstration phase is proven to work will the KOSGEB financial support mechanism move to the commercial phase. Further time and resources could be spent on the demonstration phase if it is shown that the commercial phase is not working as a further risk mitigation measure.
Lack of longer term incremental investment capital and access to finance	Low	The Government's long-term target for conversion of non-efficient to EE electric motors is beyond the scope of the project and project budget. Rather, the project mitigates the risk of a lack of long-term incremental investment capital and access to finance by developing the One Stop Shop KOSGEB financial support mechanism.
Risk of non-conformity to eco design and minimum energy performance	Low	A number of project activities are reliant on the manufacture and supply of electric motors that conform to the aforementioned standards. The project addresses the risk of non-conformity by introducing monitoring and enforcement, proactive market surveillance and providing technical assistance, capacity development and awareness raising activities to encourage and ensure compliance.
Recommended policy changes may not be employed or effectively enforced by relevant authorities	Low	The project will provide extensive review of existing policy and enforcement strategy and recommendations for strengthening. In addition the project proposes the formulation of a market surveillance plan and training of staff for enforcement of standards.
Energy Audits are significantly delayed or do not take place on time which delays investment in EE motors taking place under the financial mechanism	Low	The energy audits consist of partial audits which focus only on motor-driven systems which is quite different from comprehensive energy audits covering an entire production system such as for example those covered under the ongoing UNIDO UNDP Industrial EE Project (PIMS 4113, GEF ID 3747). Therefore this risk is viewed as being low and no additional risk mitigation action is considered necessary.
Climate change	Low	The risk of climate change impacts upon the project is perceived as low as electric motors will not be directly exposed to impacts. However, secondary impacts of climate change, such as extreme climatic events or variations in weather patterns, may affect Turkey's power supply and energy security through impacts on hydro, wind and solar power supply. Other secondary risks caused by the impacts of climate change include potential disruptions to supply of motors and parts as well as disruptions to global trade that may impact upon the demand for goods that are manufactured using electric motors.

## A.5. Coordination

50. The project will be developed in close cooperation and coordination with other relevant ongoing activities and projects of the MoSIT and other government stakeholders. Activities of the project will also be coordinated with the ongoing energy efficiency in industry activities of KOSGEB and the Turkey Sustainable Energy Financing Facility TURSEFF a credit line developed by the European Bank for Reconstruction and Development (EBRD) for SME sized industrial companies and commercial enterprises that wish to invest in energy efficiency or renewable energy projects. As such, any activities or projects that may be relevant to the proposed GEF project will leverage potential project synergies, to ensure project complementarity as well as building on best practices and lessons learned.
51. The project falls under the UNDP programmatic approach to energy efficiency in Turkey and will be closely coordinated with other relevant UNDP-GEF projects in Turkey. Other relevant projects include the “Market Transformation of Energy Efficient Appliances in Turkey” (GEF ID: 3565) which will finish by the end of 2015 and which has not focused on motors and “Improving Energy Efficiency in Industry” (GEF ID 3747) which also does not specifically focus on motors but takes a broader approach to energy efficiency in industry in Turkey. The proposed project will aim to leverage from the lessons learned from these projects and the networks of professionals and consultants in the country. Other relevant GEF financed projects include GEF-UNIDO Cleantech Programme for SMEs in Turkey (UNIDO, GEF ID: 5505) and Small and Medium Enterprise Energy Efficiency Project (IBRD, GEF ID: 4957). Coordination with these projects will be clearly defined at the PPG phase.
52. The UNDP country office in Turkey will be fully involved in the project development through its participation in the various aspects of the project such as workshops, stakeholder consultation and co-finance meetings. UNDP Turkey will contribute \$300,000 USD to the project which includes an \$80,000 contribution to project management costs and a \$220,000 contribution towards awareness raising and capacity building activities. Consultations will also be held with the UNDP-GEF Istanbul Regional Centre throughout the development of the full project on how to better link with other existing relevant UNDP GEF energy efficient motors projects such as for example the UNDP GEF EE motors in China project which started in 2014 in order to learn from experiences in other countries.

## PART B. DESCRIPTION OF THE CONSISTENCY OF THE PROJECT WITH:

**B.1** Is the project consistent with the National strategies and plans or reports and assessments under relevant conventions? (yes). If yes, which ones and how: NAPAs, ASGM NAPs, MIAs, NBSAPs, NCs, TNAs, NCSAs, NIPs, PRSPs, NPFE, BURs, etc.:

53. The project is strongly linked with a number of national legislations, strategies and plans of the government of Turkey, these are outlined in the table below:

**Table 1:4 – Consistency with National Plans and Strategies of the Government of Turkey**

<b>Plan or strategy:</b>	<b>Description of consistency</b>
The Fifth National Communication of Turkey to the UNFCCC. <i>And</i> The National Climate Change Strategy (NCCS) of 2010 and subsequent National Climate Change Action Plans (NCCAPs).	The 5 <sup>th</sup> National Communication of Turkey to the UNFCCC was formally published and submitted in 2013. The 5 <sup>th</sup> NC places critical importance on energy efficiency technologies and low emissions pilot solutions for Turkey. The GEF project represents both an innovative policy package for EE electric motor technology to mitigate GHG emissions.
Turkey 10 <sup>th</sup> National Development Program 2014-2018, and its transformative	The 10 <sup>th</sup> National Development Plan specifically outlines an increase in the use of EE electric motors as a national

programme: “Energy Efficiency Improvement and component “Energy Efficiency Improvement in Industry” and MoSIT’s “Industrial Energy Efficiency Program” Policy for low efficient AC electric motor replacement.	development goal. The project is directly consistent with this development goal and works to achieve the goals of its MoSIT’s associated policy for low efficient AC electric motors for: a) timely phasing out of electric motors that do not reach IE3 or IE2 with variable speed drive levels of efficiency and eventually IE4; b) supporting testing laboratory activities; c) raising awareness with industrialists and; d) creating effective market surveillance and testing and inspection of motors.
Electrical and Electronics Sector Strategy and Action Plan (2012-2016).	The project directly encourages market growth and use of EE electric motors, a target of this sectoral strategy. Specifically, Action 1.6 under Outcome 1.1 “Improvement of legal and administrative framework” to promote energy efficient electric products, including EE electric motors.
“Energy Efficient Electric Motor Initiative” 2014.	Outlines support plans to support the implementation of EE motors. The project is directly consistent with this initiative and components of the project have been designed to closely support the goals of the Energy Efficient Electric Motor Initiative under the direction of the GD of Productivity.
Energy efficiency laws: “Energy Efficiency Law no. 5627” 2007; Official Gazette no. 27035 “Regulation On Increasing Efficiency in the use of Energy Resources and Energy	The project supports the purpose of these laws by increasing energy efficiency and principles and procedures applicable to increasing and promoting energy efficiency and protecting the environment.
Turkey’s Sustainable Development Report 2012.	The report outlines the necessary increases in energy efficiency applications in industry. The project directly addresses these concerns by increasing energy efficiency actions in industry.

PART III: APPROVAL/ENDORSEMENT BY GEF OPERATIONAL FOCAL POINT(S) AND GEF AGENCY(IES)

**A.** Record of Endorsement<sup>20</sup> of GEF Operational Focal Point (S) on Behalf of the Government(s): (Please attach the [Operational Focal Point endorsement letter\(s\)](#) with this template. For SGP, use this [SGP OFP endorsement letter](#)).

NAME	POSITION	MINISTRY	DATE (MM/dd/yyyy)
Prof. Dr. Mr. Lutfi AKCA	GEF Operational Focal Point	MINISTRY OF FORESTRY AND WATER AFFAIRS	27/03/2015


**B. GEF Agency(ies) Certification**

**This request has been prepared in accordance with GEF policies<sup>21</sup> and procedures and meets the GEF criteria for project identification and preparation under GEF-6.**

Agency Coordinator, Agency name	Signature	Date (MM/dd/yyyy)	Project Contact Person	Telephone	Email

<sup>20</sup> For regional and/or global projects in which participating countries are identified, OFP endorsement letters from these countries are required even though there may not be a STAR allocation associated with the project.

<sup>21</sup> GEF policies encompass all managed trust funds, namely: GEFTF, LDCF, and SCCF

Adriana Dinu, UNDP-GEF Executive Coordinator		March 27, 2015	John O'Brien, Regional Technical Advisor, Climate Change Mitigation	Tel: +90 538 221 2189	<a href="mailto:john.obrien@undp.org">john.obrien@undp.org</a>
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