



### 1. BACKGROUND

#### 1.1. Context

In Turkey, 47% of net electricity consumption is from the industrial sector<sup>1</sup>, with an estimated 70% of this energy consumption from electric motor-driven systems (EMDS), 90% of which use 3-phase squirrel cage asynchronous motors as defined in the EU Eco-design Implementing Measure 640/2009 on electric motors as amended by Implementing Measure 4/2014<sup>2</sup>. Electric motors in Turkey, in general, are not energy efficient. 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 “one-stop shop” sustainable financial support mechanism (FSM), and developing and implementing a comprehensive public awareness and training programme.

The project is divided into five components focusing on:

- Component 1: Strengthened legislative and regulatory and policy framework for EE motors in Turkey.
- Component 2: Capacity building for relevant stakeholders to promote the benefits of EE motors.
- Component 3: Upgraded Turkish Standards Institute (TSI) test laboratory and strengthened monitoring, verification and enforcement.
- Component 4: One-stop-shop for financial support mechanisms.
- Component 5: Knowledge management and M&E

The DG for Productivity completed an electric motor inventory analysis in December 2015 which covered more than 90,000 electric motors (3-phase,  $\geq 7.5$  kW asynchronous motors) being operated in nearly 900 SMEs in 23 different industrial sectors in Turkey. This inventory reflects the distribution of these motors by efficiency (IE) levels, average rated power, average age, average operating time as well as electricity consumption caused by these motors.

As the next step, the EE Motors Project is also aimed at upgrading the capacity and functionality of these database by extending it to cover more electric motors in more SMEs and equip it with additional functions to monitor the change in the efficiency level of the electric motor market and electric motor stock (i.e. market transformation towards more efficient electric motors), and thereby enabling to monitor the GHG reductions as a result of this market transformation by regularly updating the database every year throughout the project implementation. The upgraded database will also be used by not only the Project but also the MoSIT after Project completion, as a tool for monitoring the energy consumption and GHG emissions caused by electric motors used in SMEs.

#### 1.2. Institutional Setup

The DG for Productivity (DGP) under the Ministry of Science, Industry and Technology (MoSIT) is the Executing Agency of the Project having the overall control over the Project. The National Project Director (NPD) of the Project is a high-level official of the DGP. The NPD oversees implementation of the project activities and provides (or facilitates provision of) technical endorsement for all deliverables.

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<sup>1</sup> TEDC (TEDAS), Electricity Distribution and Consumption Statistics of Turkey, 2015

<sup>2</sup> These are defined in Communiqué on Eco-Design Requirements for Electric Motors (OG No. 28197 of 7 February 2012)

Project Management Unit (PMU) is headed by the Project Manager and comprised of Project Manager and Project Associate and supported by a Chief Technical Advisor (CTA).

## **2. OBJECTIVE AND SCOPE**

The objective of the assignment is to facilitate the establishment of a sustainable market monitoring system, acting upon the electric motors inventory database developed by the MoSIT, including information on the annual sales of electric motors covered by the Project (0-375 kW, 2- to 6-pole, 3-phase squirrel cage asynchronous induction motors) their efficiency levels (IE classes). Besides serving the design and implementation of project's planned policy, public awareness raising and marketing activities and monitoring of their impact, the database shall also serve the monitoring and analysis of the energy savings and GHG reduction impact of the project at the national level. The methodology, calculation tools and assessment for this are to be completed as a part of the assignment. Furthermore, the database will also serve as a basis for future energy savings and GHG reduction projections for electric motors used in SMEs in Turkey.

## **3. DUTIES & RESPONSIBILITIES OF THE INDIVIDUAL CONSULTANT (IC)**

The proposed Consultant is expected to take the following roles in cooperation with Local Market Monitoring Consultant and in coordination with and under the organization of the PMU:

- 1) Identifying the needs and expectations of the key project partners (i.e. MoSIT (DG for Productivity, DG for Safety and Inspection of Industrial Products), DG for Renewable Energy, Electric Motor Manufacturers' Association (EMOSAD)) from the database and the website to be established for market monitoring;
- 2) Conducting a series of stakeholder consultations to clarify the conditions for regularly obtaining data on the sales of electric motors subject to the EU Eco-design Implementing Measure 640/2009. The stakeholders to be consulted shall include the representatives of the MoSIT and DG for Renewable Energy, Ministry of Customs and Trade, the Turkish Statistical Institute (TUIK), EMOSAD and, as applicable, the largest electric motor manufacturers and importers.
- 3) Proposing initial methodologies and specific software models (in cooperation with the software specialists of DG for Productivity under the MoSIT) for market monitoring and for assessing the impact of the project and the adopted policies in terms of energy savings and GHG reduction;
- 4) In co-operation with the local market monitoring consultant and the planned MoSIT data collection activities, collecting and analyzing the already available information that can be used for quantifying and characterizing the current state and forecasted market development of the targeted electric motors in Turkey, including information for different electric motor categories about their energy consumption characteristics (i.e. the share of IE classes and corresponding average energy consumption).
- 5) In consultation with the key stakeholders, developing and supporting the adoption of an improved market monitoring system with integrated quality control mechanisms to collect, store and present information about the existing stock and sale of new electric motors by their type and energy performance and facilitate agreements with the key stakeholders to regularly collect and supply the required data for public use elaborating the type, level of aggregation and frequency of the data to be submitted;
- 6) In co-operation with the MoSIT and local market monitoring consultant, filling in the primary data from the years 2015 (where the database completed by MoSIT) to 2017 (where the Project started) (to extent possible) into the system and conducting the first round of quality checking and processing to test the system's functionality;

- 7) Further developing the methodology for the baseline and project impact assessment and finalizing an updated baseline and alternative energy savings and GHG reduction scenarios by using the new data and the system's new data processing software;
- 8) Training of MoSIT staff on market analysis using the Market Monitoring database developed;
- 9) Updating and testing the system with the new figures obtained for 2017; and
- 10) Completing the final report for the assignment with the related recommendation and suggested next steps to sustain the operation of the system also after the project.

#### **4. INSTITUTIONAL ARRANGEMENTS**

UNDP will provide all relevant background documents. UNDP is not required to provide any physical facility for the work of the IC. However, depending on the availability of physical facilities (e.g. working space, computer, printer, telephone lines, internet connection etc.) and at the discretion of UNDP and relevant stakeholders such facilities may be provided at the disposal of the IC. UNDP will facilitate meetings between the IC and other stakeholders, when needed.

The Individual Consultant will report to the PIMS 5285: UNDP/GEF Promoting Energy Efficient Motors in Small and Medium Sized Enterprises (EE Motors) Project Manager.

The Consultant will respond to the comments on the deliverables listed in Section 5 and revise the report as per the comments received by UNDP within 10 calendar days at most.

## 5. DELIVERABLES AND WORKPLAN

The assignment is expected to start in 15 April 2018 and be completed by 29 July 2019. The table below outlines the estimated number of man/days to be allocated by the Consultant to carry out the assignment.

Please note that in order to fulfill required tasks for the development of deliverables as defined and listed in the table below, the **estimated** number of days to be invested are also provided. The number of days presented as 'estimated number of man/days to be invested' are **indicative**. The IC may invest less/more than the estimated number of days in each month and finalize the respective deliverable.

The payment for each deliverable will be made on the basis of the actual number of days invested for that respective deliverable; however, the overall number of days to be invested for all deliverables cannot exceed **27 days throughout the contract validity**. The amount paid shall be gross and inclusive of all associated costs such as social security, pension and income tax.

The deliverables expected from the consultant are as follows:

NO.	ACTIVITY	OUTPUT	BRIEF DESCRIPTION	ESTIMATED NUMBER OF MAN/DAYS TO BE INVESTED	ESTIMATED NUMBER OF MAN/DAYS IN TURKEY	DUE DATE
1	1) Identifying the needs and expectations of the key project partners (i.e. MoSIT (DG for Productivity, DG for Safety and Inspection of Industrial Products), DG for Renewable Energy, Electric Motor Manufacturers' Association (EMOSAD)) from the database and the website to be established for market monitoring; 2) Conducting a series of stakeholder consultations to clarify the conditions for regularly obtaining data on the sales of electric motors subject to the EU Eco-design Implementing Measure 640/2009. The stakeholders to be consulted shall include the representatives of the MoSIT and DG for Renewable Energy, Ministry of Customs and Trade, the Turkish Statistical Institute (TUIK), EMOSAD and, as applicable, the largest	Stakeholder consultation report and a proposal for the database structure, data collection and management procedures and the software to be used for establishing the database.	This report will reflect the expectations of stakeholders from the electric motor market monitoring system as well as the conditions for regular data supply by relevant stakeholders for updating the database. The database, software and database management to be proposed are expected to enable the MoSIT to easily monitor the energy consumption figures and GHG emissions by electric motors in SMEs database by	8	5	15.06.2018

	<p>electric motor manufacturers and importers.</p> <p>3) Proposing initial methodologies and specific software models (in cooperation with the software specialists of DG for Productivity under the MoSIT) for market monitoring and for assessing the impact of the project and the adopted policies in terms of energy savings and GHG reduction.</p>		annual sales and change in stock.			
2	<p>4) In co-operation with the local market monitoring consultant and the planned MoSIT data collection activities, collecting and analyzing the already available information that can be used for quantifying and characterizing the current state and forecasted market development of the targeted electric motors in Turkey, including information for different electric motor categories about their energy consumption characteristics (i.e. the share of IE classes and corresponding average energy consumption).</p> <p>5) In consultation with the key stakeholders, developing and supporting the adoption of an improved market monitoring system with integrated quality control mechanisms to collect, store and present information about the existing stock and sale of new electric motors by their type and energy performance and facilitate agreements with the key stakeholders to regularly collect and supply the required data for public use elaborating the type, level of aggregation and frequency of the data to be submitted;</p>	A database finalized and cross-checked different data sources		5	5	31.07.2018

3	<p>6) In co-operation with the MoSIT and local market monitoring consultant, filling in the primary data from the years 2015 (where the database completed by MoSIT) to 2017 (where the Project started) (to extent possible) into the system and conducting the first round of quality checking and processing to test the system's functionality.</p> <p>7) Further developing the methodology for the baseline and project impact assessment and finalizing an updated baseline and alternative energy savings and GHG reduction scenarios by using the new data and the system's new data processing software.</p>	An updated baseline and GHG reduction analysis	The updated baseline will reflect the change from 2015 (where the electric motor inventory database was completed by the MoSIT) to 2017 (where the Project started).	5	-	30.09.2018
4	8) Training of MoSIT staff on market analysis using the Market Monitoring database developed.	Training of MoSIT staff on market analysis using Market Monitoring database	The contents of the proposed training programme should include all components and aspects to enable the MoSIT staff to effectively use the database for all reporting and policy making activities in the field of energy efficiency of electric motors in SMEs.	4	2	31.03.2019
5	<p>9) Updating and testing the system with the new figures obtained for 2017; and</p> <p>10) Completing the final report for the assignment with the related recommendation and suggested next steps to sustain the operation of the system also after the project.</p>	Final report summarizing the main findings, recommendations and proposed next steps.	The findings and recommendations of this report will also be presented in a stakeholder workshop to be organized by the Project.	5	2	30.06.2019
<b>ESTIMATED TOTAL</b>				<b>27</b>	<b>14</b>	

## 6. MINIMUM QUALIFICATION REQUIREMENTS

The required qualifications and/or experience are presented below:

	Minimum Requirements	Assets
<b>General Qualifications</b>	<ul style="list-style-type: none"> <li>At least a Bachelor's degree in Engineering, Economy, Statistics, Environmental Sciences;</li> <li>Full proficiency in English;</li> <li>Full computer literacy.</li> </ul>	<ul style="list-style-type: none"> <li>MS or PhD in relevant fields</li> </ul>
<b>Professional Experience</b>	<ul style="list-style-type: none"> <li>A minimum 10 years of relevant working experience;</li> <li>At least 3 years of professional experience of the European experience;</li> <li>Good knowledge state of the art approaches and best practices in market analysis and market monitoring systems as well as the related statistical analysis, database management and data processing used for assessing the energy consumption of energy related products (ErPs).</li> </ul>	<ul style="list-style-type: none"> <li>More than 15 years of relevant working experience;</li> <li>Previous working experience in Turkey.</li> </ul>
<b>Specific Experience</b>	<ul style="list-style-type: none"> <li>Familiarity with software solutions used for maintaining and processing the data;</li> <li>At least 3 years of demonstrated experience of conducting GHG reduction analysis for energy efficiency projects financed by the financing mechanisms under the UNFCCC (GEF or Kyoto mechanisms) by defining and calculating the baseline and alternative scenarios and related GHG reduction impact of the project interventions.</li> </ul>	<ul style="list-style-type: none"> <li>More than 5 years of demonstrated experience of conducting GHG reduction analysis for energy efficiency projects financed by the financing mechanisms under the UNFCCC (GEF or Kyoto mechanisms) by defining and calculating the baseline and alternative scenarios and related GHG reduction impact of the project interventions.</li> </ul>
Notes: <ul style="list-style-type: none"> <li>Internships (paid/unpaid) are not considered professional experience.</li> <li>Obligatory military service is not considered professional experience.</li> <li>Professional experience gained in an international setting is considered international experience.</li> </ul>		

## 7. PLACE OF WORK

Place of work for the assignment is home based. It is expected that the Consultant will have 4 missions\* to Turkey (the provinces will be determined during the implementation of the contract) as indicated in Section 5.

All travel, accommodation and living costs in duty station (home based) will be covered by the Consultant. In case, travel out of the duty station, other than the missions indicated in Section 5 of this ToR is needed, the costs of these missions will be borne by UNDP. The costs of these missions may either be;

- Arranged and covered by UNDP CO from the respective project budget without making any reimbursements to the consultant (Any assignment-related travel (economy class), accommodation (bed & breakfast) outside duty station will be arranged by the travel agency UNDP works with, when necessary, by receiving prior approval of UNDP) or

- Reimbursed to the consultant upon the submission of the receipts/invoices of the expenses by the consultant and approval of the UNDP. The reimbursement of each cost item is subject to the following constraints/conditions provided in below table;
- Covered by the combination of both options.

Cost item	Constraints	Conditions of Reimbursement
Travel (intercity transportation)	full-fare economy class tickets	1- Approval by UNDP of the cost items before the initiation of travel 2- Submission of the invoices/receipts, etc. by the consultant with the UNDP's F-10 Form 3- Acceptance and Approval by UNDP of the invoices and F-10 Form.
Accommodation	Up to 50% of the effective DSA rate of UNDP for the respective location	
Breakfast	Up to 6% of the effective DSA rate of UNDP for the respective location	
Lunch	Up to 12% of the effective DSA rate of UNDP for the respective location	
Dinner	Up to 12% of the effective DSA rate of UNDP for the respective location	
Other Expenses (intra city transportations, transfer cost from /to terminals, etc.)	Up to 20% of effective DSA rate of UNDP for the respective location	

*\*The consultant is expected to include 4 round trips between his/her home and determined province in Turkey (including intracity transfer to/from airport). For these 4 missions, all travel costs including breakfast, lunch, dinner, living expenditures, accommodation and intracity transfer costs will be covered by the consultant. If there is a need to travel within provinces of Turkey within a mission, intercity travels within the country will be covered by the UNDP.*

## 8. PAYMENTS

Payments will be made within 30 days upon acceptance and approval of the corresponding deliverable by UNDP on the basis of actual number of days invested in that respective deliverable and the pertaining Certification of Payment document signed by the consultant and approved by the responsible Project Manager. The total amount of payment to be affected to the Consultant within the scope of this contract **cannot exceed** equivalent of 27 days. The consultant shall be paid in US\$ if he/she resides in a country different than Turkey. If he/she resides in Turkey, the payment shall be realized in TRY through conversion of the US\$ amount by the official UN exchange rate valid on the date of money transfer.

If the deliverables are not produced and delivered by the consultant to the satisfaction of UNDP as approved by the responsible Project Manager, no payment will be made even if the consultant has invested man/days to produce and deliver such deliverables.

Payment terms and conditions along with daily fee rate (indicated in the Contract) and number of days invested (not to exceed maximum number of days specified in the Contract) will be the basis of payment to the IC. Payments will be made against approval and acceptance of deliverables by UNDP.

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

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