Annex 1: Terms of Reference

1 BACKGROUND

1.1. Context

In Turkey, 47% of net electricity consumption is from the industrial sector[1], 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 4/20142. 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 most critical success factor for the EE Motors Project will be the successful implementation of the demo and scaled-up electric motor replacement programmes in Small and Medium Sized Enterprises (SMEs) in Turkey to accelerate market transformation towards more efficient electric motors used in SMEs in Turkey. For this purpose, careful design and implementation of demo motor replacement programmes as well as the financial mechanisms to be developed under the Project will be the key to achievement of this objective.

Motor replacement programmes using one-stop-shop financial mechanism(s) concept are intended to address two barriers: i) Lack of financial liquidity of SMEs to pay up front and financing costs for energy efficient motor investments; and ii) SME aversion on the use of external engineers such as ESCOs and equipment suppliers to improve their energy efficiency. Under this concern technical assistance will be focused mainly on building the capacity of the Organized Industrial Zones (OIZs) and its Energy Management Units (EMU) to become lead entities in managing a motor replacement programmes that would include a one stop shop for financial support mechanisms for industrial SMEs. Project resources used towards building EMU capacity will enable them to comprehend and prepare an "efficient motor assessed potential" or EMAP that will provide an assessment of the potential motors to be replaced within an industrial SME. With an efficient motor assessed potential (EMAP) in place, the SME can target certain motors for a standard motor testing report (SMTR) that will provide recommended improvements not just to the electric motor itself, but to the entire electric motor drive system. From this information, a "Motor Energy Efficiency Investment Plan" (MEEIP) can be prepared to include: (i) a technical component, which will include the proposed electric motors (brand, capacity

[1] TEDC (TEDAS), Electricity Distribution and Consumption Statistics of Turkey, 2015

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

and efficiency) with limited amount of associated equipment to fully benefit from potential cost savings (such as a pump, fan or compressor); and (ii) a financial component, which will include the cost savings, payback period, monthly fee calculation with a simple sensitivity analysis. The MEEIP can serve as the basis on which financing (or leasing as the case may be) will be arranged and therefore will be shared with relevant parties, such as banks for financing or with leasing company in case of leasing.

By designing specific training sessions, workshops and awareness raising sessions tailored to each type of audience (including SMEs and financial institutions to better disseminate the sustainable energy efficiency financing mechanism - SEEFM), the overall knowledge base of these important stakeholders will be raised to the extent that EE motors would be in greater use by the end of Project. This would include improving the knowledge of end-users or industrial SMEs in the lifecycle benefits of EE motors in an attempt to change their behavior from buying the lowest cost equipment without consideration of the energy consumed over the service life of the equipment. Similarly, for OIZs and their Energy Management Units (EMUs), they will require additional technical knowledge and management skills to design, implement and sustain a motor replacement program during the course of the Project as well as beyond. International technical EE expertise will be utilized by the Project to provide this technical assistance; their recruitment onto the Project will be done as energy efficiency consultants for the purposes of building the capacity and technically assisting EMU's in designing, implementing and managing a motor replacement program with OIZs.

The CTA is expected to serve for all Components of the Project, except for Component 3.

1.2. Institutional Setup

The DG for Industry and Productivity (DGIP) under the Ministry of Industry and Technology (MoIT) 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 DGIP. The NPD oversees implementation of the project activities and provides (or facilitates provision of) technical endorsement for all deliverables. Project Management Unit (PMU) is headed by the Project Manager and comprised of Project Manager and Project Associate and supported by a Senior Technical Advisor for Energy Efficiency and Renewable Energy (STA-EE&RE).

2 OBJECTIVE AND SCOPE

The objective of this assignment is to help Project Management Unit (PMU) in order to provide full support to all Project Components and related activities as cross cutting areas where energy efficiency expertise is required. Under this generic objective, CTA is expected to provide oversight support on policy analysis and regulatory framework, and strategic planning for national motor replacement programmes, exposing the project team and DGIP to best practices; provide oversight assistance to adaptive management of the project to ensure the project can meet its targets especially those related to electricity savings and Greenhouse Gas (GHG) reductions. This oversight assistance should include measures that have been taken from other successful market transformation projects.

3 DUTIES AND RESPONSIBILITIES OF THE INDIVIDUAL CONSULTANT

UNDP will mobilize an individual consultant as ***International Chief Technical Advisor (CTA)*** on a framework contract basis. The following duties and responsibilities of CTA are indicative and subject to further detailing through specific service requests to be made by UNDP during the course of the contract duration.

In line with the project components and the facts described below (but not limited to), the Consultant will perform the following functions:

- Provide full support to all Project components (except Component 3) and related activities as cross cutting areas where energy efficiency expertise is required;
- Support Project Management Unit in policy analysis and regulatory framework, and strategic planning for national motor replacement programmes, exposing the project team and DGIP to international best practices;
- Provide specific assistance to ensure the project can meet its targets especially those related to electricity savings and GHG reductions and measures that have been taken from other successful market transformation projects;
- Assist in the evaluation and redesign of one-stop shop and sustainable financial mechanisms for the scale up phase of MEEIPs in Turkey introducing international best practices;
- Provide technical input for the Terms of Reference section of RFP (Request for Proposals) for the mobilization of energy efficiency (EE) auditing teams under the overall supervision of UNDP PMU;
- Implement close follow up and managing approach before, during and after the "pilot motor replacement programme" to maintain smooth, precise and result oriented replacement programme.
- Provide guidance and necessary technical inputs for terms of references for procurement processes under the Project, where required;
- In close collaboration with the PM and short terms consultants as required, support design and delivery of appropriate training materials and workshops on EE motor market transformation, new motor design trends, and global motor market trends for SMEs, EMUs and other stakeholders; also organize and conduct such training and workshop events;

Within the scope of the Assignment; based on his/her expertise, the ***CTA*** is expected to provide consultancy services within the scope of the frame defined below, in specific service requests which will elaborate the task required from the Consultant and the due dates of these deliverables.

Below are the project outputs/activities that are relevant to this assignment:

Project Outputs	**Project Activities**	**Specific Activities for the Consultant**
COMPONENT 1: Strengthened legislative and regulatory framework related to new and existing EE motors		
Output 1.1: Augmented baseline survey on industrial SME electric motor usage.	1.1.1. Identify the needs and expectations of the key project partners for market monitoring. 1.1.2. Develop and support the adoption of an improved market monitoring system 1.1.3. Conduct the survey on electric motor usage. 1.1.4. Train MoIT staff on market analysis.	The CTA is expected to support the PMU in updating the market monitoring database every year of implementation using the data to be obtained by the PMU.
COMPONENT 2: Improved capacity of relevant stakeholders to promote the benefits of EE motors		
Output 2.2: Technical training workshops on designing and implementing EE motor replacement programmes.	2.2.1. Identification of stakeholder groups to get involved in EE motor replacement programmes and an assessment of their absorptive capacities for training on EE motor replacement programmes.	The CTA is expected to support the activities and PMU: -to identify the stakeholder groups to get involved in EE motor replacement programmes; -to conduct the assessment process of relevant stakeholders' absorptive

	2.2.2. Preparing technical materials related to EE motor design, EE motor manufacturing in compliance with the latest MEPS, EE motor regulations, motor product testing and certification requirements, basic financial analyses to introduce life cycle analysis of true electric motor replacement costs, and electric motor systems purchasing and management practices.	capacities for training on EE motor replacement programmes; -provide support for organizing and conducting 20 technical training workshops with full support of the PMU Office (logistics, appointments, place, food & beverage, promotion materials, etc.) (WSs) on EE motor replacements in the industrial sector and other sectors in Turkish society for SMEs by means of preparing technical materials related to EE motor design, EE motor manufacturing in compliance with the latest MEPS, EE motor regulations, motor product testing and certification requirements, basic financial analyses to introduce life cycle analysis of true electric motor replacement costs, and electric motor systems purchasing and management practices. The CTA will review and provide comments on the Stakeholder Assessment Report drafted by the Project Experts. For these activities, the CTA will cooperate with PMU and Consultants of the Project (LARC, and LFC Consultants).
COMPONENT 4: One-stop shop to improve industrial SME access to financing for EE motor investments		
Output 4.1: Completed efficient motor assessed potential (EMAP).	4.1.1. Organize informative and promotion meetings (15 meetings) as formal discussions with the selected chambers of industry to select the 10 OIZs who will possibly undertake the pilot activities for the EMAP, and other activities leading to the piloting of the one-stop-shop financial support mechanism. 4.1.2. Assist the EMU in conducting an assessment on the efficiency potential of all motor systems within an estimated 500 SMEs in 3 to 5 OIZs using an established "software tool" that can estimate the share of electric motors within the total electricity consumption of an SME. 4.1.3. Assist the EMU in creating a "database" of relevant motors within an SME using a software tool that incorporates a motor's operating hours and uses a decision-maker function to select motors with the best potential for energy savings.	The CTA is expected to support preparation of a short list of 10 OIZs and to determine capacities and capabilities of short listed 10 OIZ directorates and EMUs who could have proper human resource and testing equipment shop inventory via interviews performed while visiting them individually and prepare a table chart illustrating qualitative and quantitative aspects with ranking approach eventually addressing determined effectiveness of OIZs and their EMUs to involve considerable number of SMEs (i.e. around 100) in motor replacement programmes. The CTA is also expected to support the preparation of unique, web based, user friendly and financially compatible/ bankable "software tool" that can estimate the share of electric motors within the total electricity consumption of an SME (also check/ benchmark with existing tools already prepared by EBRD, WB, CTF and other EE credit line donors); conduct training for OIZ based EMUs about the

		assessment on the efficiency potential of all motor systems within SMEs using an established "software tool"; support the preparation and design of a "database" - which should be interlinked with the "software" - being relevant and compatible to existing electric motors within each of categorized SMEs to be EE audited (focusing on electric motor efficiencies) from different sectors, facing with actual power load fluctuations and various enterprise sizes, etc.; support such a correlation and compilation of the "database" sequentially with the "software" design structure for smooth data entry operations. The CTA will review and provide comments on the Report on the selection process and conceptual road-map of EE motor replacement potential of 10 resulted OIZ Directorates with structured Energy Management Units (EMUs) prepared by Project Experts. For these activities, the CTA will cooperate with PMU and Consultants of the Project (LARC, LFC, ISC, LSC).
Output 4.2: Standard motor testing reports and MEEIPs (Motor EE investment plan).	4.2.1. Study on a standard motor testing report (SMTR) for each of these motors. 4.2.2 Conduct on-site measurements within 500 SMEs (located within 3-5 OIZs) specifically on their "electric motors" with the best potential for energy efficiency gains, generate relevant SMTR after each of audits. 4.2.3 Collate all SMTR information and prepare a motor EE investment plan (MEEIP) for replacement of inefficient electric motors to 500 SMEs within 3 to 5 OIZs.	The CTA is expected to study and examine the standard motor testing report (SMTR) best effective format and contents. These reports should include recommendations on the resizing of the motors and its applications adjusted for OIZs to the needs of the industrial process being motorized but based on the findings of the SMTR. In addition, the SMTR should provide sufficient information on recommendations to upgrade the motor system with a VSD as well as other improvements and prepare the final version of the standard motor testing report (SMTR). The CTA is also expected to collaborate LARC to continuously communicate, find out and list the SMEs who are willing to conduct on site electric motor efficiency measurements; create proper SME pipe-line for sequential measurements. The CTA will review and provide comments on the draft version of the EE investment plan (MEEIP) document prepared by the energy audit teams;

		provide close technical assistance to the 100 SMEs (including the aforementioned 12 SMEs who are early adopters), in the implementing of the MEEIP through obtaining and installation of the EE motor in the SME.
Output 4.3: Pilot EE motor replacements using" one-stop-shop".	4.3.1. Confirm the viable finance models with stakeholders. 4.3.2. Provide full support for motor replacements and variable speed drives (VSDs) for an estimated 12 SMEs (over 3-5 OIZs) for the purposes of attracting early adopters and using these early adopters as demonstrations for successful and efficient motor replacement programmes for the purposes of raising awareness.	On-site measurements and energy efficient motor audits will be outsourced to a company via RFP (request for Proposal). For this reason, CTA is expected to provide technical input to the Terms of Reference. CTA will work closely with the contracted company during implementation and monitoring phases and report to the Project Manager accordingly. The CTA is expected to support the process of set up agreements that will enable the 3 to 5 selected OIZs to become the primary management entities of the one-stop shop facility for industrial SMEs to implement motor replacement programmes; determine the pilot SMEs who should be so called early adopters as demonstrations for successful and efficient motor replacement programmes for the purposes of raising awareness, out of the most convenient SMTRs and MEEIPs already been assessed in selected OIZs. During and after implementation of on-site measurements with a recruited energy efficiency audit company in selected 100 SMEs, the CTA is expected to guide compilation of relevant SMTRs and MEEIPs; supervise for finalizing the detailed inventory list of motors (as per SMEs with full technical specification of motors) for 12 SMEs and mutual agreements with SMEs about the inventory list and timing for replacement in 12 SMEs. For entire replacement processes, CTA will guide purchasing, installation and reporting of high efficient electric motor replacements for each of 12 SMEs (over 3-5 OIZs). For this activity, the CTA will cooperate with PMU and consultants of the project (LARC and LFC).
COMPONENT 5: Availability of EE motor information raising stakeholder awareness on EE motor benefit		

Output 5.1: National EE electric motor database.	5.1.1. Review available data on inefficient and efficient motors within the industrial sector from Output 1.1, and efforts to establish an EE motors database from DGIP's survey and KOSGEB's Kayseri OIZ interest rate support for EE motors scheme.	The CTA is expected to support structuring of the database on inefficient and efficient motors within the industrial sector.
Output 5.2: Nationwide public awareness raising campaign for EE motors	5.2.1. Two short movie (3-5 min) spots will be developed in Year 1 and delivered on a weekly basis on radio and TV for the entire 5-year duration of the Project. 5.2.2. Development of best practice and case studies brochures / flyers and advertisements (digital / hard copy) on the benefits of EE motors and the one-stop shop mechanism that will be displayed on billboards in selected OIZs, posters, and other print and social media and the Internet. 5.2.3. Development facilitation of specific EE motor awareness raising messaging materials (printed / audio / visual / web based / social media populated) towards other OIZs that can be disseminated to OIZs during the scale up phase of the one-stop shop. This activity is considered to be important and should have the effect of boosting confidence of other OIZs to adopt the one-stop shop mechanism piloted in Output 4.3	The CTA is also expected to support the preparation of all kinds of audio-visual, printed or digital materials in terms of technical input, if required.

If required by UNDP, the IC may be requested to provide additional consultancy services on topics related to the above expertise areas, which are not indicated above, since the table provides a general table to define the scope of the services. The detailed tasks will be provided in specific service requests.

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 in consultation with 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.

After submission of the deliverables elaborated in specific Service Requests, UNDP may have some comments and revision requests on the deliverables. The Consultant shall address the comments of

UNDP and shall revise the deliverables as per the comments within at most 10 calendar days following notification of comments by UNDP to the consultant.

5 DELIVERABLES

The Assignment will include interim and final deliverables, which will be defined in the specific service requests to be made by UNDP to the IC within the scope of Terms of Reference.

All reports should be submitted in English.

6 ESTIMATED INPUT BY THE INDIVIDUAL CONSULTANT (IC)

IC is expected to invest (at maximum) 200 man/days over 23 months throughout the contract validity.

The IC shall produce deliverables to be indicated in the Service Requests to the satisfaction of UNDP and project partners within the man/days limit set forth in the Service Request. In cases where the IC may need to invest additional man/days to perform the tasks and produce the deliverables listed and defined in the mutually agreed (signed) Service Request, the IC shall do so without any additional payment.

7 REQUIREMENTS FOR EXPERIENCE AND QUALIFICATIONS

General Qualifications (10 points):

- University degree in engineering, energy sciences or other relevant technical fields is required. **(6 points)**
- Advanced university degree is **an asset**. **(2 points)**
- Computer proficiency in MS Office (Word, Excel and PowerPoint) is prerequisite. **(2 points)**

Professional Experience (20 points):

- A minimum of 10 years of international relevant professional experience is required. **(16 points)**
- International professional experience of more than 12 years is **an asset**. **(1 point)**
- At least 5 years of international experience in "energy efficiency" field is required and more than 8 years in this field is **an asset**. **(2 points)**
- Consultancy experience with the Standard ISO 50001:2011 Energy Management System (EnMS) is **an asset. (1 point)**

Specific Experience (30 points):

- Working experience in at least 3 internationally funded projects covering energy efficiency (EE) field is required. **(13 points)**
- At least 3 years or of experience with close and intensive involvement in energy efficiency audits in industrial facilities is required. **(12 points)**
- More than 5 years' experience in close and intensive involvement in energy efficiency audits in industrial companies or Energy Performance Contracting (EPC) or energy performance service commissioning contract(s) is **an asset**. **(1 point)**

- Experience in supporting energy efficient electric motors market transformation projects (or its subcomponents) funded by international agencies/donors is **an asset**. **(1 point)**
- Familiarity with the specific UNDP and GEF requirements is **an asset. (1 point)**
- Consulting experience in projects implemented in Turkey is **an asset**. **(2 points)**

Notes:
- Internships (paid/unpaid) are not considered professional experience.
- Obligatory military service is not considered professional experience.
- Professional experience gained in an international setting is considered international experience.

8 TIMING AND DURATION

The Assignment is expected to start on 1st of March 2019 and be completed by 31st of January 2021.

9 PLACE OF WORK

Place of work for the assignment is home-based. All travel, accommodation and living costs in duty station (home-based) will be covered by the Consultant. It will be required that the Consultant travels out of the duty station (home-based) within the scope of this Terms of Reference. The Consultant is expected to travel to Ankara and possibly other provinces within Turkey, which will be defined after contract signature, for 20 times (approximately one visit per month) throughout the contract duration and stay for 5 days in Turkey in each visit. In case, travel out of the duty station is needed, the travel and accommodation costs of these missions will be borne by UNDP. Travel related costs (economy class flight ticket) of these missions out of the duty station and accommodation cost (in 3 or 4-star hotel) will be borne by UNDP. Approval of UNDP prior to the missions is needed. Only these costs will be covered in case the experts travel. The details with regards to any travels within the scope of these assignments will be elaborated in specific service requests. These missions will be arranged and covered by UNDP CO from the respective project budget without making any reimbursements to the consultant and through the travel agency UNDP works with.

10 PAYMENTS

The contract to be signed between UNDP and successful candidate will not entail a financial commitment from UNDP. UNDP's financial commitment will be established on an ad-hoc basis every time as services are officially requested by UNDP. Service Requests will be detailed and signed by both parties for a Service Request to be effective. Payment terms and conditions will be specified in the specific service requests.

Payments will be made within 30 days upon acceptance and approval of the corresponding deliverable stipulated in the specific Service Request 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 effected to the Consultant within the scope of this contract **cannot exceed** equivalent of 200 man/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.

Expected delivery dates of the reports will be indicated in each and every specific service request issued by UNDP after contract signature.

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.