Terminal Evaluation of UNDP Supported GEF Financed Project on
Promoting Energy Efficient Motors in Chinese Industries

GEF Project ID 5360 and UNDP PIMS 5121

GEF Operational Focal Area: Climate Change CCM2

Terminal Evaluation Report

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Project and evaluation information details:

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GEF financing:	3,500,000	3,500,000	
Total co-financing:	17,700,000	18,000,000	
Project total costs:	21,200,000	21,500,000	

Acknowledgments

This Terminal Evaluation report sets out findings, conclusions, lessons learnt and recommendations for the UNDP supported GEF Financed Project on Promoting Energy Efficient Motors in Chinese Industries. The report is developed in compliance with the terms of reference for the assignment. The conclusions and recommendations set out in the following pages are solely those of the evaluators and are not binding on the project management and sponsors.

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Acronyms & Abbreviations

APR	Annual Project Report
CDR	Combined Delivery Report
EE	Energy Efficient
EM	Electric Motor
EOP	End of Project
GCF	Green Climate Fund
GEF	Global Environment Facility
GHG	Greenhouse Gas
GWh	Gigawatt hour
HEM	High Efficiency (Electric) Motor
IEC	International Electrotechnical Commission
IE3	IE3 class Motor (Premium Efficiency Motor) as per IEC standard
IE4	IE4 class Motor (Super Premium Efficiency Motor) as per IEC standard
ktCO2	Kilotons of carbon dioxide
M&E	Monitoring and Evaluation
MIIT	Ministry of Industry and Information Technology, China
NEMA	National Electrical Manufacturers Association (NEMA)
NDC	Nationally Determined Contribution (under the Paris Agreement of the UNFCCC)
NPD	National Project Director
OVI	Objectively Verifiable Indicator
PIF	Project Identification Form
PIR	Project Implementation Review
PMO	Project Management Office
PREMCI	Promoting Energy Efficient Motors in Chinese Industries
REM	Remanufactured Electric Motor
tCO_2	Tons of carbon dioxide
tCO_2e	Tons of carbon dioxide equivalent
TE	Terminal Evaluation
TOR	Terms of Reference
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change

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Executive Summary:

The primary objective of PREMCI is to enhance the manufacturing and widespread application of energy efficient electric motors in China. If the manufacturing process is performed properly employing advanced technologies and techniques and in qualified and competent EE motor production facilities, relatively low cost and high quality EE motors (HEMs and REMs) can become available in the local electric motor market. The utilization of EE motors is expected to bring about large gains in electricity savings in the operation of electric motor systems in industries. This translates to benefits to the global environment, as well as to China's economy and local environment, and to contribution of the achievement of climate change mitigation targets. A combination of “technology push” and “market pull” activities will be employed to enhance the energy efficiency levels of HEMs and REMs that are locally produced in China. It is expected that by the end-of-project, at least 40% of the local electric motor manufacturers in China will produce HEMs and REMs. Ten years after the end of the project, with an average 3% improvement in energy efficiency of locally made EE motors, the estimated cumulative energy saving would be no less than 55,590 GWh, which translates to a reduction in GHG emissions of at least 44.47 million tons CO2.

The project includes enhanced and clearly defined policy enforcement mechanisms on the production EE motors and their applications in the Chinese industrial sector, increased local production of EE motors for applications in Chinese industries, increased application of domestically produced EE motors in Chinese industries and increased market share of energy efficient electric motors.

In 2017, with the aim of regulating project management, fund use and project tasks implementation, “PREMCI project management manual” and “PREMCI project bid-tender procedure” were studied and formulated. Besides, the application and manufacturing of energy efficient electric motors have been developed through the demonstration pilot companies. Moreover, assignment of sub activities through bid-tender process.

The project relies on systematic work such as demonstration leadership, policy research, publicity and promotion, and standard promotion. By strengthening the design and development of high efficiency motors, improving the production capacity of high efficiency motors, improving the market access mechanism of high efficiency motors and related policy standards, and organizing the promotion of high efficiency motors activities, China's high efficiency motor industry have greatly promoted . In the field of motor applications, the market share of China's high efficiency motors has increased from 16% in 2017 to 34.2% in 2020.

Globally, electric motor systems have been identified as the major electricity consumer in the industrial sector of countries. These electric motors are by and large responsible for about 70% of industrial electricity consumption. It is estimated that in 2011, electric motor systems accounted for an estimated 64% of China’s total annual electricity consumption. Compared with developed countries, the energy efficient level of electric motors in China is relatively low, there is less than 10% electric motors in China being capable of reaching the IE2 standard of IEC. In addition, approximately 3 to 5 percentage points than those in the developed countries. For learning advanced experiences of improving electric motors energy efficiency from developed countries, as well as facilitating electric motor industry in

China, the PREMCI was applied by MIIT with organizing local government sectors and electric motor manufacturers of Shandong, Hunan, Anhui and Shanghai at 2013. Subsequently, MIIT signed official project document with UNDP which then was reported and recorded to GEF. The project was then initiated and the Project Guide Committee was established at 8th of August 2016.

Although the project was officially launched in 2016, due to the fact that the delay of funding and the introduction of talents, the implementation of the project was really started in November 2017. The implementation time of the project is relatively late, but in 2018, 2019 and 2020, all the project contractors and demonstration pilot companies basically completed their task on time and achieved Moderately Satisfactory outcomes. The project successfully completed various indicators and tasks in March 2021.

1. Introduction:

1.1 Description of the project

The project "Promoting Energy Efficient Motors in Chinese Industries" (PREMCI) is funded by Global Environment Facility (GEF) with co-financing coordinated by China's Ministry of Industry and Information Technology (MIIT). MIIT also served as the executing agency. PREMCI started in March 2016 and ended 31 March 2021, with the exception of the TE which is ongoing. The objective of PREMCI is the reduction of greenhouse gas emissions in Chinese industries through the significant increase in manufacturing and use of energy efficient (EE) electric motors[1], which was expected to result in electricity savings of 5,559 GWh per year during the implementation and GHG emissions reductions of 7,986 ktCO2 by the end of the project. To achieve its objective, PREMCI consists of four major components[2]:

1. Support the preparation and enforcement of policy and regulatory frameworks;
2. Enhance the production of EE motors for the increased application in Chinese industries
3. Provide financial support for and improve the accessibility of EE motors in China
4. Strengthen the promotion of EE motors to increase their market share in China

A more comprehensive description of PREMCI is included in Section 2 of the TE report.

1.2 Evaluation purpose, scope and objective

According to UNDP/GEF project M&E policies and procedures, the Terminal Evaluation (TE) of PREMCI has been conducted to assess the achievement of project results in light of the expected results mentioned in the Project Document. Furthermore, the TE has aimed to draw lessons that can improve both the sustainability of the benefits from PREMCI and UNDP and GEF programming in the future. Conform the terms of reference (TOR), which the TE team accepts in full, the TE has identified potential project design problems, assessed progress towards the achievement of the project objective, identified and documented lessons learned (including lessons that might improve design and implementation of other UNDP-GEF projects), and made recommendations regarding specific actions that should be taken to improve the project in future. The TE has assessed early signs of project success or failure and identified the necessary changes to be made.

The scope of the TE covered the entirety of PREMCI and its components. It has measured the extent of project achievements against what were expected as shown in the PREMCI Project's Logical Framework and Project Document, identified any problems in project design, and assessed project performance including but not limited to relevance, effectiveness, efficiency, impact, and sustainability. It identified lessons and made recommendations that might be taken to improve design and implementation of other UNDP-GEF projects.

1.3 Evaluation methodologies and approaches

As is common for all evaluations, the TOR specifies that the TE must provide evidence-based information that is credible, reliable, and useful. Following this key requirement of evaluations, the TE team attached great importance to the objectively verifiable indicators (OVIs) that have been specified for PREMCI, and the attainment of the OVI targets. Furthermore, the TE team attached great

[1] Formally, the objective is "Increased manufacturing and widespread application of energy efficient electric motors in China" and the goal is "Reduction of greenhouse gas emissions through the widespread application of energy efficient electric motors in China".

[2] The formal names of the components are: Component 1: Policy and regulatory frameworks on the production and application of energy efficient electric motors (EE motors), Component 2: Energy efficient electric motor production and applications, Component 3: Financial support & accessibility improvement, Component 4: Energy efficient electric motor promotion.

importance to 'triangulation', the confirmation of conclusions through different pieces of objective evidence. For example, the PMO has indicated to the TE team that all OVI targets have been achieved or overachieved. The principle of triangulation requires that this was independently confirmed by the TE team, so that a finding regarding the attainment of the OVI targets is based on a solid foundation and can be seen as objective by all stakeholders. It should be noted that although triangulation is desirable, it is also time-consuming. Therefore, some judgment has been made by the TE team whether a finding is important enough to the objectives of the TE to require a second or third confirmation, also considering the strength and credibility of the original source. **It is also important to note that gender-responsive methodologies and tools are incorporated into this TE report to ensure gender equality and women's empowerment, as well as other cross-cutting issues and SDGs.**

During the initial meetings, the TE team has confirmed that although not specifically mentioned in the TOR, the client is interested in the issue of 'attribution', which basically means the extent to which the results achieved are caused by the project or would have happened in any case. This has been reflected in the detailed evaluation questions and the evaluation matrix and in particular in the online questionnaires and interview questions.

This TE took place during the COVID-19 pandemic. The pandemic has made it more difficult to organize and conduct physical meetings. To address these constraints, the TE team mainly has relied on online meetings and interviews using online meeting tools such as Teams, Zoom, etc., document review, as well as short and targeted surveys, and has avoided physical meetings.

The main focus during the inception phase was the collection of data and information on PREMCI including its background and context, design and start-up, implementation and monitoring and evaluation (M&E) activities. The document collection took place in parallel with review of the documentation and information considering its usefulness and completeness for the TE and answering of the evaluation questions, online meetings that aimed at clarifying issues and questions pertaining project implementation, outcomes, and challenges as well as the availability and utility of information. The TE team has received a considerable amount of documentation and gained a deeper understanding of the PREMCI Project, which paves the way for analysis and evaluation. The following subsections describe the process of information collection, which has been reflected into this TE inception report.

In the subsections below, we highlight our methodological approach to various aspects of the TE, starting from the various question rounds with the PMO.

1.3.1 Initial and first batch of documentation

The first batch of documentation was provided by UNDP on 2 April 2021[3]. The information was checked for completeness by the TE team, and a first request for additional information was formulated. The PMO submitted the additional documents on 29 April 2021. Table 1 includes the type of documentation gathered.

Table 1. Initial and first batch of documentation provided by UNDP and the PMO.

UNDP	
• Project Identification Form • Annual APR/PIR • Project Document • Logical Framework • Financial Progress Reports • Mid-term Evaluation Report	• Internal monitoring results • Terms of Reference for past consultants' assignments and summary of the results • Past audit reports • And any other relevant materials
PMO	
• Acceptance document checklist	• Demonstration Companies

[3] The exact timeline has been included in Sections 1.3.1 – 1.3.4 and Annex A2.

• Training Activities • Inception Report • Completion Table of PREMCI Outcome Indicators	• Training participant lists with breakdown by gender • The proportion of male and female employees in the demonstration enterprises

A complete list of documents received is provided in Section 7.

1.3.2 Request for additional information and documentation

After the review of the initial documentation and the first batch of additional documentation, the TE team formulated a second request for additional information, in order to gain an in-depth understanding of China's EE motor market, incentive policy, financial support and promotion activities carried out under the PREMCI project. The request was submitted to PMO on 5 May 2021.

1.3.3 Additional information and documentation provided by PMO

PMO sorted out the materials based on the feedback of the evaluation team. They submitted additional documents on 7 May 2021 and provided the relevant information in detail on 7 May 2021. These include the information provided in Table 2. A complete list of documents received is provided in Section 7.

Table 2. Second batch documentation and information

Additional documentation	
• Report on Policy Research and Recommendations of Electrical Machinery in China • Promoting Energy Efficient Electric Motors in Chinese Industries • Remanufacturing Motor Development Policy Research Summary Report • Green credit policy research report to support the promotion of energy-saving technology products such as energy-efficient electric motors system	• Establish and operate the motor market monitoring system • Domestic Motor Market Research Project Research Summary Report • China high-efficiency motor promotion project summary report • Four demonstration enterprises activities summary report • Report on promotion activities of 20 undertaking units20
Additional information	
• Satisfaction surveys • Details about a database with information on trainees • Details about the enterprises benefitted from the PREMCI project	• Opinions about the contribution of the PREMCI project from PMO • Details about monitoring including data collection and calculation of indicator values

1.3.4 Presentation Meeting and Q&A

Based on the preliminary review of documentations received, an online meeting was held between the TE team, UNDP China, and PMO representatives on 8 May 2021. During this meeting, PMO made a detailed presentation of PREMCI, including background, outputs, achievements, and challenges, etc. The meeting also allowed for a more in-depth discussion on implementation activities, data sources, data collection and impact measurement, project sustainability as well as arrangements for undertaking interviews. The effective communications between the TE team and PMO provided great support for the ongoing evaluation work. Annex A2.1 provides the agenda and Annex A2.2 the people consulted.

In follow up to the meeting with the PMO, on 10 May a timetable for the evaluation was presented, some of the questions asked during the meeting were elaborated and follow up questions to the materials received were shared with the PMO. Feedback was received in a timely fashion and has been reflected throughout the TE report and in Section 7.

1.3.5 Desk review of documentation

Review of documentation is the prime method for collecting information about the implementation of PREMCI. It has provided the first source of information on the achievement of the OVI targets and the understanding of the project implementation. It provided the primary evidence for the TE, which has been complemented with other data and evidence collection methods.

1.3.6 Frequent communications

The TOR specifies that the TE shall follow a participatory and consultative approach ensuring close engagement with government counterparts, particularly the GEF operational focal point, UNDP Country Office, project team, UNDP GEF Technical Adviser based in the region and key stakeholders. Again, such a participatory and consultative approach is common to evaluations. To implement it, the TE team among others has consulted with the PMO about key informants to be consulted and interviewed.

Furthermore, language can be a barrier. While the language of the TE is English to serve the international organizations that have co-financed PREMCI, many of the implementers of PREMCI are more comfortable expressing themselves in Chinese. Therefore, most of the online meetings and interviews were conducted by the Chinese members of the TE team, without the participation of the international consultant. Subsequently the international consultant was briefed about the results and issues from the interviews.

1.3.7 Assignment of responsibility in the evaluation team

The team discussed the assignment of responsibilities and tasks within the TE team. However, for practical reasons this was modified during the implementation of the TE, with the Chinese team members focusing on interviews and preparation of interview summaries, and the international team member focusing on report preparation.

1.3.8 Identification of key assessment methods and indicators

Based on a review of the available documentation, the TE team assessed that the OVIs used in the project log frame and as stated in the project document and reported on by the PMO were broadly appropriate for the evaluation. Additional indicators that have been considered include the breakdown of training participants by gender, compared with the industry-wide ratio between females and males.

In terms of assessment methods, the TE team has used document review and online meetings and interviews as well as surveys, the latter complementing surveys that have been carried out by PREMCI PMO. For both the assessment methods and indicators used in the TE, we further refer to Annex A5. The questionnaires that have been included target two groups: 1) producers of HEMs & REMs and 2) users of HEMs & REMs. The questionnaires have been included as Annex A6.

1.3.9 Elaboration of evaluation questions and matrix

The TE team has elaborated the evaluation questions mentioned in the TOR, also considering the various discussions during the inception phase, and mapped these to the various assessment methods in the evaluation matrix. See Annex A5.

It should be noted that the TOR contains a rather lengthy set of issues to be assessed at the component level and at the project level. As mentioned in the approved TE inception report, the TE team rephrased these where needed to specific questions and included these into the evaluation matrix. It should be noted that the set of issues to be assessed as specified in the TOR only imperfectly maps onto the issues to be covered according to the table of contents mentioned in the TOR, and also only imperfectly maps onto the issues for which ratings need to be provided. Moreover, this set maps only imperfectly on the sample matrix provided in the UNDP-GEF TE guidance, which follows the standard evaluation criteria relevance, efficiency, effectiveness, results, sustainability, etc. Therefore, these standard evaluation criteria have been added to the evaluation matrix, partly with their own set of evaluation questions, and partly referring to questions already covered per the issues to be assessed, as mentioned in the TOR.

Following the above-mentioned process has resulted in a rather lengthy list and therefore it should be accepted that the treatment of these questions cannot be in depth.

Furthermore, the set of issues mentioned in the TOR among others include questions about financial management and procurement procedures. While the TE team has addressed these, we should note that the team does not include auditors, and that what the TE team will conduct is obviously not an audit.

1.3.10 List of interviews held

Based on the analysis and suggestions from the TE team included in the inception report, and the feedback from the PMO received on 13 May 2021, a final list of interviews was determined. This list has been included in Annex A3. Before the interviews, a series of interview topic/question checklists were prepared, which have been annexed in Annex A3. At the end of each interview, meeting notes have been prepared that are internal to the TE team and have been used in preparing the evaluation findings (Section 3-5)[4].

1.4 Set up of the final report

This final terminal evaluation (TE) report has been prepared by the TE team on the basis of information received up to and including 11 August 2021. It has been finalized after the completion of the online surveys using written questionnaires and inclusion of the results from the surveys in the findings and analysis, includes the TE team's reactions to selected comments received from a reviewer of the draft final report.

Section 2 provides a detailed project description of PREMCI in terms of intervention. From Section 3 to Section 5 contains findings related to project design/formulation, project implementation and project results. Whereas Section 6 provides the main findings, conclusions, recommendations and lessons learned. Finally, Section 7 presents the project documents consulted. With several annexes accompanied in the end, evaluation matrix, interview questionnaires, and other more detailed sources could be found.

[4] These meeting notes have not been included in the final TE report. The reason for this exclusion is that no permission had been asked from the interviewees to have meeting notes included in the TE report. The idea behind this is to provide interviewees with the full freedom to express their experiences and impressions, in confidence.

2. Description of the intervention

2.1 Background

Globally, electric motor systems have been identified as the major industrial electricity consumers offering large energy and energy cost savings potentials. These electric motors are by and large responsible for about 70% of industrial electricity consumption. It has been estimated that in 2011, electric motor systems accounted for an estimated 64% of China's total annual electricity consumption, or about 3 trillion kWh with the installed capacity of 1.7 billion kW. On average, locally produced electric motors in China typically have efficiencies that are approximately 3 to 5 percentage points lower than those in the developed countries such as the USA and Canada. Due to high load factors and their ubiquitous nature, even a small gain in motor efficiency can result in significant electricity savings and greenhouse gas (GHG) emission reductions. It has been estimated that a 1 percentage point efficiency improvement will result in 26 billion kWh annual electricity saving. In this regard, China has ample incentives to improve the efficiency of locally made and used electric motor. This is the focus of PREMCI.

Although some electric motor manufacturers have the ability to develop and produce EE motors, their market share at the initiation of PREMCI was still small at less than 10%. The main stated reason was that most of the electric motors are purchased by OEMs rather than end-users. In China, more than 60% of electric motor buyers are not end-users but the OEMs. When OEMs buy motors as their equipment drives, they mainly care about price (next to power output and technical lifetime) since the price of energy efficient motors is usually higher than that of typical standard motors. Therefore, the price is the most important factor that restricts the wide application of high efficiency motors[5]. The producer tends to only produce EE motors based on specific orders. These orders have limited volume. The lack of volume results in limited economies of scale, making the efficient electric motor manufacturing business less profitable.

It is very important that the industry players are directly involved in the government's support activities for market enhancements for EE motors. At the initiation of PREMCI, there were over 2,300 electric motor manufacturers in China. Among these, only about 50 were capable of producing HEMs. In that regard, locally manufactured HEMs account for only about 10% of the total electric motor production output of the country as mentioned above. It should be noted that about 70% of these HEMs are for export. The national new standard GB18613-2012 was implemented in September 2012. The Government of China intends to remove the Y and Y2 series electric motors from the market. The local electric motor manufacturers are required not to produce and sell these outdated electric motor products.

2.2 Project Objectives

PREMCI's objective is to increase the manufacturing and widespread application of energy efficient electric motors in China. To achieve this, barriers towards the production and use of high efficiency motors (HEMs) and remanufactured motors (REMs) in Chinese industries have been identified (both during the project formulation and during the inception). Subsequently, PREMCI focuses on the elimination of the identified barriers to the production and use of HEMs and REMs. If the manufacturing process is performed properly employing advanced technologies and techniques and in qualified and competent EE motor production facilities, relatively low cost, and high quality EE motors (HEMs and REMs) can become available in the local electric motor market. The utilization of EE motors is expected to bring about large gains in electricity savings in the operation of electric motor systems in industries. This translates to benefits to the global environment, as well as to China's economy and local environment given the significant economic cost and local pollution associated with power generation

[5] In this case, efficiency and energy cost savings have more limited impact on the decision-making, because of split incentives.

and consumption. PREMCI intended to facilitate the realization of such potential by removing the identified barriers that up until now has prevented China from realizing substantial GHG emission reductions that would contribute to the achievement of the country's climate change mitigation targets. The project also addressed current start-up problems in the emerging EMR industry in China which focuses on the recycling/repowering of old or broken/burnout electric motors and improving their energy efficiency; as well as retrofitting the existing less energy efficient standard electric motors to turn them into high efficiency REMs.

The project focused on removing a number of key barriers in the local electric motor industry. A combination of "technology push" and "market pull" activities was employed to enhance the energy efficiency levels of HEMs and REMs that are locally produced in China by facilitating/enabling the effective promotion and application of advanced EE motor production and application technologies and techniques. It was expected that by the end-of-project, at least 40% of the local electric motor manufacturers in China will produce HEMs and REMs. Ten years after the start of project, with an average 3% improvement in energy efficiency of locally made EE motors (both HEMs and REMs), the estimated cumulative energy saving would be no less than 50,384 GWh, which translates to a reduction in GHG emissions of at least 44.47 million tons CO2 (the full set of OVIs including their respective EOP targets and actual achievements are included in).

2.3 Results Framework

The total budget of PREMCI is USD 21,500,000, including USD 3,500,000 from GEF. The implementation period was from 2017-2020. Below we present the outcomes and outputs structure of PREMCI:

I. Enhanced and clearly defined policy enforcement mechanisms on the production of EE motors and their applications in the Chinese industrial sector.

1) Completed survey of the local electric motor market in China;
2) Completed review of existing policies and regulations applicable to EE motors applications in industries in China;
3) Recommended policies, implementing rules and regulations on EE motors production and their application in the Chinese industries taking into consideration all the past and ongoing programs in China and many other global experiences;
4) Recommended policies and implementing rules and regulations on the development and support of the local EMR industry;
5) Recommended policies and implementing rules and regulations for the phasing out (including appropriate support measures) of existing low efficiency electric motors;
6) Established recommended system for EE system performance standards, testing protocol, and certification system. .
7) Enforced implementing rules and mechanisms for the approved policies & regulations on EE electric motors production and application.
8) Established M&E and improvement system on the enforcement of the approved policies and regulations on EE motors production and application.
9) Investment plans for EE motor production by new local electric motor manufacturers who were motivated and influenced by the enforced policies and regulations.

II. Increased local production of EE motors for applications in Chinese industries.

1) Developed capacity development program for local EE motor (HEM and REM) manufacturers;
2) Completed training courses for local electric motor manufacturers on the design and manufacturing of EE motors (HEMs and REMs);
3) Disseminated information on improved EE motor product design and production;
4) Established and operational EE motor research center and EE motor industry association.

5) Completed demonstration of improved EE motor product design and manufacturing;
6) Commercialized REM products;
7) Established and enforced EE motors application system testing and certification system.

III. Increased application of domestically produced EE Motors (HEMs and REMs) in Chinese industries.

1) Completed techno-economic feasibility assessment and action plan for financing improved EE motor initiatives of local electric motor manufacturers and suppliers;
2) Developed and implemented action plan for financing improved EE motor initiatives of local electric motor manufacturers and suppliers;
3) Developed and implemented suitable business model for local banks/financial institutions to support EE motors production and application;
4) Operational appropriate EE motor incentive mechanism.

IV. Increased market share of energy efficient electric motors

1) Established and operational electric motor market monitoring system;
2) Regularly disseminated publication of local EE motors market and product performance information;
3) Established guidelines for EE motor (HEM &REM) procurement system;
4) Operational EE motor (HEM and REM) manufacturer incentive program
5) Completed industrial consumer education campaigns on EE motor (HEM and REM) applications;
6) Sustainable follow-up plan for the replication of the project interventions in other cities in collaboration with electric motor manufacturers in other Chinese cities.

3. Findings on project design

The following three sections provide the main TE, and the findings are divided into several parts, with the project design and formulation discussed in Section 3, the project implementation in Section 4, and the achievement of the project results in Section 5. It should be noted that the description of the achievement of the project results may be the best point to start, because this section describes the strong performance of PREMCI measured against the objectively verifiable indicators (OVIs).

3.1 Results Framework: project logic and strategy, indicators

The project has been designed based on a barrier analysis, following a barrier removal strategy. The main focus of PREMCI has been on policy. Especially the logical framework analysis (LFA) workshop has been clear in identifying the problems and barriers to be addressed, divided over 4 broad areas (policy, technology, financial, information), as stated below.

Area 1: Policy

Problem 1: Lack of information on electric motor market.
Objective: Finalize the market survey and analysis.

Problem 2: Lack of information on the application of existing policies and relations.
Objective: Finalize the assessment on existing policies.

Problem 3: Lack of supporting policies on the application of HEMs.
Objective: Determine the policy framework (new modality of policy is recommended)

Problem 4: Lack of incentive policies on electric motor remanufacturing.
Objective: Formulate the policy proposal on EMR.

Problem 5: Lack of policies & mechanisms for phasing-out existing motors.
Objective: Determine the phasing out mechanism.

Problem 6: Weak implementation of existing policies and mechanisms, evaluations are required.
Objective: Enhance the implementation of existing policies.

Area 2: Technology

Problem 1: Lack of integration of existing electric motor association and research institutes.
Objective: Integrations implemented by MIIT, establish industry association.

Problem 2: Lack of REM standards and phasing-out standards.
Objective: Formulate the recycle / disassemble / remanufacture standards and regulations for small & medium electric motor management.

Problem 3: Inadequate capacity for manufacturing the products for specific electric motor system.
Objective: Pilot demonstration of specific electric motor manufacturing.

Problem 4: Lack of ESCOs for electric motor system modification.
Objective: Capacity building activities conducted for ESCOs, develop standards for determining the energy savings.

Problem 5: Lack of personnel for electric motor system operation and maintains.
Objective: Training programs conducted for the staffs in ESCOs, manufacturers, users, and government.

Area 3: Financial

Problem 1: technical/economic feasibility

1 The procedure of current policy is long, difficult to conduct.
- Objective: Formulate a fast and direct subsidy policy with larger coverage (e.g. provides the subsidy to manufacturers, shorten the procedure, and introduce third party verifiers for verification).

1.2 Lack of demands of users
- 1.2.1 Problems in economic feasibility
- 1.2.2 Problems in policy and regulations
- Objective: Realize the economic feasibility for EE motor users. (e.g. preferential in electricity purchasing, or subsidy to reduce prices of product)

1.3 China does not prohibit manufacturing NEMs.
- Objective: Access policy developed — improved MEPS, and phasing-out the HEMs in the market.

1.4 ESCOs do not prefer electric motor replacement project.
- Objective: Imitative of the ESCOs improved and more electric motor replaced in EPC projects.

1.5 Users lacking capacity of quantitative analysis for system-level energy consumption.
- Objective: Quantitative analysis capacity improved for third party verifiers and ESCOs.

Problem 2: Business model

2.1 Business model of the bank (threshold of loans)
- 2.1.1 No preferential policy for EE motor manufacturing.

2.1.2 No preferential policy for EE motor purchasing.

- Objective: It is not necessary to set objective. (Create a fair business model, and depend on flexible market mechanism)

Problem 3: EE motor rebate program

3.1 No rebate policy.

- Objective: Develop and implement rebate policy.

3.2 Channel of electric motor recycling.

3.2.1 Problems in the amount of recycle and rebate prices.

3.2.2 Some refurbished products do not meet national standards — lack of supervision.

- Objective: Establish a regulated system for electric motor recycling.

3.3 Large amount of existing electric motors, problems in the requirement of rebate fund.

- Objective: It is not necessary to set objective. Consider this problem when developing rebate policy.

Area 4: Information

Problem 1: Lack of an electric motor market monitoring system

1.1 Difficulty in establishing the market monitoring system and results might not be satisfactory.

- Objective: Quantitative relationship between EM population with producing and use data established to be inputs to the model.
- Note: The market monitoring system focusing on motors (being part of a machine or system) is not feasible, and it is expensive to implement. Need to devise alternative monitoring tool to gather data as input to the model.

1.2 Lack of model of investigating the types/efficiency of local EMs

- Objective: Methodology and model for EM market data developed and applied.

Problem 2: Inadequate dissemination of appropriate published local EE motors market & product performance information that will help manufactory, assemblers, and end-users to select EE motors

2.1 Lack of awareness by manufacturers/assemblers/customers of selected HEM/REMs performance data that should be disseminated to them.

- Objective: Standards and labeling including appropriate performance data on HEM/REMs performance developed and disseminated to manufacturers / assemblers / end-users.8

Problem 3: Lack of established guidelines for EE motor (HEM & REM) procurement

3.1 Lack of standard and specification that could be placed in the guidelines.

- Objective: Procurement policy with reference to energy-saving standard in the form of procurement catalog developed and adopted for implementation.

Problem 4: Lack of an EE motor manufacturer incentive program

4.1 Lack of incentive program informed to EE motors manufacturers

- Objective: Training, workshop activities conducted as part of information dissemination.

Problem 5: Lack of awareness of industrial consumer on EE motor applications

5.1 Lack of awareness on benefits and advantages by industrial consumers.

- Objective: information campaign using multimedia tools to reach as many consumers as possible.

Problem 6: Lack of a clear plan for the replication of the EE motors in other cities in collaboration with electric motor manufacturers

6.1 Need to have disseminations to be the source of experience and best practice that can be shared to more cities through the replication plan

- Objective: Replication plan developed and approved for implementation.

The various outcomes and outputs, as defined in Section 2.3 (Results Framework), deal comprehensively with these issues in clear matching. In general, the procedure of identifying barriers towards a desired outcome (increased production and deployment of HEMs and REMs) and designing a project to comprehensively address the identified barriers is standard practice and also the best available approach to project design.

3.2 Assumptions and Risks

In the project design, five risks were identified (Items 1-5 below), and during the inception phase, one additional risk was identified (Item 6 below):

1. Individual vested interests and objectives of local electric motor manufacturers as well as other stakeholders in the local and central governments may prevent the effective organization and coordination of their participation and support of the project.
2. The level of co-financing amount may not support the project implementation promptly and sufficiently.
3. The end-users may not like to buy or use EE motors, particularly REMs.
4. HEM manufacturers may not support EMR because REMs can compete with HEMs.
5. Recommended policies may not be approved by the relevant authorities or may be approved but not effectively enforced.
6. The challenges of ensuring the sustainability and replicability of the project results during and after the finalization of the project cycle.

The inception report does not state assumptions. The project document states critical assumptions but does not directly link these critical assumptions to risks, so that it is not entirely clear whether the assumptions and risks are interlinked. The critical assumptions stated in the project document are:

- GoC commitment to EE remains firm and private sector fully supports the program.
- Continuous support of relevant GoC agencies and private sector even after PREMCI.
- The length of time that policy adoption and approval will happen within the project duration.
- Most EE motor manufacturers are interested to participate in the project demonstration and after the demonstration they will produce EE motors.
- Motor users are happy with their EE motors or that they utilize their EE motors rationally and properly.
- Continued support by relevant agencies of the Government of China and all the stakeholders and companies.
- Cooperation of the EM manufacturers in market research surveys is ensured.

Both the project document and the inception report identify risk mitigation measures. In general, the risk analysis and risk management arrangements appear adequate and in line with what some of the TE team members routinely encounter when reviewing, for example, Green Climate Fund funding proposals.

3.3 Lessons from other relevant projects

The project document (p.13) mentions several relevant projects with which PREMCI would coordinate. These projects' descriptions are replicated below:

- China Energy Efficiency Promotion in Industry Project (CEEPI) – This is a MIIT/WB/GEF project that focuses on promoting energy management systems and capacity building in industry. The

policy research and formulation activities under the relevant component of the CEEPI Project that will address the policy barrier removal activities applicable for motors will be part of the baseline activities with regards to developing and enforcing the policies and regulations to be established under Component 1 of PREMCI.

- Motor Challenge Program (MCP) – This ongoing project is financed by the EU Switch Asian and focuses on promoting energy management schemes capacity building, such as energy standards development, energy management etc. MCP has energy efficiency capacity development activities that could be tapped and be the baseline also of the technical and information-related activities that are proposed under Component 4 of PREMCI.
- Barrier Removal to the Cost-effective Development and Implementation of Energy Efficiency Standards and Labeling (BRESL) Project – This is an ongoing UNDP-GEF project aimed at rapidly accelerating the adoption and implementation of energy standards and labels (ES&L) in Asia, and in so doing bring about energy savings from the use of selected energy efficient appliances/equipment (refrigerator, air conditioner, electric motor, electric fan, rice cooker, CFL and FL ballasts). While the BRESL Project has already been completed in December 2014, there are many outputs and experiences that can be useful for the PREMCI project in terms of reference testing protocols and EE performance standards for the said products that could be useful to motors, among other appliances and equipment in terms of the technical and information activities under Component 4 of this proposed GEF project. However, at this stage of completion, cannot be a baseline activity for PREMCI.

However, it should be noted that PREMCI was implemented later than expected. Therefore, the identified projects had already been terminated when PREMCI started to operate (inception in 2016, project implementation activities in 2017).

There is one area in which PREMCI could have taken advantage of lessons derived from other projects: this is in utilizing the concept of energy saving insurance (ESI)[6] and/or energy efficiency guarantees. It should be noted that in principle, investment in HEMs and REMs have short payback periods, which begs the question why these solutions do not find a ready market on commercial grounds and need policy interventions. Usually, one of the answers is a lack of trust in potential users and buyers in the claimed energy efficiency gains and hence a lack of trust that the promised energy cost savings will materialize[7]. Both ESI and energy efficiency guarantees are ways to ensure the demand side that claimed energy cost savings will be realized. Such an approach may make it easier to introduce HEMs and REMs (and more in general, energy efficiency equipment for industrial use) and could have been integrated into PREMCI. See also Section 5.7 and Annex A14.1.

3.4 Planned stakeholder participation

The PREMCI project document contains a detailed stakeholder mapping, which is reproduced in the table below.

Table 3. Overview of project stakeholders

Stakeholder	Roles and Responsibilities in Project Implementation

[6] Some good examples of the use of ESI are the GCF projects https://www.greenclimate.fund/project/fp063 and https://www.greenclimate.fund/project/fp009. ADB has several good examples of projects using energy efficiency guarantees, including in projects in China, such as https://www.adb.org/projects/39653-023/main#project-pds.

[7] Table 5 in the project document shows payback periods from investment in EE electrical motors ranging from 2.8 to 0.1 years. Neither the inception report nor the LFA results mention trust or confidence. The project document does not mention trust but mentions confidence. However, none of the 5 times confidence is mentioned it is connected to a demand-side investment decision (while the stated payback periods really should raise the question why these investments do not happen) and focus mostly on "policy and support" to take away the lack of confidence, instead of on financial instruments (such as ESI and efficiency guarantees) to take away the lack of confidence.

Ministry of Industry and Information Technology	Lead agency for the implementation of projects in the industrial sector and the overall implementation and management of the project including communication and coordination with MOF and UNDP, providing staff and administrative support, liaison with local governments, project management and monitoring and project financial management.
Ministry of Science and Technology	Provision of technical support and assistance in the identification and design of demonstrations for the promotion of the production and application of EE motors (HEMs and REMs)
Standardization Administration of China	Provision of technical support and administrative assistance in the development and implementation of energy efficiency standards for EE motors
Department of Energy Conservation in Local Governments (MIIT EMR pilot sites)	Provision of technical support and administrative assistance in capacity development and demonstration activities of the project in its pilot sites in cooperation with local governments
Pilot Enterprises on the production of (REMs)	Provision of plant space and direct technical and administrative assistance for pilot demonstration and the capacity development activities of the staff involved under the project
Electric motor industry association	Involvement in stakeholder meetings and consultations in policy making, regulatory framework and various activities of the project and provision of information regarding research and demonstration work on EE motor manufacturing, particularly on HEMs and REMs
Other private sector entities (e.g., electric motor parts suppliers)	Provision of information regarding the research work on alternative materials used in the parts and components of EE motors (HEMs and REMs) and related support services
International Copper Association	Provision of information and active involvement on the various projects on EE motors that have been carried out in China by the private sector, and other institutions (including ICA), as well as potential interventions in removing barriers to the development of the local EMR industry.
Energy Service Companies (ESCOs)	Provision of information, technical support, and implementation on the development of standards for REMs, as well as in the design of technical training programs on the application and design of motor systems using HEMs and REMs.

3.5 Linkages between project and other interventions within the sector

The following linkages with ongoing or completed interventions within the sector are mentioned in the PREMCI project document. The descriptions are replicated below[8]:

- **Energy-saving Products Project Benefiting the People-Energy Efficiency Electric Motor Promotion (ESPBP-EMP)**. The ESPBP-MEP is an ongoing financial subsidy scheme, co-implemented by Ministry of Finance (MOF) and National Development and Reform Commission (NDRC) which started in year 2010, and aims at promoting high-efficient electric motors (HEMs) by providing subsidies for the purchase of HEMs from 12 CNY/kW to 60 CNY/kW. Three kinds of HEMs with rated capacity from 0.55-25,000 kW can get subsidies if they meet the relevant efficiency standards and requirements. However, the scheme turned out to be not effective because, on one hand it is not easy to obtain subsidies, especially for small and medium-sized motor enterprises, since the subsidy application procedure is complicated and time-consuming, On the other hand, production cost of HEMs is still high even if taking into account the subsidy compared to the least costly standard electric motors which can be rewound if they get burnt out. Furthermore,

[8] See pages 14-16. Not repeated are the projects mentioned above – CEEPI and the others.

clearly the motor efficiency is not a major concern among the users for the time being. The issues faced by the subsidy scheme were to be taken into account in the PREMCI project.

- **Electric Motor Energy Efficiency Improvement Program (EMEEIP)**. The EMEEIP was launched by Ministry of Industry and Information Technology (MIIT) and General Administration of Quality Supervision, Inspection and Quarantine (AQSIQ) in June 2013 that intends to push forward HEMs development and application, promote upgrading of motor producing industry, and comprehensively improve motor efficiency to achieve energy-saving and emission reductions. The EMEEIP addresses 4 aspects consisting of a.) Speed-up of HEMs promotion; b.) Phase-out of low efficient electric motor; c.) Implement of energy-saving technological retrofit for electric motor system; and d.) Implement high-efficiency electric motor remanufacturing. The EMEEIP is a general plan, the actions taken, and support offered for which are limited and insufficient to remove the identified barriers. The project document stated that there are good entry points for the proposed GEF project build on the results of the EMEEIP, by introducing interventions with respect of policy, financial support, technical and information barrier removal activities to realize increased manufacturing and widespread application of EE electric motors in China.

- **Electromechanical Products Remanufacturing Pilot Project**. This MIIT project focuses on the remanufacturing of old electromechanical products and improving their efficiency. To the date of preparation of the PREMCI project document, the MIIT has supported 3 electric motor companies in Anhui (Anhui Wannan Electric Machine Co. Ltd); Hunan (Xiangtan Electric Manufacturing Co. Ltd); and Xian (Xi'an SIMO Motor, Inc.), and a research institution in electric motor remanufacturing (EMR). In September 2012, the Shanghai Government implemented the "Detailed plan of promoting the implementation of high-efficiency electric motor remanufacturing in Shanghai". This scheme involves the provision of subsidy of 45 CNY per kW for the purchase and use of REMs. Additionally, this scheme also includes the incentive mechanism for old electric motor replacement at 20 CNY per kW. The objective of Shanghai's plan is the diffusion of 2 million kW (2,000 MW) HEMs by 2012 and 8 million kW (8,000 MW) HEMs (including 2.4 million high-efficiency REMs) by 2015. This program targets achieving HEM application of about 20% of the total installed capacity of electric motors by the end of 12th Five-Year Plan4. Because of this, there is large market potential for old electric motor replacement.

However, it should be noted that PREMCI was implemented later than expected. Therefore, several the identified schemes and subsidies had already been terminated when PREMCI started to operate (inception in 2016, project implementation activities in 2017). It may be noted that several of the companies mentioned in the Electromechanical Products Remanufacturing Pilot Project played a key role in PREMCI e.g., as demonstration companies, demonstrating the linkages with the PREMCI project. In general, PREMCI has been well-placed to follow up on the initiatives mentioned that were implemented by MIIT.

4. Findings on project implementation

4.1 Adaptive management

Adaptive management was practiced, based on project progress monitoring through progress reports and tracking achievements versus targets. Based on the actual needs of PREMCI, annual work plans have been proposed and approved. The formal process for this was based on the project steering committee (PSC) meetings, in which the PMO reports the project progress and proposed project plans which were prepared in consultations with project participating units and relevant stakeholders, and the PSC will make recommendations for the next implementation based on the actual implementation of the project at that time.

The adaptive management framework provided PREMCI with the flexibility to address the challenges that occurred during the implementation Several interviewees, including the companies who undertook

the demonstration and training activities, mentioned challenges that occurred during the implementation of the project, and that were subsequently addressed through flexible measures. One example was the response to the COVID-19 crisis, relying to a large extent on online meetings and interviews.

4.2 Actual stakeholder participation and partnership arrangements

A wide number of stakeholders have participated in PREMCI, including the various demonstration companies, government organizations, and associations. The contributions of these organizations have been clear and satisfactory (based on the documentation provided, interviews, information and support received), and has been well described during the interviews (in random order):

- The **MIIT**, as the government authority in industries, has the mandate and management responsibility for industrial enterprises, including the production and use of electric motors. Through the selection and construction of project demonstration bases, the formulation and issuance of technical standards and the implementation of training series on high-efficiency electric motor for the enterprise, and other activities, the MIIT has established direct contacts with relevant enterprises provided policy guidance and advice and other support.

- The **Project Management Office** is responsible for the day-to-day management of project implementation including regular project planning/scheduling, organization of project undertaking units to report on implementation progress, and coordination between each undertaking unit for timely and smooth communication and exchange. The daily management of the project is carried out by PMO that is hosted in the China Industrial Energy Conservation and Cleaner Production Association. In line with UNDP requirements, it is responsible for (1) according to the progress of the project, formulating an annual task plan every year; (2) Submitting the face form to UNDP every quarter to report the expenses of the previous quarter and the demand for payment in this quarter; (3) Keeping in touch with each project undertaker to track and supervise the progress of the project; (4) organize and convene the working meetings of the project steering committee every year to discuss and determine the important items of the project; (5) regularly organize and convene working meetings of project undertaking units to exchange and discuss the progress of project implementation to ensure that the project is implemented as planned.

- The project involves **two associations**. One is the **China Industrial Energy Conservation and Cleaner Production Association**. The project management office is located in this association and is responsible for the daily management of the project. The other is the **Small and Medium-sized Electric Motor Branch of the China Electrical Equipment Industry Association**, relying on its wide network of this association to complete some of the tasks in the project, such as market monitoring, policy research, and standard setting.

- **CEPREI (Beijing) Industrial Technology Research Institute Co., Ltd.** CEPREI is a branch directly under the Fifth Electronics Research Institute of the Ministry of Industry and Information Technology (MIIT). CEPREI provided research on sustainable development of high-efficiency electric motors, including:
  - Summarize and sort out the work foundation of promoting high-efficiency electric motors in China, including, the work progress before 2015 and during the 13th Five-Year Plan (2015-2020), and the work outlook for the 14th and 15th Five-Year Plan (2021-2030).
  - The effective practices and typical modes of the four demonstration bases in the project are sorted out, to promote the subsequent promotion and application of high-efficiency electric motors.
  - Carry out high-efficiency electric motor on-site exchange meeting with small and medium-sized enterprises.

- **China International Engineering Consulting Co., Ltd.** China International Engineering Consulting Co., Ltd. is a central enterprise under the management of the State-owned Assets

Supervision and Administration Commission of the State Council. It conducted three subject studies, including:

- Research on government procurement policy of high-efficiency electric motor system
- Comparative study on the domestic and foreign practice of green procurement
- Evaluation of high-efficiency electric motor promotion policy

- **Institute of Ecological Civilization**. The Institute of Ecological Civilization research from an interdisciplinary perspective to provide solid scientific support, policy discussion and practical guidance for the construction of ecological civilization. Its main contributions to PREMCI are:
  - Complete summary report on project progress including project background, outcomes, activities, activities, impact, sustainability assessment, and lessons from the project
  - The international promotion of high-efficiency electric motors, including the High-Efficiency Electric Motor Forum expected in July 2021, which will explore how efficient motors help carbon peak and neutral from the perspective of high-efficiency electric motors and green manufacturing.

- **Shanghai Engineering Research Center For Motor System Energy Saving Co., Ltd.** Shanghai Engineering Research Center For Motor System Energy Saving Co., Ltd. is a research center that has long been engaged in R&D of small and medium-sized motor products and application of new technologies. Within the context of PREMCI, it has undertaken:
  - Development of design software for high efficiency and energy-saving motors.
  - Research and development of key technologies and manufacturing processes to reduce loss and improve the efficiency of high-efficiency energy-saving motors.
  - Preparation of a number of new electric motor technical standards and specifications including:
    a) Transmission system.
    b) New synchronous reluctance motor system.
    c) Three-phase asynchronous motor with cast copper rotor.
    d) Technical specifications for energy-saving supervision of small and medium-sized motors.
    e) Energy efficiency classification of AC variable frequency speed control motors.
    f) Direct-drive permanent magnet synchronous motor of low-speed and large-torque.
  - Development of model designs, technical specifications, and market access mechanism for the production of high-efficiency motors,
  - Completion of 3 standard publicity and training sessions with over 250 participants.
  - Preparation of a market monitoring system for high efficiency and energy-saving electric motors, which can effectively count the production and application data of China's high-efficiency motors and provide the government and industry enterprises with data on high-efficiency motors.
  - Completion of the electric motor energy efficiency improvement plan for 2021 to 2023
  - Provision of technical support to enterprises and companies for energy efficiency improvement of high-efficiency motors.

- **Xiangtan Electric Machine Co., Ltd.** Xiangtan Electric Machine Co., Ltd. was founded in 1936. It is a large-scale listed company in the domestic electric motor industry. The company has more than 6,000 employees and more than 2,900 professional and technical personnel. The company has an annual production capacity of 12 million kilowatts of large and medium-sized AC and DC motors and 8 million kilowatts of generators. Within the context of PREMCI, it contributed the following:
  - Working as a demonstration base. Since undertaking the project, the cumulative production of high-efficiency motors has exceeded 10 million kilowatts. Through the promotion of a large number of high-efficiency motors, it has gained the market's recognition and acceptance of high-efficiency motors, thereby contributing the implementation of the project, and further enhancing the project's implementation strength and impact in China at large.
  - Since undertaking the project, the company has continuously promoted high-efficiency motors through various publicity platforms, and we have achieved good results. The upstream and downstream enterprises related to our company have further realized the advantages of using

high-efficiency motors. We also let a lot more other motor using companies appreciate the necessity of using high-efficiency motors, which helps the smooth implementation of the project.
    - As a demonstration base for the promotion of high-efficiency motors, the company has exerted a major influence on domestic motor manufacturers, which is helpful to the promotion of a large number of high-efficiency motors.

- **Anhui Wannan Electric Machine Co., Ltd.** Anhui Wannan Electric Machine Co., Ltd. was founded in 1958. It is a national high-tech enterprise, with scientific research platforms such as the National Enterprise Technology Center, the National and Local Joint Engineering Laboratory, and more than 200 engineering and technical personnel. The company has more than 1,280 employees with an annual production capacity of 20 million kilowatts, and sales of 2.35 billion yuan in 2020. Within the context of PREMCI, it contributed the following:
    - With the support of the project, the company invested 400 million yuan in 2018 to establish a high-efficiency motor production base and added an annual production capacity of 10 million kilowatts of small and medium-size high-efficiency motors. The new factory was put into full production in 2020, laying a solid foundation for the company to vigorously promote the production and application of high-efficiency motors.
    - In addition, the company also actively participated in the industry's promotion and publicity activities on high-efficiency motors, participated in the revision of national and industry standards in the motor industry, undertook the China Motor and System Development Forum, and participated in domestic and foreign motor, energy conservation and environmental protection exhibitions.

- **Shandong Kaiyuan Motor Co., Ltd.** Shandong Kaiyuan Motor Co., Ltd. was founded in 1970 and currently has more than 500 employees, including 160 professional engineers and technicians, with an annual motor production capacity of 6 million kilowatts. Within the context of PREMCI, it contributed the following:
    - Research, development, and design of high-efficiency motor products, we have heavily invested in research and development work and built strong R&D teams in partnership with universities and institutes to develop high-efficiency motors with low production costs.
    - Promotion and marketing of high-efficiency motors, we expanded the production capacity and increase the market share of high-efficiency motors.

In general, the various stakeholders in the project found that their tasks were clearly described, and that cooperation within the project was smooth.

4.3 Project Finance and Co-finance

In several interviews, the TE Team explored the project finance and co-finance. All parties questioned emphasized that the co-financing has been provided according to expectations. The TE team has also reviewed the available financial documents and reports, including spot checks carried out by auditors, and has not identified any issues or discrepancies.

One remark concerns the calculation of the co-finance of PREMCI. It is understood that this covers government co-financing. However, it could be mentioned that companies also invested considerably into the success of PREMCI. For example, Anhui Wannan Electric Machine Co., Ltd. invested CNY 400 million (USD at the exchange rate of 1 July 2018) in 2018 in HEM production capacity, a significant co-finance amount. Other demonstration companies will also have made considerable investments. All such investments have, however, not been reflected in the PREMCI co-financing.

Table 4. Annual expenditure details (USD)

Item	Total budget	2017	2018	2019	2020	2021
PREMCI						
ProDoc	3,500,000	995,291	1,016,271	901,273	587,165	

AWP		995,291	922,561	1,271,973	1,215,987	547,177
Actual expenditure	3,500,000	754,928	415,814	701,076	1,068,671	559,511
Component 1						
ProDoc	800,000	190,000	175,000	245,000	190,000	
AWP		190,000	176,200	275,200	383,210	51,337
Actual expenditure	790,039	120,417	112,910	86,081	419,294	51,337
Component 2						
ProDoc	1,903,330	579,110	631,110	467,610	225,500	
AWP		579,110	532,300	775,010	619,322	355,400
Actual expenditure	1,955,013	460,934	154,630	544,851	439,198	355,400
Component 3						
ProDoc	330,000	116,000	78,000	74,000	62,000	
AWP		116,000	87,600	96,200	74,000	75,440
Actual expenditure	311,270	88,499	49,533	23,854	73,944	75,440
Component 4						
ProDoc	300,000	68,500	90,500	73,000	68,000	
AWP		68,500	84,800	83,900	90,500	65,000
Actual expenditure	278855	43,524	66,695	10,767	92,869	65,000
Project management						
ProDoc	166,670	41,681	41,661	41,663	41,665	
AWP		41,681	41,661	41,663	48,955	
Actual expenditure	166,836	41,560	35,919	40,235	49,122	

Source: PMO

Table 5. Co-financing for the project at Terminal Evaluation

Project Financing	*At CEO endorsement (USD)*	*At Terminal Evaluation (USD)*
[1] GEF financing:	3,500,000	3,500,000
[2] UNDP contribution:	300,000	300,000
[3] Government:	11,900,000	13,379,000
[4] In-kind contributions:	5,500,000	5,805,000
[5] Total co-financing [2 + 3+ 4]:	17,700,000	19,484,000

Source: PMO

4.4 Monitoring & Evaluation arrangement

The monitoring and evaluation arrangements are described in the project document.

Table 6. Monitoring and evaluation arrangements, project document

Type of M&E Activity	Responsible Parties	Budget US$*	Time frame
Inception Workshop (IW)	• Project Manager / Executing Agency • UNDP China & UNDP/GEF RCU	15,000	Within first 2 months of project start up
Inception Report (IR)	• Project Team (MIIT) • UNDP China & UNDP/GEF RCU	Included in IW Budget	a) Draft IR available before IW b) Final IR available immediately following IW
Measurement of Means of Verification	• Project Manager /Executing Agency • Project team members	Included in Component budget	Start, mid and end of project
Measurement of Means of Verification for Project Progress and	• Oversight by UNDP-GEF RCU Technical Advisor and PM • Measurements by regional field officers and local IAs	Included in Component budget	Annually prior to APR/PIR and to the definition of annual work plans

Type of M&E Activity	Responsible Parties	Budget US$*	Time frame
Performance (measured on an annual basis)			
APR and PIR	• Project Team (MIIT) • UNDP China & UNDP-GEF RCU	5,000	Annually
TPR and TPR report	• GOI Counterparts • UNDP China & UNDP-GEF RCU • Project Team (MIIT)	Included in Project Mgmt. budget	Every year, upon receipt of APR
PAC/Tripartite Review Meetings	• Project Manager /Executing Agency • UNDP China	Included in IW budget	Following Project IW and subsequently at least once a year
Periodic status reports	• Project Team (MIIT)	Included in Project Mgmt. budget	To be determined by Project team and UNDP China
Technical reports	• Project Team (MIIT) • Hired consultants as needed	Included in Component budget	To be determined by Project Team and UNDP China
Mid-term External Evaluation	• Project Team (MIIT) • UNDP- China & UNDP-GEF RCU • External Consultants (i.e. evaluation team)	30,000	At the mid-point of project implementation.
Final External Evaluation	• Project Team (MIIT) • UNDP China & UNDP-GEF RCU • External Consultants	30,000	At the end of project implementation
Terminal Report	• Project Team (MIIT) • UNDP China • External Consultant	Included in Project Mgmt. budget	Included in Project Management
Lessons learned	• Project Team (MIIT) • UNDP China & UNDP-GEF RCU	Included in Project Mgmt. budget	Included in Project Management
Audit[9]	• UNDP China • Project Team (MIIT)	5,000	Annually
Visits to field sites (UNDP staff travel costs to be charged to IA fees)	• UNDP China • UNDP-GEF RCU (as appropriate) • UNDP China/PAC representatives	5,000	Annually
Total indicative cost		US$ 80,000	

It should be noted that several of the activities listed in the M&E plan would more traditionally be considered part of the reporting and supervision arrangement, rather than M&E. In this view, reporting and supervision is focused on reporting what has been done and achieved, monitoring is focused on the progress towards the achievement of targets and identifying immediate remedial action where needed, and evaluation is focused on the analysis of the reasons for the achievement or failure to achieve the targets and formulating lessons learned. Following this line of thinking, the proper M&E activities mentioned in the list above are:

- Measurement of the OVI targets using the stated Means of Verification
- Measurement of the OVI targets for Project Progress and Performance (measured on an annual basis)
- Mid-term External Evaluation
- Final External Evaluation (this is known the terminal evaluation or TE now)

[9] Our understanding is that spot-checks have been executed by audit firms.

This said, the M&E arrangements and the arrangements for reporting and supervision are both standard for development cooperation and function well. A few comments:

- It could be considered to increase the budget for the external mid-term and final evaluations. For a project with a budget of over USD 20 million, USD 60,000 (or 0.3%) is a very small budget for the external evaluation. Based on experience with other development cooperation projects, such as those funded by the European Union (EU), it could be suggested to increase the budget to about 0.5%[10].
- The terminal evaluation could have initiated earlier, especially given the constraints imposed by COVID-19, which has slowed down the implementation of the TE.
- If anything, the number of administrative reports seems to be quite high, with some duplication of efforts. The number of reports could possibly be rationalized, although this is hard to judge without fully knowing the audience and purposes of the various reports.
- It is somewhat difficult to keep track of the various outputs and activities in PREMCI, in particular given the number of outputs and activities. Ideally, one would have after the inception an updated list of outputs and activities to be accomplished[11], and annual work plans, approved by the PSC, which would approve any suggested modifications and would include a report on the implementation of the annual work ,plan covering the previous period. Such system makes it easier to track whether the various project activities and outputs have been completed, or whether a decision has been made to postpone or cancel activities.

4.5 UNDP implementation/oversight and related issues

In general, all interviewees are appreciative of the UNDP implementation oversight and flexibility in addressing issues encountered during implementation. The various reporting and supervision arrangements (see above) have functioned well and allowed UNDP to track progress towards implementation. Interviewees are also appreciative of the various project management tools that have been made available and UNDP procedures, e.g.:

- The logical framework analysis and indicator[12] system stipulated in the project document provide clear benchmarks that are useful for the promotion of high-efficiency electric motors in China.
- The project strictly followed the procurement procedures which are well established and in line with the international best practices.
- In the process of project implementation, the APR/PIR process helped us to benchmark project progress against the established goals and effectively manage the project implementation on time.

Related to the indicator system, one of the few criticisms was that the indicators could be more relevant and practical. The TE team agrees that some of the indicators are difficult to apply and interpret. For example, "% annual growth rate (YOY) of HEM production in the demonstration pilot companies starting Year 3" [13] and "Reduction in the annual growth rate of GHG emissions by EOP compared to

[10] Typical budgets for mid-term and final evaluations of EU projects are EUR 100,000 each, with a typical project budget of EUR 20 million, so 0.5% each and 1.0% in total. The proposed total of 0.5% is substantially lower than that, reflecting that the evaluation budgets for EU projects are high because of the need for added transparency and accountability, given the structure of the EU composed of sovereign member states.

[11] Such list was not included in the inception report, and on checking, the TE team was informed that such an updated list had not been prepared after the inception.

[12] In the other words, the LFA and the resulting logframe including indicators.

[13] The main issue is interpretation of the indicator. Presumably a higher YOY growth rate is better. The target of the OVI is for the last year. Assume that production in Year 2 = 2,000 HEMs; Year 3 = 2,100 HEMs; Year 4 = 2,300 HEMs. Than the calculated OVI would be (2300-2100)/2100 * 100% = 9.5%. Now assume an alternative case, in which production in Year 2 = 2,000 HEMs; Year 3 = 2,050 HEMs; Year 4 = 2,300 HEMs. This is less total HEMs, so it would seem worse than the original. However, the calculated indicator would be (2300-2050)/2050 * 100% = 12.2%, higher than the previous one. It is unclear why this is appropriate, which makes the team question the appropriateness of the OVI.

that in Year 1, %"[14] are indicators that are difficult to interpret, and that are also not immediately clear how it should be calculated. Also, the indicators related to component 3 do not directly measure whether financial accessibility has been enhanced (rather it shows that companies have been able to overcome financial barriers, but not whether this has been the result of enhancement of access to finance). A few suggestions related to the identification/formulation of indicators might be:

- Provide calculation instructions (starting from raw data) for each of the indicators proposed. This will serve as a check to make sure that the indicators are fully understood and can indeed be calculated as envisaged.
- Use indicator pairs, with one focusing on the immediate measurement of what should be achieved (e.g., for increased financial access, the indicator could be the number of financial access programs created, or the number of companies that have access to finance for increasing HEM/REM production capacity and/or investments in HEMs/REMs), and another one with the consequence of that (e.g., increased market share and No. of Chinese industries that use locally made EE motors by EOP Using HEMs or REMs, the currently used indicators). Annex A14.2 elaborates on some further aspects related to indicators.

5. Findings on project results

5.1 Progress toward objective and expected outcomes

An important starting point for the analysis of the realization of the project results is the achievement on OVIs versus the targets set out by PREMCI. As can be seen from the table below, PREMCI has overachieved versus its targets.

Table 7. Project performance on OVIs measured against targets

No.	Indicator	Baseline	Targets	End of project (EOP) achievement	Target achieved?
Goal: Reduction of greenhouse gas emissions through the widespread application of energy efficient electric motors in China					
1	Cumulative CO2 emissions reduction in		7986	30165.3	Yes

[14] The way PREMCI has calculated this indicator is by calculating for 2016-2017, 2017-2018, 2018-2019 and 2019-2020 what the actual growth in emissions was for each year, what the emissions would have been in absence of PREMCI, and what the reduction in the growth rate was because of PREMCI. E.g., for 2019-2020 the calculated emissions growth rate with PREMCI was 2.2%, without PREMCI it was 2.9%, hence a reduction of 25.1% relative to the without PREMCI case. The TE team has confirmed that these calculations have been correctly carried out. What is not clear is whether this is the intended interpretation of the OVI (it can also be interpreted as a requirement to calculate with PREMCI GHG emission growth rates that to calculate the percentage change between the first and the last annual growth rate (example: first annual growth rate 8%, last 7%, would mean a 12.5% reduction). Whichever of these interpretations is right, in both cases the OVI would have shortcoming. In the first case, it is unclear why for example a reduction from a 1% baseline to 0.5% (OVI: 50% reduction) would be better than a reduction from a 4% baseline to 3% (OVI: 25% reduction). In the second case, macroeconomic development causing changes in GDP growth rates would likely have a larger impact than PREMCI, so that the OVI would not be very sensitive to the successes and failures of PREMCI.
Two final comments:
1) The TE team has also considered what the EOP OVI would be if the second interpretation is correct. GHG emisisons growth in the first year was 3.0% and in the last year, it was 2.2%. The reduction in the growth rate in this interpretation would be 26.7% (higher than reported and also above the EOP target).
2) The reviewer argued that the IP/PMO has the opportunity to have such indicator clarified during the project inception phase. Since it remained until end of project, that means such indicators were accepted and are being monitored. However, in the TE team's understanding, if one or more indicators are not very practical, a typical reaction would be not to challenge its inclusion, but to try to use it. People will assess costs and benefits from challenging. Moreover, people may be unaware when their interpretation is different from the intended interpretation, and even when indicators are fully understood and accepted, the indicators may have shortcomings, as noted in this and the previous footnote.

No.	Indicator	Baseline	Targets	End of project (EOP) achievement	Target achieved?
	the application of EE motors by end-of-project (EOP), ktons.				
2	Reduction in the annual growth rate of GHG emissions by EOP compared to that in Year 1, %.		14.7	25.1	Yes
Objective: Increased manufacturing and widespread application of energy efficient electric motors in China					
3	Cumulative electricity savings due to project intervention by EOP, GWh.	0	9982	49266	Yes
4	Percentage of the local electric motor manufacturers in China producing HEMs and REMs by EOP, %.	5%	At least 40%	40.4%	Yes
5	Average annual HEM production output by EOP, kW.	No estimate	102.1 million	102.7 million	Yes
6	Average annual REM production output by EOP, kW.	No estimate	4 million	5 million	Yes
7	Cumulative capacity of low-efficiency electric motors phased-out, kW.	No estimate	160 million	170 million	Yes
8	No. of people gainfully employed in newly established EE electric motor production facilities by EOP.		At least 10 per company	At least 30 per company	Yes
Component 1: Policy and Regulatory Frameworks on the Production and Application of Energy Efficient Electric Motors					
Outcome 1: Enhanced and clearly defined policy enforcement mechanisms on the production EE motors and their applications in the Chinese industrial sector					
9	No. of local electric motor manufacturers that produce EE motors by EOP.	No estimate	800	1091	Yes
10	No. of electric motor suppliers/retailers that sell EE motors by EOP.	No estimate	1,000	1100	Yes
Component 2: Energy Efficient Electric Motor Production and Applications					
Outcome 2: Increased local production of EE motors for applications in Chinese industries					
11	% annual growth rate (YOY) of HEM production in the demonstration pilot companies starting Year 3.	Nil	At least 10%	15%	Yes
12	% annual growth rate (YOY) of REM production in demonstration pilot companies starting Year 3.	Nil	At least 10%	10%	Yes
Component 3: Financial Support and Accessibility Improvement					
Outcome 3: Increased application of domestically produced EE Motors (HEMs and REMs) in Chinese industries					
13	No. of EM manufacturers that produce EE motors (HEM/REM) by EOP.	115	920	1091	Yes
14	No. of Chinese industries that use locally made EE motors by EOP Using HEMs.	No estimate	90000	94500	Yes
15	No. of Chinese industries that use locally made EE motors by EOP Using REMs.	No estimate	10000	10500	Yes
Component 4: Energy Efficient Electric Motor Promotion					
Outcome 4: Increased market share of energy efficient electric motors					
16	% of market share of EE motors by EOP.	Nil	29%	34.2%	Yes
17	Average annual volume of EE motor sales by EOP, MW.	1100	93000	94744	Yes

Source: Data provide by the PMO, confirmed by the TE Team.

While this overview table was obtained from the PMO, it should be noted that the TE team has verified the calculation of the indicators from market statistics. This means that the results are robust an indicate a very sound performance of the PREMCI implementation.

The achievement of the goal, objective and outcomes has been assessed taking into account the achievement of the OVIs in the table above and the analysis of the outcomes in Section 5.5.

Table 8. Achievement of goal, objective, and outcomes

PREMCI element	TE assessment	Comment
Goal	Highly satisfactory	EOP targets of OVIs 1 and 2 have been overachieved.
Objective	Highly satisfactory	EOP targets of OVIs 3-8 have either been achieved or overachieved.
Outcomes (aggregated)	Highly satisfactory	All EOP targets of the outcome OVIs have been achieved. Moreover, two of the individual outcomes have been rated highly satisfactory, and the other two as satisfactory. On balance, based on the achievement of OVIs 9-17, overall achievement of outcomes at the aggregated level has been rated as Highly Satisfactory.
Outcome 1	Highly satisfactory	EOP targets of OVIs 9 and 10 have been achieved. Moreover, respondents indicated their high satisfaction with the policy related contributions of PREMCI.
Outcome 2	Highly satisfactory	EOP targets of OVIs 11 and 12 have both been achieved. Moreover, respondents indicated their high satisfaction with the demonstration related contributions of PREMCI
Outcome 3	Satisfactory	EOP targets of OVIs 13-15 have been achieved. However, the progress to eliminate financial barriers towards HEMs and REMs production and deployment has been somewhat slow. No new financial mechanisms or instruments have been introduced. The rating Satisfactory reflects these qualitative aspects that are not well captured in the selected OVIs.
Outcome 4	Satisfactory	EOP targets of OVIs 16 and 17 have been achieved. However, the progress to eliminate market deployment barriers towards HEMs and REMs has been somewhat slow. No new economic mechanisms or instruments have been introduced. The rating Satisfactory reflects these qualitative aspects that are not well captured in the selected OVIs.

The TE team also explored the question of attribution. As emphasized by the PMO, PREMCI has engaged in a comprehensive set of activities to increase HEMs & REMs production and use. The project carried out 14 policy studies, 26 promotion activities, 5 standard studies, 1 market inspection system software development task, and 1 high efficiency electric motor design software development task. All these project tasks were successfully completed. The completion of these tasks has directly accelerated the research, formulation, and implementation of relevant policies of the Chinese government, the formulation, revision, and issuance of relevant electric motor energy efficiency standards, as well as the promotion of high efficiency motors in key industries and fields. During the implementation of the project, the Ministry of Industry, and Information Technology (MIIT) took the opportunity to carry out the promotion of high efficiency electric motors. The first is to promote the revision of a batch of high

efficiency electric motor energy efficiency standards applicable to all electric motor companies, such as the "Energy efficiency limits and energy efficiency ratings for small and medium-sized three-phase asynchronous motors "(GB 18613-2020), and raise the entry barrier of China's electric motor energy efficiency to the level of IE3 equivalent to that of developed countries has directly promoted the increase in China's market share of high-efficiency motors. Second, with the support of the high efficiency electric motor project, the MIIT has taken the elimination of outdated electric motors and the improvement of electric motor energy efficiency as an important content in the energy-saving supervision and diagnosis work. From 2016 to 2020, the MIIT organized and carried out special energy-saving inspections for major national industries, accumulating 23,400 high-energy-consuming enterprises. Among them, in accordance with national standards such as "Limited values of energy efficiency and energy efficiency grades for small and medium-sized three-phase asynchronous motors" (GB 18613-2012) , "High-voltage three-phase cage asynchronous motor energy efficiency limit value and energy efficiency rating" (GB30254-2013) , and "Catalogue for elimination of high energy consumption backward electrical equipment (products)", special supervision on the improvement of electric motor energy efficiency is carried out for companies that produce and use key energy-using products such as motors and pumps. A total of 150,000 outdated electric motors with a total power of about 38.4 million kilowatts were found in violation of regulations. A notice of rectification within a time limit was issued to order rectification, effectively standardize the use of high efficiency energy-saving electric motors by enterprises and accelerate the elimination of backward motors.

From 2019 to 2020, a total of 14,000 enterprises have been provided with non-profit energy-saving diagnostic services. MIIT organized the diagnosis agency to focus on the energy-saving transformation of electric motor systems such as motors, pumps, and air compressors. It has proposed a total of 2,634 recommendations for energy-saving transformation of electric motor systems, which is expected to achieve an annual energy saving of 725,200 ton of standard coal equivalent. The third is to support the promotion of high efficiency energy-saving electric motor technology equipment products. In the recommended catalog of national industrial energy-saving technology and equipment, a total of 136 high efficiency and energy-saving electric motors, 240 compressors, and 46 fans have been selected and released to encourage enterprises to accelerate their promotion and application. 16 high efficiency and energy-saving electric motor production technologies such as new ball mill and direct-drive permanent magnet synchronous motor system and 37 energy-saving technologies of electric motor system such as compressor and fan were released, which promoted electric motor production enterprises to adopt new energy-saving technologies, comprehensively improved the production capacity of high efficiency and energy-saving electric motor, and effectively promoted the completion of project objectives. The fourth is to support the promotion of high efficiency electric motors. Since the project was launched, it has focused on steel, building materials, nonferrous metals, machinery, textile, and other industrial industries, as well as electric motor, compressor, pump, and other general energy consuming equipment. 6 leading electric motor manufacturers, 29 electric motor research institutions, and more than 300 electrical engineers and motor industry experts participated in the project to jointly explore the promotion of high efficiency electric motors in China and promote the achievement of project goals.

This comprehensive set of activities strongly suggests that PREMCI is at least a major reason for the expansion in HEMs and REMs production and use. This is also borne out by the data collected through the survey among producers and users. For 63.9% of the HEM producers, PREMCI was very important in starting or expanding HEM production, and for 30.6% of the HEM producers PREMCI was an important factor in starting or expanding HEM production. For REM producers, the same percentages were 58.3% and 33.3% respectively, Additionally, for 69.6% of HEM users, PREMCI was very

important in starting to use HEMs, and for 26.1%, PREMCI was an important factor[15]. These results indicate the importance of PREMCI in achieving the expansion of production of HEMs and REMs.

5.2 Relevance

PREMCI is highly relevant. It addresses the UNDAF outcome *Low carbon and other environmentally sustainable strategies and technologies are adapted widely to meet China's commitments and compliance with Multilateral Environmental Agreements*, which is also the UNDP Strategic Plan Environment and Sustainable Development Primary Outcome. PREMCI is also well aligned with the GEF strategy, and in particular with the GEF-5 Climate Change Mitigation Focal Area Objective No. 2: Promote Market Transformation for Energy Efficiency in Industry and the Building Sector. According to the GEF-5 strategy, *GEF support under this objective will involve a synergistic combination of technical assistance on policy, regulation, and institutional capacity building; incentives and financing mechanisms to support the adoption of energy efficiency technologies and measures; piloting innovative technologies, practices, and delivery mechanisms; and support for large-scale dissemination activities*[16]. This corresponds exactly to the scope and approach of PREMCI.

At the time of the design of PREMCI, it also was highly relevant to the Chinese government policies. The project document, among others, cites the following policies and plans that align with PREMCI's goals:

- **12th Five Year Plan - Energy Conservation and Emission Reduction Comprehensive Work Plan**. The plan, which became effective on 31 August 2011 requires the implementation of Top 10 Energy Conservation Projects that includes energy conservation on motor system. The target of the plan is to increase the operation efficiency rate by 2 to 3 % by year 2015. In addition, the plan also includes support for the development of Permanent Magnet Coreless Motor to implement a financial subsidy scheme for electric motor application.
- **12th Five Year Plan - Energy Conservation and Environmental Protection Industry Development Plan**. The plan which was published on 6 June 2012, refers to the demonstration and application of high efficiency technology of Permanent Magnet Coreless Motor and Copper Rotor Motor, the promotion of technology and equipment of Grade 1 & 2 of small and medium three-phase asynchronous motors, fans, pumps, compressors and VSD system and increasing operation efficiency of motor system.
- **12th Five Year Plan - The National Strategic Emerging Industry Development Planning**. The plan, which was issued on 9 July 2012, requires that high efficiency motors (HEMs) be developed to support emerging industries.

In addition, the project document notes that *China ratified the UNFCCC on 5 January 1993. It has completed and submitted its Second National Communications to the UNFCCC, which highlighted that EC&EE, in general, and EE motors, in particular and among the measures each country are considering for the reduction of GHG emissions*.

More recent developments (see also Section 5.8 below) continue to stress the high relevance of the project towards the Chinese government goals. For example, under the 13th Five Year Plan Period, the 13th Five Year Energy Conservation and Emission Reduction Work Plan "*clarifies the main objectives and targets for energy conservation and emission reduction, aims at promoting energy efficiency and improving the quality of the ecological environment, emphasizes the supply side reform and innovation. By 2020, the national energy consumption per capita will be 12% lower than that of 2015, and the total energy consumption will be controlled within 5 billion TCE. The plan indicates the energy conservation actions in particular for structural reform, industrial upgrading, pollution emission reduction in industries, agriculture and other fields, circular economy development, energy-saving service and*

[15] The number of REM users in the survey was too low for a meaningful analysis.
[16] GEF (2011), *GEF-5 Focal Area Strategies*. See p.20.

emission reduction service system development, financial supports improvement, etc."[17] China's third national communication also mentions that this includes motor systems: "*To implement all for energy conservation action, promote energy efficiency in areas including industry, buildings, transportation and public institutions, and upgrade systems of boiler (furnace), lighting and motor, and carry out major projects like "warming city through waste heat".*"[18] (emphasis added)

5.3 Effectiveness

The effectiveness of PREMCI is obvious, given that the EOP targets of all OVIs have been achieved or overachieved. This is to a significant degree the result of the economic and political system in China, which mean that government targets and standards carry a much stronger weight than they would in western countries. Enforcement of standards is therefore less of an issue, while many companies decide to take action prior to the announcement or entry into force of a new standard, in order to build up credit with the government and maintain or gain a market share.

5.4 Efficiency

It is customary in evaluating the efficiency of development cooperation projects to consider issues such as timeliness of activities and full use of available funds. To assess the efficiency of PREMCI, we propose to look at another indicator, the project costs per tCO2 of GHG emission reductions achieved. According to data provided by the PMO to enable the TE team to confirm the calculation of the OVIs (in particular OVI 1), in 2020 the emission reductions thanks to PREMCI equaled 14.9 million tCO2. Let's conservatively assume that the economic lifetime of HEMs and REMs is 10 years, and let's very conservatively assume that the annual emission reductions do not increase. In that case, the, PREMCI lifetime emission reductions are 149 million tCO2, with a total investment amount of USD 21.5 million and a GEF contribution of USD 3.5 million. Costs per emission reduction can therefore be calculated as 0.14USD/tCO2 (total project) and 0.02USD/tCO2 (GEF contribution).

For comparison, we can use data from the GCF portfolio, using figures available from the portfolio dashboard of the GCF.[19] Costs per emission reduction over the GCF climate change mitigation portfolio can therefore be calculated as 12.2USD/tCO2 (total project) and 3.26USD/tCO2 (GCF contribution). The efficiency of PREMCI may therefore be abundantly clear. In part, this is a function of the large number of electric motors in China, there typically large load factors, and there low technical GHG mitigation costs.

5.5 Overall Outcome

See the points mentioned above related to the achievement of the OVIs, which shows that the various outcomes have been achieved, as measured against the OVI targets. In terms of the various parts of PREMCI, in general it was felt that the biggest achievement of the project was development and promulgation of new policies and technical standards for high-efficiency electric motors and strongly promoted the improvement of the entire motor industry through demonstration activities in a few of leading enterprises. In addition, several capacity development activities (trainings) were conducted, which were well appreciated (surveys among training participants reviewed by the TE team showed average scores of above 9 out of a maximum of 10). Below we present some of the key achievements per Component, based on a review of the APRs.

Component 1

- Completed survey of the local electric motor market in China.

[17] As summarized on https://policy.asiapacificenergy.org/node/3007.
[18] Government of China (2018), *The People's Republic of China: Third National Communication on Climate Change*. See p.121.
[19] https://www.greenclimate.fund/projects/dashboard

- Completed review of existing policies and regulations applicable to EE motors applications in industries in China.
- Completed research on market access mechanism of EE motor systems.
- Completed the "Remanufacturing Electric Motor Development Policy Research Report".
- Completed research on the phasing out mechanism of low efficiency electric motors.
- Completed the "Research Report on the Policy of Energy Efficiency Improvement of Electric Motors".
- Completed the "Summary Report on Existing Encouragement Policies for the Promotion and Application of High-efficiency Electric Motor System Energy-saving Technology Products".

Component 2

- The China Circular Economy Association organized two technical seminars and on-site experience exchange meetings in Liaocheng, Shandong and Cangzhou, Hebei, and two online related remanufacturing companies exchange meetings.
- Organized the "Energy-saving Service into Enterprises" events.
- Four demonstration bases have carried out work in the formulation of high-efficiency electric motor standards, R&D and production, promotion, and application, and producing high-efficiency motors. Two industry standards have been formulated. Three publicity and implementation training meetings on performance standards, test standards and certification standards of high efficiency electric motor system were completed

Component 3

- Completed the technical and economic feasibility evaluation report on the production and application of high-efficiency electric motors.
- Completed the "Research Report on Green Credit Policy Supporting the Promotion of Energy-saving Technology Products for High-efficiency Electric Motor Systems".

Component 4

- Established a high-efficiency electric motor market data monitoring system, compiled a system user manual, and submitted the "Electric Motor Market Monitoring System Development Report".
- Completed the report "Research on Government Procurement Policy for Energy-saving Technology Products of High-efficiency Electric Motor System".
- Completed the report "Research on Regional Financial Incentives and Green Finance Policy Evaluation to Support the Promotion of High-efficiency Motor System Energy-saving Technology Products".

If anything, components 1 and 2 (policy and demonstration) appear to have been more successfully implemented than components 3 and 4 (related to finance and market based promotion mechanisms). If the various stakeholders agree with this finding, it may be worthwhile to explore the reasons that explain these differences. The few more critical points and other suggestions that were mentioned include:

- The interaction between the project sub-projects needs to be strengthened. Through the collection and sharing of basic data and research conclusions, we will promote the coordination of overall project progressed and further improvement of the achievement quality.
- The main activities of the project are focused on policy promotion. In the future, the application of high-efficiency electric motors can be promoted through the construction of market mechanism, such as green finance and green procurement.
- Pay attention to the application needs and potential of high-efficiency electric motors of small and medium-sized enterprises
- Promote the application of advanced technologies such as digital and cloud management in the field of high-efficiency electric motors.

- Policies related to high-efficiency electric motors shall be formulated according to the actual development of Chinese provinces and regions.
- To promote the application of high-efficiency electric motors, we can refer to the perspective of the whole life cycle of relevant policies of European and international organizations and put forward higher energy saving and low carbon requirements in the production and use of products in government procurement.
- Further combined with the goal of carbon emission peak and carbon neutrality goal as put forward by GOC in September 2020, to promote the application of high-efficiency electric motors through low-carbon planning in key industries.
- The indicator set during the further project design can be more accurate and conducive for better project management and evaluation.

5.6 Sustainability

Sustainability has many facets, including environmental sustainability, sustainability of investments made, and creation of a system to make similar investments in the future. Environmental sustainability of PREMCI is very high, because the amount of energy savings is large, and emissions of pollutants and GHG emissions during energy generation can be avoided. Also, the inclusion of REMs means that the use of raw materials can be lowered, which is another environmental benefit.

The sustainability of the investments made during the course of the project is also guaranteed. These investments generate cost savings during operation, and hence generate the funds needed to maintain equipment. In addition, technical capacities have been built through training activities.

The policy system and standards that have been developed will continue to drive the investments in HEMs and REMs, as the more efficient electric motors become compulsory. However, it should be noted that the financial system to support investment in HEMs and REMs has not been well developed, as was mentioned in several interviews. It may be useful to step back and elaborate a bit on what appears to be the key issue here.

One of the key questions that the design of PREMCI could have considered in more detail is why investment in HEMs and REMs do not happen spontaneously. After all, payback periods appear to be very short, and the investments therefore appear to be attractive, so in a sense it is strange that standards and policies would be needed to make companies do what is in their best interest in any case. Internationally, the main reason explaining failure to investment in more energy efficient equipment despite apparent attractiveness as evidenced by short payback periods is lack of trust. Lack of trust that promised energy savings, and hence energy cost savings, will materialize. To address such lack of trust, financial instruments have been developed, such as energy efficiency guarantees and energy savings insurance. These instruments give the investor a credible claim on a financially strong entity in case promised energy savings do not happen. Therefore, the investor can lock in a return on investment and eliminate the risk of non-performance. Investing in energy efficient equipment becomes much more attractive. The provider of the energy saving insurance or energy efficiency guarantees benefits from a fee that it charges, and profits from the excess of the fees over expected payouts (the provider of the insurance / guarantees has done considerable research on the performance of the equipment of specific suppliers and hence knows what fees it needs to charge). The advantage of such system is that once it is established, it can be applied to many different subsectors, types of equipment, and countries.

In PREMCI, a different approach has been chosen, based on putting in place a mandatory minimum standard for energy performance that must be met. This is an effective system suitable to achieving results fast, but also has a few drawbacks compared to the financial instruments mentioned:

- It is not generic – it only covers a limited set of appliances and equipment over time, and one geographical area.
- It is static – to support even more efficient equipment, an update of the standards would be needed.

It could therefore be beneficial to consider the inclusion of such financial instruments in a possible continuation of PREMCI. An ecosystem of energy saving insurance and/or energy efficiency guarantee providers could create a dynamic system to promote a large variety of energy efficiency (and through similar instruments, renewable energy) investments, and could also promote the expansion of Chinese technical solution providers (e.g., producers of HEMs and REMs) to other countries, with the support of the providers of these financial instruments – both driven by profits.

5.7 Progress to impact

See the text at the start of this section for an overview of the achievement of the project vis-à-vis the OVIs. From the achievement statistics and comparison against targets alone, it may be clear that PREMCI has made a large impact and (over-) achieved its targets. This significant progress also comes through clearly in the interviews as conducted by the TE team. To cite an interview with one of the officials of MIIT: "*The project fully achieved the expected goals. Since the implementation of the project, with the joint collaboration of UNDP and related units, the project has achieved the expected goals. Relying on demonstration and leadership, policy research, publicity and training, standard promotion and other systematic work, this project and its results have greatly promoted the development of China's high efficiency electric motor industry. In the field of electric motor applications, the market share of China's high efficiency motors has increased from 16% in 2017 to 34.2% in 2020. From 2017 to 2020, through the promotion of high efficiency electric motors, a total of 48,169GWh of electricity was saved; the annual reduction of carbon dioxide emissions increased from 2.0724 million tons to 14.898 million tons, and a cumulative reduction of 30.1653 million tons of carbon dioxide emissions.*"

In general, feedback was very positive, and challenges encountered, or project failures were minor. To be specific, although several successes were mentioned, no failures were mentioned, only an "insufficiency": "Several changes in project office personnel needed time to get familiarized, though it does not affect the implementation of the project" and a "deficiency": "*the project implementation could have been accelerated*". Similarly, some challenges were mentioned:

- "*The problem of financing difficulties for small and medium-sized enterprises that produce motors. Through the project, the financing issues of the domestic motor industry were carefully studied, and policy recommendations to support the financing of high-efficiency motor manufacturers were put forward.*"
- COVID-19 related issues: "*Due to the COVID-19, activities such as field research and corporate interviews were suspended.*", "*From the impact of COVID-19, on-site research and corporate interviews have been suspended.*", "*International exchange projects were postponed due to the COVID-19.*".
- "*Collection of basic data and policies.*"
- "*Late launch of the sub-project to draft the summary report.*"
- "*During the long project period, the Chinese electric motor market has undertaken a large change.*"

However, it should be noted that in all cases, effective measures were mentioned to overcome the challenges experienced.

5.8 Country ownership

Section 5.2 on relevance has already indicated that PREMCI was at the design well aligned with Chinese policies, and that continues to be the case, even stronger than was originally the case. President Xi Jinping has announced in September 2020 that China will strengthen its 2030 climate target (NDC), peak emissions before 2030 and aim to achieve carbon neutrality before 2060. PREMCI aligns very well with these recent targets, as was emphasized in several interviews, e.g. "*This project is consistent with China's carbon emission peak and carbon neutrality goals. These goals need to be achieved through technological progress. As the main energy-consumption product, the motor is one of the key points of emission reduction because currently China still has a carbon-intensive electricity system. In*

this case, high-efficiency motors promoted by this project can play an important contribution to China's long-term emission reduction action in China.". We have also noted in Section 5.2 that during the 13th Five Year Plan, PREMCI continued to address the various energy efficiency and energy conservation goals.

The country ownership also comes clearly through in the interview with MIIT: "*The main goal of PREMCI is to promote high efficiency energy-saving electric motors and improve industrial energy efficiency. The ultimate goal is to reduce greenhouse gas emissions in China's industrial sector. This is consistent with the work responsibilities and goals of the Energy Conservation Department of the Ministry of Industry and Information Technology.*"

Finally, country ownership is also a function of how well the project has been designed and responds to the specific needs and barriers of the country. PREMCI has been designed on the basis of a LFA approach, in which barriers and corresponding barriers removal activities have been identified and form the basis for the project design. Based on these considerations, we assess the country ownership of PREMCI as high.

5.9 Gender

Gender equity is difficult to pursue in a project such as PREMCI, in which the focus is on the industrial sector and the improvement of energy efficiency of the equipment produced and used. The major gender impacts are given by the employment breakdown in the sector. In the survey conducted, female employees accounted for 31.7% of the employees producing HEMs, and for 25.9% of the employees producing REMs. For HEMs and REMs combined, female employees account for 30.6% of the employees involved in HEMs and REMs production. We can compare this with the composition of the training participants. For the HEMs training, female participants accounted for 34.6% For the REMs training, female participants accounted for 45.8%. These numbers illustrate that PREMCI has contributed to gender equity by preferentially training female employees.

In terms of the management of PREMCI, of the 9 members of the Project Steering Committee only one is female. This is a minor point, but something that could be reinforced: a larger percentage of females in the main decision-making body of PREMCI could strengthen the inclusion of gender considerations into decision-making in PREMCI.

5.10 Other Cross-cutting Issues

Other cross-cutting issues that may need to be considered in the TE are, per the TOR, poverty alleviation, improved governance, climate change mitigation and adaptation, disaster prevention and recovery, human rights, capacity development, South-South cooperation, knowledge management, volunteerism, and others, presumably also including indigenous people. Most of these issues are not relevant for PREMCI. For example, the impact of PREMCI on poverty alleviation will be negligible, neither positive or negative impacts, and that will be the case for most of the cross-cutting issues mentioned. Improved governance is also not addressed, apart from the impact on improved policies. Disaster prevention and recovery are not addressed, neither positively or negatively, as is the case for indigenous people and human rights. This follows from the nature of the project, focusing on industrial products (efficient electric motor) and improvement of industrial production processes by employing efficient electric motors, which does not affect in a meaningful manner several of these cross-cutting issues.

Some would argue that climate change adaptation is indirectly addressed, in a somewhat positive way. Reducing GHG emissions through the implementation of PREMCI means that climate change will, to a very limited extent, be slowed down, which could be considered an indirect adaptation benefit. However, because the emission reductions achieved in PREMCI are very limited compared to global GHG emissions, this impact would be very minor. Others would not consider this a climate change adaptation benefit at all. The TE team takes the latter position.

As noted in Sections 5.12 and 5.13, PREMCI does not (yet) consider South-South cooperation issues. This is something that could be considered for the future, extending the climate change mitigation benefits from PREMCI to other countries. This will be a true benefit, because for most countries, deploying HEMs and REMs will mitigate GHG emissions while lowering energy costs, with the lower energy costs quickly compensating for the investment in HEMs and REMs.

The main points from the perspective of cross-cutting issues PREMCI addresses are climate change mitigation and capacity development as a means towards the achievement of the capacity development goals. These are core reasons for implementing PREMCI.

We can conclude that the cross-cutting issues are either positively affected as the primary reason for implementing the project or are as core lever in the project strategy, or are neither positively nor negatively affected, but certainly without adverse impacts.

5.11 Social and Environmental Standards

This is somewhat similar as the case for cross-cutting issues. PREMCI has contributed to the development of new standards with associated environmental benefits resulting from reduced energy use and reduced environmental impacts from energy production. To be specific, 5 standards, namely "Energy Efficiency Classification of Rotating Electric Machines (IE Code) Part 2: Variable Speed AC Motors", "Cast Copper Rotor Three-phase Asynchronous Motor Technical Conditions", "Technical Conditions of Low Speed and Large Torque Permanent Magnet Motor for Belt Conveyor", "Technical Conditions of Synchronous Reluctance Motor", and "Technical Specification for Energy Saving Supervision of Small and Medium-sized Motors" were developed with support from PREMCI. Newly produced motors must meet the mandatory energy efficiency standards. In order to meet this demand, higher requirements are put forward for the energy efficiency of motor products of motor manufacturers in the industry, which urges enterprises to increase the development and production of high efficiency motors.

Additionally, PREMCI stimulates the production of REMs, and thereby limits the use of raw materials, which is an environmental benefit. Other than that, PREMCI is neutral on social and environmental standards.

5.12 GEF Additionality

On the one hand, the GEF-supported PREMCI has played a key role in transforming the electric motor landscape in Chinese industry as is evidenced by the achievement of all targets as measured through the OVIs. This is well appreciated by the various stakeholders and discussed in considerable detail under the heading of attribution. GEF support and UNDP support are important motivators for the implementation of PREMCI, and therefore have a high value added.

On the other hand, there could be an expectation that international funding support through UNDP/GEF implies a considerable international dimension in the project implementation, for example relying to a considerable extent on international experiences and international expertise. This, however, has not been evident. There is a good argument for the lack of international experiences and expertise: international experts are often not sufficiently familiar with China, so that recommendations may lack practical relevance and outputs may deviate from expectations. International experiences are often only to a limited extent applicable to China, because of a different economic system. For these reasons, the TE team does not consider the lack of international experiences and expertise within PREMCI a shortcoming. While such international dimensions may have been useful in the past, this is not so much the case anymore.

There is another type of international dimension, however, that could be considered and that would increase the GEF added value and the benefits from PREMCI in addressing the global issue of climate change. The Chinese government, UNDP and GEF could cooperate in spreading the project results to

other countries, so that other countries also will increasingly adopt HEMs and REMs, reduce energy use, and reduce GHG emissions. To the extent that HEMs and REMs could be produced by Chinese companies, this would also result in increased opportunities for Chinese companies and bring economic benefits, next to reputational benefits to China. South-South cooperation between China, with the support of UNDP and GEF, could even serve as a pilot for Article 6 under the Paris Agreement.

5.13 Catalytic Role / Replication Effect

The percentage of the local electric motor manufacturers in China producing HEMs and REMs has increased from a baseline of 5% to over 40% by the end of project. The number of Chinese companies producing HEMs and/or REMs has increased to 1091. The number of electric motor suppliers/retailers that sell EE motors has increased to 1100. PREMCI clearly has had a strong catalytic effect, and already considerable replication has occurred within the Chinese efficient electric motor segment. These are strong points and clear positives, which will be further reinforced through the mandatory standards that will force the market to accept more HEMs and REMs.

It is possible to also consider additional types of replication, both of which are outside of the original project scope. One direction is the expansion of PREMCI into other countries through South-South cooperation, as suggested above, based on the Chinese experiences. A second direction is the expansion of PREMCI into other subsectors with high energy use, such as air conditioners, refrigerators, boilers, and others. Highly efficient appliances and equipment, in the case of air conditioners and refrigerators using low-GWP refrigerants, could have a high impact on reducing GHG emissions. Energy saving insurance and energy efficiency guarantees are examples of financial instruments that could be deployed and that could be formulated as generic instruments that could help to achieve transformation to high efficiency in multiple subsectors and countries. This could be an extension to PREMCI that could be considered by UNDP, GEF and the Chinese government.

6. Conclusions and recommendations

6.1 Overall performance

PREMCI has achieved all its OVI targets, as summarized in the table below. For this reason, the overall performance of PREMCI needs to be evaluated as very successful. The energy saving and GHG emission reduction targets of PREMCI have more than been achieved.

Table 9. Project performance on OVIs measured against targets

No.	Indicator	Baseline	Targets	End of project (EOP) achievement	Target achieved?
Goal: Reduction of greenhouse gas emissions through the widespread application of energy efficient electric motors in China					
1	Cumulative CO_2 emissions reduction in the application of EE motors by end-of-project (EOP), ktons.		7986	30165.3	Yes
2	Reduction in the annual growth rate of GHG emissions by EOP compared to that in Year 1, %.		14.7	25.1	Yes
Objective: Increased manufacturing and widespread application of energy efficient electric motors in China					
3	Cumulative electricity savings due to project intervention by EOP, GWh.	0	9982	49266	Yes
4	Percentage of the local electric motor manufacturers in China producing HEMs and REMs by EOP, %.	5%	At least 40%	40.4%	Yes
5	Average annual HEM production output by EOP, kW.	No estimate	102.1 million	102.7 million	Yes
6	Average annual REM production output	No estimate	4 million	5 million	Yes

No.	Indicator	Baseline	Targets	End of project (EOP) achievement	Target achieved?
	by EOP, kW.				
7	Cumulative capacity of low-efficiency electric motors phased-out, kW.	No estimate	160 million	170 million	Yes
8	No. of people gainfully employed in newly established EE electric motor production facilities by EOP.		At least 10 per company	At least 30 per company	Yes
Component 1: Policy and Regulatory Frameworks on the Production and Application of Energy Efficient Electric Motors					
Outcome 1: Enhanced and clearly defined policy enforcement mechanisms on the production EE motors and their applications in the Chinese industrial sector					
9	No. of local electric motor manufacturers that produce EE motors by EOP.	No estimate	800	1091	Yes
10	No. of electric motor suppliers/retailers that sell EE motors by EOP.	No estimate	1,000	1100	Yes
Component 2: Energy Efficient Electric Motor Production and Applications					
Outcome 2: Increased local production of EE motors for applications in Chinese industries					
11	% annual growth rate (YOY) of HEM production in the demonstration pilot companies starting Year 3.	Nil	At least 10%	15%	Yes
12	% annual growth rate (YOY) of REM production in demonstration pilot companies starting Year 3.	Nil	At least 10%	10%	Yes
Component 3: Financial Support and Accessibility Improvement					
Outcome 3: Increased application of domestically produced EE Motors (HEMs and REMs) in Chinese industries					
13	No. of EM manufacturers that produce EE motors (HEM/REM) by EOP.	115	920	1091	Yes
14	No. of Chinese industries that use locally made EE motors by EOP Using HEMs.	No estimate	90000	94500	Yes
15	No. of Chinese industries that use locally made EE motors by EOP Using REMs.	No estimate	10000	10500	Yes
Component 4: Energy Efficient Electric Motor Promotion					
Outcome 4: Increased market share of energy efficient electric motors					
16	% of market share of EE motors by EOP.	Nil	29%	34.2%	Yes
17	Average annual volume of EE motor sales by EOP, MW.	1100	93000	94744	Yes

Source: Data provide by the PMO, confirmed by the TE Team.

The achievement of the goal, objective and outcomes has been assessed taking into account the achievement of the OVIs in the table above and the analysis of the outcomes in Section 5.5.

Table 10. Achievement of goal, objective, and outcomes

PREMCI element	TE assessment	Comment
Goal	Highly satisfactory	EOP targets of OVIs 1 and 2 have been overachieved.
Objective	Highly satisfactory	EOP targets of OVIs 3-8 have either been achieved or overachieved.
Outcomes (aggregated)	Highly satisfactory	All EOP targets of the outcome OVIs have been achieved. Moreover, two of the individual outcomes have been rated highly satisfactory, and the other two as satisfactory. On balance, based on the achievement of OVIs 9-17, overall achievement of outcomes at the aggregated level has been rated as Highly Satisfactory.
Outcome 1	Highly satisfactory	EOP targets of OVIs 9 and 10 have been achieved. Moreover, respondents indicated their

		high satisfaction with the policy related contributions of PREMCI.
Outcome 2	Highly satisfactory	EOP targets of OVIs 11 and 12 have both been achieved. Moreover, respondents indicated their high satisfaction with the demonstration related contributions of PREMCI
Outcome 3	Satisfactory	EOP targets of OVIs 13-15 have been achieved. However, the progress to eliminate financial barriers towards HEMs and REMs production and deployment has been somewhat slow. No new financial mechanisms or instruments have been introduced. The rating Satisfactory reflects these qualitative aspects that are not well captured in the selected OVIs.
Outcome 4	Satisfactory	EOP targets of OVIs 16 and 17 have been achieved. However, the progress to eliminate market deployment barriers towards HEMs and REMs has been somewhat slow. No new economic mechanisms or instruments have been introduced. The rating Satisfactory reflects these qualitative aspects that are not well captured in the selected OVIs.

The scores on the key evaluation criteria, summarized below, reflect this sound achievement of the targets. The TE team also verified that these achievements can indeed to a large extent be attributed to PREMCI. The TE team therefore considers PREMCI a success story.

Table 11. Evaluation assessment of PREMCI vis-à-vis key evaluation criteria

Evaluation criteria	TE assessment	Comment
Assessment of outcomes		
Relevance	Highly satisfactory	PREMCI is linked to energy efficiency, energy conservation and GHG mitigation goals that are high priorities of the Chinese government.
Effectiveness	Satisfactory	Given the achievement of all OVI targets, PREMCI should be considered effective. The achievement of the targets appears to be the result of mandatory minimum energy performance standards and demonstration activities, with activities related to finance and market mechanisms appearing relatively less successful. The latter is the reason for the "Satisfactory" rating, rather than the "Highly Satisfactory" rating.
Efficiency	Highly satisfactory	The high efficiency rating is based on a comparison of the project costs per GHG emission reduction achieved, compared to the average of the GCF mitigation portfolio. PREMCI's costs are a factor of about 100 lower than the GCF mitigation portfolio average, indicating very high efficiency.
Sustainability		
Financial resources	Moderately likely	The discussion of financial sustainability needs to consider whether investments made can be sustained financially (clearly: yes), whether new similar investments can be made (yes, of necessity, to satisfy compulsive standards), and whether investments in above-standard efficiency will be able to attract finance (unclear, no financial mechanisms to this effect have been

		created). Based on the last point, sustainability of financial resources has been assessed as moderately likely.
Socio-political/economic	Moderately likely	The discussion on this issue parallels the above: while the systems are in place to support the production and deployment of high efficiency electric motors, these same systems do no provide additional impetus for very high and ultra-high efficiency electric motors. And related to this, the systems put in place can only with significant effort (formulation of new standards) be applied to other equipment, appliances, and subsectors. For these reasons, this aspect of sustainability has been assessed as moderately likely.
Institutional framework and governance	Likely	The institutional and governance frameworks appear to be in place. Indeed these framework are a major factor behind the rapid penetration of HEMs and REMs in the market, under PREMCI.
Environmental	Likely	Environmental sustainability is very likely, based on the market that has been created for HEMs and REMs. Both HEMs and REMs reduce energy consumption vis-à-vis the baseline, and therefore reduce the amount of energy that needs to be generated and the concomitant emissions of air pollutants and GHG emissions. Moreover, increased REMs production means an increased reuse of materials, and hence a lower demand for raw materials, which is another environmental gain from PREMCI.

6.2 Conclusions

The TE team findings show that PREMCI is a success story. Moreover, it is a success story on a topic with every increasing relevance. Within China, President Xi Jinping has announced the 2030 and 2060 carbon goals (respectively peaking by or before 2030, and carbon neutrality by or before 2060). This increases the importance of projects like PREMCI which achieve significant GHG emissions (estimated at 149 million tCO_2e accumulated over a 10-year period[20]) at a low cost (a fraction of the costs of GHG emission reductions in the GCF mitigation portfolio). Globally, countries increasingly pay attention to GHG mitigation issues, and governments in several countries (e.g. Germany and the Netherlands) have lost court cases instigated by concerned citizens because of lack of progress in mitigation of climate change. Under these circumstances, we conclude that PREMCI deserves wide dissemination and replication. The recommendations section below provides specific suggestions for achieving this. For the moment, we wish to note that the replication can be within China, but also consider other countries. The TE team has checked whether there was interest in pursuing activities outside China and found that there is interest among companies and other stakeholders in international activities, with the support from the Chinese government, UNDP and GEF. Such international follow up efforts would also increase the GEF added value of supporting PREMCI, while for China it could provide PR benefits and potentially through Article 6 of the Paris Agreement, joint achievement of mitigation goals together with other countries. Chinese companies could also benefit from profitable export markets and financing opportunities (see below).

[20] While as shown in Table 9, the originally expected GHG emission reductions during the implementation period are 7.986 million tCO_2e, while the realized GHG emission reductions during the implementation period are 30.1653 million tCO_2e.

Despite these generally very positive findings and conclusions, the TE team has identified some elements that appeared to have functioned less well. As noted, the PREMCI achievements have been mostly driven by demonstrations and policies based on mandatory instruments. While these achieve the intended results, they do not well support (1) very high efficiency and ultra-high efficiency motors, (2) horizontal replication to other subsectors, appliances, and equipment, and (3) market introduction of HEMs and REMs in other countries. A different approach that can also support investment in HEMs and REMs focuses on the elimination of one of the root causes for underinvestment in HEMs and REMs: lack of trust in their performance (efficiency, longevity, and maintenance costs). Energy Savings Insurance (ESI) and energy efficiency guarantees are proposed as horizontal financial instruments that support investments in energy efficiency equipment and appliances, not restricted to subsector, type and geographical market. Annex A14.1 further discusses lack of trust and the PREMCI project design.

The TE team also considered what factors explain the success of PREMCI. The TE team believes the root cause is the relevance of PREMCI to the goals and objectives of the Chinese government and MIIT in particular, combined with the strong ability of the Chinese government to implement and enforce policies. Because of the strong alignment with government objectives, PREMCI has been rapidly implemented, creating a strong policy environment supporting the rapid market introduction of HEMs and REMs. It should be noted that the Chinese government's ability to implement and enforce policies is unusually strong, to the point that many enterprises complied with the new standard and policies related to efficient electrical motors, issued in 2020, before they entered into force (begin 2021), a case of proactive decision-making and investments by the targeted companies. This is an unusual feature of the political economy of China vis-à-vis other countries: often enterprises will move on an indication of the direction of government policies in China, before being required to do so. The same mechanism cannot be counted on in other countries.

6.3 Recommendations

Based on the findings and conclusions of the PREMCI TE, the TE team recommends:

1. To produce short brochures and documents on PREMCI for dissemination purposes. Such publications would ideally focus on: 1) profitability for enterprises of using HEMs and REMs, 2) GHG emission reductions achieved versus project costs compared to benchmarks, and 3) energy savings achieved versus project costs compared to benchmarks.
2. Consider a replication of PREMCI in China, which would also cover other equipment and appliances with high mitigation potentials at low costs. Such replication could include trust enhancing financial instruments such as ESI and energy efficiency guarantees.
3. Consider a replication of PREMCI in partnership with other countries, focusing on HEMs and REMs. This could also cover other equipment and appliances with high mitigation potentials at low costs. Such replication could include trust enhancing financial instruments such as ESI and energy efficiency guarantees. Most likely candidate countries for such South-South cooperation would be partner countries in the Belt and Road Initiative. It could be considered to formulate such cooperation as a pilot under Article 6 of the Paris Agreement on joint mitigation efforts.

6.4 Lessons learned

From the TE, several lessons emerge that are worth bringing to the fore:

- The root cause for PREMCI's success is the relevance of PREMCI to the goals and objectives of the Chinese government and MIIT in particular, combined with the strong ability of the Chinese government to implement and enforce policies. Because of the strong alignment with government objectives, PREMCI has been rapidly implemented, creating a strong policy environment supporting the rapid market introduction of HEMs and REMs. It should be noted that the Chinese government's ability to implement and enforce policies is unusually strong, to the point that many enterprises complied with the new standard and policies related to efficient electrical motors, issued in 2020, before they entered into force (begin 2021), a case of proactive

decision-making and investments by the targeted companies. This is an unusual feature of the political economy of China vis-à-vis other countries: often enterprises will move on an indication of the direction of government policies in China, before being required to do so. The same mechanism cannot be counted on in other countries.

- The project design through the LFA in general worked well in identifying barriers and barrier removal actions. However, it appears that relatively little attention had been paid in analyzing why HEMs and REMs investments were slow to take off, despite the short payback periods of such investments. A fuller analysis of this question would likely have identified the issue of trust (see also Annex A14.1) and might have led to the inclusion of ESI and/or energy efficiency guarantees into the project design, which would have helped to improve sustainability.
- Related to the indicator system, one of the few criticisms was that the indicators could be more relevant and practical. The TE team agrees that some of the indicators are difficult to apply and interpret. For example, "% annual growth rate (YOY) of HEM production in the demonstration pilot companies starting Year 3" 21 and "Reduction in the annual growth rate of GHG emissions by EOP compared to that in Year 1, %"22 are indicators that are difficult to interpret, and that are also not immediately clear how it should be calculated. Also, the indicators related to component 3 do not directly measure whether financial accessibility has been enhanced (rather it shows that companies have been able to overcome financial barriers, but not whether this has been the result of enhancement of access to finance). A few suggestions related to the identification/formulation of indicators might be:
- Provide calculation instructions (starting from raw data) for each of the indicators proposed. This will serve as a check to make sure that the indicators are fully understood and can indeed be calculated as envisaged.
- Use indicator pairs, with one focusing on the immediate measurement of what should be achieved (e.g., increased financial access, this could be the number of financial access programs

[21] The main issue is interpretation of the indicator. Presumably a higher YOY growth rate is better. The target of the OVI is for the last year. Assume that production in Year 2 = 2,000 HEMs; Year 3 = 2,100 HEMs; Year 4 = 2,300 HEMs. Than the calculated OVI would be (2300-2100)/2100 * 100% = 9.5%. Now assume an alternative case, in which production in Year 2 = 2,000 HEMs; Year 3 = 2,050 HEMs; Year 4 = 2,300 HEMs. This is less total HEMs, so it would seem worse than the original. However, the calculated indicator would be (2300-2050)/2050 * 100% = 12.2%, higher than the previous one. It is unclear why this is appropriate, which makes the team question the appropriateness of the OVI.

[22] The way PREMCI has calculated this indicator is by calculating for 2016-2017, 2017-2018, 2018-2019 and 2019-2020 what the actual growth in emissions was for each year, what the emissions would have been in absence of PREMCI, and what the reduction in the growth rate was because of PREMCI. E.g., for 2019-2020 the calculated emissions growth rate with PREMCI was 2.2%, without PREMCI it was 2.9%, hence a reduction of 25.1% relative to the without PREMCI case. The TE team has confirmed that these calculations have been correctly carried out. What is not clear is whether this is the intended interpretation of the OVI (it can also be interpreted as a requirement to calculate with PREMCI GHG emission growth rates that to calculate the percentage change between the first and the last annual growth rate (example: first annual growth rate 8%, last 7%, would mean a 12.5% reduction). Whichever of these interpretations is right, in both cases the OVI would have shortcoming. In the first case, it is unclear why for example a reduction from a 1% baseline to 0.5% (OVI: 50% reduction) would be better than a reduction from a 4% baseline to 3% (OVI: 25% reduction). In the second case, macroeconomic development causing changes in GDP growth rates would likely have a larger impact than PREMCI, so that the OVI would not be very sensitive to the successes and failures of PREMCI.

Two final comments:

1) The TE team has also considered what the EOP OVI would be if the second interpretation is correct. GHG emisisons growth in the first year was 3.0% and in the last year, it was 2.2%. The reduction in the growth rate in this interpretation would be 26.7% (higher than reported and also above the EOP target).

2) The reviewer argued that the IP/PMO has the opportunity to have such indicator clarified during the project inception phase. Since it remained until end of project, that means such indicators were accepted and are being monitored. However, in the TE team's understanding, if one or more indicators are not very practical, a typical reaction would be not to challenge its inclusion, but to try to use it. People will assess costs and benefits from challenging. Moreover, people may be unaware when their interpretation is different from the intended interpretation, and even when indicators are fully understood and accepted, the indicators may have shortcomings, as noted in this and the previous footnote.

created, or the number of companies that have access to finance for increasing HEM/REM production capacity and/or investments in HEMs/REMs), and another one with the consequence of that (e.g., increased market share and No. of Chinese industries that use locally made EE motors by EOP Using HEMs or REMs, the currently used indicators). Annex A14.2 elaborates on several aspects related to OVIs, outcomes EOP target achievement of barriers removal.

7. Documents consulted

Table 12. List of first batch of documentation provided by PMO and UNDP

No	File name		Year
1	Project Identification Form PIF		2013
2	PREMCI Project Document		2015
3	PREMCI Two Year Work Plan		2017-2018, 2018 – 2019, 2019 – 2020 and 2020 – 2021
4	Inception Report PREMCI Project		2016
5	Project Implementation Review (PIR)		2017, 2018, 2019 and 2020
6	Annual Project Report APR		2017, 2018, 2019 and 2020
7	Midterm Review Report		2019
8	Combined Delivery Report by Project CDR		2017, 2018, 2019 and 2020
9	Spot Check-Ministry of Industry and Information Technology		2020
10	Micro Assessment Report for CHN-Ministry of Industry and Information Technology		2017
11	Acceptance document checklist		2019
12	Completion Table of PREMCI Outcome Indicators		2021
13	Training Activities	a. Training's Final Report of Carrying Out Energy Conservative Motors' Application in Industry	2019
		b. Concluding Report of online training on promotion and application of high-efficiency energy-saving motors	2021
		c. Final Report of Remanufacturing Motor Technology Training	2021
14	Demonstration Companies	a. Summary report on the improvement of WNM high-efficiency motor production capacity	2021
		b. XEMC's Report on High Efficiency Electric Motor Promotion	2021
		c. Application demonstration of high efficiency motor system standard system	2021

		d. Pilot Base Work Report – NEMS	2021
15	Training participant lists	a. Remanufacturing motor training enterprises personnel information list	2021
		b. Online training on promotion and application of high-efficiency energy-saving motors	2021
16	The proportion of male and female employees in the demonstration enterprises		2021

Table 13. List of second batch documentation provided by PMO

No	File name	Year
1	Domestic motor market research project research summary report	2018
2	Report on Policy Research and Recommendations of Electrical Machinery in China	2019
3	Promoting Energy Efficient Electric Motors in Chinese Industries – 2018	2018
4	Establish and operate motor market monitoring system Summary Report	2019
5	Green credit policy research report to support the promotion of energy saving technology products such as energy efficient electric motors system report	2020
6	China high efficiency motor promotion project summary report	2021
7	PREMCI-Remanufacturing Motor Development Policy Research Summary Report	2021
8	Report on promotion activities of 20 undertaking units	2021
9	4 demonstration enterprises activities summary report	2021

Table 14. List of additional documentation provided by PMO

No	File name	Year
1	Annual market statistics for 2020	2020
2	Statistics of Remanufactured Electric Motors	2020
3	List of stakeholders to be interviewed	-
4	Members of Steering Committee	-
5	Members of Project Executing Agency	-

Annexes

A1. TE ToR (excluding ToR annexes)

Name of Project: Promoting Energy Efficient Electric Motors in Chinese Industries (EE Motor)

Terms of Reference for the Terminal Evaluation

1. Introduction

In accordance with UNDP and GEF M&E policies and procedures, all full- and medium-sized UNDP-supported GEF-financed projects are required to undergo a Terminal Evaluation (TE) at the end of the project. This Terms of Reference (ToR) sets out the expectations for the TE of Promoting Energy Efficient Electric Motors in Chinese Industries (EE Motor) Project implemented through the Ministry of Industry and Information Technology. The project started on 1 January 2017 and is in its fourth year of implementation. The TE process must follow the guidance outlined in the document 'Guidance for Terminal Evaluations of UNDP-supported GEF-financed Projects'.

2. Project Background and Context

Globally, electric motor systems have been identified as the major electricity consumer in the industrial sector of countries and have been recognized as having one of the largest energy and energy cost savings potentials. These electric motors are by and large responsible for about 70% of industrial electricity consumption. It is estimated that in 2011, electric motor systems accounted for an estimated 64% of China's total annual electricity consumption, or about 3 trillion kWh with the installed capacity of 1.7 billion kW. On average, locally produced electric motors in China typically have efficiencies that are lower by approximately 3 to 5 percentage points than those in the developed countries such as the USA and Canada. Due to high duty levels, even a small gain in motor efficiency can result I significant electricity savings. It has been estimated that there will be 26 billion kWh annual electricity saving amount for 1% efficiency improvement. In this regard, the country has ample reasons and opportunities to improve the efficiency of locally made and used electric motor.

Although some of motor manufacturers have the ability to develop and produce EE motors, however, the market share is still so small at less than 10%. Most of motors are purchased by both original OEMs and end-users. In China, more than 60% of electric motor buyers are not end-users but the OEMs. When OEMs buy motors as their equipment drives, they mainly care about price besides power output and life since the price of energy efficient motors is usually higher than that of typical standard motors. So the price is the most important factor that restricts the wide application of high efficiency motors. The producer tends to only produce EE motors by orders and with limited volume the manufacturing business becomes less profitable.

It is very important that the industry players are directly involved in the government's support activities for market enhancements for EE motors. Currently there are over 2,300 electric motor manufacturers in China. Among these, only about 50 are capable of producing HEMs. In that regard, locally manufactured HEMs account for only about 10% of the total electric motor production output of the country as mentioned above. It should be noted that about 70% of these HEMs are for export. The national new standard GB18613-2012 was implemented in September 2012. The Government of China intends to remove the Y and Y2 series electric motors from the market. The local electric motor manufacturers are required not to produce and sell these outdated electric motor products.

Project Summary

PREMCI's objective is to enhance the manufacturing and widespread application of energy efficient electric motors in China. To achieve this, the identified barriers to the effective promotion and extensive application of high efficiency motors (HEMs) and remanufactured motors (REMs) in Chinese industries have to be removed. If the manufacturing process is performed properly employing advanced technologies and techniques and in qualified and competent EE motor production facilities, relatively low cost, and high quality EE motors (HEMs and REMs) can become available in the local electric motor market. The utilization of EE motors is expected to bring about large gains in electricity savings in the operation of electric motor systems in industries. This translates to benefits to the global environment, as well as to China's economy and local environment given the significant economic cost and local pollution associated with power generation and consumption. PREMCI intends to facilitate the realization of such potential by removing the identified barriers that up until now has prevented China from realizing substantial GHG emission reductions that would contribute to the achievement of the countries climate change mitigation targets. The project will address current teething problems in the emerging EMR industry in China which focuses on the recycling/repowering of old or broken/burnout electric motors and improving their energy efficiency; as well as retrofitting the existing less energy efficient standard electric motors to turn them into high efficiency REMs. The proposed project will focus on removing a number of key barriers in the local electric motor industry. A combination of "technology push" and "market pull" activities will be employed to enhance the energy efficiency levels of HEMs and REMs that are locally produced in China by facilitating/enabling the effective promotion and application of advanced EE motor production and application technologies and techniques. It is expected that by the end-of-project, at least 40% of the local electric motor manufacturers in China will produce HEMs and REMs. Ten years after the start of project, with an average 3% improvement in energy efficiency of locally made EE motors, the estimated cumulative energy saving would be no less than 50,384 GWh, which translates to a reduction in GHG emissions of at least 44.47 million tons CO2.

Expected outcomes:

The significant developments in terms of outcomes that will be manifested in the realization of the PREMCI Alternative Scenario and the outputs that are expected are as follows:

a) Enhanced and clearly defined policy enforcement mechanisms on the production EE motors and their applications in the Chinese industrial sector.

1) Completed survey of the local electric motor market in China;
2) Completed review of existing policies and regulations applicable to EE motors applications in industries in China;
3) Recommended policies and implementing rules and regulations on EE motors production and their application in the Chinese industries taking into consideration all the past and ongoing programs in China and many other global experiences;
4) Recommended policies and implementing rules and regulations on the development and support of the local EMR industry;
5) Recommended policies and implementing rules and regulations for the phasing out (including appropriate support measures) of existing low efficiency electric motors;
6) Established recommended system for EE system performance standards, testing protocol, and certification system. .
7) Enforced implementing rules and mechanisms for the approved policies & regulations on EE electric motors production and application.
8) Established M&E and improvement system on the enforcement of the approved policies and regulations on EE motors production and application.
9) Investment plans for EE motor production by new local electric motor manufacturers who were motivated and influenced by the enforced policies and regulations.

b) Increased local production of EE motors for applications in Chinese industries.
   1) Developed capacity development program for local EE motor (HEM and REM) manufacturers;
   2) Completed training courses for local electric motor manufacturers on the design and manufacturing of EE motors (HEMs and REMs);
   3) Disseminated information on improved EE motor product design and production;
   4) Established and operational EE motor research center and EE motor industry association.
   5) Completed demonstration of improved EE motor product design and manufacturing;
   6) Commercialized REM products;
   7) Established and enforced EE motors application system testing and certification system.

c) Increased application of domestically produced EE Motors (HEMs and REMs) in Chinese industries.
   1) Completed techno-economic feasibility assessment and action plan for financing improved EE motor initiatives of local electric motor manufacturers and suppliers
   2) Developed and implemented action plan for financing improved EE motor initiatives of local electric motor manufacturers and suppliers
   3) Developed and implemented suitable business model for local banks/financial institutions to support EE motors production and application
   4) Operational appropriate EE motor incentive mechanism

d) Increased market share of energy efficient electric motors
   1) Established and operational electric motor market monitoring system;
   2) Regularly disseminated publication of local EE motors market and product performance Information;
   3) Established guidelines for EE motor (HEM &REM) procurement system;
   4) Operational EE motor (HEM and REM) manufacturer incentive program
   5) Completed industrial consumer education campaigns on EE motor (HEM and REM) applications;
   6) Sustainable follow-up plan for the replication of the project interventions in other cities in collaboration with electric motor manufacturers in other Chinese cities.

Funding:
Total Budget (USD): 21,500,000, including 3,500,000 from GEF

Implementation Period: 2017-2020

3. Terminal Evaluation Purpose

The objective of the TE is to assess the achievement of project results against what was expected to be achieved and draw lessons that can both improve the sustainability of benefits from this project, and aid in the overall enhancement of UNDP programming. The TE report promotes accountability and transparency and assesses the extent of project accomplishments. The TE report promotes accountability and transparency and assesses the extent of project accomplishments.

The TE will identify potential project design problems, assess progress towards the achievement of the project objective, identify and document lessons learned (including lessons that might improve design and implementation of other UNDP-GEF projects), and make recommendations regarding specific actions that should be taken to improve the project in future. The TE will assess early signs of project success or failure and identify the necessary changes to be made. The project performance will be measured based on the indicators of the project's logical framework (see Annex 1) and various Tracking Tools.

The TE must provide evidence-based information that is credible, reliable, and useful. The review team is expected to follow a participatory and consultative approach ensuring close engagement with government counterparts, particularly the GEF operational focal point, UNDP Country Office, project team, UNDP GEF Technical Adviser based in the region and key stakeholders. Interviews will be held with the following organizations and individuals at a minimum:

1. UNDP staff who have project responsibilities;
2. Executing agencies (including but not limited to senior officials and task team/ component leaders: MIIT, key experts and consultants in the demonstration areas, PSC members;
3. The Chair of Project Steering Committee
4. Project stakeholders, including academia, local government, and CBOs

The team will review all relevant sources of information, such as the project document, project reports – including Annual APR/PIR, project budget revisions, progress reports, GEF focal area tracking tools, project files, national strategic and legal documents, and any other materials that the team considers useful for this evidence-based review.

4. TE Approach & Methodology

The TE report must provide evidence-based information that is credible, reliable, and useful.

The TE team will review all relevant sources of information including documents prepared during the preparation phase (i.e. PIF, UNDP Initiation Plan, UNDP Social and Environmental Screening Procedure/SESP) the Project Document, project reports including annual PIRs, project budget revisions, lesson learned reports, national strategic and legal documents, and any other materials that the team considers useful for this evidence-based evaluation. The TE team will review the baseline and midterm GEF focal area Core Indicators/Tracking Tools submitted to the GEF at the CEO endorsement and midterm stages and the terminal Core Indicators/Tracking Tools that must be completed before the TE field mission begins.

The TE team is expected to follow a participatory and consultative approach ensuring close engagement with the Project Team, government counterparts (the GEF Operational Focal Point), Implementing Partners, the UNDP Country Office(s), the Regional Technical Advisor, direct beneficiaries, and other stakeholders.

Engagement of stakeholders is vital to a successful TE. Stakeholder involvement should include interviews with stakeholders who have project responsibilities, including but not limited to; executing agencies, senior officials and task team/component leaders, key experts and consultants in the subject area, Project Board, project beneficiaries, academia, local government and CSOs, etc.

The TE Team will conduct an opening meeting with the National Project Director (NPD), Project Management Office (PMO), the Ministry of Finance etc. An "exit" interview will also be held to discuss the findings of the assessment prior to the submission of the draft Final Report.

Prior to engagement with PMO, the TE Team shall receive all the relevant documents including at least:

- The Project Document and Project Brief
- Inception Report
- Annual Work and Financial Plans
- Annual Project Report/Project Implementation Review (APR/PIR) for 2015 and 2016

To provide more details, as may be needed, the following will be made available for access by the TE Team:

- Executive summary of all quarterly reports
- Internal monitoring results
- Terms of Reference for past consultants' assignments and summary of the results
- Past audit reports

All additional material related to the project management and implementation and held by the PMO and their subcontracts will be available for review at the discretion of the Evaluation Team.

The TE Evaluation Team should at least interview (online) the following people:

- National Project Director
- National Project Coordinator
- PMO Director
- International Chief Technical Advisor
- Project Financial Officer
- A representative of the Project Steering Committee
- UNDP Country Office in China in-charge of the Project

It is also anticipated that the TE will interview a number of sub-contractors and recipients of services and make site visits to implementation areas. However, the degree to which such interactions are required will be at the discretion of the Evaluation Team.

The specific design and methodology for the TE should emerge from consultations between the TE team and the above-mentioned parties regarding what is appropriate and feasible for meeting the TE purpose and objectives and answering the evaluation questions, given limitations of budget, time and data. The TE team must, however, use gender-responsive methodologies and tools and ensure that gender equality and women's empowerment, as well as other cross-cutting issues and SDGs are incorporated into the TE report.

The final methodological approach including interview schedule, field visits and data to be used in the evaluation must be clearly outlined in the TE Inception Report and be fully discussed and agreed between UNDP, stakeholders and the TE team.

The final report must describe the full TE approach taken and the rationale for the approach making explicit the underlying assumptions, challenges, strengths and weaknesses about the methods and approach of the evaluation.

❖ *Additional Text to incorporate into this section, as relevant (please adjust as needed):*

As of 11 March 2020, the World Health Organization (WHO) declared COVID-19 a global pandemic as the new coronavirus rapidly spread to all regions of the world. Travel to the country has been restricted. If it is not possible to travel to or within the country for the TE mission then the TE team should develop a methodology that takes this into account the conduct of the TE virtually and remotely, including the use of remote interview methods and extended desk reviews, data analysis, surveys, and evaluation questionnaires. This should be detailed in the TE Inception Report and agreed with the Commissioning Unit.

If all or part of the TE is to be carried out virtually then consideration should be taken for stakeholder availability, ability, or willingness to be interviewed remotely. In addition, their accessibility to the

internet/computer may be an issue as many government and national counterparts may be working from home. These limitations must be reflected in the final TE report.

If a data collection/field mission is not possible then remote interviews may be undertaken through telephone or online (skype, zoom etc.). International consultants can work remotely with national evaluator support in the field if it is safe for them to operate and travel. No stakeholders, consultants or UNDP staff should be put in harm's way and safety is the key priority.

A short validation mission may be considered if it is confirmed to be safe for staff, consultants, stakeholders and if such a mission is possible within the TE schedule. Equally, qualified, and independent national consultants can be hired to undertake the TE and interviews in country as long as it is safe to do so.

5. Detailed Scope of the Evaluation

The TE will assess project performance against expectations set out in the project's Logical Framework/Results Framework (see ToR Annex A). The TE will assess results according to the criteria outlined in the Guidance for TEs of UNDP-supported GEF-financed Projects (http://web.undp.org/evaluation/guideline/documents/GEF/TE_GuidanceforUNDP-supportedGEF-financedProjects.pdf). The Findings section of the TE report will cover the topics listed below.

A full outline of the TE report's content is provided in ToR Annex C.

The asterisk "(*)" indicates criteria for which a rating is required.

Findings:

i. Project Design/Formulation

- National priorities and country driven-ness
- Theory of Change
- Gender equality and women's empowerment
- Social and Environmental Safeguards
- Analysis of Results Framework: project logic and strategy, indicators
- Assumptions and Risks
- Lessons from other relevant projects (e.g. same focal area) incorporated into project design
- Planned stakeholder participation
- Linkages between project and other interventions within the sector
- Management arrangements

ii. Project Implementation

- Adaptive management (changes to the project design and project outputs during implementation)
- Actual stakeholder participation and partnership arrangements
- Project Finance and Co-finance
- Monitoring & Evaluation: design at entry (*), implementation (*), and overall assessment of M&E (*)
- Implementing Agency (UNDP) (*) and Executing Agency (*), overall project oversight/implementation and execution (*)
- Risk Management, including Social and Environmental Standards

iii.Project Results

- Assess the achievement of outcomes against indicators by reporting on the level of progress for each objective and outcome indicator at the time of the TE and noting final achievements
- Relevance (*), Effectiveness (*), Efficiency (*) and overall project outcome (*)
- Sustainability: financial (*) , socio-political (*), institutional framework and governance (*), environmental (*), overall likelihood of sustainability (*)
- Country ownership
- Gender equality and women's empowerment
- Cross-cutting issues (poverty alleviation, improved governance, climate change mitigation and adaptation, disaster prevention and recovery, human rights, capacity development, South-South cooperation, knowledge management, volunteerism, etc., as relevant)
- GEF Additionality
- Catalytic Role / Replication Effect
- Progress to impact

Main Findings, Conclusions, Recommendations and Lessons Learned:

- The TE team will include a summary of the main findings of the TE report. Findings should be presented as statements of fact that are based on analysis of the data.
- The section on conclusions will be written in light of the findings. Conclusions should be comprehensive and balanced statements that are well substantiated by evidence and logically connected to the TE findings. They should highlight the strengths, weaknesses, and results of the project, respond to key evaluation questions, and provide insights into the identification of and/or solutions to important problems or issues pertinent to project beneficiaries, UNDP and the GEF, including issues in relation to gender equality and women's empowerment.
- Recommendations should provide concrete, practical, feasible and targeted recommendations directed to the intended users of the evaluation about what actions to take and decisions to make. The recommendations should be specifically supported by the evidence and linked to the findings and conclusions around key questions addressed by the evaluation.
- The TE report should also include lessons that can be taken from the evaluation, including best and worst practices in addressing issues relating to relevance, performance and success that can provide knowledge gained from the particular circumstance (programmatic and evaluation methods used, partnerships, financial leveraging, etc.) that are applicable to other GEF and UNDP interventions. When possible, the TE team should include examples of good practices in project design and implementation.
- It is important for the conclusions, recommendations and lessons learned of the TE report to include results related to gender equality and empowerment of women.

The TE report will include an Evaluation Ratings Table, as shown below:

ToR Table 2: Evaluation Ratings Table for *(project title)*

Monitoring & Evaluation (M&E)	Rating[23]
M&E design at entry	

[23] Outcomes, Effectiveness, Efficiency, M&E, I&E Execution, Relevance are rated on a 6-point rating scale: 6 = Highly Satisfactory (HS), 5 = Satisfactory (S), 4 = Moderately Satisfactory (MS), 3 = Moderately Unsatisfactory (MU), 2 = Unsatisfactory (U), 1 = Highly Unsatisfactory (HU). Sustainability is rated on a 4-point scale: 4 = Likely (L), 3 = Moderately Likely (ML), 2 = Moderately Unlikely (MU), 1 = Unlikely (U)

M&E Plan Implementation	
Overall Quality of M&E	
Implementation & Execution	Rating
Quality of UNDP Implementation/Oversight	
Quality of Implementing Partner Execution	
Overall quality of Implementation/Execution	
Assessment of Outcomes	Rating
Relevance	
Effectiveness	
Efficiency	
Overall Project Outcome Rating	
Sustainability	Rating
Financial resources	
Socio-political/economic	
Institutional framework and governance	
Environmental	
Overall Likelihood of Sustainability	

The TE will assess the Project implementation taking into account the status of the project activities and outputs and the resource disbursements made up to the point of the start of the review

The evaluation will involve analysis at two levels: component level and project level. On the component level, the following shall be assessed:

- Whether there is effective relationship and communication between/among components so that data, information, lessons learned, best practices and outputs are shared efficiently, including cross-cutting issues during project implementation.
- Whether the performance measurement indicators and targets used in the project monitoring system were adequately used in monitoring and gauging the achievement of the project outputs and outcomes.
- Whether the end-of-project targets for each objectively verifiable indicator of the project objective and each project outcome were achieved.
- Whether the use of consultants has been successful in achieving component outputs.
- Whether the quality of the outputs of consultants whose services were engaged by the project is of the required quality, were useful to the realization of the project outcomes, and were delivered in a timely manner.
- Whether the appropriate resource inputs to deliver the outputs were adequately provided.

The evaluation will include such aspects as appropriateness and relevance of work plan, compliance with the work and financial plan with budget allocation, timeliness of disbursements, procurement, coordination among project team members and committees. Any issue or factor that has impeded or accelerated the implementation of the project or any of its components, including actions taken and resolutions made should be highlighted.

On the project level, it will assess the project performance in terms of: (a.) Progress towards achievement of results, (b.) Factors affecting successful implementation and achievement of results, (c.) Project Management framework, and (d.) Strategic partnerships.

Progress towards achievement of results (internal and within project's control)

- Has the Project made satisfactory progress in achieving project outputs vis-à-vis the targets and related delivery of inputs and activities?

- Were the direct partners and project consultants able to provide necessary inputs or achieve results?
- Given the level of achievement of outputs and related inputs and activities, is the Project likely to achieve its expected outcomes and objective? Is the project contributing to the achievement of its goal?
- Are there critical issues relating to achievement of project results that have been pending and are not resolved? What are the impacts of such pending or unresolved issues?
- What is the planned exit strategy for the project? What is the plan for sustaining and maintaining the implementation of the various frameworks (policy/regulatory and institutional) and systems, best practices that the project has established and operationalized after the project completion?

Factors affecting successful implementation and achievement of results (beyond the Project's immediate control or project-design factors that influence outcomes and results)

- Has the project implementation and achievement of results proceeding well and according to plan, or are there any outstanding issues, obstacles, bottlenecks, etc. on the consumer, government or private sector or other organizations that are affecting the successful implementation and achievement of project results?
- To what extent does the broader policy environment remain conducive to achieving expected project results, including existing and planned legislations, rules, regulations, policy guidelines and government priorities?
- Has the project logical framework and design been relevant in the light of the project experience to date? Has the project logical framework and design adjusted to adapt to changing conditions and circumstances?
- To what extent do critical assumptions/risks in project design held true under the circumstances the project implementation has been through? Validate these assumptions as presently viewed by the project management and determine whether there are critical assumptions that should have been raised?
- Does the project remain well-placed and integrated within the national government development strategies, such as community development, poverty reduction, etc., and related global development programs to which the project implementation should align?
- Are the Project's institutional and implementation arrangements still relevant and helpful in the achievement of the Project's objective and outcomes or are there any institutional concerns that hinder the Project's implementation and progress.

Project management (adaptive management framework)

- Are the project management arrangements adequate and appropriate?
- How effectively is the project managed at all levels? Is it results-based and innovative?
- Do the project management systems, including progress reporting, administrative and financial systems and monitoring and evaluation system, operate as effective management tools, aid in effective implementation and provide sufficient basis for evaluating performance and decision making?
- Has the technical assistance and support from project partners and stakeholders been appropriate, adequate, and timely?
- Validate whether the risks originally identified in the project document and, currently in the APR/PIRs, are the most critical and the assessments and risk ratings placed are reasonable.
- State the initial risks that were identified during project design and start that have been removed during the project implementation period and described how each of these were removed, i.e., the risk mitigation measures that were applied. Identify those that were not removed or have persisted, as well as any additional risks that may have arose during the project implementation (if any).

- Assess the use of the project logical framework and work plans as management tools and in meeting with UNDP-GEF requirements in planning and reporting.
- Assess the use of electronic information and communication technologies in the implementation and management of the project.
- Are the project outputs (e.g., reports on studies and research conducted, capacity development activities conducted and evaluated, etc.) properly documented and are available with the Implementing Partner and UNDP-China?
- On the financial management side, assess the cost effectiveness of the resource inputs to each activity, or set of activities, and note any irregularities.
- Assess how the applied process for the procurement/supply of required resource inputs, covering the RFP and TOR preparation, bidding, bid selection and awarding, and note any irregularities.
- How have the APR/PIR process helped in monitoring and evaluating the project implementation and achievement of results?

Strategic partnerships (project positioning and leveraging)

- Asses how project partners, stakeholders and co-financing institutions are involved in the implementation of project activities.
- Assess the realization of the committed co-financing for the project.
- Assess how the results of co-financed baseline activities are reported to the project management office.
- Assess how project partners, stakeholders and co-financiers are involved in the Project's adaptive management framework.
- Identify opportunities for stronger collaboration and substantive partnerships for future projects to ensure successful achievement of the results and outcomes of such projects.
- Are the project information and progress of activities disseminated to project partners and stakeholders? Are there areas to improve in the collaboration and partnership mechanisms?

NOTE: Detail any COVID-19 project interventions that should be included in the scope of the evaluation.

6. Timeframe

NOTE: Flexibility and delays should be included in the timeframe for the TE, with additional time for implementing the TE virtually recognizing possible delays in accessing stakeholder groups due to COVID-19. Consideration may be given to a time contingency should the evaluation be delayed in any way due to COVID-19.

The total duration of the TE will be approximately *(average 25-35 working days)* over a time period of *(# of weeks)* starting on *(date)*.

NOTE: Adjust the text in this column if a mission will not take place. The stakeholder interviews, if done virtually, may require a longer than usual time period. Please adjust the number of days and completion date to accommodate this.

Options for site visits should be provided in the TE Inception Report.

7. TE DELIVERABLES

#	Deliverable	Description	Timing	Responsibilities
1	TE Inception Report	TE team clarifies objectives,	No later than 2 weeks before the	TE team submits Inception Report to

		methodology and timing of the TE	TE inception: *(by date)*	Commissioning Unit and project management
2	Presentation	Initial Findings	End of TE interview: *(by date)*	TE team presents to Commissioning Unit and project management
3	Draft TE Report	Full draft report *(using guidelines on report content in ToR Annex C)* with annexes	Within 3 weeks of end of TE interview: *(by date)*	TE team submits to Commissioning Unit; reviewed by BPPS-GEF RTA, Project Coordinating Unit, GEF OFP
5	Final TE Report* + Audit Trail	Revised final report and TE Audit trail in which the TE details how all received comments have (and have not) been addressed in the final TE report *(See template in ToR Annex H)*	Within 1 week of receiving comments on draft report: *(by date)*	TE team submits both documents to the Commissioning Unit

*All final TE reports will be quality assessed by the UNDP Independent Evaluation Office (IEO). Details of the IEO's quality assessment of decentralized evaluations can be found in Section 6 of the UNDP Evaluation Guidelines.[24]

8. TE Team Composition

NOTE: Provide additional details on management structures and implementation if the International Consultant will work with a National Consultant and/or if the International Consultant is to operate remotely. Include a provision for experience in implementing evaluations remotely.

A team of *three independent evaluators* will conduct the TE – *one team leader (with experience and exposure to projects and evaluations in other regions) and two team experts, usually from the country of the project*. The team leader will *(add details, as appropriate, e.g. be responsible for the overall design and writing of the TE report, etc.)* The team expert will *(add details, as appropriate, e.g. assess emerging trends with respect to regulatory frameworks, budget allocations, capacity building, work with the Project Team in developing the TE itinerary, etc.)*

The evaluator(s) cannot have participated in the project preparation, formulation and/or implementation (including the writing of the project document), must not have conducted this project's Mid-Term Review and should not have a conflict of interest with the project's related activities.

The selection of evaluators will be aimed at maximizing the overall "team" qualities in the following areas: *(Adjust the qualifications as needed and provide a weight to each qualification. In most cases, the qualifications for the team leader and those for the team expert will differ. Therefore, there should be two different lists of qualifications or separate TORs.)*

[24] Access at: http://web.undp.org/evaluation/guideline/section-6.shtml

The TE Team will be composed of one International Lead Consultant and two National Consultants. At the minimum, the members of the TE Team shall have the following professional background and responsibilities:

A. International Lead Consultant （one person）

Education

- Master's degree in *energy science, international development,* or other closely related field;

Experience

- Minimum of ten years accumulated and recognized experience in the Energy Efficiency and climate change area
- Minimum of five years' experience of project evaluation and/or implementation experience in the result-based management framework
- Familiarity with China
- Experience with multilateral and bilateral supported project environments
- Comprehensive knowledge of international project best practices
- Very good report writing skills in English

Language

- Fluency in written and spoken English.

Responsibilities

- Define the evaluation methodology and schedule, and report to the PMO
- Documentation of the review
- Leading the TE Team in planning, conducting, and reporting on the evaluation
- Deciding on division of labor within the team and ensuring timeliness of reports
- Use of best practice evaluation methodologies in conducting the evaluation
- Leading presentation of the draft evaluation findings and recommendations in-country
- Conducting the debriefing for the UNDP China Office and the TNC PMO
- Leading the drafting and finalization of the MTR report

9. EVALUATOR ETHICS

The TE team will be held to the highest ethical standards and is required to sign a code of conduct upon acceptance of the assignment. This evaluation will be conducted in accordance with the principles outlined in the UNEG 'Ethical Guidelines for Evaluation'. The evaluator must safeguard the rights and confidentiality of information providers, interviewees, and stakeholders through measures to ensure compliance with legal and other relevant codes governing collection of data and reporting on data. The evaluator must also ensure security of collected information before and after the evaluation and protocols to ensure anonymity and confidentiality of sources of information where that is expected. The information knowledge and data gathered in the evaluation process must also be solely used for the evaluation and not for other uses without the express authorization of UNDP and partners.

10. PAYMENT SCHEDULE

- 100% payment upon satisfactory delivery of the final TE report and approval by the Commissioning Unit and RTA (via signatures on the TE Report Clearance Form) and delivery of completed TE Audit Trail

  Criteria for issuing the final payment of 100%:

- The final TE report includes all requirements outlined in the TE TOR and is in accordance with the TE guidance.
- The final TE report is clearly written, logically organized, and is specific for this project (i.e. text has not been cut & pasted from other TE reports).
- The Audit Trail includes responses to and justification for each comment listed.

NOTE: Include a provision for the impact of COVID-19 on the production of deliverables and any reduced payment should this occur.

❖ *Suggested additional text*

In line with the UNDP's financial regulations, when determined by the Commissioning Unit and/or the consultant that a deliverable or service cannot be satisfactorily completed due to the impact of COVID-19 and limitations to the TE, that deliverable or service will not be paid.

Due to the current COVID-19 situation and its implications, a partial payment may be considered if the consultant invested time towards the deliverable but was unable to complete to circumstances beyond his/her control.

11. APPLICATION PROCESS[25]
(Adjust this section if a vetted roster will be used)
Recommended Presentation of Proposal:

a) **Letter of Confirmation of Interest and Availability** using the template[26] provided by UNDP;
b) **CV** and a **Personal History Form** (P11 form[27]);
c) Brief description **of approach to work/technical proposal** of why the individual considers him/herself as the most suitable for the assignment, and a proposed methodology on how they will approach and complete the assignment; (max 1 page)
d) **Financial Proposal** that indicates the all-inclusive fixed total contract price and all other travel related costs (such as flight ticket, per diem, etc.), supported by a breakdown of costs, as per template attached to the Letter of Confirmation of Interest template. If an applicant is employed by an organization/company/institution, and he/she expects his/her employer to charge a management fee in the process of releasing him/her to UNDP under Reimbursable Loan Agreement (RLA), the applicant must indicate at this point, and ensure that all such costs are duly incorporated in the financial proposal submitted to UNDP.

All application materials should be submitted to the address (insert mailing address) in a sealed envelope indicating the following reference "Consultant for Terminal Evaluation of *(project title)*" or by email at the following address ONLY: *(insert email address)* by *(time and date)*. Incomplete applications will be excluded from further consideration.
Criteria for Evaluation of Proposal: Only those applications which are responsive and compliant will be evaluated. Offers will be evaluated according to the Combined Scoring method – where the educational background and experience on similar assignments will be weighted at 70% and the price proposal will weigh as 30% of the total scoring. The applicant receiving the Highest Combined Score that has also accepted UNDP's General Terms and Conditions will be awarded the contract.

[25] Engagement of evaluators should be done in line with guidelines for hiring consultants in the POPP https://popp.undp.org/SitePages/POPPRoot.aspx
[26] https://intranet.undp.org/unit/bom/pso/Support%20documents%20on%20IC%20Guidelines/Template%20for%20Confirmation%20of%20Interest%20and%20Submission%20of%20Financial%20Proposal.docx
[27] http://www.undp.org/content/dam/undp/library/corporate/Careers/P11_Personal_history_form.doc

A2. Meetings held

A2.1 Agenda inception meetings

1. **The first online meeting with PMO (via Zoom)**
   Date & time: 20 April 2020，15:00 - 16:00 (Beijing Time)

Agenda

15:00-15:10 Opening Remarks and brief introduction by Mrs. Liu Shijun
(Programme Director, UNDP China)

15:10-15:30 Introduction and arrangement of the terminal evaluation by Mr. Casper Van der Tak
(International Consultant)

15:30-15:50 Discussion on the terminal evaluation hosted by Mr. Casper Van der Tak
(International Consultant)

15:50-16:00 Meeting summary, hosted by Mr. Casper Van der Tak
(International Consultant)

2. **The second online meeting with PMO (via Zoom)**
   Date & time: 8 May 2020，14:00 - 16:00 (Beijing Time)

Agenda

14:00-14:20 Opening Remarks and brief introduction by Mr. Mo Hongping
(Deputy Division Director, MIIT)

14:20-14:50 Presentation by Mrs. Deng Xianghui
(Project Manager)

14:50-15:50 Discussion on the PREMCI project hosted by Mr. Casper Van der Tak

(International Consultant)

15:50-16:00 Project summary, hosted by by Mr. Casper Van der Tak

(International Consultant)

A2.2 People consulted, inception meetings

The following people were consulted:

Table 3. List of stakeholders consulted in the first inception meeting

Name	Organization	Title
Mo Hongping	Department of Energy Conservation and Resources Utilization	Deputy Division General
Deng Xianghui	China Industrial Energy Conservation and Cleaner Production Association	Secretary General
Yan Jingping	China Industrial Energy Conservation and Cleaner Production Association	Manager
Liu Shijun	UNDP China	Programme Director
Li Dan	UNDP China	Programme Assistant

Table 4. List of stakeholders consulted in the second inception meeting

Name	Organization	Title
Wang Xiaoyang	Department of Energy Conservation and Resources Utilization	Deputy Director
Mo Hongpin	Department of Energy Conservation and Resources Utilization	Deputy Division General
Deng Xianghui	China Industrial Energy Conservation and Cleaner Production Association	Secretary General
Yan Jingping	China Industrial Energy Conservation and Cleaner Production Association	Manager
Song Xiaoming	Institute of Energy, Resources and Environment, Center for International Economic and Technological Cooperation, MIIT	Deputy Director
Yu Xiang	Research Institute for Eco-civilization	Director
Yang Benxiao	CEPREI (Beijing) Industrial Technology Research Institute Co., Ltd	Director
Li Wenqian	China International Engineering Consulting Corporation	Deputy Director
Zhao Lihua	China Electronics Standardization Institute	Director
Yao Binglei	Minister of Electrical Machinery Division	General manager
Li Dan	UNDP China	Programme Assistant

A2.3 Meetings held, TE implementation phase

Table 5. List of meetings held during the TE implementation phase

Date	Organization	Participants
10 June 2021	PMO	Mr. Mo Hongpin from PMO Mr. Yan Jingping from China Industrial Energy Conservation and Cleaner Production Association
18 June 2021	Wannan	Mr. Xu Quan from Anhui Wannan Electric Machine Co., Ltd. Mr. Yan Jingping from China Industrial Energy Conservation and Cleaner Production Association
18 June 2021	Xiangtan	Mr. Tian Chuanchuan from Hunan Xiangtan Electric Machine Co., Ltd. Mr. Yan Jingping from China Industrial Energy Conservation and Cleaner Production Association.
18 June 2021	Kaiyuan	Mr. Tian Pan Yanfu from Shandong Kaiyuan Electric Machine Co., Ltd. Mr. Yan Jingping from China Industrial Energy Conservation and Cleaner Production Association.
18 June 2021	UNDP	Miss. Li Dan from UNDP Mr. Yan Jingping from China Industrial Energy Conservation and Cleaner Production Association.
19 June 2021	Research institutes	Mr. Yang Benxiao from CEPREI (Beijing) Industrial Technology Research Institute Co., Ltd Mrs. Li Wenqian from China International Engineering Consulting Corporation Mrs. Yu Xiang from Research Institute for Eco-civilization
22 June 2021	PSC	Mr. Xu Zhiqiang from National Energy Conservation Center
22 June 2021	Shanghai	Mr. Tian Yao Binglei from Shanghai Electric Appliance Research Institute and Engineering Research Centre for Motor System Mr. Yan Jingping from China Industrial Energy Conservation and Cleaner Production Association.
3 July 2021	Project National Executing Agency	Mrs. Luo Xiaoli, Ministry of Industry, and Information Technology

A3. List of persons interviewed and interview checklists

A3.1 Persons interviewed during the TE implementation phase

During the TE implementation phase, the following people were interviewed (in order of the date and time the interviews were held):

- Mr. Mo Hongpin from PMO
- Mr. Yan Jingping from China Industrial Energy Conservation and Cleaner Production Association
- Mr. Xu Quan from Anhui Wannan Electric Machine Co., Ltd.
- Mr. Tian Chuanchuan from Hunan Xiangtan Electric Machine Co., Ltd.
- Mr. Tian Pan Yanfu from Shandong Kaiyuan Electric Machine Co., Ltd.
- Miss. Li Dan from UNDP
- Mr. Yang Benxiao from CEPREI (Beijing) Industrial Technology Research Institute Co., Ltd
- Mrs. Li Wenqian from China International Engineering Consulting Corporation
- Mrs. Yu Xiang from Research Institute for Eco-civilization
- Mr. Xu Zhiqiang from National Energy Conservation Center
- Mr. Tian Yao Binglei from Shanghai Electric Appliance Research Institute and Engineering Research Centre for Motor System
- Mrs. Luo Xiaoli, Ministry of Industry, and Information Technology

A3.2 Question checklists

The following are the question checklists that were used for the interviews. The question checklist also indicates which person the TE team initially targeted for the interviews. The TE team was not always able to interview the intended persons. Finally, the TE team anticipated the possibility of time pressure, making it impossible to go through the complete checklist. For that reason, specific questions have been highlighted as priority questions.

PMO Question Checklist

1. Mo Hongping
2. Zhi Hui

Most important questions highlighted

1. What do you see as the greatest successes of PREMCI? Why? Are there any failures you would like to highlight?
2. What were the biggest challenges PREMCI encountered during the implementation of the project? How did you address these?
3. Was there an effective relationship and communication between/among components so that data, information, lessons learned, best practices and outputs are shared efficiently, including cross-cutting issues during project implementation? Could you provide examples?
4. Could you describe how the various project components and outputs interacted? Was this beneficial to the implementation of PREMCI?
5. Could you describe the project monitoring system? How did you use it?
6. PREMCI used consultants. How was there performance? Were outputs delivered on time? Can you give examples of especially good work conducted by consultants?
7. Were the project management arrangements adequate and appropriate?
8. Did the project management systems, including progress reporting, administrative and financial systems logical framework, and monitoring and evaluation system, operate as effective

management tools, aid in effective implementation and provide sufficient basis for evaluating performance and decision making?

9. How were project partners, stakeholders and co-financiers involved in the Project's adaptive management framework?
10. Please describe the contribution of the APR/PIR process in monitoring and evaluating the project implementation and achievement of results?
11. The original project document identified several risks. Which of these risks have affected the project? How were the risks addressed? Were the risk ratings appropriate?
12. How effective were the use of the project logical framework and work plans as management tools and in meeting with UNDP-GEF requirements in planning and reporting?
13. How effective have electronic information and communication technologies been used in the implementation and management of the project?
14. How are project outputs disseminated to UNDP and MIIT? Do they have copies (electronic or hard copies) of all outputs prepared?
15. How do you see the HEM and REM sector develop after the end of PREMCI?
16. Will an increasing number of companies produce HEMs and REMs? Are there any barriers (for example financial, technical capacity)? How will these barriers be addressed?
17. Will an increasing number of companies use HEMs and REMs? Are there any barriers (for example financial, technical capacity)? How will these barriers be addressed?
18. Is there anything else you would like to share with the TE team about PREMCI?

China Industrial Energy Conservation and Cleaner Production Association question checklist

3. Deng Xianghui
4. Yan Jingping

Most important questions highlighted

1. Please provide an introduction about China Industrial Energy Conservation and Cleaner Production Association. What type of organizations are member of China Industrial Energy Conservation and Cleaner Production Association?
2. How did PREMCI meet the goals of China Industrial Energy Conservation and Cleaner Production Association? Did PREMCI meet your expectations?
3. Please describe the role of China Industrial Energy Conservation and Cleaner Production Association in PREMCI and in the PMO?
4. What outputs has China Industrial Energy Conservation and Cleaner Production Association been involved in? With what results? How was China Industrial Energy Conservation and Cleaner Production Association supported by PREMCI?
5. How was China Industrial Energy Conservation and Cleaner Production Association involved in PREMCI decision-making?
6. PREMCI used consultants. How was there performance? Were outputs delivered on time? Can you give examples of especially good work conducted by consultants?
7. Did the project management systems, including progress reporting, administrative and financial systems logical framework, and monitoring and evaluation system, operate as effective management tools, aid in effective implementation and provide sufficient basis for evaluating performance and decision making?
8. Please describe the contribution of the APR/PIR process in monitoring and evaluating the project implementation and achievement of results?
9. The original project document identified several risks. Which of these risks have affected the project? How were the risks addressed? Were the risk ratings appropriate?
10. Has the project logical framework and design been relevant in the light of the project experience to date? Has the project logical framework and design been adjusted to adapt to changing conditions and circumstances?
11. Were the project management arrangements adequate and appropriate?
12. Describe the use of the electronic information and communication technologies for implementation and management. To what extents were these technologies effective for implementation and management?
13. Could you describe the PMO procurement process?
14. Is M&E adequate and does it provide information necessary for adjusting implementation?
15. How do you see the HEM and REM sector develop after the end of PREMCI?
16. Will an increasing number of companies produce HEMs and REMs? Are there any barriers (for example financial, technical capacity)? How will these barriers be addressed?
17. Will an increasing number of companies use HEMs and REMs? Are there any barriers (for example financial, technical capacity)? How will these barriers be addressed?
18. Is there anything else you would like to share with the TE team about PREMCI?

Project National Executing Agency question checklist

5. Gao Yunhu
6. You Yong

Most important questions highlighted

1. Could you describe your direct involvement in PREMCI, and the amount of time involved?
2. In your opinion, did PREMCI meet its objectives? Could you elaborate?
3. How well does PREMCI align with your organization's goals at the start of the project and at the moment?
4. To what extent do China's sector policies and strategies contribute to the achievement of PREMCI's goals?
5. Does the project remain well-placed and integrated within the national government development strategies?
6. How satisfied are you with PREMCI's results? Why? What are PREMCI's strong points, and what are the weak points?
7. How do you see the HEM and REM sector develop after the end of PREMCI?
8. Will an increasing number of companies produce HEMs and REMs? Are there any barriers (for example financial, technical capacity)? How will these barriers be addressed?
9. Will an increasing number of companies use HEMs and REMs? Are there any barriers (for example financial, technical capacity)? How will these barriers be addressed?
10. Would your organization consider to partner up with UNDP to replicate PREMCI in other countries?
11. Is there anything else you would like to share with the TE team about PREMCI?

Project Steering Committee Members question checklist

PSC members

7. Xie Ji
8. Zhu Meina

Most important questions highlighted

1. Could you describe your direct involvement in PREMCI, and the amount of time involved?
2. In your opinion, did PREMCI meet its objectives? Could you elaborate?
3. Does the project remain well-placed and integrated within the national government development strategies?
4. How satisfied are you with PREMCI's results? Why? What are PREMCI's strong points, and what are the weak points?
5. How effectively is the project managed at all levels? Is it results-based and innovative?
6. Do you consider the logical frameworks and work plans useful and effective in planning and reporting? Have they have been adapted? If yes, why, and what was the process?
7. Has the committed co-financing for the project been provided?
8. How do you see the HEM and REM sector develop after the end of PREMCI?
9. Will an increasing number of companies produce HEMs and REMs? Are there any barriers (for example financial, technical capacity)? How will these barriers be addressed?
10. Will an increasing number of companies use HEMs and REMs? Are there any barriers (for example financial, technical capacity)? How will these barriers be addressed?
11. Would your organizations consider to partner up with UNDP to replicate PREMCI in other countries?
12. Is there anything else you would like to share with the TE team about PREMCI?

UNDP question checklist

UNDP

9. Patrick Haverman
10. Liu Shijun
11. Danny Li

Most important questions highlighted

1. How long has each of you been involved in PREMCI?
2. What do you see as the greatest successes of PREMCI? Why? Are there any failures you would like to highlight?
3. What were the biggest challenges PREMCI encountered during the implementation of the project? How did you address these?
4. Did the project management systems, including progress reporting, administrative and financial systems logical framework, and monitoring and evaluation system, operate as effective management tools, aid in effective implementation and provide sufficient basis for evaluating performance and decision making?
5. How effectively is the project managed at all levels? Is it results-based and innovative?
6. The original project document identified several risks. Which of these risks have affected the project? How were the risks addressed? Were the risk ratings appropriate?
7. How are project outputs disseminated? Do you have copies (electronic or hard copies) of all outputs prepared?
8. Have there been any challenges in procurement processes and in financial management?
9. Please describe the contribution of the APR/PIR process in monitoring and evaluating the project implementation and achievement of results?
10. Has the committed co-financing for the project been provided? How could we verify this?
11. Could you describe the adaptive management framework and the role of project partners, stakeholders, and co-financiers therein?
12. How does UNDP see the future of the project? Would UNDP consider to partner up with Chinese government entities to replicate PREMCI in other countries?
13. Is there anything else you would like to share with the TE team about PREMCI?

Research Institute for Eco-civilization, China International Engineering Consulting Corporation, CEPREI(Beijing) Industrial Technology Research Institute Co., Ltd question checklists

Research Institute for Eco-civilization

12. Yu Xiang
China International Engineering Consulting Corporation

13. Li Wenqian
CEPREI(Beijing) Industrial Technology Research Institute Co., Ltd

14. Yang Benxiao

Most important questions highlighted

1. Could you introduce your organization?
2. Could you introduce the role of your organization in PREMCI?
3. How clear were your tasks described? How was your company selected to conduct the tasks?
4. What topic did you address? What results did you achieve? How could the results be used by PREMCI? Do you believe they have been used to the fullest degree possible? In case of studies and reports, what were your main recommendations or suggestions?
5. What do you see as your main successes in PREMCI? What do you see as any failure (if any)?
6. Did you encounter any challenges? How did you overcome such challenges?
7. How well did PREMCI support you in performing your tasks? How smooth was the cooperation with PREMCI?
8. Do you have any recommendations for PREMCI's future?
9. Do you have any further comments you would like to make to the TE team?

Demonstration companies' questions checklist

Project demonstration companies

15. Yao Binglei (Minister of Electrical Machinery Division – maybe clarify this one)
16. Xu Quan (Anhui Wannan Electric Machine Co., Ltd.)
17. Tian Chuanchuan (Hunan Xiangtan Electric Machine Co., Ltd.)
18. Li Dejun (Shandong Kaiyuan Electric Machine Co., Ltd.)

Most important questions highlighted

1. Could you introduce your organization?
2. Could you introduce your organizations contributions to PREMCI (this should be a considerable productions of HEMs and/or REMs)
3. How did PREMCI support you in building up your production capacity? Would you have been able to achieve the establishment of this production capacity without the support from PREMCI? Would you have done so without PREMCI?
4. How do you are the commercial attractiveness of HEMs and REMs production? What are the main challenges? How effective do you find has PREMCI been in overcoming these challenges? Are more competitors entering the market or expanding their HEMS and REMs production?
5. Will you continue to expand your production capacity after the end of PREMCI?
6. Do you export to markets outside China? What do you see as the main challenges for export?
7. How smooth was the cooperation with PREMCI? Were you consulted during management decisions and changes in PREMCI? Could you give examples?
8. What do you see as your main successes in PREMCI? What do you see as any failure (if any)?
9. Did you encounter any challenges? How did you overcome such challenges?
10. Do you have any recommendations for PREMCI's future?
11. Do you have any further comments you would like to make to the TE team?

A4. Summary of field visits

Not applicable – no field visits were held, due to COVID-19.

A5. Evaluation Matrix

Table 6. Evaluation matrix

Evaluation questions	Indicators	Sources	Methodology
Component level assessment questions (split out by component – next sets of questions are at the project level)			
1. Is there an effective relationship and communication between/among components so that data, information, lessons learned, best practices and outputs are shared efficiently, including cross-cutting issues during project implementation?	• Project partners and PMO staff perceive an effective relationship and communication between components and can provide specific examples	• Project document, progress reports, monitoring reports • Project staff • Project partners	• Desk review • Online interviews
2. Were the performance measurement indicators and targets specified in the project monitoring system adequately used in monitoring and gauging the achievement of the project outputs and outcomes?	• Performance measurement indicators were systematically used on reporting and monitoring progress	• Project document, progress reports, monitoring reports • Project staff	• Desk review • Online interviews
3. Were the end-of-project targets for each objectively verifiable indicator of the project objective and each project outcome achieved?	• Achievement of project objective and outcome OVI's vis-à-vis expectations.	• Project documents • Project staff • Calculations by TE team based on surveys and statistics	• Desk review • Online interviews • Surveys conducted by TE team
4. Has the use of consultants been successful in achieving component outputs?	• Successful completion of outputs by consultants.	• Project documents • Project staff	• Desk review • Online interviews
5. Was the quality of the outputs of consultants whose services were engaged by the project adequate and useful to the realization of the project outcomes, and were the outputs delivered in a timely manner?	• Satisfaction with consultant's contributions to outputs, per component. • Absence of need to replace consultants or hire additional consultants and experts. • On time delivery of outputs.	• Project documents • Project staff • Review of project outputs • In case of trainings: evaluations	• Desk review • Online interviews
6. Were the appropriate resource inputs to deliver the outputs adequately provided?	• Necessary inputs were provided in sufficient amounts and on time.	• Project documents • Project staff	• Desk review • Online interviews

Evaluation questions	Indicators	Sources	Methodology
7. Are there any issues or factors that have impeded or accelerated the implementation of the components or the project as a whole, and what actions have been taken and what resolutions have been made in response?	• Factors that hindered or facilitated project implementation. • Project management response to such factors.	• Project documents • Project staff	• Desk review • Online interviews
Progress towards achievement of results (internal and within project's control) – this and following sets of questions are at the level of the project			
8. Has the Project made satisfactory progress in achieving project outputs vis-à-vis the targets and related delivery of inputs and activities?	• Achievement of project output OVI's vis-à-vis expectations. • Completion of outputs	• Project documents • Project staff • Calculations by TE team based on surveys and statistics	• Desk review • Online interviews • Surveys conducted by TE team
9. Were the direct partners and project consultants able to provide necessary inputs or achieve results?	• Successful completion of results or delivery of inputs by consultants.	• Project documents • Project staff	• Desk review • Online interviews
10. Given the level of achievement of outputs and related inputs and activities, is the Project likely to achieve its expected outcomes and objective?	• Achievement of project objective and outcome OVI's vis-à-vis expectations.	• Project documents • Project staff • Calculations by TE team based on surveys and statistics	• Desk review • Online interviews • Surveys conducted by TE team
11. Is the project contributing to the achievement of its goal?	• Achievement of project OVI's vis-à-vis expectations.	• Project documents • Project staff • Calculations by TE team based on surveys and statistics	• Desk review • Online interviews • Surveys conducted by TE team
12. Are there critical issues relating to achievement of project results that have been pending and are not resolved and what are the impacts of such pending or unresolved issues?	• Factors within project's control that hindered or facilitated project implementation. • Project management response to such factors. • Process for making the management response possible and formally approve it.	• Project documents • Project staff	• Desk review • Online interviews
13. What is the planned exit strategy for the project?	• How will project results achieved be sustained?	• Project documents • Project staff	• Desk review • Online interviews

Evaluation questions	Indicators	Sources	Methodology
	• How will future improvements in efficiency in HEM and REM be promoted and the adoption of HEM and REM be promoted? (focus on enterprises and finance)		
14. What is the plan for sustaining and maintaining the implementation of the various frameworks (policy/regulatory and institutional) and systems, best practices that the project has established and operationalized after the project completion?	• How will project results achieved be sustained? • How will future improvements in efficiency in HEM and REM be promoted and the adoption of HEM and REM be promoted? (focus on polities/regulations and institutions)	• Project documents • Project staff	• Desk review • Online interviews
Factors affecting successful implementation and achievement of results (beyond the Project's immediate control or project-design factors that influence outcomes and results)			
15. Has the project implementation and achievement of results proceeding well and according to plan, or are there any outstanding issues, obstacles, bottlenecks, etc. on the consumer, government or private sector or other organizations that are affecting the successful implementation and achievement of project results?	• Factors outside project's control that hindered or facilitated project implementation. • Project management response to such factors. • Process for making the management response possible and formally approve it.	• Project documents • Project staff	• Desk review • Online interviews
16. To what extent does the broader policy environment remain conducive to achieving expected project results, including existing and planned legislations, rules, regulations, policy guidelines and government priorities?	• Relevant international commitments, national level policies, sector policies that support HEM and REM	• Project documents • Project staff • National policy documents • Sector policy documents • UNFCCC website and Chinese NDCs and other communications to the UNFCCC	• Desk review • Online interviews • Internet search
17. Has the project logical framework and design been relevant in the light of the project experience to date? Has the project logical	• Use of the LFA approach in design and management	• Projects documents • Project staff	• Desk review • Online interviews

Evaluation questions	Indicators	Sources	Methodology
framework and design been adjusted to adapt to changing conditions and circumstances?			
18. To what extent do critical assumptions/risks in project design held true under the circumstances the project implementation has been through? Validate these assumptions as presently viewed by the project management and determine whether there are critical assumptions that should have been raised?	• See questions 12 and 15 and compare against risks and assumptions in the project document.	• Project document • See questions 12 and 15	• Desk review • Online interviews
19. Does the project remain well-placed and integrated within the national government development strategies, such as community development, poverty reduction, etc., and related global development programs to which the project implementation should align?	• Level of coherence between project objective and national policy priorities and strategies, as stated in official documents	• Project documents • Project staff • National policy documents • Sector policy documents • UNFCCC website and Chinese NDCs and other communications to the UNFCCC	• Desk review • Online interviews • Internet search
20. Are the Project's institutional and implementation arrangements still relevant and helpful in the achievement of the Project's objective and outcomes or are there any institutional concerns that hinder the Project's implementation and progress.	• Adequacy of implementation structure and mechanisms for coordination and communication.	• Projects documents • Project staff	• Desk review • Online interviews
Project management (adaptive management framework)			
21. Are the project management arrangements adequate and appropriate?	• Perceived adequacy of management arrangements. • Above seen in the context set by the extent of the achievement of OVI's.	• Projects documents • Project staff	• Desk review • Online interviews
22. How effectively is the project managed at all levels? Is it results-based and innovative?	• See Question 21	• See Question 21	• See Question 21
23. Do the project management systems, including progress reporting, administrative and financial systems and monitoring and evaluation system, operate as effective management tools, aid in effective implementation and provide sufficient basis for evaluating performance and decision making?	• Rating of the effectiveness of the various project management systems	• Project staff	• Online interviews
24. Has the technical assistance and support from project partners and stakeholders been appropriate, adequate, and timely?	• Satisfaction with project partners' and stakeholders'	• Project documents • Project staff • Review of project outputs	• Desk review • Online interviews

Evaluation questions	Indicators	Sources	Methodology
	contributions to outputs, per component. • Absence of need to replace project partners and stakeholders or hire additional project partners and stakeholders. • On time delivery of outputs.	• In case of trainings: evaluations	
25. Are the risks originally identified in the project document and, currently in the APR/PIRs the most critical and are the assessments and risk ratings placed reasonable?	• Assessment of risks identified at start and risks remaining till project end and assessment of risk ratings	• Project documents • Project staff	• Desk review • Online interviews
26. State the initial risks that were identified during project design and start that have been removed during the project implementation period and described how each of these were removed, i.e., the risk mitigation measures that were applied. Identify those that were not removed or have persisted, as well as any additional risks that may have arose during the project implementation (if any).	• State any active mitigation measures implemented during the project to address delays and project implementation challenges, and compare the delays and challenges to those identified in the risk statements	• Project documents • Project staff	• Desk review • Online interviews
27. How effective were the use of the project logical framework and work plans as management tools and in meeting with UNDP-GEF requirements in planning and reporting?	• Describe the use of the logical frameworks and work plans in planning and reporting. • To what extents were these tools effective for planning and reporting. • Describe the process for adapting them and identify to what extent they have been adapted.	• Project documents • Project staff	• Desk review • Online interviews
28. How effective have electronic information and communication technologies been used in the implementation and management of the project?	• Describe the use of the electronic information and communication technologies for implementation and management. • To what extents were these technologies effective for implementation and management.	• Project documents • Project staff	• Desk review • Online interviews

Evaluation questions	Indicators	Sources	Methodology
29. Are the project outputs (e.g., reports on studies and research conducted, capacity development activities conducted and evaluated, etc.) properly documented and are available with the Implementing Partner and UNDP-China?	• Describe the process of project output dissemination. • Confirm availability with UNDP-China and MIIT	• Project documents • Project staff	• Desk review • Online interviews
30. On the financial management side, assess the cost effectiveness of the resource inputs to each activity, or set of activities, and note any irregularities.	• Cost of project inputs and outputs relative to norms and standards for donor projects in the country or region	• Project documents • Project staff	• Desk review • Online interviews
31. Assess how the applied process for the procurement/supply of required resource inputs, covering the RFP and TOR preparation, bidding, bid selection and awarding, and note any irregularities.	• Description of the procurement process. • Check of procurement based on one or two samples.	• Project documents • Project staff	• Desk review • Online interviews • Review of sample files for following of procedures.
32. How have the APR/PIR process helped in monitoring and evaluating the project implementation and achievement of results?	• Describe the contribution of the APR/PIR process in monitoring and evaluating the project implementation and achievement of results. • Effectiveness rating of these tools.	• Project documents • Project staff	• Desk review • Online interviews
Strategic partnerships (project positioning and leveraging)			
33. How effective are project partners, stakeholders and co-financing institutions involved in the implementation of project activities?	• See Question 24	• See Question 24	• See Question 24
34. Has the committed co-financing for the project been provided?	• Level of cash and in-kind co-financing relative to expected level	• Project documents • Project staff	• Desk review • Online interviews
35. How are the results of co-financed baseline activities reported to the project management office?	• Process for reporting co-finance baseline activities to the PMO • More in general, exchange of information and coordination with related donor activities	• Project documents • Project staff	• Desk review • Online interviews
36. How are project partners, stakeholders and co-financiers involved in the Project's adaptive management framework?	• Description of the adaptive management framework and the role of project partners,	• Project documents • Project staff	• Desk review • Online interviews

Evaluation questions	Indicators	Sources	Methodology
	stakeholders, and co-financiers therein.		
37. What are opportunities for stronger collaboration and substantive partnerships for future projects to ensure successful achievement of the results and outcomes of such projects?	• Not a proper evaluation question – depends on outcomes of the TE, conclusions and recommendations following from the main findings	Not applicable	Not applicable
38. Are the project information and progress of activities disseminated to project partners and stakeholders? Are there areas to improve in the collaboration and partnership mechanisms?	• Process for updating partners and stakeholders	• Project documents • Project staff	• Desk review • Online interviews
Relevance **See also questions 16**			
39. Does the project objective fit GEF strategic priorities?	• Level of coherence between project objective and GEF strategic priorities	• GEF strategic priority documents for period when project was approved • Current GEF strategic priority documents	• Desk review
40. Does the project's objective support implementation of the UNFCCC? Other relevant multilateral environmental agreements?	• Linkages between project objective and elements of the UNFCCC	• UNFCCC website • China's NDC and other official communications to the UNFCCC	• Desk review
Efficiency **See also questions 4, 5, 6, 8, 9, 30, 34**			
41. Is the project cost-effective?	• Financial delivery rate vs. expected rate • Management costs as percentage of total costs	• Project documents • Project staff	• Desk review • Online interviews
42. Is M&E adequate and does it provide information necessary for adjusting implementation?	• Quality and adequacy of project monitoring mechanisms (oversight bodies' input, quality, and timeliness of reporting, etc.)	• Project documents • Project staff • National and local stakeholders	• Desk review • Online interviews • Interviews with national and local stakeholders

Evaluation questions	Indicators	Sources	Methodology
Effectiveness **See also questions 3, 10, 11**			
43. What are the key risks and barriers that remain to achieve the project objective and generate Global Environmental Benefits	• Presence, assessment of, and preparation for expected risks, assumptions, and impact drivers	• Project documents • Project staff • Project stakeholders	• Desk review • Online interviews • Interviews with project stakeholders
Results **See also questions 3, 10, 11**			
44. Are impact level results likely to be achieved? Are the likely to be at the scale sufficient to be considered Global Environmental Benefits? Can these impact level results, and any intermediary results, be attributed to the project?	• Level of progress through the project's Theory of Change. • Achievement of OVI's at all levels of the project • Existence of logical linkages between project activities, outputs, outcomes, and impacts	• Project documents • Project staff • Calculations by TE team based on surveys and statistics	• Desk review • Online interviews • Surveys conducted by TE team
Sustainability **See also questions 13, 14**			
45. To what extent are project results likely to be dependent on continued financial support? What is the likelihood that any required financial resources will be available to sustain the project results once the GEF assistance ends?	• Financial requirements for maintenance of project benefits • Level of expected financial resources available to support maintenance of project benefits • Potential for additional financial resources to support maintenance of project benefits • Enterprises interest in HEM and REM production and use ('ownership')	• Project documents • Project staff • Project stakeholders	• Desk review • Online interviews • Interviews with project stakeholders
46. Do relevant stakeholders have the necessary technical capacity to ensure that project benefits are maintained?	• Level of technical capacity of relevant stakeholders relative to	• Project documents • Project staff • Project stakeholders	• Desk review • Online interviews

Evaluation questions	Indicators	Sources	Methodology
	level required to sustain project benefits		• Interviews with project stakeholders
47. To what extent are the project results dependent on socio-political factors?	• Existence of socio-political risks to project benefits	• Project documents • Project staff • Project stakeholders	• Desk review • Online interviews • Interviews with project stakeholders
48. To what extent are the project results dependent on issues relating to institutional frameworks and governance?	• Existence of institutional and governance risks to project benefits	• Project documents • Project staff • Project stakeholders	• Desk review • Online interviews • Interviews with project stakeholders
49. Are there any environmental risks that can undermine the future flow of project impacts and Global Environmental Benefits?	• Existence of environmental risks to project benefits	• Project documents • Project staff • Project stakeholders	• Desk review • Online interviews • Interviews with project stakeholders
Gender equality and women's empowerment			
50. How did the project contribute to gender equality and women's empowerment?	• Level of progress of gender action plan and gender indicators in results framework (to the degree available) • Female and male relative employment in HEM and REM companies engaged in the projects vis-à-vis electric motor employment. • Female and male relative participation in trainings vis-à-vis electric motor employment.	• Project documents • Project staff • Project stakeholders	• Desk review • Online interviews • Interviews with project stakeholders
Cross-cutting and UNDP Mainstreaming Issues			
51. How were effects on local populations considered in project design and implementation?	• Possible effects of the project on employment opportunities and environment	• Project document, progress reports, monitoring reports	• Interviews with HEM and REM producers and PMO

A6. Questionnaires

Survey among HEM and REM producers.

Introduction

The project "Promoting Energy Efficient Motors in Chinese Industries" (PREMCI) managed by United Nations Development Programme (UNDP) is funded by the Global Environment Facility (GEF) with co-financing coordinated by China's Ministry of Industry and Information Technology (MIIT). MIIT also served as the executing agency. The objective of PREMCI is the reduction of greenhouse gas emissions in Chinese industries through the significant increase in the production and remanufacturing and use of energy efficient (EE) electric motors. PREMCI therefore focuses on the production and use of High Efficiency (Electric) Motors (HEMs) and the remanufacturing and use of Remanufactured Electric Motors (REMs).

According to monitoring and evaluations policies and procedures of UNDP and GEF, the Terminal Evaluation (TE) of PREMCI is being conducted to assess the achievement of project results and to draw lessons that can improve both the sustainability of the benefits from PREMCI and UNDP and GEF programming in the future.

Purpose of the survey

UNDP has hired a team of national and international experts for the TE. As part of the TE, the expert team would like to ask you several questions through this survey. Your answers will help us conduct the TE and improve future projects. Completion of the survey should not take more than 10 minutes. All information collected is anonymous and will be treated confidentially.

Many thanks in advance for your cooperation!

Start of the questionnaire

In this questionnaire, the following definitions are used:

- **High Efficiency (Electric) Motors (HEMs): Electric motors produced from new resources, with energy efficiencies corresponding to IE3 or better.**

- **Remanufactured Electric Motors (REMs): Electric motors remanufactured from old electric motors, with energy efficiencies corresponding to IE2 or better.**

1. Does your company produce HEMs?

ϒ Yes Continue with question 2.
ϒ No Skip to question 8.

2. Since which year does your company produce HEMs?

… (year)

3. What is the total capacity of HEMs produced during the last year 12-months period for which data are available?

From … to … (period covered): … MW.

4. What is the total capacity of HEMs sold during the last year 12-months period for which data are available?

From … to … (period covered): … MW.

5. Below several factors are mentioned that may have provided the reasons for starting to produce HEMs. Could you for each of these indicate how important the factor was?

a. PREMCI project	ϒ Very important	ϒ Important	ϒ Unimportant	ϒ Very unimportant	ϒ No influence at all
b. Awareness raising and promotion activities	ϒ Very important	ϒ Important	ϒ Unimportant	ϒ Very unimportant	ϒ No influence at all
c. Demonstration projects by other companies	ϒ Very important	ϒ Important	ϒ Unimportant	ϒ Very unimportant	ϒ No influence at all
d. Government support policies	ϒ Very important	ϒ Important	ϒ Unimportant	ϒ Very unimportant	ϒ No influence at all
e. Standards and regulatory requirements	ϒ Very important	ϒ Important	ϒ Unimportant	ϒ Very unimportant	ϒ No influence at all
f. Profitability	ϒ Very important	ϒ Important	ϒ Unimportant	ϒ Very unimportant	ϒ No influence at all
g. Keeping up with competitors	ϒ Very important	ϒ Important	ϒ Unimportant	ϒ Very unimportant	ϒ No influence at all

6. *How many of your employees work on HEMs production?*

… female employees and … male employees.

7. *What, if any, are the major factors that limit your ability or willingness to expand the production of HEMs?*

Answer:

Continue with question 9.

8. *What are your main reasons for not producing HEMs? (Several factors may be mentioned. Examples are lack of technical capacity, lack of profitability, lack of demand, lack of finance, lack of consumers trust in higher energy efficiency performance, lack of supporting policies and regulations.)*

Answer:

Continue with question 9.

9. *Does your company produce REMs?*

ϒ Yes Continue with question 10.

ϒ No Skip to question 16.

10. *Since which year does your company produce REMs?*

… (year)

11. *What is the total capacity of REMs produced during the last year 12-months period for which data are available?*

From … to … (period covered): … MW.

12. *What is the total capacity of HEMs sold during the last year 12-months period for which data are available?*

From … to … (period covered): … MW.

13. *Below several factors are mentioned that may have provided the reasons for starting to produce REMs. Could you for each of these indicate how important the factor was?*

h. PREMCI project	ϒ Very important	ϒ Important	ϒ Unimportant	ϒ Very unimportant	ϒ No influence at all
i. Awareness raising and promotion activities	ϒ Very important	ϒ Important	ϒ Unimportant	ϒ Very unimportant	ϒ No influence at all
j. Demonstration projects by other companies	ϒ Very important	ϒ Important	ϒ Unimportant	ϒ Very unimportant	ϒ No influence at all
k. Government support policies	ϒ Very important	ϒ Important	ϒ Unimportant	ϒ Very unimportant	ϒ No influence at all
l. Standards and regulatory requirements	ϒ Very important	ϒ Important	ϒ Unimportant	ϒ Very unimportant	ϒ No influence at all
m. Profitability	ϒ Very important	ϒ Important	ϒ Unimportant	ϒ Very unimportant	ϒ No influence at all
n. Keeping up with competitors	ϒ Very important	ϒ Important	ϒ Unimportant	ϒ Very unimportant	ϒ No influence at all

14. *How many of your employees work on REMs production?*

… female employees and … male employees.

15. *What, if any, are the major factors that limit your ability or willingness to expand the production of REMs?*

Answer:

End of the Questionnaire. Many thanks for your support!

16. *What are your main reasons for not producing REMs? (Several factors may be mentioned. Examples are lack of technical capacity, lack of profitability, lack of demand, lack of finance, lack of consumers trust in higher energy efficiency performance, lack of supporting policies and regulations.)*

Answer:

End of the questionnaire. Many thanks for your support!

Survey among HEM and REM users.

Introduction

The project "Promoting Energy Efficient Motors in Chinese Industries" (PREMCI) managed by United Nations Development Programme (UNDP) is funded by the Global Environment Facility (GEF) with co-financing coordinated by China's Ministry of Industry and Information Technology (MIIT). MIIT also served as the executing agency. The objective of PREMCI is the reduction of greenhouse gas emissions in Chinese industries through the significant increase in the production and remanufacturing and use of energy efficient (EE) electric motors. PREMCI therefore focuses on the production and use of High Efficiency (Electric) Motors (HEMs) and the remanufacturing and use of Remanufactured Electric Motors (REMs).

According to monitoring and evaluations policies and procedures of UNDP and GEF, the Terminal Evaluation (TE) of PREMCI is being conducted to assess the achievement of project results and to draw lessons that can improve both the sustainability of the benefits from PREMCI and UNDP and GEF programming in the future.

Purpose of the survey

UNDP has hired a team of national and international experts for the TE. As part of the TE, the expert team would like to ask you several questions through this survey. Your answers will help us conduct the TE and improve future projects. Completion of the survey should not take more than 10 minutes. All information collected is anonymous and will be treated confidentially.

Many thanks in advance for your cooperation!

Start of the questionnaire

In this questionnaire, the following definitions are used:

- **High Efficiency (Electric) Motors (HEMs): Electric motors produced from new resources, with energy efficiencies corresponding to IE3 or better.**
- **Remanufactured Electric Motors (REMs): Electric motors remanufactured from old electric motors, with energy efficiencies corresponding to IE2 or better.**

1. Does your company use HEMs?

ϒ Yes Continue with question 2.

ϒ No Skip to question 7.

2. Since which year does your company use HEMs?

… (year)

3. What is the total capacity of HEMs bought during the last year 12-months period for which data are available?

From … to … (period covered): … MW.

4. For what percentage of total electrical motor capacity do HEMs account?

From … to … (period covered): … MW.

5. Below several factors are mentioned that may have provided the reasons for starting to use HEMs. Could you for each of these indicate how important the factor was?

o. PREMCI project	ϒ Very important	ϒ Important	ϒ Unimportant	ϒ Very unimportant	ϒ No influence at all
p. Awareness raising and promotion activities	ϒ Very important	ϒ Important	ϒ Unimportant	ϒ Very unimportant	ϒ No influence at all
q. Demonstration projects by other companies	ϒ Very important	ϒ Important	ϒ Unimportant	ϒ Very unimportant	ϒ No influence at all

r.	Government support policies	ϒ Very important	ϒ Important	ϒ Unimportant	ϒ Very unimportant	ϒ No influence at all
s.	Standards and regulatory requirements	ϒ Very important	ϒ Important	ϒ Unimportant	ϒ Very unimportant	ϒ No influence at all
t.	Profitability	ϒ Very important	ϒ Important	ϒ Unimportant	ϒ Very unimportant	ϒ No influence at all
u.	Keeping up with competitors	ϒ Very important	ϒ Important	ϒ Unimportant	ϒ Very unimportant	ϒ No influence at all

6. *What, if any, were the major factors that limit your ability or willingness to expand the use of HEMs?*

Answer:

Continue with question 8.

7. *What are your main reasons for not using HEMs? (Several factors may be mentioned. Examples are lack of technical capacity, lack of profitability, lack of demand, lack of finance, lack of consumers trust in higher energy efficiency performance, lack of supporting policies and regulations.)*

Answer:

Continue with question 9.

8. *Does your company use REMs?*

ϒ Yes Continue with question 2.
ϒ No Skip to question 14.

9. *Since which year does your company use REMs?*

… (year)

10. What is the total capacity of REMs bought during the last year 12-months period for which data are available?

From … to … (period covered): … MW.

11. For what percentage of total electrical motor capacity do REMs account?

From … to … (period covered): … MW.

12. Below several factors are mentioned that may have provided the reasons for starting to use REMs. Could you for each of these indicate how important the factor was?

v. PREMCI project	ϒ Very important	ϒ Important	ϒ Unimportant	ϒ Very unimportant	ϒ No influence at all
w. Awareness raising and promotion activities	ϒ Very important	ϒ Important	ϒ Unimportant	ϒ Very unimportant	ϒ No influence at all
x. Demonstration projects by other companies	ϒ Very important	ϒ Important	ϒ Unimportant	ϒ Very unimportant	ϒ No influence at all
y. Government support policies	ϒ Very important	ϒ Important	ϒ Unimportant	ϒ Very unimportant	ϒ No influence at all
z. Standards and regulatory requirements	ϒ Very important	ϒ Important	ϒ Unimportant	ϒ Very unimportant	ϒ No influence at all
aa. Profitability	ϒ Very important	ϒ Important	ϒ Unimportant	ϒ Very unimportant	ϒ No influence at all
bb. Keeping up with competitors	ϒ Very important	ϒ Important	ϒ Unimportant	ϒ Very unimportant	ϒ No influence at all

13. What, if any, were the major factors that limit your ability or willingness to expand the use of REMs?

Answer:

End of the questionnaire. Many thanks for your cooperation!

14. *What are your main reasons for not using REMs? (Several factors may be mentioned. Examples are lack of technical capacity, lack of profitability, lack of demand, lack of finance, lack of consumers trust in higher energy efficiency performance, lack of supporting policies and regulations.)*

Answer:

End of the questionnaire. Many thanks for your cooperation!

A7. Co-financing tables

Table 7. Co-financing table

Co-financing (type/source)	UNDP (USD million)		Government (USD million)		Partner agency (USD million)		Total (USD million)	
	Planned	Actual	Planned	Actual	Planned	Actual	Planned	Actual
Grants					3.500	3.500	3.500	3.500
Loans/Concessions			11.900	13.379			11.900	13.379
In-kind support	0.300	0.300	5.500	5.805			5.800	6.105
Other								
Totals	0.300	0.300	17.400	19.184	3.500	3.500	21.200	22.984

Source: PMO

Table 8. Confirmed Sources of Co-Financing at TE Stage

Sources of Co-Financing	Name of Co-financier	Type of Co-financing	Type of Investment Mobilized	Amount (USD)
GEF		Grant	Recurrent expenditure	3,500,000
UNDP		In-Kind	Recurrent expenditure	300,000
MIIT		Public Investment	Investment mobilized	2,257,000
		In-Kind	Recurrent expenditure	1,101,000
Department of Shandong Economic and Information Technology Committee	Shandong Kaiyuan Electric Motors Company	Other (cash)	Investment mobilized	1,900,000
		In-Kind	Recurrent expenditure	1,300,000
Anhui Province Economic and Information Technology Commission	Anhui Wannan Motor Company	Other (cash)	Investment mobilized	3,720,000
		In-Kind	Recurrent expenditure	1,210,000
Hunan Economic and Information Technology Commission	Hunan Xiangtan Electric Motor Company	Other (cash)	Investment mobilized	2,300,000
		In-Kind	Recurrent expenditure	1,160,000
Shanghai Electric Appliance Research Institute	Shanghai Electric Appliance Research Institute	Other (cash)	Investment mobilized	3,202,000
		In-Kind	Recurrent expenditure	1,034,000
Total amount mobilized:				**22,984,000**

Source: PMO

A8. TE Ratings

Table 9. TE Ratings

Monitoring & Evaluation (M&E)	Rating (6-point scale, see below)
M&E design at entry	5
M&E Plan Implementation	5
Overall Quality of M&E	5
Implementation & Execution	Rating (6-point scale, see below)
Quality of UNDP Implementation/Oversight	6
Quality of Implementing Partner Execution	5
Overall quality of Implementation/Execution	5
Assessment of Outcomes	Rating (6-point scale, see below)
Relevance	6
Effectiveness	5
Efficiency	6
Overall Project Outcome Rating	6
Sustainability	Rating (4-point scale, see below)
Financial resources	3
Socio-political/economic	3
Institutional framework and governance	4
Environmental	4
Overall Likelihood of Sustainability	3

Table 10. Achievement of goal, objective, and outcomes

PREMCI element	**Rating**
Goal	6
Objective	6
Outcomes (aggregated)	6
Outcome 1	6
Outcome 2	6

Outcome 3	5
Outcome 4	5

- Outcomes, Effectiveness, Efficiency, M&E, I&E Execution, Relevance are rated on a 6-point rating scale: 6 = Highly Satisfactory (HS), 5 = Satisfactory (S), 4 = Moderately Satisfactory (MS), 3 = Moderately Unsatisfactory (MU), 2 = Unsatisfactory (U), 1 = Highly Unsatisfactory (HU).
- Sustainability is rated on a 4-point scale: 4 = Likely (L), 3 = Moderately Likely (ML), 2 = Moderately Unlikely (MU), 1 = Unlikely (U)

A9. Signed Evaluation Consultant Agreement form

Agreement Casper Van der Tak through Nutawa sagl:

United Nations Development Programme

民强国盛

UNDP REIMBURSABLE LOAN AGREEMENT (RLA)

Date of Agreement: **09 April 2021** Contract Reference: **RLA21065** Vendor No.:

MEMORANDUM OF AGREEMENT between the **UNITED NATIONS DEVELOPMENT PROGRAMME** (hereinafter referred to as "UNDP") and **Nutawa Sagl** (hereinafter referred to as "The Company")

Whose Address is: Via San Gottardo 17c, Bellinzona 6500, Switzerland

Whereby the Company will provide the services o the consultancy as per the attached Terms of Reference.

The Company accepts this engagement of service with UNDP according to the terms and conditions hereinafter set forth.

1. Duties of Consultant

The company shall make available **Mr. Casper Meeuwis Van der Tak** (hereinafter called "The Consultant") who shall perform the duties according to the attached Terms of Reference.

2. Duration of Agreement

This agreement shall commence on **09 April 2021** and shall expire no later than **30 June 2021**

3. Consideration

a) For the services performed by the Company under the terms of this agreement and subject to the provisions of Article 5 below, UNDP shall reimburse the Company the sum of: **The total fee of USD 12,000 at a daily rate of USD 750 for 16 working days.**

☐Gross Per Day Worked ☐ Gross Lump Sum with monthly payment ☐Equal Payments ☒ Other

Related cost will be covered by below COA:

GL Unit	Account	Oper. Unit	Fund	Dept	BU	Project	Activity	Imp. Agent	Donor
UNDP1	71210	CHN	62000	39805	CHN10	00093919	2	001981	10003

b) Other Reimbursable Items: ☒ Airfare ☒DSA ☒Terminal Expenses ☒Other

c) The Company will provide UNDP with the enclosed UNDP Certification of Payment Form(s) to claim payments per subsection 3a.

d) The Company will provide a Company invoice (attaching receipts) to claim Other Reimbursable Items per subsection 3b.

e) The Company will submit UNDP Certification of Payment Form and Company Invoices to: **Ms. Liu Shijun** UNDP Office at **Shijun.liu@undp.org**

f) Payments made in a currency other than US dollars will be made at the UN operational rate of exchange in effect on the day of payment and the Company will incur charges related to the payment. The Company is responsible for any taxes levied on the monies received under this agreement.

4. Rights and Obligations

a) It is understood that the obligations of UNDP are limited to those expressly provided for in this agreement.

b) This agreement shall not in any respect confer upon the Consultant the status of staff member of the UNDP.

c) The Company will make available the services of the Consultant for the period noted above, and will remain responsible for actual payment of salaries, taxes and any other overhead administrative charges.

d) It is understood that the Company will provide insurance and medical coverage for the Consultant. In particular, the Company will remain responsible for insuring the Consultant in the event of accident, illness, or death, whether or not such event occurs during service with UNDP.

e) The rights and obligations of the Company are strictly limited to the terms and conditions of this agreement. Accordingly, the Company shall not be entitled to any benefit, payment, subsidy, compensation or entitlement, except as expressly provided in this agreement.

f) The Company shall be solely liable for claims by third parties arising from negligent acts or omissions by the Company/Consultant in the course of performing this agreement, and under no circumstances shall UNDP be held liable for such claims by third parties.

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

5. Standard Conditions

UNDP standard conditions of procuring services shall apply to this agreement (Attachment A).

6. Effectiveness

This contract shall become effective on the date of signing of this Memorandum of Agreement, the execution by of the Consultant of the Side Letter (Attachment B), affirming his/her personal obligation to abide by the Covenants stipulated

therein. This contract shall be in full force and effect until the services have been completed and all payments therefore have been made.

In witness whereof, the parties hereto agree with the terms and conditions of the agreement:

Nutawa Sagi

Ge Yunyan
Operations Manager, UNDP China

Please return a copy of this agreement to: hongyang.xiong@undp.org

Attachment A

GENERAL CONDITIONS FOR UNDP REIMBURSABLE LOAN AGREEMENTS (RLA)

Article 1 - Independent Contractor

1. The Contractor shall be considered as having the legal status of an independent contractor. The Employees of the Contractor shall not be considered in any aspect as being officials or staff members of the United Nations Development Programme. The Contractor shall be solely responsible for all claims by such persons arising out of or in connection with their agreement by the Contractor. The Contractor shall inform such persons of the foregoing.

Article 2 - Contractor's General Responsibilities

1. The Contractor shall perform its obligations under the RLA with due diligence and efficiency and in conformity with sound professional, administrative and financial practices.
2. The Contractor shall act at all times so as to protect, and not be in conflict with, the interests of UNDP.
3. The Contractor shall be responsible for the services performed by its Employees. To this end, and without limiting the generality of the foregoing, the Contractor shall select reliable individuals who will perform effectively in the implementation of the RLA, respect the local customs and conform to a high standard of moral and ethical conduct.
4. The Contractor shall respect and abide by all applicable laws and regulations of the country in which the obligations under this RLA are to be performed, and shall take all reasonable measures to ensure that its Employees do so.

Article 3 - Assignment of Personnel

1. Other than persons specifically named in this RLA, no person shall be assigned by the Contractor to perform services in connection with this RLA until after the Contractor has notified the UNDP of the identity of such proposed persons and has provided the UNDP with their curricula vitae, and the UNDP has notified the Contractor of its approval of such assignments.

Article 4 - Removal of Personnel

1. If in the opinion of the UNDP any of the Contractor's Employees prove themselves incapable of substantially carrying out their duties and/or are fundamentally unsuitable for the services, it shall be at the discretion of the UNDP to decide if and when the employment of such Contractor's employees under the RLA shall be terminated and the Contractor be required to replace him. In this event the Contractor shall, on receipt of instructions from the UNDP, comply forthwith and shall assign new persons in accordance with the provisions of Article 3.
2. Such withdrawal or replacement shall not be a cause for suspension of the RLA.

3. Any costs or expenses resulting from any withdrawal or replacement of persons pursuant to paragraph 1 of this Article 4 shall be borne by the Contractor.

Article 5 - Indemnification and Insurance

1. The Contractor shall indemnify, hold and save harmless and defend, at its own expense, the UNDP, its officials, agents, servants and employees, from and against all suits, claims, demands and liability o any nature, including their costs and expenses, arising out of the acts or omissions of the Contractor or its Employees in the performance of this RLA. This provision shall extend to claims and liability in the nature of workmen's compensation claims and those arising out of the use of patented inventions or devices.
2. The Contractor shall provide and thereafter maintain all appropriate workmen's compensation and liability insurance to cover its Employees and any claims for death, bodily injury or damage to property arising from the execution of this RLA. The Contractor represents that the liability includes possible subcontractors.
3. The Contractor shall ensure that all policies of insurance referred to above, other than workmen's compensation, shall name the UNDP and, where appropriate, subcontractors concerned, as additional insured parties.
4. Upon request by the UNDP, the Contractor shall provide evidence, to the reasonable satisfaction of the UNDP, of the insurance referred to above and shall give the UNDP reasonable advance notice of any proposed changes related to such insurance.
5. The UNDP undertakes no responsibility to provide life, accident, travel or any other insurance coverage which may be necessary or desirable in respect of any persons performing services in connection with this RLA.

Article 6 - Sickness and Accident

1. If the Contractor's Employees fall sick in the period during which they are engaged on the RLA, the UNDP shall not be responsible for arranging or paying for medical treatment and attention.
2. The UNDP shall not be required to pay for the services of the Contractor's Employees for any period that the Contractor's Employees are incapacitated by sickness.
3. If in the opinion of the UNDP, any of the Contractor's Employees either has been or will be incapacitated by sickness for an unreasonable period or period then, and in that case, it shall be at the discretion of the UNDP to decide if and when the employment of the Contractor's Employee under the RLA shall be terminated and the Contractor be required to replace him. In this event, the Contractor shall on receipt of instructions from the UNDP comply forthwith and shall substitute for the Employee whose services are so terminated another and satisfactory person and the whole costs of such replacements shall be at the Contractor's expense.

Article 7 - Encumbrances

1. The contractor shall not cause or permit any lien, attachment or other encumbrance by any third party to be placed on file or to remain on file in any public office or on file with the UNDP against any monies due or to become due for any work done or services rendered in connection with this RLA, or by reason of any claim or demand against the Contractor.

Article 8 - Source of Instructions

1. The Contractor shall neither seek nor accept instructions from any authority external to the UNDP in connection with the performance of its services under this RLA. The Contractor shall refrain from any action which may adversely affect the UNDP and shall fulfill its commitments with the fullest regard for the interest of the UNDP.

Article 9 - Prohibition of Conflicting Activities

1. The Contractor and its personnel admitted into the country to perform services under this RLA shall not engage in any conflicting business or other activity in the country in which the services are to be performed, or accept paid employment in contravention with the laws of the country.

Article 10 - Officials not to Benefit

1. The Contractor warrants that no official of the UNDP has been or shall be admitted by the Contractor to any direct or indirect benefit arising from this RLA or the award thereof. The Contractor agrees that breach of this provision is a breach of an essential term of this RLA.

Article 11 - Records, Accounts, Information and Audit

1. The Contractor shall maintain accurate and systematic records and accounts in respect of the performance of its obligations under this RLA.
2. The Contractor shall furnish, compile and make available at all reasonable times to the UNDP any records, accounts or other information, oral or written, which the UNDP may reasonably request in respect of the performance by the Contractor of its obligations under this RLA.

3. The Contractor shall allow the UNDP to inspect and audit such records, accounts or other information upon reasonable notice.

Article 12 - Confidential Nature of Documents

1. All maps, drawings, photographs, plans, manuscripts, records, reports, recommendations, estimates, documents and all other data compiled by or received by the Contractor under this RLA shall be the property of the UNDP, shall be treated as confidential and shall be delivered only to the authorized UNDP officials on completion of work under this RLA.
2. The Contractor may not communicate at any time to any other person, government or authority external to the UNDP, any information known to it by reason of its association with the UNDP which has not been made public except with the authorization of the UNDP; nor shall the Contractor at any time use such information to private advantage. These obligations do not lapse upon termination of this RLA with the UNDP.

Article 13 - Copyright, Patents and other Proprietary Rights

1. The UNDP shall be entitled to all intellectual property and other proprietary rights including but not limited to patents, copyrights and trademarks, with regard to documents and other materials which bear a direct relation to or are prepared or collected in consequences or in the course of the execution of this RLA. The Contractor, at the UNDP's request shall take all necessary steps, execute all necessary documents and generally assist in securing such proprietary rights and transferring the same to the UNDP in compliance with the requirements of the applicable law.

Article 14 - Use of Name, Emblem or Official Seal of the UNDP

1. The Contractor shall not advertise or otherwise make public the fact that it is a contractor with the UNDP. Also the Contractor shall, in no manner whatsoever use the name, emblem or official seal of the UNDP or any abbreviation of the name of the UNDP in connection with its business or otherwise. This obligation does not lapse upon termination of the RLA.

Article 15 - Contractor's Default

1. If the Contractor shall fail to carry out the Services or any part thereof with due diligence and expedition, or shall refuse or fail to comply with any reasonable order given to it in writing by the UNDP, the UNDP may immediately give notice in writing to the Contractor to make good such failure or contravention.
2. Should the Contractor fail to comply with the notice referred to in Sub-Clause 15.1 either within seven days from receipt of such notice, or otherwise within such times as may be reasonably necessary for making it good, the UNDP without prejudice to any other right it may have under the RLA may, subject to the prior notification of the Contractor
   (a) employ others to carry out that part of the Services which the Contractor shall have failed to carry out, or
   (b) take the Services in whole or in part out of the Contractor's hands and recontract with others as may be appropriate.
3. If the cost to the UNDP of employing others to carry out part or all of the Services in accordance with Sub-Clause 15.2. exceeds the amount which would have become payable to the Contractor had it completed that part or all of the Services, then the UNDP shall have the right to charge such excess cost to the Contractor. The UNDP shall also have the right to retain part or all of any sum which would otherwise be due to the Contractor under the RLA and set such sum against the excess due from the Contractor.

4. If the Contractor fails to carry out the Services in part or in whole, the Contractor shall refund to the UNDP any advance payment made in respect of that portion of the Services not carried out.
5. Nothing in this Clause shall, in the event of a malfunction, prevent emergency action being taken by the UNDP to meet operational requirements but, if such actions result in the UNDP incurring additional costs in carrying out the Services, such reasonable costs shall be reimbursed to the Contractor by the UNDP provided such emergency action is not taken as a result of failure by the Contractor.

Article 16 - Audits and investigations:

16.1- Each invoice paid by UNDP shall be subject to a post-payment audit by auditors, whether internal or external, of UNDP or the authorized agents of the UNDP at any time during the term of the Contract and for a period of three (3) years following the expiration or prior termination of the Contract. The UNDP shall be entitled to a refund from the Contractor for any amounts shown by such audits to have been paid by the UNDP other than in accordance with the terms and conditions of the Contract. Should the audit determine that any funds paid by UNDP have not been used as per contract clauses, the company shall reimburse such funds forthwith. Where the company fails to reimburse such funds, UNDP reserves the right to seek recovery and/or to take any other action as it deems necessary.

16.2- The Contractor acknowledges and agrees that, at anytime, UNDP may conduct investigations relating to any aspect of the Contract, the obligations performed under the Contract, and the operations of the Contractor generally. The right of UNDP to conduct an investigation and the Contractor's obligation to comply with such an investigation shall not lapse upon expiration or prior termination of the Contract. The Contractor shall provide its full and timely cooperation with any such inspections, post-payment audits or investigations. Such cooperation shall include, but shall not be limited to, the Contractor's obligation to make available its personnel and any documentation for such purposes and to grant to UNDP access to the Contractor's premises. The Contractor shall require its agents, including, but not limited to, the Contractor's attorneys, accountants or other advisers, to reasonably cooperate with any inspections, post-payment audits or investigations carried out by UNDP hereunder.

Article 17 - Anti-terrorism:

- The Contractor agrees to undertake all reasonable efforts to ensure that none of the UNDP funds received under this Contract are used to provide support to individuals or entities associated with terrorism and that the recipients of any amounts provided by UNDP hereunder do not appear on the list maintained by the Security Council Committee established pursuant to resolution 1267 (1999). The list can be accessed via http://www.un.org/Docs/sc/committees/1267/1267ListEng.htm. This provision must be included in all sub-contracts or sub-agreements entered into under this Contract.

Article 18 - Security:

18.1 The responsibility for the safety and security of the Contractor and its personnel and property, and of UNDP's property in the Contractor's custody, rests with the Contractor.

18.2 The Contractor shall:

(a) put in place an appropriate security plan and maintain the security plan, taking into account the security situation in the country where the services are being provided;
(b) assume all risks and liabilities related to the Contractor's security, and the full implementation of the security plan.

18.3 UNDP reserves the right to verify whether such a plan is in place, and to suggest modifications to the plan when necessary. Failure to maintain and implement an appropriate security plan as required hereunder shall be deemed a breach of this contract. Notwithstanding the foregoing, the Contractor shall remain solely responsible for the security of its personnel and for UNDP's property in its custody as set forth in paragraph 3.1 above.

Article 19 - Termination for Insolvency

1. The UNDP may at any time terminate the RLA by giving written notice to the Contractor, without compensation to the Contractor, if the Contractor becomes bankrupt or otherwise insolvent, provided that such termination will not prejudice or affect any right of action or remedy which has accrued or will accrue thereafter to the UNDP.

Article 20 - Termination for Convenience

1. The UNDP, may by written notice sent to the Contractor, terminate the RLA, in whole or in part, at any time for its convenience. The notice of termination shall specify that termination is for the UNDP's convenience, the extent to which performance of Services under the RLA is terminated, and the date upon which such termination becomes effective. This shall be no fewer than 30 days from the date of the letter issued by the UNDP detailing its intent to terminate the RLA.
2. In the event of any termination no payment shall be due from the UNDP to the Contractor except for the Services satisfactorily performed in conformity with the expressed terms of this RLA.

Article 21 - Force Majeure

1. The Contractor shall not be liable for termination for default if, and to the extent that, its delay in performance or other failure to perform its obligations under the RLA is the result of the event of Force Majeure.
2. For the purposes of this Clause, "Force Majeure" means an event beyond the control of the Contractor and not involving the Contractor's fault or negligence and not foreseeable. Such events may include, but are not restricted to, acts of the UNDP either in its sovereign or contractual capacity, wars, fires, floods, epidemics, quarantine restrictions.
3. If a Force Majeure situation arises, the Contractor shall promptly notify the UNDP in writing of such condition and the cause thereof. Unless otherwise directed by the UNDP in writing, the Contractor shall continue to perform its obligations under the RLA as far as is reasonably practical, and shall seek all reasonable alternative means for performance not prevented by the Force Majeure event.
4. If the Contractor is rendered permanently unable, wholly or in part, by reason of Force Majeure to perform its obligations under this RLA, the UNDP shall have the right to suspend or terminate this RLA with a period of notice to the Contractor of seven (7) days.

Article 22 - Arbitration

1. Any controversy or claim arising out of, or in connection with this RLA or any breach thereof, shall unless it is settled amicably by direct negotiation, be referred to arbitration in accordance with the UNCITRAL Arbitration Rules then obtaining. Such arbitration shall be conducted under the auspices of the International Chamber of Commerce ICC (where contract activities are conducted outside the United States of America) or the American Arbitration Association AAA (where the contract activities are more closely connected with the United States of America) which shall also serve as the Appointing Authority under the Rules.
2. All parties shall be bound by the arbitration award rendered in accordance with such arbitration, as the final adjudication of any such controversy or claim.

Article 23 - Privileges and Immunities

1. Nothing in or relating to this RLA shall be deemed a waiver, express or implied, of any of the privileges and immunities of the United Nations including is subsidiary organs.

Article 24 - Tax Exemption

1. Section 7 of the Convention on the Privileges and Immunities of the United Nations provides, inter alia, that the UN including this subsidiary organs, such as the UNDP, are exempt from all direct taxes and from custom duties in respect of articles imported or exported for its official use. Accordingly, the Contractor authorizes the UNDP to deduct from the Contractor's invoice any amount representing such taxes or duties. Payment of such corrected invoiced amount shall constitute full payment by the UNDP. In the event any taxing authority refuses to recognize the UNDP exemption from such taxes, the Contractor shall immediately consult with the UNDP to determine a mutually acceptable procedure.

Article 25 - Amendments

1. No modification of or change in this RLA, waiver of any of its provisions or additional contractual provisions shall be valid or enforceable unless previously approved in writing by the parties to this RLA or their duly authorized representatives in the form of an amendment to this RLA signed by the parties hereto.

Attachment B
Side Letter

UNDP Office
United Nations Development Programme, 2 Liangmahe Nanlu, Beijing, China 100 600

Dear Sir/Madam:

Subject: **Undertaking by the Consultant**

1. I refer to para 6 of the Reimbursable Loan Agreement between **Nutawa Sagl** and UNDP, dated **09 April 2021.**

2. I affirm any personal obligation to comply with undertaking as contained in the covenants applicable to the consultant in the Standard Conditions of the Contract. I also affirm that my employment in connection with the contract will include, as my personal obligation, continued cooperation with UNDP after the conclusion of the Reimbursable Loan Agreement to the extent necessary to clarify or explain any report or recommendations made by me. This obligation shall be independent of my obligation to **Nutawa Sagl** under our employment contract.

3. I understand that UNDP's confirmation of this side letter is necessary to make the Reimbursable Loan Agreement effective.

Sincerely yours,

Mr. Casper Meeuwis Van der Tak

Confirmed:

Ge Yunyan,
Operations Manager
UNDP China

United Nations Development Programme

Certification of Payment

1. For Personnel use only

Name:	**Casper Meeuwis Van der Tak**	Contract No.:	**RLA2021065**
Project Number:		Fee: (per diem)	
Project Title:		Duration:	
Starting Date:	Expiry date:	Expected number of work days per week:	
Nationality:		Vendor No.:	
Allotment Number(s):		Index no.:	
MOD Number(s):			

2. To be completed by the subscriber

Please type or print and **mail original and first and second copies**, along with your travel claim upon completion of travel, to: United Nations Development Programme, 2 Liangmahe Nanlu, Beijing, China 100 600

Attention: *(Finance Officer)* **Room No.:**

I certify that the dates indicated below are an accurate account of the services and duties performed under the terms of this contract.

Countries visited	Dates worked		No. of days worked	Total Payable
	From	To		

Please note that payment will be made in the currency of the subscriber's usual residence, unless otherwise indicated in Article 3 of the Special Service Agreement, or paragraph 2 of the Reimbursable Loan Agreement. Payments in other than US dollars will be made at the UN operational rate of exchange in effect at the time payment is made. Bank charges related to payment will be borne by the subscriber.

Please make payment as indicated below:

Name of Bank:	Account title:
Address:	Account number:
Currency of Account:	Social Security or Tax Identification No.: (if applicable)
Signature: _____	Date:

3. To be completed by Area/Requesting Officer

Please check appropriate box

Final report accepted ☐ Assessment sheet attached: ☐

Final report not accepted ☐ Second Assessment to be added: ☐

I certify that the work was satisfactorily performed during the above mentioned dates.

Signature: _____ Date:

Name:

4. To be completed by the Certifying Officer

Please process the payment of to the subscriber in accordance with the payment instructions given above.

Travel Claim received ☐

Certifying Officer Certifying Bureau/Division Date

A10. Signed UNEG Code of Conduct form

UNEG Code of Conduct for Evaluators

Independence entails the ability to evaluate without undue influence or pressure by any party (including the hiring unit) and providing evaluators with free access to information on the evaluation subject.

Evaluators/Consultants:

1. Must present information that is complete and fair in its assessment of strengths and weaknesses so that decisions or actions taken are well founded.
2. Must disclose the full set of evaluation findings along with information on their limitations and have this accessible to all affected by the evaluation with expressed legal rights to receive results.
3. Should protect the anonymity and confidentiality of individual informants. They should provide maximum notice, minimize demands on time, and respect people's right not to engage. Evaluators must respect people's right to provide information in confidence and must ensure that sensitive information cannot be traced to its source. Evaluators are not expected to evaluate individuals and must balance an evaluation of management functions with this general principle.
4. Sometimes uncover evidence of wrongdoing while conducting evaluations. Such cases must be reported discreetly to the appropriate investigative body. Evaluators should consult with other relevant oversight entities when there is any doubt about if and how issues should be reported.
5. Should be sensitive to beliefs, manners and customs and act with integrity and honesty in their relations with all stakeholders. In line with the UN Universal Declaration of Human Rights, evaluators must be sensitive to and address issues of discrimination and gender equality. They should avoid offending the dignity and self-respect of those persons with whom they come in contact in the course of the evaluation. Knowing that evaluation might negatively affect the interests of some stakeholders, evaluators should conduct the evaluation and communicate its purpose and results in a way that clearly respects the stakeholders' dignity and self-worth.
6. Are responsible for their performance and their product(s). They are responsible for the clear, accurate and fair written and/or oral presentation of study imitations, findings, and recommendations.
7. Should reflect sound accounting procedures and be prudent in using the resources of the evaluation.
8. Must ensure that independence of judgement is maintained, and that evaluation findings and recommendations are independently presented.
9. Must confirm that they have not been involved in designing, executing, or advising on the project being evaluated and did not carry out the project's Mid-Term Review.

Evaluation Consultant Agreement Form

Agreement to abide by the Code of Conduct for Evaluation in the UN System:

Name of Evaluator: Casper Meeuwis VAN DER TAK

Name of Consultancy Organization (where relevant): Nutawa sagl

I confirm that I have received and understood and will abide by the United Nations Code of Conduct for Evaluation.

Signed at Laveno-Mombello on 15 July 2021

Signature: 

An independent evaluation reduces the potential for conflicts of interest which might arise with self-reported ratings by those involved in the management of the project being evaluated. Independence is one of ten general principles for evaluations (together with internationally agreed principles, goals, and targets: utility, credibility, impartiality, ethics, transparency, human rights and gender equality, national evaluation capacities, and professionalism).

UNEG Code of Conduct for Evaluators

Independence entails the ability to evaluate without undue influence or pressure by any party (including the hiring unit) and providing evaluators with free access to information on the evaluation subject.

Evaluators/Consultants:

1. Must present information that is complete and fair in its assessment of strengths and weaknesses so that decisions or actions taken are well founded.
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6. Are responsible for their performance and their product(s). They are responsible for the clear, accurate and fair written and/or oral presentation of study imitations, findings, and recommendations.
7. Should reflect sound accounting procedures and be prudent in using the resources of the evaluation.
8. Must ensure that independence of judgement is maintained, and that evaluation findings and recommendations are independently presented.
9. Must confirm that they have not been involved in designing, executing, or advising on the project being evaluated and did not carry out the project's Mid-Term Review.

Evaluation Consultant Agreement Form

Agreement to abide by the Code of Conduct for Evaluation in the UN System:

Name of Evaluator: CHAI Qimin

Name of Consultancy Organization (where relevant): Tsinghua University

I confirm that I have received and understood and will abide by the United Nations Code of Conduct for Evaluation.

Signed at Beijing on 15 July 2021

Signature: Chai Qimin

An independent evaluation reduces the potential for conflicts of interest which might arise with self-reported ratings by those involved in the management of the project being evaluated. Independence is one of ten general principles for evaluations (together with internationally agreed principles, goals, and targets: utility, credibility, impartiality, ethics, transparency, human rights and gender equality, national evaluation capacities, and professionalism).

UNEG Code of Conduct for Evaluators

Independence entails the ability to evaluate without undue influence or pressure by any party (including the hiring unit) and providing evaluators with free access to information on the evaluation subject.

Evaluators/Consultants:

1. Must present information that is complete and fair in its assessment of strengths and weaknesses so that decisions or actions taken are well founded.
2. Must disclose the full set of evaluation findings along with information on their limitations and have this accessible to all affected by the evaluation with expressed legal rights to receive results.
3. Should protect the anonymity and confidentiality of individual informants. They should provide maximum notice, minimize demands on time, and respect people's right not to engage. Evaluators must respect people's right to provide information in confidence and must ensure that sensitive information cannot be traced to its source. Evaluators are not expected to evaluate individuals and must balance an evaluation of management functions with this general principle.
4. Sometimes uncover evidence of wrongdoing while conducting evaluations. Such cases must be reported discreetly to the appropriate investigative body. Evaluators should consult with other relevant oversight entities when there is any doubt about if and how issues should be reported.
5. Should be sensitive to beliefs, manners and customs and act with integrity and honesty in their relations with all stakeholders. In line with the UN Universal Declaration of Human Rights, evaluators must be sensitive to and address issues of discrimination and gender equality. They should avoid offending the dignity and self-respect of those persons with whom they come in contact in the course of the evaluation. Knowing that evaluation might negatively affect the interests of some stakeholders, evaluators should conduct the evaluation and communicate its purpose and results in a way that clearly respects the stakeholders' dignity and self-worth.
6. Are responsible for their performance and their product(s). They are responsible for the clear, accurate and fair written and/or oral presentation of study limitations, findings, and recommendations.
7. Should reflect sound accounting procedures and be prudent in using the resources of the evaluation.
8. Must ensure that independence of judgement is maintained, and that evaluation findings and recommendations are independently presented.
9. Must confirm that they have not been involved in designing, executing, or advising on the project being evaluated and did not carry out the project's Mid-Term Review.

Evaluation Consultant Agreement Form

Agreement to abide by the Code of Conduct for Evaluation in the UN System:

Name of Evaluator: LI Shaoyi

Name of Consultancy Organization (where relevant): Freelance

I confirm that I have received and understood and will abide by the United Nations Code of Conduct for Evaluation.

Signed at Beijing, China on July 16, 2021

Signature: Shaoyi Li

An independent evaluation reduces the potential for conflicts of interest which might arise with self-reported ratings by those involved in the management of the project being evaluated. Independence is one of ten general principles for evaluations (together with internationally agreed principles, goals, and targets: utility, credibility, impartiality, ethics, transparency, human rights and gender equality, national evaluation capacities, and professionalism).

A11. Signed TE Report Clearance Form

EVALUATION REPORT CLEARANCE FORM

(to be completed by CO and UNDP GEF Technical Adviser based in the region and included in the final document)

Evaluation Report Reviewed and Cleared by

UNDP Country Office

Name: Liu Shijun

Signature: Liu Shijun Date: 09/13/2021

UNDP GEF RTA

Name: Manuel Soriano

Signature: Date: 14 Sep 2021

A12. TE Audit Trail

Provided as a separate file

A13. Relevant terminal GEF/LDCF/SCCF Core Indicators

Provided as a separate file.

A14. Elaboration of selected points of the TE

The TE team circulated a draft final TE report and received comments. Below are responses to those that are deemed as relevant and appropriate, and which requires a longer response than can conveniently be included in the main text of this final report.

A14.1 Trust and Confidence in the PREMCI project design

Does the PREMCI project design consider trust and confidence? Neither the inception report nor the LFA results mention trust or confidence. The project document does not mention trust but mentions confidence. However, none of the 5 times confidence is mentioned it is connected to a demand-side investment decision (while the payback periods stated in the project document, ranging from 2.8 years to 0.1 years really should raise the question why these investments do not happen). Confidence is discussed for instance in connection with awareness and accessible information and focus mostly on "policy and support" and "awareness" to take away the lack of confidence, instead of on financial instruments (such as ESI and efficiency guarantees) to take away the lack of trust in the stated performances of HEMs and REMs through instruments that create payouts to the user when the performances fall below expectation and hence ensure an adequate return on investment. Such instruments make investments in HEMs and REMs more attractive, and hence boost demand. By boosting demand for HEMs and REMs, such instruments also indirectly make investments in HEMs and REMs production capacity easier to finance.

A14.2 Does achievement of outcome OVI EOP targets imply removal of associated barriers?

Once could put forward the following thesis: Component 3 will address the removal of specific financial barriers related to shortage of financing for EE motors (HEMs and REMs) production and application. If the barriers are removed, the expected outcome is increased application of domestically produced EE Motors (HEMs and REMs) in Chinese industries. The premise here is if the financing barriers are removed the expected outcome will be achieved. The TE team was challenged to explain whether the achievement of Outcome 3, as measured by the realization of the EOP targets for the OVIs, would be possible without the removal of financial barriers.

A more general formulation of this thesis is: Achievement of EOP targets of OVIs means that the goal, objective, or outcome is achieved. Since each project component is addressing a specific barrier category, achieving the outcome of a project component, translates to the removal of the specific barrier category.

The TE team deals specifically with the thesis related to outcome 3, but in doing so also answers the more general thesis.

According to the TE team, achievement of the outcome indicators (as defined) only shows that companies have been able to overcome financial barriers, but not whether this has been the result of enhancement of access to finance. No OVI has been formulated that directly tracks creation of financial mechanisms and their use. Instead, the OVIs used are based on the assumption that only if the financial barriers have been removed, the EOP OVI targets set for Component 3 could have been achieved. If that would be true, achievement of the targets would imply that the financial barriers have been eliminated. The question is then whether the underlined assumption is accurate.

Is the assumption accurate? Note that financial barriers are relevant when economic actors (here: enterprises) face freedom of action. Enterprises then determine whether an investment is attractive (e.g., profitable) and whether, if attractive, it is possible to finance the investment. Financial barriers may make it impossible or too costly to finance an investment that otherwise appears attractive. Financial barriers determine the amount of investments that can be financed and the cost of the finance, and the characteristics of the various possible investments determine their priority order. The confrontation of these two determines what investments will be made. Lowering financial barriers mean that the enterprise can finance more investments (and hence cover investments that were previously excluded), and if the financial barrier removal is targeted, it can make financing of a specific investment possible.

Now consider PREMCI. According to the TE's interviews, PREMCI has mostly focused on policies (formulation of standards and a policy to make compliance with energy standards compulsory) and expanding manufacturing of HEMs and REMs. Especially the standard and policies are important. If HEMs / REMs become compulsory, as per new policies which are expected to be strictly enforced, the order of investment priorities of the companies involved changes, because companies must find a way to finance such investments. This will happen no matter whether access to finance for the companies has been increased or not, in other words, whether or not a reduction or elimination of financial barriers has been achieved. It has not become easier for the targeted enterprises to raise finance in general, nor has it become easier for the targeted enterprises to raise finance for HEMs and REMs in particular. However, the costs of failing to finance such investment has dramatically increased. For that reason, achievement of the EOP targets of the PREMCI OVI's for outcome 3 do not necessarily mean that the lowering of financial barriers has been successfully achieved. The assumption that only if the financial barriers have been removed, the EOP OVI targets set for Component 3 could have been achieved is not correct. For this reason, the TE recommends that OVIs are included that more directly track creation of financial mechanisms and their use.

Interviews suggest that the lowering of financial barriers has not been fully achieved. Achievement of the EOP targets of OVIs of outcome 3 is mostly thanks to activities carried out under components 1 and 2. A consequence is that financing of electric motors with efficiencies higher that required

under the new standards and policies will remain problematic. Moreover, no financing model has been created that would be easily expanded to other products, sectors and countries, which is relevant to some of the findings and recommendations of the TE.